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Predictive Nature of Commitment Language in Relation to Outcome of Prolonged Exposure Therapy for Posttraumatic Stress Disorder

Aaron P. Brinen

Philadelphia College of Osteopathic Medicine, brinen@comcast.net

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Philadelphia College of Osteopathic Medicine

Department of Psychology

THE PREDICTIVE NATURE OF COMMITMENT LANGUAGE IN RELATION TO
OUTCOME OF PROLONGED EXPOSURE THERAPY FOR POSTTRAUMATIC
STRESS DISORDER

By Aaron P. Brinen, Psy. D.

Submitted in Partial Fulfillment of the Requirements of the Degree of

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DEPARTMENT OF PSYCHOLOGY

Dissertation Approval

This is to certify that the thesis presented to us by Aaron P. Brinen, M.A. M.S.
on the 24th day of March, 2010, in partial fulfillment of the requirements for the degree
of Doctor of Psychology, has been examined and is acceptable in both scholarship and
literary quality.

Committee Members' Signatures:

Frederick Rotgers, Psy.D., ABPP, Chairperson

Stacey Cahn, Ph.D., Chairperson

Virginia Salzer, Ph.D.

Elizabeth A. Hembree, Ph.D.

Robert A. DiTomasso, Ph.D., ABPP, Chair, Department of Psychology

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Abstract

Sessions of prolonged exposure therapy, an extensively studied treatment for posttraumatic stress disorder, were coded for client verbalization in favor of maintaining or changing the focal behavior of the treatment. The frequency of client verbalization was used to attempt discrimination of group membership based on treatment completion and diagnosis remission. Client language was not predictive of group membership. However, for treatment completers, average frequency of verbalization against the status quo was twice as high as noncompleters when reviewing common reactions experienced following a trauma. Implications for treatment conceptualization and delivery are discussed.

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Epigraph

"And, like bright metal on a sullen ground,
My reformation, glitt'ring o'er my fault,
Shall show more goodly and attract more eyes
Than that which hath no foil to set it off."

-Henry IV

Chapter 1

Introduction

According to emotional processing theory (Foa, Huppert, & Cahill, 2005), the behavior that perpetuates posttraumatic stress disorder (PTSD) is avoidance. PTSD sufferers avoid trauma memories and stimuli associated with a traumatic event.

Prolonged exposure therapy (PE), a form of cognitive behavioral therapy for PTSD that has extensive empirical support, targets avoidance specifically, with a combination of imaginal and in vivo exposures. However, there is still an unexplained percentage of individuals who do not respond to treatment or drop out of treatment. Therefore, other behavior change literature might be examined for ways to increase the effectiveness of Prolonged Exposure (Jaycox, Foa, & Morral, 1998), a highly efficacious treatment for PTSD. Motivational interviewing (MI) and other motivational enhancement therapies were originally developed in the treatment of drug and alcohol disorders. They focus on resolving the ambivalence toward changing a behavior by increasing client verbalization of commitment to change with a client-centered, directive style. Since its development, MI has been applied to the changing of other behaviors (Maltby & Tolin, 2005; Westra & Dozois, 2006). Ambivalence about changing avoidant behavior might, hypothetically, account for some of the dropout rate and nonresponse rate in PTSD treatment. Motivational approaches could increase effectiveness of treatment by resolving the ambivalence regarding said behavior.

Statement of the Problem

PE is the most extensively studied and empirically supported treatment for PTSD (Hembree, Rauch, & Foa, 2003). Across trauma types, genders, and severity of symptoms, PE has been found to be highly effective, often yielding full remission of the disorder or large decreases in symptoms. In spite of the positive outcomes, there still exists an unexplained 20.5% dropout rate for treatment (Hembree, Foa, Dorfan, Street, Kowalski, & Tu, 2003). This is equivalent to the dropout rates for other empirically studied treatments for PTSD (e.g., cognitive restructuring, 22.1%, eye movement desensitization and reprocessing, 18.9%). Furthermore, there is no conclusive research about what makes a person respond or not respond to the treatment.

Client commitment to change has been found to predict outcome for drug and alcohol use treatments (Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003). Retrospective studies that reviewed session language found that commitment language is the strongest predictor of future behavior (Moyers, Martin, Christopher, Houck, Tonigan, & Amrhein, 2007; Moyers, Martin, Houck, Christopher, & Tonigan, 2009). If drug and alcohol use is viewed as a set of maladaptive behaviors, then the research on how to change it can be applied to other behaviors, such as avoidance. Avoidance of traumatic memories and reminders has been recognized as the active behavior that maintains PTSD (Riggs, Cahill, & Foa, 2006). Therefore, it is possible that the dropout rate and other lack of response to treatment might be associated with a lack of client commitment language in PE sessions.

Purpose of the Study

The purpose of this study was to determine if the key component of motivational interviewing (MI), client verbalization of commitment to change (Amrhein, 2004), is related to successful outcomes of PE and if the client verbalizations against change are related to poorer outcomes and dropout. If so, introduction of MI might have a significant effect on the outcomes of PE. Ultimately, this would suggest the value of studying the application of MI to traditional PE for individuals who exhibit low motivation to change avoiding behavior.

Overview of Literature Review

PTSD has become a common phenomenon in the treatment room and appropriate protocols are needed for clients. PE has led the field in effectiveness for PTSD. Even though many have expressed concern, systematic research has attempted to respond to these critics. PE has been found to be safe and efficient and to produce long-lasting effects. However, there still remains an inexplicable dropout rate and nonresponse rate that is mirrored in other PTSD treatment protocols (Hembree, Foa et al., 2003). MI is a directive, client-centered approach designed to resolve ambivalence about changing a behavior (Miller & Rollnick, 2002). Client commitment language is believed to be the active component of MI and most predictive of future behavior (Amrhein, 2004).

Relevance to Cognitive Behavior Therapy

Cognitive behavior therapy (CBT) has become the leader in the field of evidence-based psychological treatments. As these treatments become more common in clinical

practice, the need to identify common factors that enhance or hinder treatment outcome will become necessary. The identification of a common factor that is a predictor of treatment success will be the first step to increasing outcomes. This includes increasing awareness of motivational factors that influence treatment. This motivational domain becomes of greater importance for behavioral interventions that might be aversive to or difficult for participants, even though they have well-established efficacy.

Chapter 2

Literature Review

Evolving from the client-centered approach of Carl Rogers, Miller and Rollnick (2002) developed motivational interviewing (MI) and associated motivational interventions. MI is a client-centered, directive style of therapy designed to help people to resolve their ambivalence about changing a behavior. In implementing MI, therapists respect the client's autonomy, express empathy, *roll with* their resistance toward change, and bolster their self-efficacy about changing. Through a purposeful application of active listening, the practitioner elicits the patient's desire, ability, reason, need and ultimately commitment to change the behavior. MI then builds commitment to the client-selected course of action. This approach has a measurable effect on the likelihood of the individual changing his or her behavior.

Prochaska and DiClemente's Transtheoretical Model

Prochaska and DiClemente's transtheoretical model (TTM) outlines five stages through which individuals progress when attempting to change a behavior. According to the TTM, the stages occur in a spiral fashion, and a person passes through them multiple times as he or she approaches successful behavior change. This revolution in the conceptualization of behavior change arose from the studies of smoking cessation (Rosen, 2000). Prochaska, DiClemente, and Norcross (1992) summarized in their review of the research that behavior change success was related to subjects' readiness to change their current smoking behaviors. They categorized change into five stages:

Precontemplation is the stage in which little or no thought has been given to the presence of a problem. The person has no intention to change the behavior. *Contemplation* is the stage in which the person is aware of and thinking about the problem, but has not committed to change. The next stage, *preparation*, is an intermediate stage in which the person intends to change and might make some behavioral gestures toward change, yet has not gone through with changing the behavior. Next, in the *action* stage, the individual puts into motion the interventions and preparations to make a behavioral change. Finally, the *maintenance* stage is when the person consolidates behavioral changes and works to maintain them. A person is considered to be in *termination* when the behavior no longer is an active part of their life. TTM postulates that interventions should be tailored to the individual based on stage of change. Cognitive-affective processes are recommended for individuals in early stages (i.e., precontemplation, contemplation, preparation). Behavioral processes are suggested for use in later stages of change (i.e., action, maintenance).

Motivational Interviewing

MI was originally developed for the treatment of alcohol and drug problems. It has subsequently been applied to the change of other behaviors, including health behaviors and treatment adherence (e.g., medical, psychological). The hypothesized mechanisms involved in MI have been studied to aid in developing a unifying theory of MI (Moyers et al., 2007). Study of the language used by the client, whether in MI or other interventions, has shown that client commitment language is the best predictor of future behavior, and MI elicits this language effectively (Amrhein, 2004; Amrhein et al.,

2003; Moyers et al.). Social psychology theories, such as cognitive dissonance, explain the effect of commitment language on behavior change (Amrhein, 2004).

Motivational interviewing findings.

Over the past 17 years, a body of research has developed that demonstrates the efficacy of MI and other motivational interventions in a variety of therapeutic applications (Burke, Arkowitz, & Menchola, 2003). Burke et al. and Hettema, Steele, and Miller (2005) evaluated the research on MI using meta-analysis. There are no studies that evaluate “pure” MI as a stand-alone intervention, as described in Miller and Rollnick’s (2002) text. The studies evaluated in the two meta-analyses (Burke et al.; Hettema et al.) embody what Miller and Rollnick consider the spirit of MI and use its basic components. Each meta-analysis defined the MI criteria independently. Burke et al. determined the MI components needed for inclusion in their meta-analysis were expressing empathy, developing discrepancy, rolling with resistance, and supporting self-efficacy. Hettema et al. included studies making explicit use of MI techniques, including “being collaborative, being client centered, being nonjudgmental, building trust, reducing resistance, increasing readiness to change, increasing self-efficacy, increasing perceived discrepancy, engaging in reflective listening, eliciting change talk, exploring ambivalence, and listening empathically” (p. 98). While Burke et al. used a more conservative analysis of MI than did Hettema et al., as described below, both concluded that motivational interventions were supported by the available studies and worthy of further research.

