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USE OF THE ELABORATION LIKELIHOOD MODEL TO PREDICT OUTCOMES OF INPATIENT CHEMICAL DEPENDENCY TREATMENT

By

Kenneth Gerard Dugan

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ABSTRACT

USE OF THE ELABORATION LIKELIHOOD MODEL TO PREDICT OUTCOMES OF INPATIENT CHEMICAL DEPENDENCY TREATMENT

by

Kenneth Gerard Dugan

One-hundred subjects were recruited from two inpatient chemical dependency treatment centers. Sixty-seven subjects completed treatment and 33 subjects dropped out of treatment. All subjects completed demographic, state motivation (for treatment), need for cognition, social desirability, attitude, and symptom-severity surveys. Subjects who completed treatment also responded to questionnaires which assessed their: confidence in treatment, perceptions of treatment as applicable to their problems, perceptions of their ability to understand therapeutic messages, judgements about the frequency of exposure to therapeutic messages, ratings of counselor characteristics, and post-treatment attitudes and symptom-severity. Data from treatment completers were used in bivariate correlations and multiple regressions on post-treatment recovery attitudes, behavioral intentions, and symptom severity using . Data from all subjects were entered into a discriminant function analysis to predict termination status.

Message evaluations (confidence and applicability ratings), counselor characteristics (expertness, attractiveness, and trustworthiness), and frequency of exposure to therapeutic messages were correlated with post-treatment recovery oriented attitudes and behavioral intentions. Multiple regression analysis revealed that message evaluations and a two way interaction between need for cognition and counselor trustworthiness explained variance in post-treatment attitudes after controlling pre-treatment attitudes. Message frequency explained variance in behavioral intentions. After pretreatment distress was controlled, state motivation and need for cognition explained variation in post-treatment distress. The discriminant function analysis did not aid in the differentiation between treatment completers and premature terminators.

These results supported hypotheses about expected patterns of correlation in the prediction of attitudes and revealed that although variables of interest did not collectively predict treatment outcomes, some variables of interest did explain variance in treatment outcomes.

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This work is dedicated to ...

all who strive and persevere.

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CHAPTER 1: INTRODUCTION

In the twenty-five years since Strong (1968) conceptualized counseling as an interpersonal influence process, more than 100 research articles have appeared in the counseling literature which have been guided by his and other social psychological models of attitude change. Numerous theoretical papers addressing this topic have also been published. Despite the popularity of this line of investigation, it does not appear to have substantially enhanced our understanding of how change occurs in therapy. In fact, reviews of the research in this area paint a complex and seemingly paradoxical picture of how therapeutic persuasion occurs (see Corrigan, Dell, Lewis, & Schmidt, 1980; Heppner & Claiborn, 1989; Heppner & Dixon, 1981).

Heesacker (1986a) suggested that this situation is due to the preponderance of conflicting findings and to a reliance on social psychological theories of attitude change having poor generalizability to counseling. Another factor which has limited the utility of this research is that the vast majority of studies have examined only therapist or source characteristics (e.g., counselor credibility, attractiveness). However, interpersonal influence has long been recognized as also being dependent upon message variables and recipient characteristics. Heesacker (1986a) concluded that, in order to move beyond the present state of affairs, it will be necessary for investigators to use more sophisticated theories and research designs.

Research on attitude change has progressed considerably beyond Strong's (1968) classic framework. One recent theory which has resulted from this work, the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1981),[1] provides a relatively systematic account of the role of source, message, and recipient factors and their interactions in effecting attitude change. The model provides a clear theoretical foundation for describing and explaining conditions that facilitate or inhibit attitude change, and it also offers guidelines for the systematic investigation of relevant variables (e.g., characteristics of the counselor, client, and therapeutic intervention).

The most basic theoretical statement of this model is that individuals will experience a greater degree of attitude and behavior change under conditions in which the likelihood that they will cognitively elaborate persuasive communications is high than under conditions in which cognitive elaboration likelihood is low (Petty & Cacioppo, 1981). Elaboration likelihood is considered to be high when an individual is both motivated and able to process a given message. When this is the case, individuals are said to rely on a thoughtful consideration of issue-relevant arguments in forming their attitudes. Elaboration likelihood is viewed as being low when an individual is either unable or unmotivated to process a message. Under these circumstances individuals tend to rely on situational cues or simple decision rules in formulating their opinions. These two sets of circumstances are postulated to result in two distinct routes to persuasion, the central route (associated with extensive cognitive elaboration) and the peripheral route (associated with minimal cognitive elaboration). The central route is hypothesized to produce more enduring change (Petty & Cacioppo, 1981).

The architects of the ELM have explicitly hypothesized that the model could be relevant to counseling (Petty, Cacioppo, & Heesacker, 1984). They also noted discrepancies which have arisen in research based on Strong's (1968) application of Festinger's (1957) theory of cognitive dissonance to counseling and described how the ELM can be used to explain these discrepancies.

The purpose of this investigation was to determine if predictions derived from the ELM and from social and counseling psychological research could be applied in a real-life counseling context. Four questions are of interest. First, can post-treatment attitude toward drug use and recovery behaviors be predicted from a combination of recipient, message, and source characteristics? Second, can post-treatment behavioral intentions be predicted from these same variables? Third, can post-treatment distress, i.e., symptom severity, be predicted from these variables? Fourth, can termination status (sucessful versus premature) be predicted using these variables? Although answers to these questions will not demonstrate causal relationships, they will provide evidence that either supports or challenges the ELM and its use in predicting treatment outcomes.

The real-life counseling setting selected for examination of social influence and ELM variables was inpatient chemical dependency treatment. Two sites were utilized to collect data. Both sites were approximately 15 bed programs; one was located in the Midwest and the other was located in the Northeast. Both sites are described further in Chapter three. The rationale for selecting in-patient chemical dependency units lies in the conceptual compatibility between the ELM variables and variables important in chemical dependency treatment. For example, the ELM emphasizes the role of motivation, and motivation has long been recognized as a crucial element of the treatment of substance abuse. Moreover, the ELM highlights the cognitive processing of information related to attitudes and behavior; inpatient chemical dependency treatment helps patients to examine information pertinent to their drug-related attitudes and behaviors.

The second chapter will review: (a) research on the central and peripheral routes to persuasion, (b) research exploring the interaction of source, message, and recipient variables, and initial applications of the ELM to counseling, and (c) relevant findings from the addictions literature. The methodology (including subject selection, instruments used, and procedures) is described in Chapter three. Chapter four is comprised of the statistical analyses and results of this investigation. Chapter five contains a discussion of the results and suggestions for further study.

CHAPTER 2: REVIEW OF LITERATURE

The main purpose of this chapter is to review social and counseling psychological findings on the Elaboration Likelihood Model(ELM). This model, developed by Petty and Cacioppo (1981, 1986), is a social psychological model that integrates knowledge about attitude change processes and outcomes from a variety of social psychological models of persuasion. The advantage of this model is its ability to account for conflicting interpretations among other theories in a parsimonious manner. This chapter begins by identifying the theories of attitude change which predominated the field prior to the ELM. Concepts from several of these theories are integrated into the ELM. The description of the pre-ELM models is followed by a discussion of the ELM and the empirical data supporting its postulates, including work relevant to counseling psychology. Finally, relevant findings from the addictions literature will be reviewed, given the nature of the subject population employed in this study. Thus, this chapter is divided into three major sections: (a) a review of ELM theory and research, (b) a review of the theoretical and empirical applications of the model to counseling, and (c) a review of the pertinent substance abuse literature.

Models of Attitude Change

Petty and Cacioppo (1981) categorized the diverse models of attitude change into seven primary approaches. First, they discussed theories which emphasized basic principles of learning, such as conditioning and modeling (e.g., Bostrom, Vlandis, & Rosenbaum, 1961; Cialdini & Insko, 1969; Miller & Dollard, 1941; Rosenbaum & Tucker, 1962; Scott, 1957; Staats & Staats, 1957, 1958). These approaches stress the manner in which targets of persuasion are either directly or vicariously reinforced for attitude change. Second, Petty and Cacioppo (1981) outlined the verbal-learning approach of Hovland, Janis, and Kelly (1953) which highlights the variables that influence a person's attention to, understanding of, yielding to, and memory of the arguments in a persuasive communication. A third set of approaches are the perceptual-judgmental theories (e.g., Ostrom & Upshaw, 1968; Sherif & Hovland, 1961) which emphasize how individuals perceive messages, and how opinions are influenced or distorted by past experiences. A fourth area of focus involved the impact of motivation and cognitive consistency on attitude change (e.g., Festinger, 1957). Fifth are information processing approaches (e.g., Bem, 1967, 1972) which focus on the attributions individuals make about their own behavior or about a communicator's actions. A sixth class of theories is composed of probabilistic models of how individuals receive, evaluate, and integrate information into attitudes (e.g., Anderson, 1971; McGuire, 1960). The seventh approach discussed by Petty and Caccioppo (1981) underscores information that people generate on their own, either upon exposure to a persuasive communication or in the absence of one. These models are called self-persuasion approaches (e.g., Janis, 1959, 1968; Tesser, 1978).

The Elaboration Likelihood Model

Unfortunately, the findings of various attitude change theorists regularly contradicted each other. Further, "because proponents of each approach attempted to explain a wide variety of phenomena, the different approaches often provided competing interpretations for the results of a particular experiment" (Petty & Caccioppo, 1981, p. 255). Also, results within a paticular line of research were frequently inconsistent. In response to this disarray, Petty and Caccioppo (1981, 1986) developed a metatheorectical model of attidue change, called the "Elaboration Likelihood Model." The model was named for its basic tenets which are: (a) the degree and direction of attitude change that individuals experience depends on the amount, direction, and type of cognitive elaboration that people undergo when confronted by an attempt to persuade them; and (b) the probability that an individual will engage in cognitive elaboration of messages contained in a persuasive attempt depends on the individual's level of motivation and ability to process the information.

After reviewing the prominent social-psychological theories of attitude change, Petty and Cacioppo (1981) asserted that, although each contributed to a full understanding of persuasion, none served as an adequate integrative theory. The ELM was created to provide a general, unifying framework for comprehending attitude change processes. "Elaboration-likelihood" is the probability that an individual who is the target of a persuasive attempt will cognitively elaborate, i.e., think about, examine, agree with, or dispute, the messages that are intended to cause attitude change. According to the ELM, persuasion will sometimes result from a careful examination of the issue-relevant arguments (i.e., as perceived by the message recipient), and sometimes from the presence of issue-irrelevant positive or negative cues (for example, association with an attractive message source). The former is called the central route to persuasion and the latter is called the peripheral route to persuasion. The postulates of the ELM are listed in Table 2-1. The central and peripheral routes to persuasion, and their potential outcomes, are depicted in Figure 2-1.

Table 2-1. Postulates of the Elaboration Likelihood Model of Persuasion

1. People are motivated to hold correct attitudes.
2. Although people want to hold correct attitudes, the amount and nature of issue-relevant elaboration in which they are willing or able to engage to evaluate a message vary with individual and situational factors.
3. Variables can affect the amount and direction of attitude change by (a) serving as persuasive arguments, (b) serving as peripheral cues, and/or (c) affecting the extent or direction of issue and argument elaboration.
4. Variables affecting motivation and/or ability to process a message in a relatively objective manner can do so by either enhancing or reducing argument scrutiny.
5. Variables affecting message processing in a relatively biased manner can produce either a positive (favorable) or negative (unfavorable) motivational and/or ability bias to issue-relevant thoughts.
6. As motivation and/or ability to process arguments is decreased, peripheral cues become relatively more important determinants of persuasion. Conversely, as argument scrutiny is increased, peripheral cues become relatively less important determinants of persuasion.
7. Attitude changes that result mostly from processing issue-relevant arguments (central route) will show greater temporal persistence, greater prediction of behavior, and greater resistance to counterpersuasion than attitude changes that result mostly from peripheral cues.

[1] From _Communication and Persuasion: Central and Peripheral Routes to Attitude Change_ (p.5) by R. E. Petty and J. T. Cacioppo, 1986, New York: Springer-Verlag. Copyright 1986 by Springer-Verlag New York, Inc. Reprinted by permission.

As shown in Figure 2-1, a potential attitude change situation is initiated when an individual is presented with a message or series of messages intended to alter a person's affective evaluation of an issue or topic. The model predicts that central route processing (i.e., cognitive elaboration) will occur only when the person is both motivated and able to examine the arguments presented. The motivation to process a message stems from such factors as an individual's need for cognition, issue involvement (which is determined by the extent to which accepting the argument will result in favorable or unfavorable consequences to the individual), commitment to change or not change, and cognitive dissonance stimulated by the message (Petty, Cacioppo, & Heesacker, 1984). Additionally, Petty and Cacioppo (1986) assumed that motivation stems, in part, from the natural tendency individuals have to strive to hold correct attitudes. Although Petty and Cacioppo (1986) do not define "correct" attitudes, it appears that they mean people are driven by a psychological need to hold opinions which can be justified on a rational or pseudorational basis to self and others.

The ability to examine or process arguments depends on such variables as the presence or absence of environmental distractions, message comprehensibility, and recipient characteristics, for example, the recipient's familiarity with the issue, and his or her intelligence (Petty & Cacioppo, 1986; Petty et al., 1984). If either the motivation or ability to engage in a careful examination of the issue-relevant arguments is absent, then a temporary shift in attitude is predicted to occur if a persuasive cue is present. If no cue is present, the subject will retain his or her initial attitude.

When motivation and ability are both present the outcome of the persuasive attempt depends on the nature of the cognitive elaboration,

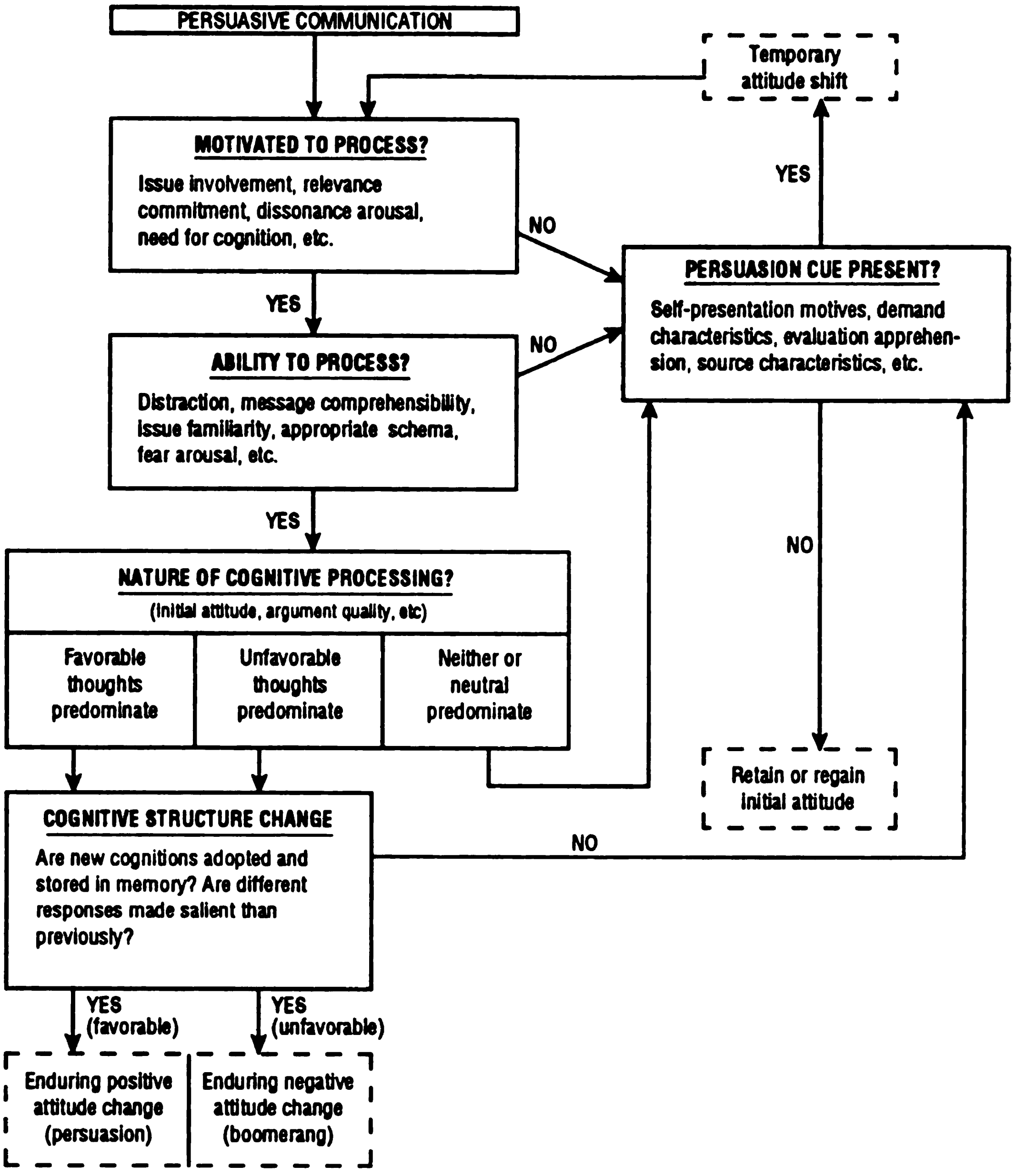
PERSUASIVE COMMUNICATION
MOTIVATED TO PROCESS?
Issue involvement, relevance commitment, dissonance arousal, need for cognition, etc.
YES
ABILITY TO PROCESS?
Distraction, message comprehensibility, issue familiarity, appropriate schema, fear arousal, etc.
YES
NATURE OF COGNITIVE PROCESSING?
(Initial attitude, argument quality, etc)
Favorable thoughts predominate
Unfavorable thoughts predominate
Neither or neutral predominate
COGNITIVE STRUCTURE CHANGE
Are new cognitions adopted and stored in memory? Are different responses made salient than previously?
YES (favorable)
YES (unfavorable)
Enduring positive attitude change (persuasion)
Enduring negative attitude change (boomerang)
NO
NO
NO
PERSUASION CUE PRESENT?
Self-presentation motives, demand characteristics, evaluation apprehension, source characteristics, etc.
YES
Temporary attitude shift
NO
Retain or regain initial attitude

Figure 2-1. This diagram of the central and peripheral routes depicts potential outcomes of exposure to a persuasive message. Reprinted by permission from Communication and Persuasion: Central and Peripheral Routes to Attitude Change (p.5) by R. E. Petty and J. T. Cacioppo, 1986, New York: Springer-Verlag. Copyright 1986 by Springer-Verlag New York, Inc.

which is influenced by the subject's initial attitude, the quality of the argument, credibility of the source, and other variables. The thoughts resulting from cognitive elaboration will be predominately favorable, unfavorable, or neutral. If favorable thoughts predominate, then attitude change will occur in the direction of the advocated position. If unfavorable thoughts predominate, the recipient's initial attitude will be retained or attitude change will occur in a direction antagonistic to the advocated position. If neutral thoughts predominate, the outcome will depend on the presence of persuasive cues.

Experimental Evidence on the ELM

An extensive amount of research has been conducted to validate and extend the ELM (e.g., Cacioppo & Petty, 1982; Cacioppo, Petty & Morris, 1983; Cacioppo, Petty & Sidera, 1982; Petty & Cacioppo, 1979; 1984; Petty, Cacioppo, & Goldman, 1981). This section will review the research based on postulates 4 through 7 of the ELM (postulates 1 through 3 are axiomatic, therefore, they have not been empirically tested). Material relevant to postulates 4 through 7 is presented according to specific ELM hypotheses. Moreover, only those variables of direct interest to this study are discussed at length.

Motivation and Ability to Elaborate in an Objective Manner

The fourth postulate of the ELM indicates that variables which affect an individual's motivation or ability to engage in cognitive elaboration in an objective manner either enhance or reduce examination of messages. Cognitive processing occurs in a relatively objective fashion when the individual strives to remain impartial and is guided by the facts presented in an argument; the individual is both motivated to seek the truth and has the necessary information and opportunity to examine data without bias. In contrast, biased elaboration occurs when circumstances lead the individual to favor or oppose a position on the basis of a pre-existing schema or when his or her knowledge slants the interpretation of arguments.

Petty and Cacioppo (1986) identified four variables which enhance motivation to elaborate in an objective manner: issue involvement, need for cognition, personal responsibility, and multiple message sources. Only the first two of these four variables will be expanded upon in this review because they are variables investigated in this study; the latter two variables were not included. The personal responsibility and multiple message sources variables were excluded because this study was non-experimental (in contrast to prior ELM studies in which these variables were manipulated experimentally) and because less emphasis has been placed on these variables in the ELM literature. Another reason for not investigating the effects of multiple message sources was that it was expected that subjects would be exposed to approximately the same number of sources via hospital treatment procedures.

Additionally, four main variables have been hypothesized to influence the ability to engage in relatively objective cognitive processing: message repetition, message comprehensibleness/complexity, message distraction, and recipient physical posture (standing versus reclining). Again, only the first two of these four variables are discussed below, because they are variables included in this study. Message distraction is a variable which previously has been studied only as an independent variable, and it was not included in this study because of the absence of experimental control. Recipient physical posture was not included because subjects' physical posture (i.e., sitting during treatment) was not expected to vary.

Issue involvement. This variable is defined as the extent to which a message has personal relevance or intrinsic significance for individuals, as when message recipients expect an advocated position to have salient repercussions upon their lives (Petty & Cacioppo, 1986). One early hypothesis was that increased issue involvement could enhance persuasion for pro-attitudinal advocacy (i.e., when the message advocates change in the direction with which the subject already agrees) and reduce it for counter-attitudinal advocacy (Petty & Cacioppo, 1979).

Two studies have examined the hypothesis that high issue involvement enhances cognitive elaboration of the content of a persuasive message. In the first study (Petty & Cacioppo, 1979), issue involvement (high or low) was crossed with attitudinal congruence (pro or counter) regarding a persuasive message. When issue involvement was high, attitude change increased with the presentation of pro-attitudinal messages and decreased with the presentation of counter-attitudinal messages. It is possible these findings resulted from assimilation and contrast effects (cf. Pallak, Mueller, Dollar, & Pallak, 1972). That is, individuals may simply be more likely to accept (assimilate) proattitudinal messages and reject (contrast) counter-attitudinal positions (Petty & Cacioppo, 1986). Thus, it was necessary to conduct a more stringent test of the hypothesis.

In Petty and Cacioppo's (1979) second study, issue involvement was again manipulated but both messages were counter-attitudinal. Half of the subjects were exposed to a message containing strong or cogent arguments; the remaining subjects were exposed to a message containing weak or specious arguments. Cogent arguments elicited positive responses, and specious arguments elicited counter-arguments. The combined results of these two studies were interpreted to indicate that message position (counter- or proattitudinal) can bias cognitive elaboration while issue involvement per se influences message processing in an essentially objective manner. A corollary finding was that, under conditions of low issue involvement and counter-attitudinal advocacy, weak arguments were about as likely to produce attitude change as were strong ones (Petty & Cacioppo, 1984; Petty, Cacioppo, & Goldman, 1981).

These investigations, which demonstrated the interaction between personal relevance and argument quality, support the hypothesis that as issue involvement increases individuals are increasingly motivated to evaluate the issue-relevant arguments that are presented in persuasive communications. Petty and Cacioppo (1986) have shown that "... this increased processing can result in people showing a greater appreciation for the strengths of cogent arguments and the flaws of specious ones. Several cautions are in order, however, concerning the possible limitations of the effect" (p. 87). First, Petty and Cacioppo believed that in some situations personal interests are so intense that elaboration will be biased in preservation of the ego, or elaboration may cease in the interest of self-protection. Second, the pro or counter-attitudinal direction of a message may motivate acceptance or rejection given that all other variables are essentially equal. Third, in real life situations, issue involvement is likely to be confounded with prior knowledge, i.e., individuals will presumably be more knowledgeable and thus more able to process messages pertaining to personally relevant material.

Need-for-cognition. An additional implication of the model is that people with a high "need-for-cognition" should be more motivated to examine the issue relevant material contained in persuasive messages than would be individuals with a low need-for-cognition. Need for cognition refers to a psychological need to understand or make sense of one's world or to engage in and enjoy effortful mentation or problem solving. Cacioppo and Petty (1982) described a series of four studies in which they constructed and validated the Need for Cognition Scale (NCS). Cacioppo, Petty, and Morris (1983) provided evidence that individuals with a high need-for-cognition were more persuaded to accept counterattitudninal messages than individuals with a low need-for-cognition when cogent arguments were used. However, they were less persuaded when specious arguments were used. Petty and Cacioppo (1986) indicated that the effect of need-for-cognition is maintained when intellectual ability is controlled and that low need-for-cognition individuals are apparently more conservative in their willingness to put forth cognitive effort in processing persuasive communications.

Message repetition. Moderate message repetition is described as resulting in a two-phase process of attitude modification. In the initial phase, repetition of persuasive messages gives recipients an opportunity to examine the merits of an advocacy in a relatively unbiased manner (Petty & Cacioppo, 1986). When an individual has adequately contemplated the associations and implications of the communication, the second phase is entered. In this phase affective evaluations are driven by boredom or reactance; both tend to lead to decreased acceptance of advocated positions either by biasing cognitive elaboration in a negative direction or by serving as a simple negative emotional cue (Petty & Cacioppo, 1986). The distinction between moderate and excessive repetition will vary depending on several factors, such as recipient familiarity with the topic, and length and complexity of the message.

In one investigation Cacioppo and Petty (1980a) found that message repetition enhanced recall of both strong and weak arguments, and that strong arguments resulted in more favorable thoughts. Moreover an argument quality x repetition interaction existed in which positive attitudes were associated with moderate repetition of strong arguments and negative attitudes were associated with moderate repetition of weak arguments. Cacioppo and Petty (1985) replicated these findings using different experimental tasks. According to Petty and Cacioppo (1986) the interaction of argument quality and message repetition is incongruent with alternate social influence models, for example, the verbal-learning approach (Hovland, Janis, & Kelly, 1953).