Burke et al. (2003) used a customary approach for selecting psychotherapy efficacy studies to include in their meta-analysis. They only considered controlled clinical trials of MI adaptations that were delivered individually and face to face. First, motivational interventions were found to be superior to no-treatment conditions. Second, treatment effects on behavior change in alcohol use, drug use, and diet/exercise were sustained up to 4 years posttreatment. Third, motivational interventions were shown to have equivalent effects on both target problems and social factors. Finally, the fact that the length of motivational interventions (less than 100 minutes) is less than other psychotherapies (more than 400 minutes) suggests a greater efficiency in the MI approach. In a similar vein, Burke et al. found strong support for using MI as an adjunctive prelude to another treatment.

Hettema et al. (2005) found that the adjunctive power of motivational interventions is maintained over a longer period of time than MI alone as an intervention. Their meta-analysis included more studies, with less rigorous standards, with the goal of achieving a general understanding of the use of MI. The greatest support for MI was within the addictive behaviors, for which it was originally developed. Use of MI yielded inconsistent findings with health behaviors (e.g., exercise and diet, HIV risk reduction). Finally, psychotherapy treatment adherence was associated with MI because of MI's adjunctive effect, as explained below.

Adjunctive motivational interventions.

A number of studies employed versions of MI as an introduction to therapy for anxiety, with the aim of increasing treatment retention and engagement (Maltby & Tolin,

2005; Murphy, Rosen, Cameron, & Thompson, 2002; Simpson, Zuckoff, Page, Franklin, & Foa, 2008; Westra & Dozois, 2006). Westra and Dozois investigated whether four sessions of MI implemented prior to treatment (versus no pretreatment MI) would increase treatment adherence and retention among individuals with anxiety (panic disorder, generalized anxiety disorder, social phobia) entering group cognitive behavioral therapy. Those receiving MI were more likely to engage in treatment, including greater client-reported homework compliance. Those receiving the pretreatment MI sessions also had a higher expectancy to resolve their problems with anxiety, and a greater number of individuals resolved their anxiety to subclinical levels.

Obsessive-compulsive disorder and motivational interviewing.

MI has been used as a pretreatment phase for exposure and ritual prevention (EX/RP) in studies of individuals with obsessive-compulsive disorder (OCD). In EX/RP, individuals confront or expose themselves to feared stimuli, while purposefully preventing ritualized behavior that decreases the resultant anxiety. In a small pilot trial, Simpson et al. (2008) used MI as a part of the introduction to EX/RP and also as an additional module when resistance was encountered during exposure to items on the hierarchy or ritual prevention. Therefore, the dose of MI received was dependent on the patient's difficulty with EX/RP. Five of the six individuals treated with MI had decreased symptoms of OCD following the treatment; three of those achieved an excellent response. The sixth individual did not respond to the treatment and was referred to other treatment.

Maltby and Tolin (2005) used a more traditional application of MI as a prelude to treatment. Twelve patients with OCD who declined EX/RP treatment were randomly assigned to either a wait list ($n = 5$) or a motivational intervention ($n = 7$). The participants entered these conditions with the understanding that they would not be pressured to enter EX/RP. Six of those who received the MI condition and one of the wait-list subjects subsequently chose to undergo EX/RP. Three MI patients completed EX/RP with considerable reduction of symptoms, while the wait-list individual did not respond. One MI recipient dropped out after six sessions. Of the other three MI participants, two dropped out before treatment due to scheduling delays. In their meta-analysis, Hettema et al. (2005) noted the greatest impact of MI was found shortly after its application. The effect size of MI compared to a control group decreased as time passed without treatment to be enhanced by the prelude.

Application to posttraumatic stress disorder.

Murphy and Rosen (2006) describe the development of a motivational enhancement group for veterans with PTSD. This group intervention, part of an inpatient PTSD treatment program, is delivered simultaneously with the treatment as usual. The group focuses on problems that the members either “have, might have, or don’t have” (Murphy et al., 2002, p. 311). Initial outcomes showed that individuals resolved the “might have” classifications of behaviors to either having the problem or not. Murphy and Rosen conceptualized this shift as a sign of ambivalence resolution. The group intervention has been mainly used with male combat veterans, yet a small number of female veterans with histories of sexual abuse have benefited from this treatment.

Murphy, Thompson, Murray, Rainey, and Uddo (2009) compared the above-mentioned group to an active control, psychoeducation, in a randomized controlled trial. They studied 114 combat veterans with a primary diagnosis of PTSD to determine if participation in a PTSD motivational enhancement (PME) group would lead to increased resolution of ambivalence, treatment attendance, and treatment retention. PME group members attended more sessions, stayed in treatment an average of 1.5 months longer, and resolved ambivalence about PTSD problems more often. Finally, the PME group members reported higher satisfaction with the group than did the control group.

Studies have shown that adjunctive MI for clients with anxiety disorders increases treatment engagement, leading to enhanced outcome. Applications of MI to increase adherence and outcome of treatments for PTSD specifically appear promising, but need more controlled study. However, a preliminary step before subjecting PTSD patients to a treatment that has no evidence of efficacy with this population is to conduct studies to learn if the active components of MI (i.e., increased commitment language relating to increased behavior change) are present in an existing, successful PTSD treatment.

Theory of Motivational Interviewing

An emerging theory of MI is that, in session, the therapist's behavior elicits the patient's behavior, and the patient's behavior in session affects the likelihood of eventual behavior change (Hettema et al., 2005; Moyers et al., 2007). For example, a therapist who is empathic and respects the patient's autonomy will elicit commitments to change a negative drinking behavior. The patient's commitments to the therapist to change his behavior will lead to lower levels of drinking. Researchers have attempted to isolate a

relationship between therapists' *MI consistent behavior* (MICO) or *MI inconsistent behavior* (MIIN) and change in clients' target behavior. MICO includes expressing empathy, validating autonomy, developing discrepancy, and building self-efficacy. Therapists' MIIN includes confrontation, giving advice or raising concerns without permission, directing individuals, and warning. An identified mediating factor is the subjects' commitment language (Moyers et al.; Amrhein et al., 2003), which is defined as a verbal expression "to alter or maintain the status quo" (Amrhein, 2004, p.330).

Moyers et al. (2007) found that MICO was associated with an increase in client commitment language or change talk (CT). Conversely, MIIN was associated with increased counter change talk (CCT).¹ CT is client language that expresses advantages of change, disadvantages of the status quo, optimism for change, intention to change, steps taken to change, or commitment to change (Miller, Moyers, Amrhein, & Rollnick, 2006). CCT is language that advocates for the status quo of behavior: specifically, the advantages of status quo, reasons for continuing the behavior, desire to continue a behavior, and a commitment to the status quo.

Moyers and Martin (2006) used a behavioral coding system to study the relationship between therapist behavior and client language. They coded 38 sessions of motivational enhancement therapy. They found that clients are more likely to voice CT following MICO and more likely to emit CCT following MIIN. Thus, a relationship

¹ Counterchange Talk (CCT) and Sustain Talk (ST), both refer to the same construct, verbalization supporting the status quo or supporting the continuation of the current behavior. MI literature changed from using CCT to ST because the latter is more accurate in describing the language. For the purpose of this study, CCT is used for consistency when describing literature. ST is the label used for language observed in the current study.

between commitment language, either CT or CCT, and behavior change has begun to be established, with each construct having a specific relationship with the outcome (Moyers et al., 2007). Specifically, it appears that therapist behavior (e.g., MICO or MIIN) elicits client commitment language (e.g., CT or CCT) that is associated with subsequent behavior change and those verbalizations impact the client's behavior change.

In an extension of the above-mentioned studies, Moyers et al. (2009) used a sequential behavioral coding system to study the mediational role of change talk in MI. They coded 63 sessions of motivational enhancement therapy from a multisite study of alcohol dependence treatment. Moyers et al. found that CT mediated the relationship between therapist behavior and substance abuse outcome. This finding supports the theory of MI. Additionally, they controlled for clients' pretreatment readiness to change and the relationship exceeded its impact. Therefore, beyond the client's own pretreatment desire to change, MI exerts control over client verbalization, which in turn leads to reduced drinking.

Commitment language: Change talk and counterchange talk.

Amrhein (2004) stated that commitment language ranges in strength based on the wording chosen, from strong (e.g., "I guarantee to stop") to weak (e.g., "I will see about stopping"). Commitments that are prompted, such as in treatment when the speaker is asked to promise abstinence, are weaker than unprompted commitments. The weakness is due to the social pressure to conform. This pressure is compounded by the power differential inherent in the therapeutic relationship. MI may avoid this pitfall in that it is used to develop commitment while purposefully avoiding direct requests for commitment

(Miller & Rollnick, 2002). MI equally develops the reasons not to commit to behavior change and asserts the autonomy of the individual to choose whether or not to change. These interventions strengthen the commitment when it is eventually made because it is built from the individual's beliefs and desires, with only reflections from the therapist.

Amrhein (2004) stated, in his review of MI linguistic studies, that client language can be used as a predictor of future behavior. Amrhein et al. (2003) coded sessions of 84 drug-abusing clients receiving MI to see if client commitment language was associated with proportion of days abstinent (PDA) at 3-, 6-, 9-, and 12-month follow-up. The clients' verbalizations were categorized by commitment language type (e.g., commitment, desire, ability, readiness, reason). They found strength of client commitment language to be the strongest predictor of future client behavior. Strength of commitment language was so strong a predictor that it predicted PDA at 12-month follow-up. While some individuals in this study gave false self-reports, as determined by urine drug screen, their commitment language was similar to individuals who struggled with changing their behavior. Moyers et al. (2007) hypothesized that the relationship between commitment language and outcome might be observed in other interventions.

Moyers et al. (2007) studied commitment language with three separate treatments for alcohol problems: motivational enhancement therapy, cognitive behavioral therapy, and twelve step facilitation therapy. They coded the first therapy session ($n = 45$) for frequency of CT and CCT. Consistent with the findings of Amrhein et al. (2003), client language was predictive of behavioral outcome up to 15 months posttreatment. Moyers et al. found CT and CCT to be disparate constructs. As mentioned above, CT was a transient phenomenon that exerted immediate effects on outcome. It was predictive of

drinks per drinking days and of a dichotomous outcome, either good or poor outcome. It did not predict proportions of days abstinent. CCT predicted both drinks per drinking day and PDA, as well as the dichotomous outcome. The authors concluded that CCT might exert a constant resistant force that needs the elicitation of CT to counter it.