Message comprehensibleness. Petty and Cacioppo (1986) have identified message complexity/comprehensibleness as another variable that has relatively objective effects on message elaboration. Viewed from the ELM perspective, "the strengths of cogent arguments and the flaws in specious ones should become more apparent as complexity is reduced and comprehensibility is increased" (Petty and Cacioppo, 1986, p. 76). This should hold true only when motivation to process an argument is high. When motivation is low, message complexity/ comprehensibility may act a cue to the validity of a position via the peripheral route. For example, a complex message may be associated with authority and act as a positive cue or it may be so complex as to cause confusion and induce a negative response.

Motivation and Ability to Elaborate in a Biased Manner

The fifth ELM postulate asserts the existence of variables which affect cognitive elaboration by producing a positive or negative motivational or ability bias. Petty and Cacioppo (1986) identified several variables which act as motivational biases on elaboration. These variables include: forewarning, bogus personality feedback, and a high level of message repetition. Prior issue-relevant knowledge is the only variable identified which increases ability to cognitively process persuasive messages in a biased manner. These variables and biased cognitive elaboration were not investigated in this study and, therefore, are not discussed further. The effect of forewarning was not investigated because it was assumed that all subjects were forewarned. That is, since all subjects were recently admitted to an in-patient chemical dependency treatment unit, one may assume that they were aware that attempts would be made to influence their beliefs and opinions about the use of drugs. Bogus personality feedback was not studied because it contradicts ethical standards of treatment.

Peripheral Cues Versus Objective Or Biased Elaboration

The sixth ELM postulate assumes the existence of a tradeoff between cognitive elaboration and peripheral cues. Petty and Cacioppo (1986) suggested that the tradeoff between cognitive elaboration (objective or biased) and the influence of peripheral cues depends on the level of elaboration likelihood. On the basis of postulate six one would hypothesize that attitudes will be determined primarily by peripheral cues when elaboration likelihood is low. The impact of peripheral cues has been investigated in relation to subjects' degree of issue-involvement, need-for-cognition, and prior-knowledge.

Issue-involvement and peripheral cues.

Petty, Cacioppo, and Goldman (1981) carried out a 2 (issue involvement: high or low) x 2 (argument quality: weak or strong) x 2 (source expertise: inexpert or expert) between-subjects factorial experiment. Source expertise was used as a peripheral cue based on earlier research (Hoveland, Janis, & Kelly, 1953) which suggested that the apparent expertise of a message source acts as a cue to the validity of a message. Petty et al. (1981) found subjects to report more positive attitudes when argument quality was strong and when the message source was expert. They also found a personal relevance by argument quality interaction and a personal relevance by source expertise interaction which revealed that source expertise was a more important determinant of attitudes when personal relevance was low. This study was replicated using source likability as a cue, in place of source expertise (Petty, Cacioppo, & Schumann, 1983). An identical pattern of results occurred, including the personal relevance by cue (source likability) interaction.

Need-for-cognition and peripheral cues. An additional prediction is that subjects high in need for cognition will rely less on peripheral cues than will subjects low in need for cognition. Cacioppo, Petty, Kao, and Hargitt (cited in Cacioppo & Petty, 1984b) manipulated the attractiveness of a source (by varying the makeup and clothing of the source presented on videotape) and found that subjects low in need for cognition were more affected by attractiveness in forming their opinion than were subjects high in need for cognition.

Prior knowledge and peripheral cues. The ELM tradeoff hypothesis has been supported in regard to subjects' prior knowledge of a topic (Cacioppo & Petty, 1980b; Wood, 1982). Peripheral cues have less impact when prior knowledge is high, but they enhance persuasion when prior knowledge is low. For example, Cacioppo and Petty (1980b) found that females (a) expressed more agreement than men both to accurate and inaccurate evaluations of football tackles, and (b) showed less acceptance of inaccurate evaluations of fashions. They concluded that a lack of issue-relevant knowledge leads women to rely on simple decision rules "(e.g., 'As a woman, I should maintain harmony')" (p. 166).

Perceptions or judgements of subjects about their own behavior have also been shown to act as peripheral cues. Wood (1982) concluded that individuals' perceptions of their own behavior had a more powerful influence on attitudes when individuals were less knowledgeable about and less able to evaluate a topic. Wood measured the knowledge of subjects regarding environmental conservation. At a later date she asked subjects to deliver a pro-environment message to two fellow students and to ask the fellow students to sign a petition. Half the subjects were provided an incentive (five dollars) and the other half were given no incentive. The proattitudinal position of low knowledge subjects decreased when they were given an incentive, while the attitudes of high knowledge subjects remained positive regardless of the incentive. Low knowledge subjects apparently used their behavior (in the context of the incentive) as a behavioral cue to infer that they did not fully agree with the proattitudinal position and were simply acting on the basis of the reward (Petty & Cacioppo, 1986).

Consequences of Central Route Processing

The seventh ELM postulate describes the consequences of persuasion occurring under high elaboration likelihood conditions. Specifically, central route processing is expected to result in greater temporal endurance of changed attitudes, a higher level of consistency between attitudes and behavior, and more resistance to change than peripheral route processing. Support for these predictions is discussed below.

Temporal endurance of attitudes. Petty and Cacioppo (1986) reasoned that, if extensive cognitive processing enhances the endurance of attitude change, then circumstances which promote cognitive elaboration ought to yield more attitudinal endurance than circumstances which reduce elaboration. This hypothesis was tested in a 2 (immediate or delayed assessment) x 2 (message type: negative cue plus weak arguments or positive cue plus strong arguments) x 2 (high or low issue-involvement) mixed model factorial design. The investigators induced essentially equivalent attitude changes via either the peripheral and central routes; the temporal persistence of attitudes was then measured (Petty, Cacioppo, Haugtvedt, & Heesacker, 1986; experiment 1). Opinions changed under central route conditions endured longer than opinions changed under peripheral route conditions. A message type x time-of-measurement interaction was found for low-involvement subjects. These individuals experienced a decay of the attitudes they had expressed immediately after message exposure; i.e., subjects who heard positive messages became less favorable and subjects exposed to negative messages became more favorable toward the advocated position at the time of delayed measurement. Petty et al. (1986) interpreted their findings as supporting the ELM hypothesis about temporal persistence of attitude change under central versus peripheral processing conditions.

Prediction of behavior. Petty and Cacioppo (1986) reviewed research supporting the hypothesis that opinions changed via the central route predict actual behavior better than opinions changed via the peripheral route. For example, Petty, Cacioppo, and Schumann (1983) found that subjects exposed to phony magazine advertisements for a disposable razor had more positive attitudes toward the razor and expressed intentions to purchase the product more frequently when personal involvement (i.e., motivation) was high than when it was low. Also, Schumann, Petty, and Cacioppo (1986) increased subjects' ability to elaborate by allowing them more frequent opportunities to examine the issue-relevant tenets of a message endorsing the merits of using a particular ink-pen. Subjects reported engaging in more thought about the pen and stronger intentions to purchase it as message exposure increased. Petty and Cacioppo (1986) concluded that the data support the hypothesis that attitudes changed under conditions of high elaboration likelihood (i.e., high motivation and ability to process messages) are associated with increased behavioral intentions.

Need-for-cognition and attitude-behavior consistency. Another relationship expected in the framework of the ELM is a higher consistency between attitudes and behaviors for people who are high in need-for-cognition (HNC) than for people low (LNC) in this need (Petty & Cacioppo, 1986). To test this hypothesis a survey was administered to 300 students eight weeks prior to the 1984 elections; attitudes toward, reported thoughts regarding, and knowledge about both presidential tickets were obtained (Cacioppo, Petty, Kao, & Rodriguez, 1986). A subset of HNC (n=61) and LNC (n=108) subjects was then selected. A larger percentage of HNC than LNC reported having voted, but the difference was not significant. In a test of the major prediction that attitudes are better predictors of behavior for HNC rather than LNC persons separate correlations between a preference index and reported voting behavior were calculated for each group. Analyses of the data for subjects who actually voted indicated that preelection attitudes predicted voting behavior (i.e., the candidate for whom the subject voted) to a greater degree for subjects high (r=.86, n=40) as opposed to low in need for cognition (r=.41, n=41), Z=3.71, $p < .01$.

Resistance to change. A third hypothesis derived from postulate seven pertains to the differential resistance-to-change of opinions formed under central versus peripheral route conditions. Opinions formed through the central route are expected to withstand (or resist) counter-persuasion to a greater degree than opinions formed through the peripheral route (Petty & Cacioppo, 1986). Specifically, the ELM predicts that individuals who form an attitude based on a peripheral cue (e.g., source attractiveness) will be less capable of defending and, therefore, maintaining their opinion than will individuals who form their attitude based on a thoughtful consideration of the merits of an advocated position. Petty et al. (1986; experiment 2) found support for this hypothesis: subjects exposed to conditions that facilitate a high degree of elaboration were more resistant to counter persuasion than were subjects who initially demonstrated a similar amount of attitude change yet had not been exposed to conditions facilitative of cognitive elaboration.

Utilizing the ELM to Understand Counseling

Shortly after the ELM was first posited, its potential for illuminating the social influence process of counseling was recognized (Petty et al., 1984). Several authors (Cacioppo, Petty, & Stoltenberg, 1985; Heesacker, 1986a; 1986b; Heppner & Claiborn, 1989; McNeill & Stoltenberg, 1989; Stoltenberg, 1986) have advocated the use of the model to account for the apparent inconsistencies of previous research based on Strong's (1968) interpersonal influence model of counseling (see reviews by Corrigan et al., 1980; Heppner & Dixon, 1981; Heppner &

Claiborn, 1989). The ELM is likely to account for inconsistencies because it provides a more systematic explanation of the interactions of source, message, and recipient variables than did earlier theories of social influence. The counseling psychology literature pertaining to the ELM may be divided into theoretical treatises and empirical applications.

Theoretical Extensions of the ELM to Counseling

In a theoretical discussion of the relevance of the ELM for counseling Stoltenberg and McNeill (1984b) concluded on the basis of existing data that: (a) it is hazardous for counselors to rely on source cues to cause attitude change in the absence of issue-involvement because any changes would probably be transitory and (b) the quality of of counseling interventions (i.e., change messages) is crucial.

Stoltenberg, Bratt, and McNeill (1985) elucidated the role that affect plays in facilitating or inhibiting cognitive processing. Dysphoric moods usually interfere with recall and processing. However, depressed individuals have been found to process and recall negative feedback and memories more efficiently than do happy individuals (Stoltenberg et al., 1985). Ellis (1983) suggested that depression has two primary effects on memory: (a) it yields a differential allocation of cognitive resources, and (b) it reduces the amount of task-relevant elabortation engaged in by a subject. Stoltenberg et al. (1985) identified depression as one type of affective schemata. They hypothesized that when an affective schema is activated it triggers the subjective experience of the emotion and the activation of cognitive networks with which it is affiliated. Thus, happy moods are expected to facilitate processing of positive information and sad moods to facilitate processing of negative information. Stoltenberg et al. (1985) also hypothesized a curvilinear relationship between the ability or motivation to process data centrally and depression. Specifically, they suggested that clients are unlikely to be motivated to process information if they are not depressed; that motivation would increase as depression increased up to a given level; and that, as depression continues to increase, motivation and ability to process relevant therapeutic information is expected to decline.

Heesacker (1986b) suggested that ELM concepts can be extrapolated to explain counseling processes. "The ELM holds promise in helping to resolve three existing problems in social influence research, namely, inconsistent findings regarding counselor characteristics, little behavior change resulting from client attitude change, and difficulty generalizing from social influence research in the lab to actual counseling" (Heesacker, 1986, p. 50). From an ELM perspective, source cues will fail to elicit attitude change consistently when (a) subjects process information via the central route and thus are not influenced by source traits or (b) subjects process data via the peripheral route but the source does not act as a noticeable attitude cue (Heesacker, 1986b).

Heesacker (1986) favored the first (central route) explanation, and stated that there are at least two ways to understand the inconsistent findings using the central route explanation: inconsistencies may result from either (a) uncontrolled differences in subjects' thoughts toward the topic and toward persuasive arguments regarding the topic or (b) differences in level of subjects' issue involvement.

Heesacker (1986b) suggested that the lack of connection between attitude and behavior in traditional social influence research exists because investigators have not demonstrated that subjects were motivated or able to process information; nor have they shown manipulations of independent variables to produce clearly favorable or clearly unfavorable issue-relevant cognitions. Heesacker (1986b) concluded that it is likely central route processing did not occur and therefore behavior change did not coincide with opinion change in most counseling studies of social influence variables. Heesacker (1986b) also suggested that in order to enhance the generalizability (i.e., external validity) of laboratory investigations, experimental designs must match the route of persuasion (central versus peripheral) which exists in the field. Other conditions needing to be met to improve generalizability include subject: motivation to change, and personal investment in the topic/attitude of study.