When put into the context of Strang and McCambridge's (2003) study, these findings are of more clinical significance. They found that individuals trained in MI were accurately able to predict client commitment level following a motivational intervention to decrease marijuana use. The clinicians administered a single-session, MI intervention and were given an 11 question rating scale about the patient's commitment to change. The authors found that clinician rating of overall intervention effect was predictive of cannabis use at 3-month follow-up. This finding implies that therapists sensitized to motivational factors in clients are able to detect differences during therapy and act accordingly.

Cognitive dissonance.

Amrhein (2004) suggests that the strong impact of commitment language on future behavior can be attributed to the social psychology theory of cognitive dissonance. Festinger (1957) stated that individuals strive for a sense of consistency in their environment. When a situation is contrary to what the individual believes it should be or the person has a thought or desire that is contradictory to another valued thought or belief, a state of discomfort is created that Festinger termed *cognitive dissonance*. When discomfort persists, the individual's natural drive is to resolve the situation or the way he or she thinks to create a consonant state of affairs. According to Amrhein, in the case of

commitment language, cognitive dissonance occurs when the individual strongly commits to changing a behavior because of a set of expectations created between that individual and the listeners (e.g., therapist, others present). If the person does not carry out the agreed upon behavior, cognitive dissonance will occur because the behavior categorizes the person as dishonest. In Amrhein's view, this threat to self-perception that one is good and honest is the source of the cognitive dissonance.

Harmon-Jones and Mills (1999) described how dissonance can be reduced. "Dissonance can be reduced by removing dissonant cognitions, adding new consonant cognitions, reducing the importance of dissonant cognitions, or increasing the importance of consonant cognitions" (p. 4). One example is a drinker who commits to changing a binge drinking behavior. When the individual is confronted with the chance to drink, cognitive dissonance increases. The individual has four ways to decrease the cognitive dissonance. First, changing the behavior and not drinking can remove the dissonant cognition. Also, believing that the commitment was not that serious would have the same effect of removing the dissonant cognition. Second, the drinker can think of all of the other ways he or she is a good person (e.g., "I go to temple, I give blood, my dog likes me"). Third, the drinker might excuse the breach of commitment and reduce the importance of the dissonant thought (e.g., "No one must keep a commitment like that"). Finally, the drinker can increase the thought that no one should ask such a commitment from another person, thus increasing the consonant thought. Any of these actions on the part of the individual will also resolve the dissonance, either temporarily or permanently.

Avoidance

While MI was initially developed to help people change drug and alcohol behavior, the technique and spirit of the approach might be applicable to other behavior change. MI can potentially be applied to enhance the changing of avoidant behaviors. Avoidance has long been a behavior targeted by psychotherapy, particularly for anxiety (e.g., Foa & Kozak, 1986; Lang, 1977; Wolpe, 1990). The reinforcing effects of avoidance are explained in Mowrer's two-factor theory (Mowrer, 1960). While the initial fear is conditioned, avoidance of the feared stimuli is reinforced through instrumental conditioning (i.e., negative reinforcement). For example, if a dog barks at a girl, she becomes frightened of the dog. The next time she sees a dog, she becomes anxious. This is a conditioned fear. If the girl experiences the fear when she is around a dog and she leaves the situation, her anxiety reduces. This relief from anxiety is instrumental conditioning of avoidance. Therefore, she is more likely to avoid dogs. The avoidance behavior interferes with the natural extinguishing of the fear response.

Emotional Processing Theory: The Fear Structure

Emotional processing theory (Foa & Kozak, 1986) posits that specific informational structures in memory serve as programs to avoid or escape dangerous situations. Foa and Kozak called them fear structures. These structures contain three parts: the stimulus (e.g., dog), the response (e.g., heart racing, run away), and information about the meaning of the stimulus (e.g., dogs are dangerous) and the response (e.g., I am in danger). When normal, the fear structure contains the information to prepare for and the cue to escape from a dangerous situation. Fear is common to most people and fear

structures are adaptive. However, some fear structures become pathological and resistant to change.

According to Foa and Kozak (1986), two factors that make a fear structure pathological are an abundance of stimuli associated with danger and excessive responses (e.g., avoidance and physiological arousal). Foa and Kozak stated that the pathological fear structure would be resistant to change due to impaired processing of the fear-related information. In the above-mentioned example of a girl who was frightened by a dog, she will associate neutral stimuli (e.g., pictures of dogs, sounds of dogs) with danger. When she encounters these stimuli (e.g., beware of dog sign), the fear structure will cue her that she is in danger and she will have an excessive response (e.g., heart racing, avoiding the house with the sign). Due to the pathological fear structure's excessive response the girl does not have the opportunity to experience that most of the time, dogs are safe, and new information is not incorporated into the structure.

Posttraumatic Stress Disorder

Epidemiological studies report that 60.7% of men and 51.2% of women in the United States experienced a traumatic event in their lifetime (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Kessler et al. found that most of these individuals experienced multiple traumas. A traumatic event, as defined under Criterion A for PTSD in the *American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders* (4th ed. text revision, 2000)(*DSM-IV-TR*), is when:

1. the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others, and
2. the person's response involved intense fear, helplessness, or horror (p. 467).

Traumatic events take many forms. A partial list of potential events from Foa, Hembree, and Rothbaum (2007) includes:

Natural Disaster (e.g., tornado, hurricane, fire, or flood)

Serious accident or serious injury

Combat or being in a combat zone

Sudden life-threatening illness

Accidental death or murder of a close friend or family member

Suicide of a close friend or family member

Being attacked with a gun, knife, or other weapon

Attacked without a weapon but with the intent to kill or seriously injure

Severely beaten (i.e., beating that left marks or bruises), or witnessing severe physical violence

Sexual abuse as a child or adolescent

Physical force or the threat of physical force leading to unwanted sexual contact

Rape or attempted rape

Aggravated assault (p. 129).

While approximately 60% of the population experiences at least one trauma in their lifetime, Kessler et al. (1995) found PTSD to occur in 7.8% of the population. Tolin

and Foa (2006) conducted a meta-analysis of the research on PTSD to study sex differences in trauma. They found that while men were more likely to experience traumatic events, women were twice as likely to develop PTSD. Tolin and Foa found that when type of trauma (e.g., combat, sexual assault, natural disaster) was controlled for, women were still twice as likely to develop PTSD following a trauma.

Other risk factors for the development of PTSD include a preexisting psychiatric diagnosis, injury during the trauma, and history of previous trauma. Bryant and Guthrie (2007) found specific patterns of automatic thoughts to be associated with increased risk of developing PTSD following a traumatic event. They assessed firefighters ($N = 68$) for cognitive distortions during firefighter training. Those with cognitive distortions of negative self-appraisal were 20% more likely to develop PTSD in a 4-year follow-up after commencing firefighting duties.

The three clusters of PTSD symptoms are reexperiencing of the traumatic event, avoidance of trauma reminders and numbing of response to trauma reminders, and increased arousal (*DSM-IV-TR*, 2000). The individual must have at least one of the reexperiencing symptoms:

1. recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions. **Note:** In young children, repetitive play may occur in which themes or aspects of the trauma are expressed.
2. recurrent distressing dreams of the event. **Note:** In children, there may be frightening dreams without recognizable content.
3. acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback

episodes, including those that occur on awakening or when intoxicated). **Note:** In young children, trauma-specific reenactment may occur.

4. intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
5. physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event (*DSM-IV-TR*, p. 468)

Three symptoms from the avoidance and numbing cluster must be present:

1. efforts to avoid thoughts, feelings, or conversations associated with the trauma
2. efforts to avoid activities, places, or people that arouse recollections of the trauma
3. inability to recall an important aspect of the trauma
4. markedly diminished interest or participation in significant activities
5. feeling of detachment or estrangement from others
6. restricted range of affect (e.g., unable to have loving feelings)
7. sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span) (*DSM-IV-TR*, p. 468)

Two increased arousal symptoms must be present:

1. difficulty falling or staying asleep
2. irritability or outbursts of anger
3. difficulty concentrating
4. hypervigilance
5. exaggerated startle response (*DSM-IV-TR*, p.468)

Other DSM-IV-TR criteria specify that these symptoms were either not present before the traumatic event or, if present, significantly worsened as a consequence of the trauma and that the symptoms last for more than a month and cause a significant disturbance in the individual's life.

Emotional processing theory and posttraumatic stress disorder.

Foa, Steketee, and Rothbaum (1989) offered an explanation of PTSD from the perspective of emotional processing theory. They reviewed the limitations of traditional stimulus-response explanations of the symptoms of PTSD and demonstrated how emotional processing theory accounts for the full range of symptoms. They held that when a trauma is experienced, formerly safe stimuli and responses become associated with danger. Foa et al. (2007) described, in their manual on treatment of PTSD, that an excessive number of stimuli, both safe and dangerous, become associated with danger. They also described how physiological and behavioral responses express themselves as PTSD symptoms. The meaning attributed to the abundance of stimuli is that the world is a dangerous place and the meaning attributed to the response and memories of their behavior during the trauma is that the individual is incompetent and helpless.

Foa and Kozak (1986) explained that two essential conditions need to be present in order to alter a pathological fear structure. First, the fear structure needs to be sufficiently activated. Second, corrective information needs to be incorporated into the fear structure while it is activated. When the structure is activated, the individual will gain corrective information that the feared consequence will not occur, anxiety will not last indefinitely, and that anxiety will decrease over time, called habituation.

Prolonged Exposure Therapy

Prolonged Exposure Therapy (PE) is a cognitive-behavioral treatment for PTSD. In PE, a combination of exposures, both imaginal and in vivo, is used to treat the symptoms of PTSD. Emotional processing theory (Foa & Kozak, 1986) states that in order to modify a fear structure, it needs to be activated. PE, as outlined by Foa et al. (2007), is a comprehensive approach to maximize learning during activation of the fear structure. Following psychoeducation regarding the rationale for the treatment and the common reactions to trauma, clients learn relaxation breathing. Next, individuals develop a hierarchy of objectively safe scenarios in their lives that they have been avoiding and rate them using a Subjective Units of Discomfort Scale (SUDS), ranging from 0 (e.g., completely calm) to 100 (e.g., the most anxious a person could be in a lifetime). Between sessions, individuals will work up the hierarchy, from lower items to the highest items, exposing themselves for prolonged periods of time (30 minutes to an hour) to a given situation until habituated to the anxiety. Meanwhile, during session individuals repeatedly revisit the trauma (i.e., imaginal exposure) in greater detail, similarly looking to habituate to the anxiety. Between sessions, clients are asked to listen to the imaginal exposure, in order to increase between session habituation. Throughout the treatment, clients are asked to keep records of the exposures completed. Finally, at the end of treatment, often 9 to 15 sessions, individuals discuss procedures to continue the behaviors learned in the treatment, most importantly not avoiding objectively safe situations that cause anxiety.