Stoltenberg (1986) raised the question of how counselors motivate their clients. He identified a subject's "degree of decisiveness" on a given issue as an important aspect of motivation to examine issue-relevant arguments. A client who has already selected a course of action is less likely to be motivated to examine a topic than is an individual who is struggling to make a decision. Further, it may be assumed that clients are more likely to engage in a high level of cognitive processing when they view the issues in counseling as important or personally relevant. Perceived relevance can be enhanced by pointing out the (negative) consequences of continuing current dysfunctional behaviors compared to the expected (positive) consequences of alternative behaviors (Stoltenberg, 1986). Stoltenberg (1986) described three attempts (Dixon & Claiborn, 1981; Heppner & Dixon, 1978;

Heppner & Heesacker, 1982) to examine the influence of issue-involvement by measuring clients' perceived need for help and motivation for counseling; no differential effects of perceived need for help were discovered.

Stoltenberg (1986) argued that counseling motivation or perceived need for counseling may not be a specific enough measure of issues that are personally relevant to clients in resolving their problems. For instance, some clients may be motivated to attend sessions regularly but not to examine issue-relevant arguments. Instead, Stoltenberg (1986) viewed Dixon and Claiborn's (1981) notion of a client's "commitment to change" as commensurate with personal relevance. Premature termination and a failure of attitude change to result in behavior change were seen as by-products of low motivation to cognitively elaborate therapeutic messages (Stoltenberg, 1986).

Stoltenberg and McNeill (1987) suggested that when counselors present evidence regarding the potential benefits of change, address client values, and confront counter-productive beliefs, then client resistance can be minimized. They also noted that issue-involvement is topic-specific, thus a clients's degree of involvement can shift a great deal during a single session, depending on the extent of topic variation. Finally, they recognized that a client's level of intelligence, psychological mindedness, or both may affect his or her ability to process information in counseling (Stoltenberg & McNeill, 1987).

McNeill and Stoltenberg (1989) compared Strong's (1968; Strong & Matross, 1973) Social Influence Model to the ELM and pointed out advantages of the ELM. Strong (1968) hypothesized that counselor power, which is derived from credibility (a combination of expertness and trustworthiness), is the primary determinant of attitude change. In contrast, the ELM hypothesizes that message quality is the primary determinant of attitude change when clients are motivated and able to process information; peripheral cues, such as counselor expertness, are the primary determinant of attitudes when clients are unmotivated or unable to engage in cognitive elaboration. McNeill and Stoltenberg (1989) suggested that the ELM explains the impact of different depths of cognitive processing on attitude change, while Strong's (1968) interpersonal influence model only explains the effect of peripheral cues. Thus, Strong's model can be subsumed within the ELM.

Empirical Applications

A growing body of empirically based applications of the ELM reveals the utility of differentiating between central and peripheral information processing in order to describe, predict, and experimentally control interpersonal influence variables within counseling. This body of literature consists of analogue studies and lab experiments (e.g., McNeill & Stoltenberg, 1988; Stoltenberg & Davis, 1989; Stoltenberg & McNeill, 1984), pretreatment intervention studies (e.g., Heesacker, 1986a), and investigations using actual clients (e.g., Heppner & Heesacker, 1988).

Analogue and experimental studies. Stoltenberg and McNeill (1984a) examined the effects of issue-involvement and counselor expertise on perceptions of counseling, finding that subjects' level of involvement did have differential effects on perceptions of a counseling interview. Specifically subjects who were highly involved and who were exposed to a counselor of high expertise listed fewer negative thoughts and expressed more agreement with the counselor's statements than did subjects who were highly involved but exposed to a counselor of moderate expertise. Additionally, subjects having low issue-involvement who were exposed to the high expertise counselor expressed less agreement than low issue-involvement subjects exposed to the moderately expert counselor. Finally, high issue-involvement subjects paid more attention to the interview and they agreed more with the high expertise counselor than did low issue-involvement subjects. These results were interpreted as tentatively supporting ELM predictions (Stoltenberg & McNeill, 1984a).

McNeill and Stoltenberg (1988) used a 2 (high vs. low message quality) x 2 (high vs. low counselor credibility) x 2 (high vs. low issue involvement) factorial design to investigate: (a) favorableness of subjects' thoughts in response to an audiotaped counseling interview, (b) subject's agreement with the recommendations made in the session, and (c) their intentions to seek counseling. Statistical analyses indicated that subjects were influenced primarily by high-quality messages. Significant main effects of message quality were discovered in relation to all of the dependent variables. There were no main effects for credibility or issue-involvement. The presence of main effects for message quality suggested that central route processing had occurred.

Significant source credibility x message quality and source credibility x level of issue involvement interactions were also found. The first interaction was characterized by a tendency for subjects to generate a larger number of favorable thoughts in response to a moderately credible source as opposed to a highly credible source, under conditions of high message quality. Also, subjects exposed to the highly credible source and a high quality message listed a larger number of favorable thoughts than did subjects exposed to the moderately or highly credible source under low message-quality conditions. The second interaction was characterized by a tendency for low-involvement subjects who were exposed to the highly credible source to agree more with the way the session was conducted than did high-involvement subjects exposed to the highly credible source or low-involvement subjects exposed to the moderately credible source.

The first interaction effect was interpreted by McNeill and Stoltenberg (1988) to be inconsistent with ELM predictions. This is a potentially erroneous interpretation, however, because the ELM suggests that source credibility is irrelevant when message quality and issue involvement are high, and it is not clear what level of issue involvement was present for the subjects whose data contributed to the interaction. Additionally, this study differed from the typical ELM lab study in that sources of high and moderate credibility were used as opposed to sources of high and low credibility. The ELM does not make specific predictions about the effects of moderate source credibility. The second interaction supported ELM predictions.

Stoltenberg and Davis (1989) studied attitudes toward career and study skills information and found counselors of low credibility to be more persuasive than counselors of high credibility when issue involvement was low and cogent arguments were used. It was believed that more attention was paid to argument quality than source credibility cues. Finally, McNeill and Stoltenberg (1989) cited two investigations (Bratt & Stoltenberg, 1987; Stoltenberg, Leach, & Bratt 1988) which suggested that dysphoric moods increased central route processing relative to euphoric moods when the issue was mood-congruent (i.e., counter-attitudinal for a negative mood).

Pretreatment intervention studies. Heesacker (1986a) attempted to influence subjects to adopt more favorable attitudes toward counseling in a pre-counseling intervention. Undergraduates (N=254) categorized as relatively high or low in ego-involvement in regard to either social skills or career concerns participated in a pretreatment intervention comprised of strong or weak arguments and presented by a counselor of high or low credibility who promoted participation in either a social skill or career decision making group. Analyses indicated that favorable attitudes towards counseling increased as ego involvement increased and when intervention quality was high. Another result was a two-way interaction of intervention quality and counselor credibility. Subjects exposed to messages from a counselor low in credibility distinguished between weak and strong argument better than did subjects exposed to a counselor high in credibility (regardless of level of ego-involvement). Heesacker (1986a) claimed that these results can be more parsimoniously explained by the ELM than by other theories of social influence because the ELM predicts interaction effects for credibility and intervention quality while other theories, for example, Strong's (dissonance) theory, predict only main effects.

In a similar study, Neimeyer, Guy, and Metzler (1989) examined ELM variables in a pre-treatment study of attitudes toward a cognitive restructuring technique aimed at the treatment of disordered eating. Subjects consisted of 107 undergraduate students who took part in a 2 (involvement: excess restraint of eating vs. low restraint of eating) x 2 (intervention quality: strong vs. weak) x 2 (source credibility: high vs. low) between-subjects factorial design. Analyses of the number of positive and negative thoughts listed in response to the intervention revealed significant main effects for intervention quality. Subjects exposed to the high quality intervention listed a significantly larger number of positive thoughts than did subjects exposed to the low quality intervention. Also, subjects exposed to the low quality intervention listed a significantly larger number of negative thoughts than did subjects exposed to the high quality intervention. Analysis of subjects' attitudes toward the cognitive restructuring technique indicated only a main effect for intervention quality. As predicted the high quality intervention was judged to be more effective.

In an attempt to determine the impact of the manipulations on behavior, a subset of subjects was instructed to list food-relevant thoughts over a one-week period and to engage in rational restructuring of the thoughts when appropriate. Two dependent measures were used: the percentage of appropriate applications and the range of days on which the technique was applied. Analysis of the percentage of appropriate applications revealed a significant main effect for intervention quality and an interaction between level of involvement and source credibility. As expected, the high quality intervention was associated with a higher percentage of relevant applications and source credibility affected the percentage of appropriate applications only when issue involvement was low. This same pattern was found in analysis of the range of days across which the technique was applied.

Actual-counseling studies. Heesacker, Heppner, and Shaw (1988) studied the relationship between client motivation for counseling, client expectations about counselor acceptance, expertness, attractiveness, and trustworthiness, and premature termination from counseling. No main effects for motivation or expectations on termination were found. However, a significant interaction effect occurred, revealing lower expectations to be related to premature termination in _brief_ psychotherapy while higher expectations were related to premature termination in _longer_ psychotherapy. A similar, though statistically insignificant, trend regarding motivation was also found (Heesacker et al., 1988).

A relevant study was conducted by Grimes and Murdock (1989) who, although not relying on ELM concepts, investigated the relationship of social influence variables to change in distress level (measured with the Brief Symptom Inventory; Derogatis & Spencer, 1982) and premature termination from counseling. Specifically, these authors utilized Strong's (1968) model and assessed the relationship of client perceptions of expertness, attractiveness, and trustworthiness (with the CRF-Short Form) to client symptom reduction and premature termination. Twenty-nine of 51 subjects completed at least four sessions of counseling; the 22 subjects who attended four or fewer sessions subjects were classified as premature terminators. Multiple regression analysis revealed that all three social influence variables were significantly related to symptom reduction, as measured by the Global Severity Index of the BSI. Termination status was also negatively correlated with judgments of counselor expertness, trustworthiness, and a composite counselor rating score.

Pierce and Stoltenberg (1990) examined the effects of an ELM-based intervention on attrition rates in behavior education (BE) classes conducted within a weight loss program. A motivation enhancement program (MEP) was compared to 3 control conditions: a standard BE class aimed at changing negative eating habits, a time-attention placebo group, and a group of clients who had declined to participate in the MEP. The MEP was designed to instill positive attitudes and behavioral intentions toward regular attendance of the BE class. The dependent measure was the number of BE classes attended over a 12 week period. Results revealed that MEP clients attended classes on significantly more consecutive weeks than did clients in the control conditions.

On balance the accumulated social and counseling psychology data warrant continued use of the ELM to investigate counseling processes and outcomes. The theory is a major step beyond more simplistic conceptualizations of attitude change, and may assist practitioners and scientists to clarify the means by which counseling changes attitudes and behaviors. Social psychological variables (source, message, recipient) are paralleled by counseling variables of therapist, intervention, and client. As in social psychology laboratory studies, message quality appears to interact with personal relevance (i.e., motivation) in determining recipient/client attitudes. Unfortunately, the variable of recipient ability to cognitively elaborate therapeutic statements has not been investigated. This is a major short coming in the counseling-psychological applications of the model because ability is equal in importance to motivation withinin the ELM.

Attitude Change and Addictions Treatment

The investigation of substance abuse or chemical dependency has not been approached from a social influence perspective. An extensive computer-based literature search revealed no investigations that examined social influence variables in the context of addictions treatment. Only one article was located that linked the two topics. Lacrosse (1980) utilized a group of thirty-six subjects undergoing outpatient treatment of drug addiction in a validation study of the Counselor Rating Form (CRF; a measure of client perceptions of counselor expertness, attractiveness, and trust-worthiness). The CRF variables, particularly expertness, were found to have predictive utility relative to therapeutic outcomes. No specific mention was made about the nature of the sample in the results or discussion section of this article. Although little overlap exists between addiction and attitude-change literature, discussion of addictions treatment is relevant because of the population under study in this investigation. Moreover, the extension of the ELM to the explication of chemical dependency treatment is relevant because the treatment of addictions entails a great deal of persuasion and also relies heavily on cognitive interventions. A brief discussion of different theories of addictions treatment follows, and the chapter will conclude with a discussion of client motivation within the context of chemical dependency treatment.

Models of addiction. Miller and Hester (1989) identified eleven conceptual models of addictions treatment: Moral, Temperance, American Disease, Education, Characterological, Classical/Operant Conditioning, Biological, Social Learning, General Systems, Sociocultural, and Public Health. They then proposed a twelfth approach in which they encouraged the use of an "informed eclecticism." Miller and Hester's (1989) Informed Eclecticism emphasizes the importance of health factors and three additional concepts: (a) no single approach is superior to all others in treating all individuals, (b) different people respond better to different forms of treatment, and (c) treatment effectiveness and efficiency can be maximized by matching individuals with their optimal treatment.

The American Disease Model is more restrictive: it attributes the cause of addiction to physical, psychological, and spiritual conditions within the addict that make him or her incapable of drinking or using drugs in moderation. This model has been embraced by Alcoholic Anonymous and is the most widely utilized model of inpatient and outpatient chemical dependency treatment. It is also the model used at each of the data collection sites in this study.