Criticisms of prolonged exposure.

Rosen et al. (2004) found few of the Veteran's Administration's PTSD specialists (<10%) used PE or other exposure-based treatments on a routine basis, in spite of exposure being considered a front-line treatment for PTSD. Fewer than 20% used exposure infrequently. Riggs, Cahill, and Foa (2006) discuss the main criticism of PE, the idea that exposure retraumatizes the victim. If this were true, then PE would show higher rates of dropout due to the imaginal exposure. Hembree, Foa et al. (2003) found PE dropout rates were equivalent to other treatments. Furthermore, Ruzek et al. (2001) did not find symptom worsening by most veteran inpatients participating in a trauma-focused exposure group.

In comparing four commonly studied treatments, exposure therapy, stress inoculation, cognitive therapy, and EMDR, Hembree, Foa et al. (2003) found exposure therapies had an equivalent rate of dropout to other active CBTs. In a separate study, Foa, Zoellner, Feeny, Hembree, and Alvarez-Conrad (2002) reported that exposure-related symptom exacerbation (e.g., symptom worsening after the introduction of imaginal and in vivo exposure) in female chronic PTSD patients ($N = 76$) was not associated with dropout. Those with temporarily worsening symptoms benefited equally from treatment. Furthermore, Zayfert et al. (2005) reported that the initiation of imaginal exposure was associated with higher rates of completion of treatment in 115 patients seen for PTSD at a clinical setting.

Outcomes.

PE is the most rigorously studied of the various treatments for PTSD (Rothbaum, Meadows, Resick, & Foy, 2000). The studies of PE meet the highest standards for methodological control. Furthermore, the support for PE found in these studies is consistently positive. Exposure therapy is the only treatment for PTSD, either pharmacotherapy or psychotherapy, determined by the Institute of Medicine (2008) to have adequate findings to conclude its efficacy. There are two explanations for this finding. First, reviews of PTSD studies excluded less meticulous research, as it can bias the overall findings without reasonable assurance of the study's validity. Second, PE has been routinely subjected to high quality investigations, many meeting the gold standard for studies (Rothbaum et al., 2000). This type of research is included in reviews of treatments for PTSD and allows for such conclusive support.

Cahill, Rothbaum, Resick, and Follette (2009) reviewed the CBT literature for the treatment of PTSD in adults. They came across PE studies with a range of diverse populations and various trauma types. Only considering studies of the actual PE protocol, Cahill et al. describe five gold standard studies with female sexual assault victims, two studies of individuals with mixed trauma types, and one study with the female veteran and active duty population. Thus, for many traumas, PE was effective. Four studies of individuals, male and female, who experienced civilian trauma, a study of African American women experiencing interpersonal violence, and a study of political refugees of mixed-gender expands the literature to a diverse population. The successful

application of PE to different samples suggests an ability to generalize across populations.

PE was compared to a wait list control and other active treatments (Cahill et al., 2009). PE compared to a wait list, supportive counseling, or another type of control condition was consistently found to be more effective in 22 randomized controlled studies. PE combined with other treatments showed that the addition of other components, such as cognitive restructuring, added nothing significant to the established treatment. PE compared to other active cognitive-behavioral treatments was found to have equivalent efficacy. Studies that compared academic with community therapists demonstrated that PE can be successfully implemented outside the research clinics with similar effects (Foa, Hembree et al., 2005).

Avoidance and Diminished Prolonged Exposure Effect

While many patients experience a reduction in PTSD symptoms following PE, some patients treated with PE do not respond fully. Emotional processing theory (Foa et al., 1989) explains that the individual must activate the fear structure and maintain engagement for the incorporation of corrective information. Lack of response to PE might be explained by continued avoidant behavior. The clearest example of this behavior is with those that drop out of treatment. They are continuing to engage in the avoidant behavior by not engaging in exposure to the memories or life events. Additionally, some people do not fully engage in the imaginal exposure (i.e., underengagement), which can be another form of partial avoidance (Jaycox et al., 1998).

Thus, a parsimonious explanation for PE nonresponse might be that the individual is not committing to stopping the avoidant behavior.

Underengagement.

Emotional processing theory (Foa & Kozak, 1986) explains that, in order to correct or change a fear structure, the individual must engage the stimulus and activate the structure. This is based on Lang's theory of informational structures that act as programs for defense against danger. Lang, Melamed, and Hart (1970) found higher autonomic activation (i.e., heart rate) in 29 subjects that habituated to the feared stimulus. This physiological activation was synchronized with their verbal reports of heightened anxiety (i.e., SUDS level). In a second experiment, they found that the sympathetic arousal (e.g., heart rate, skin conductance) was correlated to verbal report in an imaginal exposure of public speaking. In these studies, without this engagement, corrective emotional processing did not occur.

Jaycox et al. (1998) found three patterns of engagement in 37 female assault victims receiving imaginal exposure. The level of engagement was based on a cluster analysis of the mean peak SUDS level over six sessions of exposure. The first engagement type, associated with the best outcome, was high levels of engagement and high levels of between-session habituation. The second engagement type was high engagement and low habituation. The final engagement type was moderate engagement and low habituation. The last two groups had less successful outcomes than the high engagers and habituaters. The authors suggest, "If the client is unable to emotionally engage in the exposure, procedures for enhancing engagement should be introduced"

(Jaycox et al., p. 190). As discussed above, MI is most successful as an adjunctive treatment with the goal of increasing engagement.

Dropout rate.

The most blatant form of avoidance would be dropping out of the study or treatment altogether (Foa et al., 2002). Foa et al. found no data to support that individuals drop out of treatment due to the trauma-focused nature of treatment. Ruzek (2001) found that application of single episode exposure did not have any worsening or beneficial effect on veterans. Zayfert et al. (2005) found that initiation of the imaginal portion of PE increased the likelihood of treatment completion by patients. Finally, Foa et al. found that those who experienced temporary exacerbation of symptoms were equally likely to respond to treatment favorably. Therefore, dropout cannot be attributed to stress of exposure.

Hembree, Foa et al. (2003) found dropout rates for PE to be equivalent to other active cognitive behavioral treatment for PTSD. They identified 25 controlled studies of CBT for PTSD that included dropout data. They categorized treatments from these studies into one of five types: exposure therapy, cognitive or anxiety management therapies, combinations of exposure and other CBT techniques, eye movement desensitization and reprocessing (EMDR), and control conditions (both wait list and active controls such as supportive counseling). No significant difference in dropout was detected among the different active CBT treatments. The highest level of dropout was with the combination treatments (26.9%) and the lowest was with EMDR (18.9%). Each of the treatments was equally tolerable. As Hembree et al. noted, this dropout rate is low

in comparison to studies of other disorders (e.g. social phobia, depression). Therefore, if the treatment modality is not to blame for the dropout, can the behavior change literature provide information on how to decrease the dropout? If patients are still ambivalent about changing their avoidance, then engaging in intensive treatment could elicit resistance, which may result in premature dropout. Furthermore, the findings of Strang and McCambridge (2003) suggest that practitioners who are sensitized to client motivation are successful at identifying a patient's commitment level. Therefore, a properly sensitized practitioner might be successful in identifying ambivalent avoiders and intervene to increase the motivation of the individual.

Chapter 3

Hypotheses

The researchers identified two forms of commitment language, change talk (CT) and sustain talk (ST), as potential predictors of treatment completion and treatment outcome. The interaction between CT and ST was investigated to see if it had a unique impact on treatment completion and treatment outcome.

The first hypothesis considered the relation between frequency of client verbalization in favor of change and treatment completion. The researchers predicted that greater frequency of CT would be associated with treatment completion. Higher frequency of CT would reflect less ambivalence toward behavior change, leading to greater likelihood of treatment completion.

The second hypothesis considered the relation between frequency of client verbalization in favor of sustaining current behaviors and treatment completion. The researchers predicted that greater levels of sustain talk (ST) would be associated with lack of treatment completion. Individuals with low levels of motivation are less likely to have resolved their ambivalence. According to MI theory, when ambivalence is unresolved and a therapist makes an argument for change, it is more likely to be met with resistance from the patient (Miller & Rollnick, 2002). Ultimately, this resistance is manifested in treatment dropout.

The third hypothesis considered the relation between frequency of client verbalization in favor of sustaining current behaviors, the frequency of client verbalization in favor of changing the status quo, and treatment completion. The

researchers predicted that a higher ratio of CT to ST frequency would be associated with treatment completion. Commitment language types (i.e., CT, ST) are separate constructs, and each exerts an independent effect on future behavior. Commitment language is a reliable predictor of a patient's current level of ambivalence. Ambivalence increases the likelihood of continuing a previous behavior (i.e., avoiding trauma memories and triggers). Therefore, the researchers tried to determine if there is an interaction between the two constructs.

The fourth hypothesis considered the relation between frequency of client verbalization in favor of change and treatment outcome. The researchers predicted that greater frequency of CT would be associated with greater PTSD symptom reduction at treatment completion and at follow-up. Individuals with a higher frequency of CT would be less likely to continue avoidant behavior, leading to better treatment outcomes for PTSD symptoms.

The fifth hypothesis considered the relation between frequency of client verbalization in favor of sustaining current behaviors and treatment outcome. The researchers predicted that greater levels of ST would be associated with less PTSD symptom resolution at treatment completion and at follow-up. Presence of ST signals a continued ambivalence toward changing a behavior. Individuals who continue to be ambivalent regarding behavior change are less likely to engage in treatment to its fullest (e.g., exposure), thus decreasing symptom resolution.

The sixth hypothesis considered the relation between frequency of client verbalization in favor of sustaining current behaviors, the frequency of client verbalization in favor of changing the status quo, and treatment outcome. The

researchers predicted that a higher ratio of CT to ST frequency would be associated with level of PTSD symptom resolution at treatment completion and at follow-up.

Commitment language is a reliable predictor of one's current level of ambivalence.

Therefore, the interaction of the two constructs should predict whether the person would engage, thus affecting symptom resolution.

Chapter 4

Methods

Overview

In this exploratory study, patients' level of motivation to change avoidance behavior was determined by coding their verbalizations during the second session of PE treatment. Videotaped therapy sessions from a completed study by Foa, Hembree et al. (2005) were coded for frequency of patients' verbalization of language that expressed both desire to change and desire to sustain the status quo or current behavior. The participants were 50 women with assault-related PTSD, treated at two separate sites using PE or a combination of prolonged exposure and cognitive restructuring (PE/CR). For the current study, the independent variables were frequency of CT and frequency of ST. The dependent variables were treatment completion, diagnosis remission, PTSD severity, and type of engagement.

Parent Study

In the parent study by Foa, Hembree et al. (2005), 179 women with chronic PTSD resulting from rape, nonsexual assault, or childhood sexual abuse were randomly assigned to treatment with PE alone or PE/CR or to a 9-week waiting list followed by treatment with PE or PE/CR. Participants were seen in one of two settings: an academic research clinic or a local community rape crisis center. Foa et al. (2005) found no difference in PTSD and depression reduction between PE and PE/CR and no difference in PTSD and depression reduction between clients of academic clinic therapists and community therapists. They found that 80% of the subjects in active treatment conditions

experienced reduction in PTSD severity and 67.6% of the participants completed treatment.

Parent study participants.

Participants in the Foa, Hembree et al. (2005) parent study came from a pool of 285 women who were referred by police, victim advocates, or other professionals and evaluated for inclusion in the study. The inclusion criteria of the parent study were adult females with a diagnosis of PTSD related to an assault, either sexual or nonsexual, that occurred at least 3 months prior to evaluation. Current abusive relationship, diagnosis of an organic or psychotic mental disorder, illiteracy in English, suicidal behavior, unmedicated and symptomatic bipolar disorder, and recent history of self-injurious behavior were all exclusion criteria. Women on psychiatric medication needed to be on a stable dose for 3 or more months and were asked to maintain the regimen for the duration of treatment. One hundred seventy-nine women entered the study and were randomly assigned to one of three conditions, wait list ($n = 26$), PE/CR ($n = 74$), or PE ($n = 79$). One hundred five of the participants were treated at the academic clinic and 74 were treated at the community clinic.

Parent study procedure.

Blind evaluations were conducted at pretreatment, posttreatment, 3, 6, and 12 months posttreatment. Patients were randomized to one of the three conditions following pre-treatment evaluation. Treatment consisted of 90- to 120-minute weekly individual sessions, which followed an established treatment manual. The second session of the

treatment manual had five components, which were (a) common reactions to trauma, (b) rationale for in vivo exposure, (c) establishment of Subjective Units of Discomfort Scale (SUDS), (d) development of in vivo hierarchy, and (e) assignment of first *in vivo* exposure. The first half of the session consisted of discussing the common reactions following a trauma. The second half of the session included the rationale for using in vivo exposure, establishment of SUDS, development of an in vivo hierarchy, and assignment of the first in vivo assignment.

For a full description of the parent study's findings, participants, and treatment procedures, see Foa Hembree et al. (2005).

Design and Design Justification

The researchers attempted to find differences in commitment language existing among females receiving PE, to determine whether those differences were quantifiable, and whether commitment language was associated with completion and outcome of treatment. This study was exploratory because there are no known studies that investigated commitment language with PTSD patients. A portion of the videotapes of the completed study were coded for two different markers of commitment to change avoidance behaviors: frequency of CT and frequency of ST. A discriminant analysis was performed using the independent variables as attributes to determine if they were predictive of outcomes for PE. A regression was used to test whether a relationship existed between commitment language and percentage decrease of PTSD symptoms.

This archival approach allowed for the development of new information without impacting a vulnerable population coping with being traumatized. The exploratory step

increases the knowledge to support an intervention before spending time and resources on a larger study.

Definitions.

A volley is a unit of speech. It begins when the therapist stops speaking and ends when the therapist begins speaking. A volley was coded as CT, ST, or neutral. A volley was coded once. A neutral volley meant it was neither ST nor CT.

Change talk (CT) is client verbalization in support of stopping a current behavior or verbalization against the status quo. CT is either preparatory or committing. Preparatory CT included statements of the desire, ability, reason, and need to change current behavior of avoidance or PTSD symptoms. Commitment CT included statements of commitment, activation, and steps taken to change the status quo of PTSD symptoms or to stop avoidance behavior.

Sustain talk (ST) is client verbalization in favor of the status quo or in favor of continuing a behavior. ST included statements of desire, ability, reason, need, or commitment to sustain the avoiding behavior or the status quo of the PTSD symptoms. Table 1 outlines both CT and ST and provides examples of statements.

Table 1
Categories and Common Phrasing for Coding Statements

Category	Sample Phrasing
Change Talk	
Preparatory Language	
Desire	<i>I want to stop avoiding...</i>
Ability	<i>I could do go to those places</i>
Reason	<i>I'll lose my job if I don't change</i>
Need	<i>I need to change now</i>
Commitment Language	
Commitment	<i>I am going to do that exposure</i>
Activation	<i>Ready, willing, prepared to change</i>
Taking Steps	<i>I've been going to the mall to see if I can</i>
Sustain Talk	
Preparatory Language	
Desire	<i>I want to stay safe and keep avoiding</i>
Ability	<i>I couldn't stand confronting</i>
Reason	<i>I have worse nightmares if I stop avoiding</i>
Need	<i>I need to feel safe</i>
Commitment Language	
Commitment	<i>I am never going to that place</i>

Participants

The videotapes of sessions were selected from the parent study (Foa, Hembree et al, 2005). Fifty of the 179 subjects from the original study who received PE or PE/CR were selected. The participants were selected on the basis of several specific criteria: One third who achieved good outcome, one third who had poor outcome, and the remaining third who dropped out of therapy prior to completion of treatment. This ensured a balanced representation of end-state conditions (i.e., treatment completion, remission of diagnosis) to allow hypothesis testing. The coders and principal investigator (PI) were blind to group membership. Only a faculty member at the CTSA had the

master list that matched participants to outcome status. Table 2 depicts demographic information on the sample of 50 women.

Table 2
Demographics

Variable	Frequency	Percent of Sample
Age		
23 and under	18	36.0
24 to 34	17	34.0
35 and above	15	30.0
Ethnicity		
Black	21	42.0
White	25	50.0
Other	4	8.0
Marital Status		
Single	36	72.0
Married/Cohabiting	8	16.0
Divorced/Widowed	6	12.0
Education		
Greater than a B.A.	5	8.0
B.A./B.S.	12	16.0
A.A./Some college	21	42.0
High school (HS) diploma	12	24.0
Less than a HS diploma	4	8.0
Target Trauma		
Rape	32	64.0
Physical assault	9	18.0
Childhood sexual abuse	9	18.0
Years from Trauma		
9 to 42 years	13	26.0
1 to 8 years	13	26.0
Less than 1 year	13	26.0
Missing	11	22.0

The age range in the subsample of women in the current study was 17 to 51 years. The mean age of the sample was 29.78 years. The majority of the sample was single, had a target trauma of rape, and received PE. The average amount of time from the trauma was 92.26 months, with a range from 1.51 months to 503.52 months. Seven of the subjects had been on the wait list and subsequently treated with PE or PE/CR. Twenty-eight of the subjects (56%) were treated at the academic site and the remainder were treated at the community site.

Treatment completion.

Thirty-five patients who completed treatment were selected (70%) and 15 who dropped out of treatment (30%).

Treatment outcome.

The distribution of treatment outcome consisted of 19 patients who no longer met the criteria for PTSD (38%), 16 patients who continued to meet the criteria for PTSD (32%), and 15 patients who dropped out before completing treatment (30%). The sample used for the present study thus differed from the parent study, where 80% of the sample reached PTSD remission.

Inclusion/exclusion criteria.

For this study, any subjects who had a video tape for second session of treatment that was codable and had all five segments of the session were included. Three of the

tapes were excluded after the initial selection. They were replaced to match the a priori group from which they were selected.

Informed consent process.

This study required coding data from archived videotapes. Because coders saw and heard the patients on video tape, and may even have heard names spoken by the therapist, a special waiver from the University of Pennsylvania School of Medicine's Institutional Review Board (IRB) was obtained. The IRB approved special instructions to all coders to ensure confidentiality.

Analysis of risk/benefit ratio.

Risks to confidentiality were minimal. The last subject was recruited in 2001 for the parent study. The minimal chance of a coder knowing a subject was anticipated and addressed in coders' training. The videotapes were reviewed on-site, and the coding did not include identifiers that could link the subject to the information that was collected for the study. The PI did not have access to the key that linked subject identification number with the other identifying information.

Potential risk or benefit to subjects.

The only risk to the subjects was the potential identification by a coder during data collection. There are no benefits to the subjects beyond the benefits from the parent study.

Potential benefit to others.

Information gained in the area of how motivation and treatment outcome are related may inform treatment decisions and generate further research. The study explored the integration of motivational techniques and PTSD treatment to improve outcomes and retention in treatment.

Procedure for maintaining confidentiality.

All videotapes were stored and viewed at the Center for the Treatment and Study of Anxiety at the University of Pennsylvania. Selected videotapes were stored in a locked office on a locked floor. Coders viewed the videotapes alone in a room with the door closed. The coders participated in three training sessions, which included instruction in maintaining confidentiality. Each coder signed a confidentiality agreement prior to coding.

All data was entered into an existing database from the parent study. Data was stored in an SPSS database. Access to the database was only provided to the PI.

Measures**Coder training.**

Training of coders entailed watching a video tape created by the investigator on how to use the coding tool. The training included the standardized use of the coding sheets, procedure for reporting if the coder knew a patient, definitions of commitment language, how to identify the language, examples of how to identify one unit of speech (i.e., volley), and examples of commitment speech. A trainer certified by the

Motivational Interviewing Network of Trainers was filmed for the commitment language portion of the training video.

Following the video taped training, coders practiced coding three 10-minute segments of a second session of PE. The segments contained examples of each type of commitment language and examples of decisions regarding volleys. Each segment had a transcript for the coder to compare against. Upon successful completion of the practice segments, the coder coded a full session to establish that they coded to a preset level of reliability with the PI.