Motivation to overcome addiction. Though a wide range of differences exist among and within various professions involved in treating addiction, all agree that motivation of the client is crucial (Miller, 1989). Miller (1989) encouraged a shift in our definition of motivation away from something the client has (i.e., motivation as a trait) to something the client does. "It [motivation] involves recognizing a problem, searching for a way to change, and complying with that change strategy" (Miller, 1989, p. 69).

Miller (1989) has identified several strategies which can be used to enhance the motivation of individuals who need chemical dependency treatment. One method is to advise clients of the need to change and to provide specific and sound recommendations. A second method entails removal of practical barriers such as excess cost, inadequate child care, and inaccessibility of treatment facilities. A third approach involves providing clients with alternatives and choices. Individuals are more likely to comply with an intervention they have helped create. Choice has been found to reduce dropout rates and resistance (Miller, 1989).

A fourth commonly used method is decreasing the attractiveness of a behavior. This entails helping a client to become more aware of the negative consequences of their continued substance abuse. Methods used in the ELM, e.g., presenting the possibility of an unwanted consequence like a requirement to take comprehensive exams, are similar. A fifth method used to enhance motivation to participate in treatment is external contingencies. This refers to the use of pressure, for example, when an individual will lose his/her employment if he/she does not participate in treatment. A sixth means to increase motivation is the provision of individualized feedback. Most people respond well to specific feedback regarding the way their drug use harms themselves and others. Assisting clients to set clear, measurable, and realistic goals is a seventh method which increases motivation. An eighth medium is labeled the "helping attitude." Miller (1989) describes it as combination of the core therapeutic conditions of empathy, genuineness, and unconditional positive regard, and of therapist optimism.

Miller (1983, 1989) weaves these methods into a confrontational process named "motivational interviewing." The interview is intended to increase a client's insight into and responsibility for his or her addiction and to instill a commitment to change. "The underlying strategy ... is to create a dissonance or discrepancy between the person's current behavior and important personal goals" (Miller, 1989, p. 74). In ELM terminology the interview can thus be used to help clients engage in cognitive elaboration of addiction-relevant information.

Research Questions, Hypotheses, and Statistical Analyses

The primary question investigated in this study was whether recipient (e.g., client), message (e.g., substance abuse treatment), and source (e.g., therapists) variables which have been hypothesized by the ELM to be relevant to interpersonal influence processes in counseling can be used to predict inpatient chemical dependency treatment outcomes. The four treatment outcomes studied included: post-treatment attitudes toward drug using and recovery-oriented behaviors, recovery-oriented behavioral intentions, symptom severity, and termination status (i.e., successful vs. premature termination). It was hypothesized that these outcomes could be predicted from a combination of ELM variables. Specifically, on the basis of ELM postulate four, it was hypothesized that (a) measures of client motivation and ability to examine therapeutic messages should be predictive of each of the above treatment outcomes. Based on investigations of the need-for-cognition construct (e.g., Cacioppo, et al., 1983), it was also hypothesized that (b) a measure of need-for-cognition should predict treatment outcomes. On the basis of Petty and Cacioppo's (1981, 1986) assertion that the nature of recipient elaboration (i.e., favorable or unfavorable evaluations of persuasive arguments) determines the amount and direction of attitude change, it was hypothesized that (c) measures of client evaluations of therapeutic messages should predict treatment outcomes. Finally, based on the identification of counselor characteristics (McNeill & Stoltenberg, 1989; Petty & Cacioppo, 1986) as peripheral cues, it was hypothesized that (d) a measure of client perceptions of counselor expertness, attractiveness, and trustworthiness should also predict treatment outcomes. Bivariate correlations and multiple regressions were used to explore the simple and multivariate relations of the theoretical predictors to each of the outcome variables.

In addition to these hypotheses, which assume that social influence variables may individually and collectively predict various treatment outcomes, it is possible that interaction effects could exist. For example, because the ELM posits that both motivation and ability are necessary for cognitive elaboration, it is likely that the effects of clients' motivation to examine therapy-relevant information will depend on the level of their ability to comprehend therapeutic messages. It is also possible that motivation and ability will interact with perceptions of counselor characteristics. That is, in keeping with ELM theory, counselor characteristics (peripheral cues) may be unassociated with outcomes when motivation and ability are high, but positively associated with outcomes when motivation and ability are low. These and other interaction effects were explored within the statistical analyses.

Chapter Summary

This chapter began with a description of the ELM and the seven postulates on which it is based. This was followed by a review of research on the theory, with particular emphasis on those studies examining variables to be included in the present study. Theoretical extensions and empirical applications of the ELM to counseling were also presented. Various models of addiction treatment were then identified and the importance of client motivation for addictions treatment was discussed. Finally, the research questions of this investigation were enumerated.

CHAPTER 3: METHODOLOGY

Subjects

Participants in this study were 100 adult inpatients on the chemical dependency units of two psychiatric hospitals. Seven referral sources were identified: self (*n*=13), family member (*n*=37), friend (*n*=17), outpatient therapist (*n*=15), doctor (*n*=2), and court order (*n*=16). They ranged in age from 18 to 61; mean=32.40, *SD*=10.00. All participants were volunteers. There were 57 males and 43 females. The average number of years of schooling was 11.83 (*SD*=2.04). Subjects indicated an average of 5.71 (*SD*=7.43) biological relatives who also had substance abuse problems. Most subjects were unemployed (*n*=64); thirty-four subjects indicated that they were currently employed and two subjects did not report their employment status. Specific data on the socioeconomic status of subjects was not gathered. However, it is likely that most subjects in this study were from low to lower-middle class backgrounds given the large number of unemployed subjects in the sample. Also, most subjects reported that they worked or had previously worked in unskilled or semiskilled occupations e.g., dishwasher, janitor, hair-stylist, assembly line worker. The marital status of subjects included: never married (*n*=42), married (*n*=31), separated (*n*=12), divorced (*n*=13), and unreported (*n*=2). The number of prior outpatient chemical dependency treatments which subjects had undergone ranged from 0 to 6; fifty-three reported having never had outpatient treatment, 31 reported having gone through outpatient treatment once, and 13 subjects indicated they had gone trough outpatient treatment 2 or more times. The number of previous inpatient chemical dependency treatments ranged from 0 to 8; fifty-five subjects had never previously received inpatient care, 24 subjects had gone trough inpatient treatment once before, and 18 subjects reported 2 or more inpatient treatments (3 subjects did not indicate whether they had had inpatient care).

The two sites from which data were collected were both inpatient chemical dependency units housed within the mental health departments of private hospitals. One site was located in a moderately sized urban community in the Midwest (*n*=52); the other site was in a small urban community in the Northeast (*n*=48). The primary treatment orientation of both was based on the American Disease Model; each provided individual, group, family, and activity therapy, and also used education sessions and A. A. meetings. Both treatment sites were unwilling to share specific diagnostic information about the subjects, however, each site reported that they treated the following types of chemical dependencies (listed in descending order of frequency): alcohol, polysubstance - usually alcohol and cannabis, cannabis, cocaine, and other. Racial minorities comprised less than ten percent of the individuals receiving treatment at the Midwest site and zero percent of the Northeastern site. See Tables 3-1 and 3-2 for further clarification of the demographic data.

Subjects completing treatment. Sixty-seven subjects completed treatment (males: *n*=37, females: *n*=30); they ranged in age from 18 to 56, mean=32.51, *SD*=9.86.

Premature terminators. Thirty-three subjects terminated treatment prematurely against medical advice (males: *n*=22, females: *n*=11); they ranged in age from 19 to 61, mean=32.27, *SD*=10.63.

Table 3-1 Means and Standard Deviations of Demographic Data

	Successful Completers (N=67)		Premature Terminators (N=33)		Total Sample (N=100)	
Variable	M	SD	M	SD	M	SD
Age	32.51	9.86	32.41	10.63	32.40	10.00
Years of School	11.94	2.09	11.58	1.95	11.83	2.04
# Prior OP Hosp's*	.88	1.48	.65	1.23	.81	1.40
# Prior IP Hosp's*	.94	1.65	.90	1.54	.93	1.60
# Bio-Relatives*	6.32	8.70	4.37	3.22	5.71	7.43
# NonBio-Relatives*	.23	.52	.13	.35	.21	.48

*These variables represent the number of: previous outpatient (OP) treatments for addiction, previous inpatient (IP) hospitalizations for addiction, and biological and non-biological relatives identified by the subject as having a substance abuse problem.

Measures of the Independent Variables

Demographic Data Sheet (DDS). The DDS is a 9-item survey used to obtain information about subjects' age, gender, marital status, employment status, number of previous inpatient and outpatient treatments for substance abuse, and number of relatives with substance abuse problems (see Appendix A). No explicit relationship between these variables and attitude change is postulated by the ELM; however, they were included in order to examine, and control for, their possible relation to the treatment outcomes.

The Counselor Rating Form-Short(CRF-S). Corrigan and Schmidt (1983) developed a 12-item abbreviated version of the CRF (Barak & LaCrosse, 1975) and demonstrated that the reliability of the scale was comparable to that of the longer version (see Appendix B). The CRF is a

Table 3-2 Frequencies of Nominal Level Demographic Data

Variable	Successful Completers (N=67) Frequency	Premature Terminators (N=33) Frequency	Total Sample (N=100) Frequency
Gender			
Male	37	22	59
Female	30	11	41
Total	67	33	100
Marital Status			
Never Married	31	11	42
Married	19	12	31
Separated	10	2	12
Divorced	7	6	13
Total	67	31*	98*
Employment Status			
Part-Time	3	2	5
Full-Time	22	7	29
Unemployed	42	22	64
Total	67	31*	98*
Level of Education			
Junior High	14	9	23
G.E.D.	11	5	16
High School	21	10	31
Some College	14	4	18
Associates Degree	2	2	4
Bachelors Degree	5	1	6
Total	67	31*	98*
Admission Status			
Voluntary	57	27	84
Court Ordered	10	6	16
Total	67	33	100

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*This figure is not equivalent to the sample size n because of missing data.

36-item scale which was found through principal components factor analysis to have three primary factors tapping client perceptions of counselor expertness, attractiveness, and trustworthiness (Barak & LaCrosse, 1975). Items which had consistently shown high factor loadings across most analyses were selected for the CRF-S. Inter-item reliabilities of the 4-item expertness, attractiveness, and trustworthiness scales in the CRF-S were .85, .91, and .91, respectively, using a sample of community mental health center clients (Corrigan & Schmidt, 1983). Validation of the CRF-S factor structure using confirmatory factor analysis indicated that a 3-factor oblique model could best account for the results, thereby replicating and extending Barak's and LaCrosse's work. The CRF-S served to operationalize source characteristics in this study. In this sample the Cronbach's alpha coefficients were .90 for the whole survey, .79 for the expertness scale, .82 for the attractiveness scale, and .77 for the trustworthiness scale. Each scale was composed of four 5-point Likert scale items. Expertness, attractiveness, and trustworthiness scores were derived from the calculation of the average of the four items in the scale. Scores could potentially range from 1 to 5; higher scores indicate subject perceptions of a higher degree of counselor expertness, attractiveness, and trustworthiness.

Treatment Evaluation Questionnaire (TEQ). This 24-item scale was designed by the principal investigator to reflect subjects' perceptions of different qualities of therapeutic messages to which they had been exposed during treatment (see Appendix C). Subjects used a 5-point Likert scale to evaluate six modalities of treatment: (a) individual therapy, (b) family therapy, (c) group therapy, (d) activity therapy,

(e) education sessions, and (f) A.A./N.A. meetings. The subjects were asked to indicate their perceptions of how _frequently_ they where exposed to arguments intended to change their opinions about drug use, how _applicable_ suggestions made to them in each modality were to their drug problem, how _confident_ they were that the suggestions made to them in each modality would help them stay sober, and the degree to which they were _able to understand_ the jargon and suggestions to which they were exposed in treatment.

Items were combined over treatment modalities to form four scales. Each scale contained six items and scores were determined by calculating the average ratings. Scores could range from 1 to 5 with higher scores reflecting perceptions of a higher degree of the variable of interest. The first scale is a measure of the perceived frequency (TEQ-PF) of message exposure (Cronbach's alpha coefficient = .83); it was intended to approximate the variable of message repetition used in ELM laboratory studies. The second is a measure of the perceived applicability (TEQ-PA) of therapeutic suggestions to the subjects' addiction (Cronbach's alpha coefficient = .77). The third scale is a measure of the perceived confidence (TEQ-PC) that therapeutic suggestions will assist the subject in maintaining sobriety (Cronbach's alpha coefficient = .77). The fourth was used as an approximation of subjects' ability to comprehend (TEQ-MC) and therefore engage in cognitive elaboration of therapeutic messages. A Cronbach's alpha coefficient of .84 was obtained for this scale. Each of the scales is a face valid measure and no other validity data is available for any of the four scales.