The PI and Dr. Elizabeth Hembree selected a set of video tapes for reliability sessions, and the PI coded them. Coders established their reliability by coding these tapes. Successful attainment of this goal was indicated by the coder's recording of total frequency of CT and ST from the session. The coders were allowed a variance of ten tallies for each type of commitment language. Coders who did not achieve reliability reviewed the tape with the PI and attempted a second tape. To reduce drift, coders reestablished reliability every 10 sessions.

To establish that the PI met reliability, one coder's tapes were chosen. After she met the reliability criteria, she coded study tapes. The PI used these tapes to establish his reliability using the same procedure described above.

Commitment language videotape coding.

Coders recorded a tally mark per volley in the CT column, ST column, or neutral column. Regardless of volley length, it only received one tally mark. The session was divided into 10-minute segments and the coder started a new tally every segment.

To develop and test the coding tool, a set of four tapes from other studies were coded using the current coding tool. Successful testing of the coding system would allow the PI to rank the subjects from best outcome to worst outcome based on the frequency of commitment language. The PI was blind to the subject outcomes. Using the coding tool, he successfully ranked the subjects in order of treatment outcome, from most successful to least successful. He based the ranking on total frequency of CT and ST.

Treatment completion.

Treatment completers attended at least nine sessions of treatment and participated in a posttreatment evaluation. Status was coded as 1 for completer and 2 for dropout.

Treatment response.

PTSD Symptom Scale-Interview (PSS-I). PSS-I is a 17-item, semi structured interview used to assess the severity and presence of PTSD. The items correspond to the reexperiencing, avoidance, and hyperarousal symptoms of PTSD. The items are rated on a 4-point scale from 0, not at all, to 3, 5 or more times per week/very much, and are based on the evaluator's assessment of both frequency and severity of the different symptoms. Foa, Riggs, Dancu, and Rothbaum (1993) reported alpha coefficients for interrater reliability as $r = .97$ for PTSD severity. Stability results indicated the PSS-I is a relatively stable instrument between first and second administration over a 1-month period. Correlation coefficients for PSS-I PTSD severity scores between test administrations were $r = .80, p < .001$.

Treatment response was determined by posttreatment PSS-I score. Treatment responders no longer met the criteria to be diagnosed with PTSD as described above,

nonresponders continued to meet criteria for PTSD, and noncompleters did not complete treatment. The posttreatment PSS-I score was divided by the pretreatment PSS-I score to produce percent change of PSS-I. This was a continuous variable of change in PTSD severity.

Procedure

Coding procedure.

Coders were randomly assigned tapes to code. Coding of sessions occurred in one sitting. The coders reviewed the tape to ensure that it had all five session elements. They rewound the tape as needed to review complicated volleys to ensure accuracy in coding. Regardless of the quantity of speech contained in a volley, it was coded once for CT and ST. Upon completion of the coding, they returned the form to the researcher and reviewed any questionable statements to increase coding agreement.

After data collection, it was determined that the session lengths ranged from less than 1 hour to over 2 hours. In response to a large range of session lengths, the PI divided commitment language by time in hours. The commitment language was tallied for each half of the session because the tasks of therapy were different in the first versus the second half of the session.

For hypotheses 1 through 3, a discriminant analysis was completed to determine if CT or ST predicted membership to a group, either treatment completion or dropout. For hypotheses 4 through 6, a discriminant analysis was completed to determine if CT or ST predicted membership to a group, either diagnosis remission, diagnosis retention, or dropout. A regression analysis of percentage reduction in PSS-I score and commitment

language was completed to determine if frequency of CT and ST was associated with percent reduction in PSS-I score. Hypotheses regarding engagement style were not tested because the sample did not yield adequate representation in the three engagement groups.

Chapter 5

Results

Descriptive Statistics

Using an independent samples *t*-test to compare means, no significant differences were identified in CT or ST based on treatment type (e.g., PE, PE/CR). An independent samples *t*-test was performed to evaluate CT and ST means by site. Significantly higher CT ($p < .005$) emerged in academic clinic tapes. Inspection of the two group means indicates that the average frequency per session of CT for individuals who were treated in the academic setting (11.07) was significantly higher than for those who were treated in the community setting (6.18). Inspection of the two group means indicated that the average frequency of CT in the second half of the session for individuals who were treated in the academic setting (6.68) was significantly higher than for those who were treated in the community setting (3.18). A large range of session lengths was observed, from 55 minutes to 122 minutes. The PI attempted to control for this range by dividing the frequency of commitment language by the number of hours of the session.

Change Talk

The frequency of CT occurring over the full session ranged from 1 to 35 events, as shown in Figure 1. The mean number of CT events was 8.92, with a standard deviation of 5.98. The researcher divided the session into two halves. The mean frequency of CT for the first half of the session was 3.78, with a standard deviation of

3.52. The frequency ranged from 0 to 15 events. The mean frequency of CT for the second half of the session was 5.14, with a standard deviation of 3.62. The frequency ranged from 0 to 20 events.

Sustain Talk

The frequency of ST occurring over the full session ranged from 0 to 32 events, as shown in Figure 1. The mean number of ST events was 7.14, with a standard deviation of 6.59. The mean frequency of ST for the first half of the session was 2.40, with a standard deviation of 2.51. The frequency ranged from 0 to 8 events. The mean frequency of ST for the second half of the session was 4.74, with a standard deviation of 4.96. The frequency ranged from 0 to 24 events.

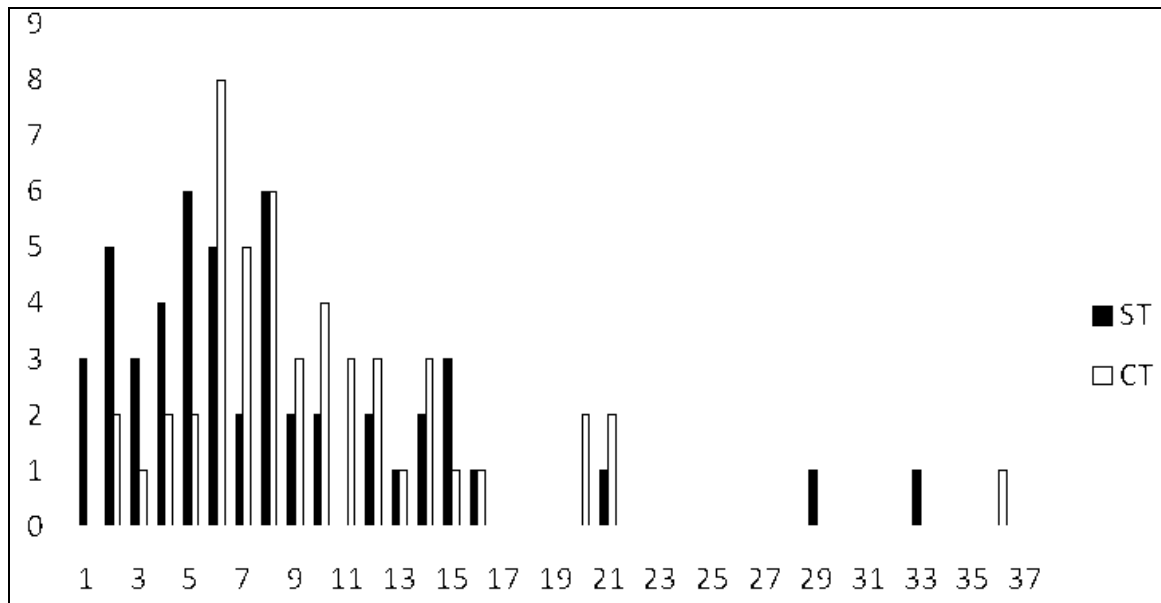


Figure 1. Distribution of commitment language frequency

Percent Change in PSS-I Score

Change on the PSS-I ranged from -13.16% to 100% from pretreatment PSS-I to last available PSS-I. The mean percent change on the PSS-I was 50.05%, and the standard deviation was 34.81.

The sample was selected to test two dependent variables, completion and outcome. The data for engagement style was not available for enough of the subjects (56%) to analyze this variable.

Inferential Statistics

Inferential statistics are used to draw conclusions that are not available from the data. Inferences about a population can be drawn from a sample using these types of statistics.

Frequency of change talk and sustain talk will discriminate treatment completion from dropout (Hypotheses 1-3).

The researcher performed a discriminant analysis to determine if CT and ST could be used to differentiate between those who completed treatment and those who dropped out of treatment. The frequency of CT for the total session and the frequency of ST for the total session were entered into the discriminant analysis, with treatment completion as the grouping variable. Wilks' lambda was not significant, $\lambda = .976$, $X^2 = 1.142$, $p = .565$, partial $\eta^2 = .008$, which indicates that the model including these variables was not able to significantly discriminate the two groups.

Next, the frequency of CT and ST from the first and second halves of the session were entered into a discriminant analysis to see if these frequencies could be used to differentiate treatment completion. Wilks' lambda was not significant, $\lambda = .916$, $X^2 = 4.030$, $p = .402$, partial $\eta^2 = .03$, which indicates that the model including these variables was not able to significantly discriminate the two groups. A trend was observed for CT from the first half of the session to discriminate treatment completers.

Inspection of the two group means from the first half of the session (Figure 2) indicates that the average frequency of CT for individuals who completed treatment (4.34) was significantly higher than for those who did not complete treatment (2.47). Patients who completed treatment ($n = 35$) had significantly higher frequency of CT ($p = .023$).

Treatment completion was not better predicted by trauma type or time since trauma. To investigate whether patients who completed treatment and those who dropped out differed based on type of trauma experienced (i.e., rape, physical assault, childhood sexual abuse), a chi-square statistic was used. Treatment completers and dropouts were not significantly different on the type of trauma they experienced ($X^2 = .331$, $df = 2$, $n = 50$, $p = .848$). Inspection of the two group means indicated that the average lengths of time since the trauma do not differ significantly ($p = .979$).