Marlowe-Crowne Social Desirability Scale, Short Form. This scale, called the Personal Reaction Inventory (PRI), was developed by Reynolds (1982) who selected 13 items from the original (33-item) Marlowe-Crowne Social Desirability Scale (see Appendix D). Subject's respond true or false to items such as, "I sometimes feel resentful when I don't get my way". The social desirability score equaled the number of items endorsed in a direction reflecting a socially desirable response. Validity was established by correlating the PRI to the standard Marlowe-Crowne scale, and to the Edwards Social Desirability Scale. These coefficients were .93 and .41, respectively. Reynolds (1982) found an internal consistency of .76 using the Kuder-Richardson formula-20 reliability coefficient. This instrument was used to estimate the extent to which subjects' responses to the various self-report measures in this study may have been affected by the tendency to respond in a socially desirable manner. The Cronbach's alpha coefficient of this scale for this study was .75.

Need for Treatment Survey (NTS). This 21-item scale was constructed by the primary investigator to tap aspects of subjects' issue-involvement, i.e., motivation to listen to and engage in cognitive examination of the messages, suggestions, and recommendations presented in treatment (see Appendix E). It is intended to tap motivation for treatment in a general manner and to measure motivation to examine particular topics in treatment (e.g., spiritual well-being, emotional and physical health, and intimate relationships) that are relevant to recovery from addiction. It does not specifically measure subjects' motivation regarding such issues as participating in A.A. or abstaining from drugs.

The first two items asked subjects to indicate who, among several possible significant individuals, had suggested or demanded that they receive treatment, and to judge the extent to which their decision to seek treatment was based on this social pressure. Preliminary item analysis revealed that the vast majority of subjects responded identically to the second portion of both items (i.e., virtually all subjects indicated that they strongly disagreed that they had based their decision to seek treatment on the suggestions or demands of others). Thus, there was essentially no variance for either item and these items were dropped from further analyses. The remaining 19 items required subjects to rate their extent of agreement or disagreement with statements about their commitment to treatment, their expectations of positive consequences that would result from treatment, and their expectations of negative consequences should they not participate in treatment. All items used a 5-point Likert scale. Eighteen items were constructed so that a stronger degree of agreement reflected higher motivation. For one item, item 14, disagreement reflected higher motivation. These 19 items produced a Cronbach's alpha coefficient of .90.

Items were designed to reflect face validity. Most items were worded in a manner which asked subjects judge their level of agreement with statements pertaining to their perception of the likelihood of avoiding negative consequences and attaining positive consequences as a result of listening to and seriously considering treatment recommendations. This wording specifically addresses the issue of subject motivation to cognitively examine treatment messages. No other validity data is available.

The NTS is conceptualized as a measure of state motivation. This method of determining subject motivation differs from the typical method used in laboratory investigation of ELM variables. In most ELM studies, motivation is a variable which is experimentally manipulated, i.e., subjects are exposed to conditions which either increase or decrease their issue-involvement. Because of the non-experimental nature of this study and the fact that it would be unethical to attempt to decrease patients' treatment motivation, it was necessary to assess levels of motivation among a sample in which all members were expected to be relatively high in motivation. It was expected that higher motivation within this restricted range would be more predictive of treatment success.

Need for Cognition Scale (NCS). This scale was originally developed and validated as a 34-item instrument in a series of four studies (Cacioppo & Petty, 1982; see Appendix F). The scale was designed to measure the psychological need of an individual to engage in and enjoy thinking. It taps subjects' perceptions of their motivation to use their mental capacities to examine different aspects of problems and then to base solutions on these efforts. Cacioppo, Petty, and Kao (1984) reduced the NCS from a 34-item scale to an 18-item scale and concluded that the reliability was not sacrificed because the maximized Cronbach's alpha coefficient was .90 for the 18-item scale and .91 for the longer version. A principal components factor analysis yielded one dominant factor, thereby supporting the validity of the 18-item Need for Cognition Scale. The short version of the NCS was used in this study as a measure of trait motivation. A Cronbach's alpha coefficient calculated on this sample was .86. Responses to the eighteen 5-point

Likert scale items were averaged to yield the Need-for-cognition score. Higher scores reflect higher motivation.

Thoughts and Feelings List (TFL). This instrument (see Appendix G), designed as a modified version of Cacioppo and Petty's (1981) thought-listing technique, was intended as an additional index of whether subjects had been able to comprehend therapeutic messages and whether they had changed their attitudes toward drug use and recovery-oriented behaviors. When subjects in this study completed treatment they were asked to list all of the thoughts and feelings they had had about their chemical dependence and how they might best maintain their recovery. (It was planned that the TFL would later be shown to patients' primary therapists, who would rate the nature of the thoughts listed; see Appendix H - Therapist's Evaluation Form.)

The method used here differs from Cacioppo and Petty's (1981) technique in that the present method does not request subjects to list thoughts immediately after being exposed to persuasive arguments in a single session, but rather is administered at the end of treatment. The technique used in this study was similar to Greenwald's (1968) procedure in which subjects are asked to list general thoughts on a topic. This adaptation was used because it would have been extremely cumbersome for subjects to list their thoughts after every therapy session or every time they were exposed to a persuasive communication during treatment. It lacks the experimental control of the lab, yet is more realistic in regard to tasks an actual patient would be asked to complete. A second difference is that subjects in this study were asked to list feelings in addition to thoughts. Subjects were asked to list feelings, because in therapy emphasis is often placed on feelings more than on thoughts, and asking for feelings was a way to further reveal the subject's treatment-relevant cognitions (i.e., statements about feelings were defined as a subclass of subjects' thoughts). A third difference was that the thought lists in this investigation were intended to be ancillary measures used in conjunction with the Therapist's Evaluation Form. In the thought listing technique described by Cacioppo and Petty (1981), the number of favorable and unfavorable thoughts generated are used as dependent variables (e.g., Petty & Cacioppo, 1979, 1984).

In order to minimize the possibility that subjects would alter their responses to impress their therapists, subjects were not informed that their therapist would evaluate their TFL until after they had completed the form. The use of deception was avoided by informing subjects that the experimenter wished to have their therapist review only their TFL (no other surveys would be seen by their therapist or other hospital staff members), and then requesting them to sign a form (see Appendix M) granting permission for their therapist to review the TFL.

Therapist's Evaluation Form (TEF). This 8-item scale was developed by the principal investigator to provide concurrent evidence of the subjects' motivation and ability to engage in a thoughtful consideration of treatment-relevant issues (see Appendix H). The primary therapist for each subject was asked to evaluate the subject on dimensions related to his or her motivation, ability, and attitude change. The first item allows the therapist to identify the type and number of treatment modalities (individual, group, family, activity, educational, A. A. meetings) in which the subject participated. Items two and three ask the therapist to indicate his or her level of agreement with statements regarding the subject's motivation to engage in cognitive elaboration of treatment issues. Items four and five ask therapists to rate their level of agreement with statements regarding the subject's ability to engage in cognitive elaboration of therapeutic messages. Items six, seven, and eight were designed to be used in conjunction with the subject's completed "Thoughts and Feelings List". Specifically, the therapist was asked to examine the TFL of each subject who granted permission for his or her TFL to be reviewed, judging whether the thoughts listed demonstrated: (a) that the subject comprehended therapeutic messages, (b) change in attitudes toward drug use, and (c) change in attitudes toward behaviors needed to recover from addiction.

Unfortunately, useful data were not obtained with either the TEF or the TLF. Only 28 TEFs were completed, all 28 were completed by therapists at the Midwest site, and these measures were collected only on the first 28 subjects at that site. This occurred because the therapists who had initially agreed to provide assistance stopped completing the forms. The reason given for their discontinuation was that they felt overworked and did not have time to complete superfluous paperwork. Therapists at the Northeastern site had initially agreed to complete the forms, but no completed TEF's from this site were returned to the experimenter. Additionally, only 12 subjects (9 at the Midwestern site and 3 at the Northeastern site) gave permission for their therapist to review their TLF.

Measures of Dependent Variables

Judgements of Drug Use and Recovery-Oriented Behavior. This 10-item scale was developed by the principal investigator to assess subjects' attitudes regarding various drug using and recovery promoting behaviors (see Appendix I). It is based on a method of measuring attitudes toward behaviors from the theory of reasoned action (Ajzen & Fisbein, 1980). Specifically, attitudes towards a given activity were assessed by asking respondents to rate their position (with a 9-point Likert scale) on four continua regarding the extent to which the activity is: harmful or beneficial, bad or good, unpleasant or pleasant, and punishing or rewarding. This measure was administered to each subject at the outset of treatment and again when they completed treatment. Cronbach's alpha coefficients of .97 occurred at both assessment intervals. A general recovery-oriented attitude score was created by determining the average value of each subject's ratings across all 10-items. Scores could have ranged from 1 to 9 with higher scores reflecting a greater degree of pro-recovery oriented attitudes.

Items were designed as face valid measures of attitudes toward various recovery oriented behaviors, for example, remaining abstinent. The survey was not statistically validated.

Statement of Behavioral Expectations (SBE): This 7-item face valid measure was constructed by the primary investigator to assess subjects' intentions to follow treatment recommendations to remain abstinent, join a 12-Step recovery peer support group (e.g., A.A.,N.A.,C.A.), and seek outpatient aftercare therapy (see Appendix J). Subjects were asked to predict the likelihood that they would actually follow through on their stated intentions using a 5-point Likert scale. Scores were created by calculating the average of each subject's responses to the seven items. A higher score reflected a higher degree of pro-recovery oriented intentions. A Cronbach's alpha coefficient of .84 was found for this measure in this sample. All items were face valid and no other form of validity data is available.

Brief Symptom Inventory (BSI). This is a 53-item inventory developed by Derogatis and Spencer (1982) which yields scores on 9 symptom dimensions (somatization, obsessive-compulsiveness, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) and three global indices of distress (global severity index, positive symptom distress index, and positive symptom total). A five-point Likert scale is used to assess level of distress for each symptom.

Internal consistency coefficients were computed using Cronbach's coefficient alpha on a sample of 719 psychiatric outpatients. The alpha coefficients for the 9 symptom dimensions ranged from a high of .85 on Depression to a low of .71 on Psychoticism. Test-retest coefficients across a two-week interval ranged from .91 on Phobic Anxiety to .68 on Somatization. Test-retest coefficients for the global severity index, positive symptom distress index, and positive symptom total were respectively .90, .87, and .80. The authors of the BSI found substantial convergent validity between the BSI and the MMPI. To assess internal structure and construct validity, a principal components factor analysis was conducted and a normal varimax rotation of the principal components indicated that there were 9 interpretable factors.

The Global Severity Index (GSI), which reflects a combination of the positive symptom distress index and the positive symptom total, was used as the measure of symptomatology in this study. The GSI is calculated by dividing the sum of all responses by 53 (the total number of items on the inventory) and is then converted into a standardized T-score using published norms (Derogatis & Spencer, 1982).

Completion of Treatment Form. This form (Appendix K) was used to identify whether patients prematurely terminated or successfully completed treatment. It was completed by either the principal investigator or a research assistant.

Procedures

On the first or second day following admission to the inpatient chemical dependency units, patients were approached and informed that the unit was providing assistance to a student who was investigating changes that people experience during inpatient treatment for addiction. Potential subjects were informed that their participation would involve responding to six brief surveys at the outset of treatment and six brief surveys on their second to last or last day of treatment. They were also informed that the total time commitment required for the study was no more than an hour at the beginning and approximately one-half hour at the end of treatment. All potential subjects were informed that their participation would be completely voluntary and that their consent to participate in the study could be withdrawn at any time. They were also told that their involvement or lack of involvement in the study would not affect their current or future services in the unit and that no staff member other than those persons directly involved in collecting the data would have access to their surveys. They were also told that their confidentiality would be protected because their names would not be attached to their surveys and any reports based on the study would identify only group trends, not the data of any specific individual.

Two part-time staff members acted as research assistants at the Midwestern site (one was a psychology technician and the other was an activity therapist); both were made familiar with the above procedure for recruiting subjects and with the instruments. Both of these assistants were paid five dollars for each subject to whom they administered surveys. Subjects were not remunerated for their participation. At the Northeastern site, data were gathered either by the primary investigator or by a nurse who had been trained in the recruitment procedure and familiarized with the measures.

Those who agreed to participate were required to read and sign a consent form (Appendix L) which described the study and informed them of their rights and duties as subjects. After signing the consent form subjects were given the Demographic Data Sheet, Personal Reaction Inventory, Brief Symptom Inventory, Judgements of Drug Using and Recovery-Oriented Behaviors, Need for Treatment Survey, and the Need for Cognition Scale (see Table 3-3). The instruments were self-administered; however, the primary investigator or a research assistant remained in the subject's presence while he or she completed the surveys, in order to clarify instructions, if necessary. Most subjects were administered the instruments in small groups; some subjects were individually administered the surveys. Group versus individual administration depended upon the number of subjects who had been admitted or discharged from the program on the days that on or very near the days that data was collected. Most subject completed the pre-treatment surveys in 30 to 45 minutes.

All subjects then underwent the standard treatment provided by the Chemical Dependency Unit to which they were admitted. The typical length of stay at each unit was from 12 to 14 days. On their last or second to last day of treatment subjects completed the Brief Symptom Inventory, Judgements of Drug Using and Recovery-Oriented Behaviors, Statement of Behavioral Expectations, Counselor Rating Form-Short,

Table 3-3 Pre and Post Treatment Surveys

Pretreatment Surveys	Construct Measured
1. Demographic Data Sheet	Demographic Information
2. Personal Reaction Inventory	Social Desirability
3. Brief Symptom Inventory	Distress (Symptom Severity)
4. Judgements of Drug Using and Recovery-Oriented Behaviors	Attitudes
5. Need for Treatment Survey	State Motivation
6. Need for Cognition Scale	Trait Motivation

Post-Treatment Surveys	Construct Measured
1. Brief Symptom Inventory	Distress (Symptom Severity)
2. Judgements of Drug Using and Recovery-Oriented Behaviors	Attitudes
3. Statement of Behavioral Expectations	Behavioral Intentions
4. Counselor Rating Form-Short Version	Expertness, Attractiveness, & Trustworthiness
5. Treatment Evaluation Questionnaire	
TEQ-Message Comprehension	Ability to Understand Messages
TEQ-Message Frequency	Perceived Message Frequency
TEQ-Applicability	Perceived Applicability of Tx
TEQ-Confidence	Perceived Confidence in Tx
6. Thoughts and Feelings List & Therapist's Evaluation Form	Therapist Ratings of Subject Ability to Understand Messages

Treatment Evaluation Questionnaire, and the Thoughts and Feelings List. Most subjects took from 20 to 30 minutes to complete the post treatment surveys.

An attempt was made to administer post-treatment instruments to subjects who left treatment against medical advice before they had actually signed out and left the treatment unit. However, only one of the premature terminators completed the post-treatment surveys. Data were collected continuously for a period of twelve months until a sufficient sample size (*N*=100) was obtained.

At the Midwestern site, approximately twenty patients declined to participate; all indicated that they were not interested because study participation was not required as part of their treatment. At the Northeastern, site twelve patients declined to participate. One of these individuals said he was unable to read; the remaining eleven stated they were not interested in doing anything that was not a required part of treatment. Four subjects at the Midwestern site withdrew from the study without providing a reason for their withdrawal; two dropped out stating the surveys were too difficult to complete. At the Northeastern site two subjects who had initially agreed to participate withdrew after finding the surveys too hard to understand. They both indicated they were illiterate and had been embarrassed to admit this at first. One subject dropped out stating that the surveys involved too much work.

Data Analysis

The internal consistency of each instrument was first explored by calculating coefficient alpha reliabilities. Data from the two collection sites were compared using Chi-square analyses and multivariate analysis of variance. A correlation matrix was also computed, assessing relations among the individual theoretical predictors and treatment outcomes.

After these preliminary analyses, the theoretical variables derived from the ELM were entered into multiple regression equations predicting post-treatment recovery-oriented attitudes, behavioral intentions, and symptom severity outcomes. Theoretical variables were grouped into sets according to the theoretical construct which they measured. Specifically, state and trait motivation comprised one set (motivation), message comprehension a second (ability), treatment applicability and confidence in treatment a third (message evaluation), perceived message frequency a fourth (frequency), and counselor expertness, attractiveness, and trustworthiness a fifth set (counselor ratings). The rationale for grouping independent variables was to conserve statistical power by maintaining an acceptable ratio of subjects to independent variables. Interaction effects were also examined using multiple regression analyses. In multiple regression two variables are said to interact in accounting for variance in a third variable when they have a joint effect over and above the combination of their separate main effects (Cohen & Cohen, 1983). Therefore, it is necessary to enter main effects prior to interaction effects in order to have the additive combination of main effects partitioned out so that the joint effect can be identified.

Because of limitations in the SAS program it was necessary to conduct the regressions in a two-stage process. In the first stage the groups were entered into a stepwise analysis to determine main effects. (Stepwise selection involving forward entry followed by backward entry was used in all regressions). In the second stage the main effects identified in the first equation were hierarchically entered in a second equation followed by interaction effects entered in a step-wise manner. This was done to ensure that main effects would be entered prior to interaction effects. The SAS program is incapable of entering variable sets in a stepwise manner while simultaneously entering interactions after the sets. The interactions were entered into the regression equations in a step-wise fashion.

The proposal for this research project had stipulated that multiple regression analyses would be used to predict changes in attitude and distress (i.e., symptom severity) because the ELM is a model of attitude change. However, because of difficulties in the interpretation of pre- post change scores, an alternate data analysis strategy was used: pretreatment attitude and distress were controlled by entering each as the first variable in the regressions predicting, respectively, post-treatment attitude and distress.

Finally, data pertaining to the prediction of termination status were analyzed using canonical discriminant function analysis. This analysis was conducted to explore potential differences between successful completers and premature terminators. Only pretreatment data were used in the discriminant function analysis because premature terminators did not complete post-treatment measures.

Supplemental analyses not directly related to the purposes of this study were also carried out. One form of analysis consisted of comparing the significance of the differences between the correlations of central route variables (e.g., confidence in treatment) and peripheral route variables (e.g., perceptions of counselor expertise). A $\underline{t}$-score formula described by Steiger (1980) for comparing the significance of difference between correlations from the sample was used. The method involves comparing the difference between the respective correlations of two independent variables with a third dependent variable. The correlations of the central and peripheral route variables and the differences between various pairs of correlations are discussed in the context of outcomes that could be expected on the basis of the ELM.

A second supplemental analysis consisted of determining the means and standard deviations of treatment evaluations, i.e., judgements about message frequency, treatment applicability, confidence in treatment, and message comprehension, according to the six treatment modalities. This analysis was conducted to explore variation among the six treatment modes.

CHAPTER 4: RESULTS

Comparison of Data Collection Sites

Chi-square analyses revealed no significant differences between subjects from the two data collection sites in regard to marital status, level of education, employment status, whether or not they were court-ordered to undergo treatment, or termination status (successful vs. premature). This was true for Chi-squares conducted using all 100 subjects and also for Chi-squares conducted using only the 67 successful completers. A significant difference between the two samples was found in regard to gender balance, $\underline{X}^2(1)=5.34$, $\underline{p}<.05$, $\underline{n}=100$. The ratio of males to females was nearly equal (males=25, females=27) at the first collection site, but differed substantially at the second data collection site (males=34, females=14). A gender balance difference also existed among those subjects who completed treatment, $\underline{X}^2(1)=5.78$, $\underline{p}<.05$, $\underline{n}=67$. The ratio of males to females changed at the first data collection site (males=15, females=21) because of treatment dropouts, and continued to be unbalanced at the second site (males=22, females=9). See Table 4-1.

After Chi-square analyses were conducted on nominal level demographic data, two one-way MANOVAs were conducted to check for differences between the data collection sites in terms of continuous level demographic and theoretically derived variables. The first MANOVA included 97 subjects (data from 3 subjects were eliminated because of missing data on some variables) and tested for pretreatment differences on six demographic variables (age, years of education, number of prior outpatient and inpatient treatments, number of chemically dependent biological relatives, and number of chemically dependent non-biological

Table 4-1 Demographic Frequencies: Total Sample & Completers by Location

	All Subjects			Completers		
	Site			Site		
Variable	#1	#2	Total	#1	#2	Total
Gender						
Male	25	34	59	15	22	37
Female	27	14	41	21	9	30
Total	52	48	100	36	31	67
Marital Status						
Never Married	19	23	42	14	17	31
Married	20	11	31	11	7	18
Separated	5	7	12	5	5	10
Divorced	6	7	13	5	2	7
Total	50	48	98	35	31	66
Employment Status						
Part-Time	2	3	5	1	2	3
Full-Time	17	12	29	14	8	22
Unemployed	31	33	64	20	21	41
Total	50	48	98	35	31	66
Level of Education						
Junior High	12	11	23	7	7	14
G.E.D.	7	9	16	6	5	11
High School	11	20	31	7	13	20
Some College	12	6	18	9	5	14
Associates Degree	3	1	4	2	0	2
Bachelors Degree	05	1	6	4	1	5
Total	50	48	98	35	31	66
Admission Status						
Voluntary	41	43	84	28	29	57
Court Ordered	11	5	16	8	2	10
Total						

*Chi-squares significant for all subjects and completers, $p < .05$.

Table 4-2 Means and Standard Deviations by Site, All Subjects

	Site # 1		Site # 2		Combined		
	M	SD	M	SD	M	SD	Range
Age	34.16	9.80	30.56	9.98	32.40	10.00	18.00-61.00
Years of School	12.22	2.10	11.42	1.91	11.83	2.04	6.00-17.00
# Prior OP Hosp's	.72	1.47	.90	1.32	.81	1.40	0.00- 6.00
# Prior IP Hosp's	.98	1.67	.88	1.55	.93	1.60	0.00- 8.00
# Bio-Relatives	4.98	4.96	6.46	9.30	5.71	7.43	0.00-25.00
# NonBio-Relatives	.27	.53	.15	.41	.21	.48	0.00- 2.00
Social Desirability[a]	3.73	2.89	3.81	3.30	3.77	3.08	0.00-12.00
State Motivation[b]	3.97	.80	4.08	.70	4.02	.75	1.21- 5.00
Trait Motivation[b]	3.08	.60	3.08	.61	3.08	.60	1.17- 4.42
Attitudes Pretreatment[c]	7.14	1.49	7.27	1.51	7.20	1.49	3.20- 9.00
Distress Pretreatment[d]	56.25	8.61	55.52	7.10	55.90	7.89	36.00-80.00

[a] This variable was scored by summing the number of items endorsed in a direction reflecting a socially desirable presentation.

[b] Scores on these variables could range from 0 to 5, with higher scores reflecting stronger perceptions or feelings.

[c] Scores on this variable could range from 0 to 9: higher scores reflected increasingly positive attitudes towards recovery.

[d] This score reflects the average Global Severity Index T-Score; T-scores were obtained from the BSI normative tables for psychiatric inpatients.

relatives) and all five theoretically derived pretreatment variables (pretreatment symptom severity, social desirability score, pretreatment attitudes, state-motivation for treatment, and trait-motivation to use cognition for problem solving). This MANOVA was nonsignificant $F(11,85)=1.33$, $p=.2247$. See Table 4-2.

The second MANOVA, which used data from 65 subjects who completed treatment (data from 2 subjects were eliminated because of missing data on some variables), was conducted to determine if significant differences existed between treatment completers at the two data collection sites, in terms of six demographic variables and sixteen theoretically derived variables (See Table 4-3). This analysis was also nonsignificant $F(22, 42)=1.33$, $p=.142$. Because a significant difference between data collection sites was detected only on one variable (gender

Table 4-3 Means and Standard Deviations by Collection Site and for Both Sites Combined for Subjects Who Completed Treatment

	Site # 1		Site # 2		Combined		
	(n=36)		(n=31)		(n=67)		
	M	SD	M	SD	M	SD	Range
Age	33.92	9.18	30.87	10.50	32.51	9.86	18.00-56.00
Years of School	12.26	2.23	11.58	1.93	11.94	2.10	6.00-17.00
No. Prior OP Hosp's	.91	1.69	.84	1.24	.88	1.48	0.00- 6.00
No. Prior IP Hosp's	1.09	1.77	.77	1.52	.94	1.65	0.00- 8.00
No. Bio-Relatives	5.06	5.54	7.74	11.20	6.32	8.70	0.00-25.00
No. NonBio-Relatives	.26	.56	.19	.48	.23	.52	0.00- 2.00
No. Treatment Modes[a]	5.44	.56	5.55	.58	5.49	.56	4.00- 6.00
Social Desirability[b]	4.17	2.55	3.58	3.39	3.89	2.96	0.00-11.00
State Motivation[c]	3.97	.81	4.19	.54	4.07	.70	1.21- 5.00
Trait Motivation[c]	3.13	.59	3.10	.70	3.12	.64	1.17- 4.56
Message Frequency[c]	3.54	1.01	3.56	.96	3.55	.98	0.00- 5.00
Treatment Applicabiliy[c]	3.91	.88	3.82	.69	3.87	.79	0.00- 5.00
Confidence in Treatment[c]	3.97	.87	3.98	.73	3.97	.80	0.00- 5.00
Message Comprehension[c]	4.07	1.15	4.00	.82	4.04	1.00	0.00- 5.00
Counselor Expertness[c]	4.69	.44	4.38	.95	4.55	.73	0.00- 5.00
Counselor Attractiveness[c]	4.64	.47	4.20	1.00	4.44	.79	0.00- 5.00
Counselor Trustworthiness[c]	4.70	.50	4.47	.92	4.59	.73	0.00- 5.00
CRF-Score (EAT Combined)[c]	4.68	.41	4.35	.92	4.53	.71	0.00- 5.00
Behavioral Intentions[c]	4.20	.62	4.23	1.07	4.21	.85	0.00- 5.00
Attitudes Pretreatment[d]	7.20	1.44	7.20	1.52	7.20	1.47	3.40- 9.00
Attitudes Post-Treatment[d]	7.81	1.16	8.11	.99	7.95	1.09	4.40- 9.00
Distress Pretreatment[e]	56.56	8.49	55.94	7.21	56.27	7.87	40.00-80.00
Distress Post-Treatment[e]	45.75	9.51	47.52	6.85	46.57	8.37	30.00-80.00

[a] This variable reflects the number of various treatment modalities that subjects experienced. Each collection site had the same six modes, i.e. individual, group, family, education, activity, and attendance of A.A. meetings.