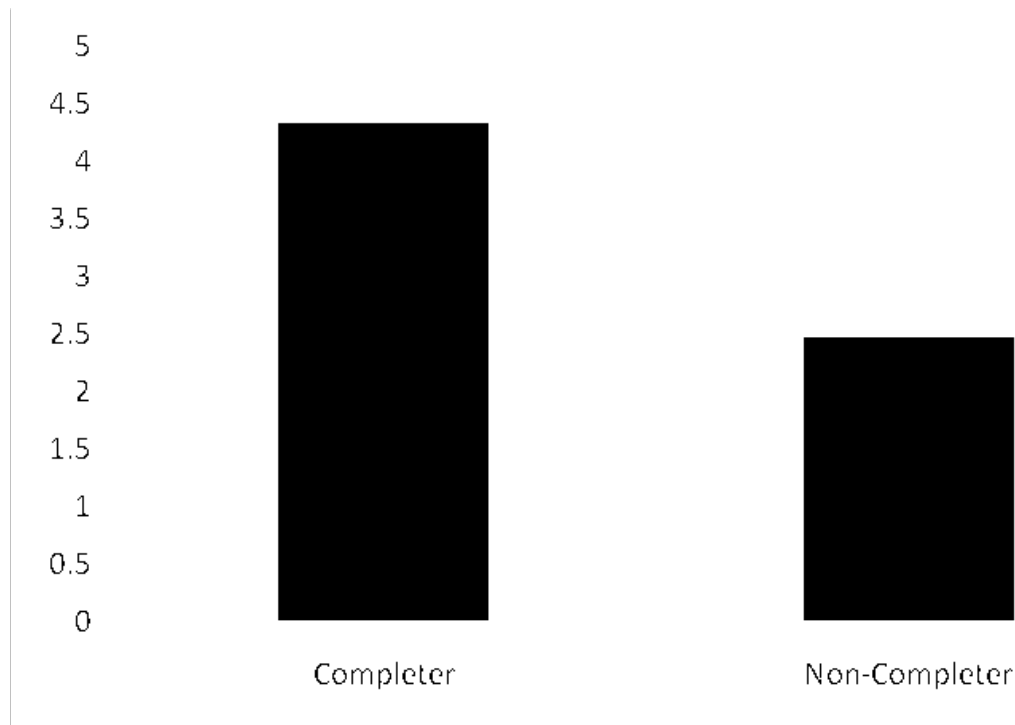


Figure 2. Comparison of means of CT from the first half of the session between completers and non-completers

Dividing the frequency of CT and ST by the hours of the session, for either the total session or the first and second halves, did not impact the variable's ability to differentiate group membership.

Due to the lack of findings for the separate variables, analyses involving the interaction of CT and ST were not conducted.

Frequency of change talk and sustain talk will discriminate PTSD symptom remission or treatment dropout (Hypotheses 4-6).

The researcher performed a discriminant analysis to determine if CT and ST could be used to differentiate between those whose diagnosis remitted at the last assessment,

those whose diagnosis remained, and those who dropped out of treatment. The frequency of CT for the total session and the frequency of ST for the total session were entered into the discriminant analysis with PTSD remission, PTSD nonremission, and dropout as the grouping variable. For the first canonical discriminant function, Wilks' lambda was not significant, $\lambda = .893$, $X^2 = 5.279$, $p = .260$, partial $\eta^2 = .037$. For the second canonical discriminant function, Wilks' lambda was not significant, $\lambda = .990$, $X^2 = .477$, $p = .490$, partial $\eta^2 = .003$, which indicates that the model including these variables was not able to successfully discriminate the two groups.

Next, the frequency of CT and ST from the first and second halves of the session were entered into a discriminant analysis to see if they could be used to differentiate PTSD remission, PTSD nonremission, and dropout. For the first canonical discriminant function, Wilks' lambda was not significant, $\lambda = .810$, $X^2 = 9.608$, $p = .294$, partial $\eta^2 = .068$. For the second canonical discriminant function, Wilks' lambda was not significant, $\lambda = .963$, $X^2 = 1.725$, $p = .631$, partial $\eta^2 = .0124$, which again indicates that the model including these variables was not able to significantly discriminate the two groups. A trend was observed for CT from the first half of the session to discriminate those with PTSD, those without PTSD, and those who dropped out. No significant differences were observed among these groups, loss of PTSD diagnosis, maintenance of PTSD diagnosis, and treatment dropout.

Dividing the frequency of CT and ST by the number of hours in the session, either for the total session or the first and second halves, did not impact the ability to use the variable to differentiate group membership.

Due to the lack of findings for the separate variables, analyses involving the interaction of CT and ST were not conducted.

Frequency of change talk and sustain talk will be associated with percent change on PSS-I from pretreatment to last Assessment (Hypotheses 4-6).

A simultaneous multiple regression was performed to examine how well CT and ST predict percentage change of PSS-I from pretreatment to last assessment. When CT and ST were entered together, they did not significantly predict percent change in PSS-I score, $F(2,47) = .197, p = .822$, adjusted $R^2 = -0.34$. When CT and ST for the first and second halves of the session were entered together, they did not significantly predict percent change in PSS-I score, $F(4,45) = .153, p = .961$, adjusted $R^2 = -0.074$.

Differences in percentage change were not better accounted for by type of trauma or time since trauma. To investigate whether patients' percentage change in PSS-I score could be attributed to trauma type (i.e., rape, physical assault, childhood sexual abuse) a one-way ANOVA was performed. No statistically significant differences were found among the three levels of trauma type on percentage change in PSS-I score, $F(2, 47) = .227, p = .798$. Also, percentage change was not significantly correlated with months since trauma ($r(50) = .070, p = .671$, two-tailed).

Frequency of Change Talk and Sustain Talk will discriminate among engagement styles.

This hypothesis could not be tested because of missing data.

Correlations among CT and ST.

CT from the first half of the session was significantly correlated with the frequency of CT from the second half of the session ($r(50) = .397, p = .004$, two-tailed).

ST from the first half of the session was significantly correlated with the frequency of ST from the second half of the session ($r(50) = .505, p = .000$, two-tailed).

CT and ST were not significantly correlated, nor were any of the variables derived from the first and second halves of the session. Table 3 depicts a correlation matrix of the results described.

Table 3.
Intercorrelations for frequencies of CT and ST

	1	2	3	4	5	6
1. Change talk total		.098	.831**	.841**	.044	.107
2. Sustain talk total			.112	.052	.760**	.944**
3. CT first half				.397**	.119	.089
4. CT second half					-.042	.091
5. ST first half						.505**
6. ST second half						

Note. ** Correlation is significant at the 0.01 level (2-tailed).

Chapter 6

Discussion

This study was designed to examine client commitment language and how it relates to behavior change in Prolonged Exposure Therapy. Clients' utterances reflecting desire to either change or sustain their behavior were coded in the second session of prolonged exposure therapy and examined in relation to treatment completion and outcome. The relationship of frequency of commitment language to treatment outcome and completion was not observed at a statistically significant level. Commitment language did not discriminate between treatment completion and dropout, although treatment completers showed a trend for higher frequency of CT in the first half of the session. CT from the first half of the session for women who completed treatment was two times more frequent than for those who dropped out of treatment. A positive correlation was observed between CT in the first and second halves of the session and ST in the first and second halves of the session.

These results provide some insights regarding the second session of PE. The session is divided into an exploration of the status quo and planning action to change. The second session contains two unique tasks. The task of the first half of the session is devoted to discussion about and normalization of reactions to trauma. The second half of the session involves discussing the rationale for in vivo exposure, planning the hierarchy, and selecting the initial exposures. For the first half of the session, the significant difference between the mean CT of completers and dropouts suggests that individuals who express unhappiness with the current state of affairs or have been attempting to

change are more likely to complete treatment. This finding was not better accounted for by type of trauma (i.e., rape, physical assault, childhood sexual abuse) or time since the trauma. Furthermore, a significant correlation was observed between the CT in the first and second halves of the session. A similar correlation was found between ST in the first and second halves of the session. This finding suggests that further investigation is warranted into whether focusing on developing commitment in the first half of the session might be associated with increased commitment to the in vivo exposure. An alternate explanation for this finding is that people are internally consistent. The type of commitment language being expressed at the start of a session would thus be maintained throughout the session.

The present findings are congruent with the literature. Westra and Dozois (2006) found that individuals with anxiety disorders receiving MI before group CBT were more likely to comply with homework, engage in treatment, and complete group therapy. Thus, the effect of MI on outcome was indirect: increased treatment engagement and completion led to better outcome. The current study findings converge with those of Westra and Dozois. Greater frequency of CT during the first half of the session was associated with completion of treatment versus outcome of treatment. Considering the findings of Foa et al. (2002) that introduction of imaginal exposure does not typically exacerbate symptoms and the findings of Hembree, Foa et al. (2003) that PE does not have a higher dropout rate than other treatments for PTSD, these findings continue to support the possibility that motivation plays an important role in treatment retention for PE.

These findings are similar to those of Maltby and Tolin (2005). They found that individuals who agreed to exposure treatment following a motivational intervention and then waited for scheduling of treatment had poorer outcomes or did not complete treatment in comparison to those who entered treatment immediately. This finding implies that the effect of change talk diminishes with time. Therefore, therapists who find that the patient is expressing commitment to change should complete the full session and engage the patient in his or her first in vivo exposure.

A positive correlation between the level of CT in the first and second halves of the session was found. This finding suggests that behavior change (e.g., engaging in in vivo exposure) should be agreed upon closer to eliciting CT. Similarly, patients who are voicing reasons to continue avoiding or that the status quo is good might need more time to explore why they want to change. This is important because the level of ST in the first half of the session was positively correlated with ST in the second half of the session. For example, while CT had an effect that diminished with time, the effect of ST was more persistent. While studying drinking behavior, Moyers et al. (2007) found that ST (called counterchange talk) was associated with a higher proportion of days drinking. A higher frequency of *drinks per day drunk* was associated with more ST. This finding was independent of the modality of intervention being delivered, CBT, 12-step facilitation, or MI.

Implications of Findings

Miller and Rollnick (2002) outlined two distinct phases of motivational interviewing. The therapist, in the first phase, develops and reflects motivation to change

a given behavior. The second phase is used to consolidate motivation and elicit commitment to a given course of action. The second session of PE is analogous to the phases of MI. As in MI, the first half of the session focuses on developing motivation for change. First, the therapist reviews the effect of breathing retraining. Analogous to MI, the discussions about breathing retraining can develop preparatory CT of an individual's ability to change. While it is currently a deemphasized component of the treatment, a person who uses breathing retraining successfully to reduce anxiety might challenge a belief that the PTSD symptoms cannot be changed and will last forever. Patients are instructed to practice the breathing daily and try it when in a situation where they feel anxious. If patients are able to do this, they experience relief from anxiety. The breathing retraining discussion can elicit preparatory CT about ability to change. This conversation can be used to develop a discrepancy between the current life and the possibility that life could be different.

Second, the therapist and patient discuss the common reactions to a traumatic event. Analogous to MI, the therapist uses this segment of PE to develop desire, reason, need, and taking steps CT. The conversation involves a description of the three symptom clusters of PTSD and the secondary symptoms of PTSD. Each reaction is described by the clinician, connected to the experience of trauma, and related to the individual patient's experience. The discussion frames the distress as being directly related to the trauma. The therapist elicits the conclusion that if the treatment is completed, a reduction in the PTSD symptoms will occur.

In viewing the tapes for this study, the coders observed a range of therapist styles. Some therapists facilitated this discussion by describing the reaction to the trauma and

quantifying the presence of the reaction with the patient (e.g., “How often are you experiencing intrusive thoughts?”). Other therapists reflected the distress involved in the reaction to trauma (e.g., “So you experience intrusive thoughts; that must be upsetting.”), which elicited CT. This style is consistent with MI style. Moyers et al. (2007) found that MI consistent behavior (MICO) was associated with increased CT. This research might apply to therapist behavior in PE. The findings from the current study imply that this portion of the session could be used as an opportunity to elicit commitment for changing the status quo and dissatisfaction with the status quo. As in MI, the PE therapist can develop the discrepancy (i.e., difference) between the patient’s current life and how she or he wants it to be (i.e., before the PTSD).

The second half of the session is analogous to the second phase of MI. In the second phase of MI, the therapist consolidates commitment to change and agrees on a plan for action. This phase mirrors the second half of the PE second session. In MI, the therapist will often start the second phase by giving advice with the patient’s permission. In PE, the therapist explains the rationale for in vivo exposure, commonly incorporating the patient’s own examples into the discussion. Next in MI, the therapist and patient negotiate a plan for action. This step in MI is similar to the construction of the in vivo hierarchy and selection of the first in vivo exposures. The selection of the exposure parallels the MI technique of giving a menu or list of options and allowing the patient to decide. This naturally elicits commitment to changing the behavior.

Motivation seemed to be consistent through the session, either for or against changing avoidance. When a patient was expressing CT during the preparatory phase of the session, she would continue expressing CT in the action-planning phase. Because CT

is transient, this finding implies that the therapist should move to agreeing on the in vivo exposure by the end of the session in order to consolidate the commitment for change.

However, if a patient is expressing ST throughout the first half of the session, the therapist might spend more time on the common reactions because the patient is likely to be resistant to planning in vivo exposures. Application of MI techniques with this subset of patients might increase commitment to changing the behavior. In this situation, a therapist can split the session in half and focus homework on the common reactions and developing motivation for change.

This study attempted to use the findings of linguistic studies to test whether a basic element of MI was present in a well-established treatment for PTSD (i.e., a relationship between CT and behavior change). However, the purpose was not to examine or further linguistic research. Findings suggest a relationship exists between CT and treatment completion. However, the results indicate that research regarding the relationship between language and behavior requires intensive linguistic analysis. The coding system used by the studies cited above (e.g., Amrhein et al., 2003; Moyers et al., 2007) involved listening to the therapy session three times, with a typed transcript. Each review of the session had a specific coding task. Merely counting the frequency of volleys, such as the coding in this study, lacked the power to detect differences in groups. Future studies should note this when designing similar investigations of the interaction between language and behavior change.

Limitations

The implications discussed are limited in scope. First, the discussion is not based on any significant findings, but rather on an interpretation of trends observed in the outcomes. The lack of significant findings is possibly due to two main factors, sample size and method of measurement. The sample size was small ($N = 50$) with two groups (i.e., treatment completion, treatment dropout). Second, the use of frequency to measure commitment language was not as sensitive as other methods that are currently employed. To increase the reliability of coders, the researchers chose to divide the coding by volleys, rather than by utterances, a unit of language that makes up volleys. Data were lost by this decision. If a subject spoke at length in support of changing or sustaining behavior, the coder only tallied one volley. A larger range of language frequency might have been observed had the researchers chosen to code by utterances. However, ensuring reliability for this level of coding was outside the scope of this study. Finally, the ability to generalize these findings is limited. The small sample was comprised fully of female survivors of rape, physical assault, and sexual assault. Therefore, these findings might not apply to other types of trauma (e.g., combat, natural disaster) or to male survivors.

Future Directions

The purpose of exploratory research is to generate future directions for research. The findings of the present study suggest that motivation might have a role in retention of patients. Future studies can further explore patient language using more involved coding systems to obtain more accurate findings regarding patient language and future behavior.

Other researchers could examine the interaction between therapist behavior and patient language to determine whether therapist behavior influences patient language. Sequential behavioral coding systems could identify if a link exists between therapist behavior, patient language, and patient behavior. Future researchers may wish to explore the use of an MI module for individuals who seem resistant to or ambivalent about exposure or PTSD treatment.

Conclusion

Throughout the PTSD treatment literature, there has not been a consensus on which psychological characteristics or individual factors lead to premature dropout or treatment failure. As evidence-based treatments for PTSD are disseminated, it will be important to determine ways to enhance treatment retention and response, even in light of the comparably low dropout rate and high response rate for current treatments. The findings from the MI literature could be used to inform treatment delivery. MI can be used to resolve a patient's ambivalence about changing before engaging in treatment.

The researchers in this study chose to examine the relationship between client verbalization of commitment to change a behavior and successful outcomes of PE and the relationship between client verbalizations against change to poorer outcomes and dropout. Commitment language is potentially an important concept in the delivery of PE and should be considered before engaging the patient in exposure. This study revealed some preliminary, nonsignificant findings that patients who completed treatment expressed twice as many verbalizations in favor of changing when discussing how the trauma had impacted their lives. The results of this study provide insight into the

potential role of the second session of PE in the overall treatment protocol. An analogy can be drawn between MI's two phases and the second session of PE. The first half of the session is used to build commitment to change a person's current behavior, and the second half of the session is used to solidify the plan to change. Determining whether to continue with planning the in vivo exposures might take into account how the patient is talking about the current state of life after the trauma. Additional time might be allocated to develop the patient's language in opposition to the status quo, with the goal of increasing treatment retention. Future researchers should expand on this exploratory study and investigate the impact of motivational factors on treatment for PTSD.

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Appendices

- A. Commitment Language Coding Manual
- B. Commitment Language Coding Form

Appendix A

Coding

General Procedure (Words in **Bold** are defined below):

1. Get videotape and coding sheet.
2. Record identification information (Subject #, Coder Name, and Date)
3. Secure a room to watch video, with no unauthorized people in it.
4. Rewind tape to beginning
5. Determine **inclusion** or **exclusion** of the session
6. Start tape and Record one tally mark per **volley** in **Sustain talk**, **Change Talk**, neither, or both.
7. Separate the tally counts into ten minute segments. There should be ~12 divisions by the end of the tape.
8. Upon Completion, return the tape to the box for completed tapes.
9. Hand coding into Aaron.

Note: Please code session all the way through. Do not leave half coded tapes, for safety and accuracy reasons. NEVER remove a tape from the CTSA. This is a direct violation of the IRB protocol, HIPAA, and confidentiality and will have serious consequences to the study.

Inclusion/Exclusion:

The tape must have a completed session 2 which includes:

1. Check of the homework
2. Common Reactions to Trauma
3. Rationale for In Vivo
4. Construction of In Vivo Hierarchy
5. Introduction of SUDS
6. Assigning of Homework

Components 1-3 are always in this order; Components 4-6 are sometimes mixed around, but must be present. If the session starts on something unrelated to these items (most typically the standard trauma interview), then make detailed notes about what is seen.

Leave Aaron a note and he will retrieve the next tape to determine if the next session is in

sync with treatment. If the session stops without all of the items being completed then make detailed notes about what was present and that tape is excluded. Please put it aside for Aaron.

Terms:

- A. Avoidance- A behavior by a patient. This behavior includes avoidance of trauma reminders or memories of the trauma. In the first session of PE, a rationale is made that avoidance maintains the symptoms of PTSD. Therefore, for this study, any statements that support or oppose any symptoms that are related to PTSD are also considered statements about avoidance.
- B. Volley- One volley is the client's verbalization that *begins* when the therapist stops speaking and *ends* when the therapist starts speaking. The volley is not divided by therapist vocalizations, such as "uh huh" and "mmm." Nor is it divided by reinforcing statements by the therapist, such as "yes," "good", "exactly," or "bingo," unless the reinforcement stops the flow of the volley (e.g. "I really think I can do this" "good" "You think this is a good thing?"). Depending on patient and therapist style. Volleys will vary in length and frequency. A volley that contains Change talk and Sustain Talk will receive a tally mark in both columns. A volley that has NO change talk or Sustain Talk will receive no tally (e.g. information, acknowledgement).
- C. Change Talk- Change Talk is client verbalization in favor of changing a current behavior or against the status quo. To identify change talk, common categories are:
 - a. Desire- Statements of a desire to change the current situation or stop the behavior (I want to stop being so afraid)
 - b. Ability- Statements that the person is able to change the behavior or able to change the status quo. (I could go to a grocery store again).
 - c. Reason- Verbalizations of a reason a person should change the behavior or that the status quo is bad. (I am missing so much of my life)

- d. Need- Verbalization that the person needs to change (I need to stop being so scared).
 - e. Commitment- Statements of commitment to change (I will look through the pictures)
 - f. Activation- preparatory language regarding changing. (I am ready to start confronting situations, I am willing to go to the building, I am preparing to do these exposures)
 - g. Taking Steps- Patient descriptions of already changing (I got myself to go in the car and stay there for a while)
- D. Sustain Talk- client verbalization in favor of the status quo or opposing changing the current behavior. To identify Sustain Talk, common categories are:
- a. Desire- Statements of a desire to maintain the current situation or sustain the behavior (I want to stay away from those reminders).
 - b. Ability- Statements that the person is not able to change the behavior or not able to change the status quo. (I can't think about these memories).
 - c. Reason- Verbalizations of a reason a person should sustain the behavior or that the status quo is beneficial. (I am safe when I avoid these reminders).
 - d. Need- Verbalization that the person needs to sustain the behavior (I need to stop myself from being scared and avoiding does this).
 - e. Commitment- Statements of commitment to sustain the behavior (I'm not doing that)

Appendix B

Subject # _____ Date of Coding _____ Coder Name _____

Counter Time	Change Talk	Sustain Talk	Neutral Talk

Desire Ability Reason Need Commitment Activation Taking Steps