[b] This variable was scored by summing the number of items endorsed in a direction reflecting a socially desirable presentation.

[c] Scores on these variables could range from 0 to 5, with higher scores reflecting stronger perceptions or feelings.

[d] Scores on these variables could range from 0 to 9, with higher scores reflecting increasingly positive attitudes towards recovery.

[e] These scores reflect the average Global Severity Index T-Scores; T-scores were obtained from the BSI normative tables for psychiatric inpatients.

balance), the data were collapsed over sites in subsequent statistical analyses.

Social Desirability

An abbreviated version of the Marlow-Crowne Social Desirability Scale was included in this study because of the possibility that responses to certain measures might be biased by a social desirability set. The correlation matrix presented in Table 4-4 reveals a moderate negative correlation between social desirability and pretreatment distress. Subjects with higher social desirability scores tended to report less pretreatment distress. Social desirability was not significantly correlated with post-treatment distress or any other variable included in the study. Social desirability was entered into the discriminant function analysis to identify the difference between the mean social desirability scores of successful completers and premature terminators and to determine if this difference contributed to the discrimination between these two groups. The social desirability score was entered as the first variable in the multiple regression on post treatment distress to control for its effect on pre-treatment distress. It was excluded from all other analyses because its lack of correlation with each of the variables derived from the ELM suggested that subjects' responses were not biased by a social desirability set.

Correlations of Predictor Variables with Treatment Outcomes

The correlations presented in Table 4-4 display the correlation of each ratio level demographic variable, independent variable, and dependent variable with every other variable. The following description of the results focuses on the correlations between the independent (demographic and theoretically derived) variables and the dependent

Table 4-4 Correlations of Demographic, Predictor, and Dependent Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Age	--																			
2. Years of School	-.02	--																		
3. Prior Outpatient	.07	-.36^{b}	--																	
4. Prior Inpatient	.13	-.40^{c}	.63^{c}	--																
5. Addicted Relatives	.07	-.14	.03	-.02	--															
6. Social Desirability	.17	-.11	.12	-.03	.01	--														
7. PreTx Distress	-.20	-.06	.25^{a}	.44^{c}	.07	-.37^{b}	--													
8. PreTx Attitudes	-.01	-.07	.05	.16	.05	.11	-.15	--												
9. State Motivation	.08	.12	.11	.19	.05	.02	.14	.39	--											
10. Trait Motivation	.18	.35^{b}	-.10	-.20	.01	.12	-.08	.01	.16	--										
11. Message Frequency	.21	.14	-.22	-.16	.01	.12	-.16	.13	.09	.14	--									
12. Applicability of Tx	.23	.12	.01	.03	.05	.16	-.04	.24^{a}	.38^{b}	.15	.71^{c}	--								
13. Confidence in Tx	.20	.07	.08	.11	.05	.19	-.06	.25^{a}	.38^{b}	.19	.56^{c}	.89^{c}	--							
14. Message Comprehension	.15	.06	-.04	-.07	.09	.18	-.07	.14	.29^{a}	.11	.56^{c}	.58^{c}	.56^{c}	--						
15. Expertness	.16	-.03	.10	.00	-.02	.21	-.26^{a}	.29^{a}	.08	.03	.28^{a}	.21	.14	.10	--					
16. Attractiveness	.26^{a}	-.11	.12	-.04	-.02	.18	-.32^{b}	.09	-.05	.01	.36^{b}	.25^{a}	.21	.14	.79^{c}	--				
17. Trustworthiness	.19	-.05	.11	-.02	-.05	.20	-.33^{b}	.13	-.03	.06	.24^{a}	.16	.11	.10	.90^{c}	.80^{c}	--			
18. Post-Tx Attitudes	.11	-.08	.13	.05	-.01	-.03	-.03	.44^{c}	.20	.01	.28^{a}	.40^{c}	.43^{c}	.14	.34^{b}	.25^{a}	.24^{a}	--		
19. Post-Tx Intentions	-.10	-.02	.05	-.00	.20	-.20	.06	.12	.16	.19	.33^{b}	.25^{a}	.28^{a}	.10	.34^{b}	.35^{b}	.28^{a}	.32^{b}	--	
20. Post-Tx Distress	.04	-.27^{a}	.37^{b}	.49^{c}	.08	-.17	.48^{c}	-.11	-.16	.09	-.22	-.20	.20	-.24^{a}	-.11	-.20	-.10	-.08	-.18	--

$^{a}\underline{p}<.05$, $^{b}\underline{p}<.01$, $^{c}\underline{p}<.001$.

variables, i.e, post-treatment attitudes, behavioral intentions, and distress.

Post-treatment attitudes were more highly correlated with pretreatment attitudes ($r=.44$, $p<.001$) than any other variable. Post-treatment attitudes were also significantly correlated with subjects' confidence in treatment ($r=.43$, $p<.001$), perceptions of treatment as applicable to their problem ($r=.40$, $p<.001$), ratings of message frequency ($r=.28$, $p<.05$), and perceptions of counselor expertness ($r=.34$, $p<.01$), attractiveness ($r=.25$, $p<.05$), and trustworthiness ($r=.24$, $p<.05$).

Post-treatment recovery oriented behavioral intentions were significantly correlated with message frequency ($r=.33$, $p<.01$), applicability of treatment ($r=.25$, $p<.05$), confidence in treatment ($r=.28$, $p<.05$), and counselor expertness ($r=.34$, $p<.01$), attractiveness ($r=.35$, $p<.01$), and trustworthiness ($r=.28$, $p<.05$).

Post-treatment distress (i.e., symptom severity) was negatively correlated with education ($r=-.27$, $p<.05$) and subjects' ratings of their ability to understand therapeutic messages ($r=-.24$, $p<.05$); distress was positively correlated with the number of previous outpatient ($r=.37$, $p<.01$) and inpatient ($r=.49$, $p<.001$) treatments for chemical dependency. A moderate, significant correlation also existed between pretreatment and post-treatment distress ($r=.48$, $p<.001$).

Prediction of Post-Treatment Recovery Oriented Attitude

In order to control for its effect on post-treatment attitude, pretreatment attitude was entered at the first step in the equation predicting post-treatment attitude. The remaining predictor variables were hierarchically forced into sets on the basis of their theoretical relatedness; then the sets were entered in a stepwise fashion. The sets consisted of: (a) state-motivation as measured by the NTS and trait-motivation as measured by the NCS, (b) subjects' ability to comprehend therapeutic messages as measured by the message comprehension scale of the Treatment Evaluation Questionnaire (TEQ-MC), (c) perceived frequency of exposure to therapeutic messages from the TEQ-PF scale, (d) subjects confidence in treatment (TEQ-PC) and perception of treatment as applicable to their problems (TEQ-PA), and (e) counselor expertness, attractiveness, and trustworthiness from the CRF-S.[2] The first set of variables comprised a "motivation" block, the second a "comprehension ability" block, the third a "message frequency" block, the fourth a "message evaluation" block, and the fifth a "counselor rating" block. Although the ability and message evaluation sets each entered into the model, only the message evaluation set contributed significant unique variance to the equation after controlling for pretreatment attitude (see Table 4-5). This model accounted for 32 percent of the variance in post-treatment attitudes, $\underline{R}^2=.32$ $\underline{F}(4,60)=6.899$, $\underline{p}<.001$.

Because of limitations in the SAS program it was necessary to conduct a second MR to examine the potential influence of interactions beyond the main effects. In the second MR analysis the three variable sets (pretreatment attitude, message evaluation, and comprehension ability) identified by the first model were hierarchically entered into the equation. Interaction effects were then entered in a step-wise fashion. As was the case in the first MR the three hierarchically

[2] These same five sets were also used in MR analyses to predict post-treatment behavioral intentions and distress.

Table 4-5 Regression Analysis Predicting Post-Treatment Attitude

Group/ predictor	Beta	Multiple R	R^2	R^2 change	F change	Prob F
Regression 1						
Attitude-Pre	.26	.424	.18	.18	14.03	.0004
Message Evaluation		.332	.29	.11	4.47	.0154
Confidence	.45					
Applicability	.18					
Ability		.173	.32	.03	2.48	.1207
Comprehension	-.23					
Regression 2						
Attitude-Pre	.17	.424	.18	.18		
Message Evaluation		.332	.29	.11		
Confidence	.73					
Applicability	-.15					
Ability		.173	.32	.03		
Comprehension	-.28					
Interactions						
two-way	-.76	.317	.42	.10	10.78	.0017
three-way	.30	.173	.45	.03	3.18	.0799
five-way	-1.51	.245	.51	.06	6.32	.0148

entered variable sets accounted for 32 percent of the variance in post-treatment attitudes, R^2=.32, F(4,60)=6.899, $p<.001$. Because there were many potential interaction effects and because inclusion of all potential interactions would have diminished the power of the equation, only those interaction effects which were significantly correlated with the dependent variables were added for potential entry into the model. Of these, three interaction effects accounted for an additional 19 percent of the variance in post-treatment attitudes (see Table 4-5). However, only one interaction was statistically significant at the $p<.01$ level: a two-way interaction involving need-for-cognition and ratings of counselor trustworthiness. This interaction is graphically represented in figure 4-1. These estimates of the regression lines were determined by calculating the means of the subgroups on the basis of median splits. The figure suggests that, as need for cognition increased, pro-recovery

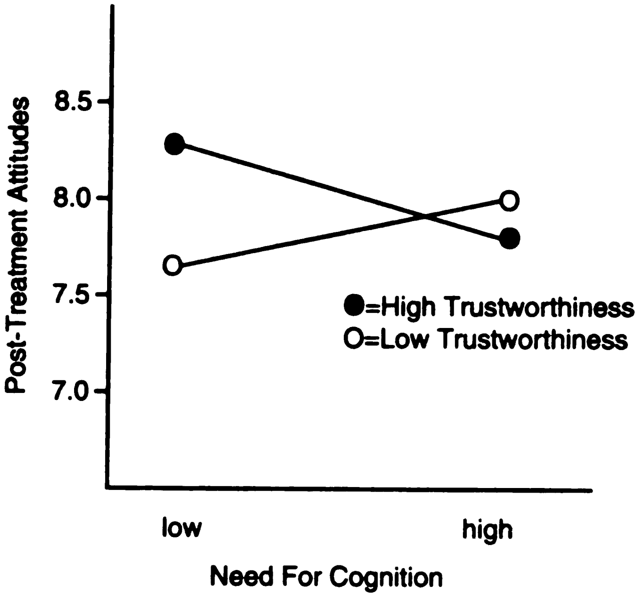

Figure 4-1. Regression lines predicting post-treatment attitudes as a function of the interaction between ratings of counselor trustworthiness and Need-for-Cognition scores.

oriented attitudes increased for subjects who perceived their counselors as relatively less trustworthy. In contrast, with increasing need for cognition, pro-recovery attitudes decreased for subjects who perceived their counselors to be relatively more trustworthy.

In order to further explore this interaction effect an analysis of variance was conducted comparing the post-treatment attitude means of the four groups that were created by using median splits on the trustworthiness ratings and need-for-cognition scores. This ANOVA was nonsignificant $\underline{F}(3,48)=.96$, $\underline{p}=.42$ and indicated that although the interaction effect contributed to the explanation of variance in post-treatment attitudes, the means of the four groups were quite similar.

A five way interaction involving need for treatment, ability to comprehend therapeutic messages, confidence, perceived frequency of exposure to therapeutic messages, and ratings of counselor expertness was entered into the model and approached significance at the $p < .01$ level ($p = .0148$). This interaction could have been represented with a series of graphs constructed using median splits. However, because of the small sample size of this study the resulting cell means would be based on very small *n*'s and would not be expected to be reliable. Also, Cohen and Cohen (1983) indicate that there is a risk of spuriously significant higher order interactions (*i.e.* interactions of 3 or more variables) in multiple regression analysis. Because of the possibility that this interaction was significant by chance alone, it will not be interpreted herein.

Prediction of Post-Treatment Behavioral Intentions

As in the analysis predicting post-treatment attitudes theoretical variables were grouped into sets which were then entered into a stepwise MR to predict post-treatment recovery-oriented behavioral intentions. Two sets (message frequency and counselor ratings) entered into the equation, but only message frequency explained significant predictive variance (see Table 4-6). Twenty percent of the variance in behavioral intentions was accounted for, $R^2 = .20$, $F(4, 60) = 3.72$, $p < .01$. In a second MR conducted to test for interaction effects no interactions reached the level of significance for entry into the model.

Prediction of Post-Treatment Distress

Because social desirability was significantly correlated with pretreatment distress, its effect was controlled by entering it as the first variable in the equation. Then, to control for the effect of pretreatment distress on post-treatment distress, pretreatment distress was entered at the second step in the equation. Two sets (motivation and ability) entered into the equation after pretreatment distress.

Table 4-6 Regression Analysis Predicting Post-Treatment Intentions

Group/ predictor	Beta	Multiple R	R^2	R^2 change	F change	Prob F
Message Frequency		.346	.12	.12	8.18	.0058
Frequency	.20					
Counselor Ratings		.283	.20	.08	2.10	.1103
Expertness	.43					
Attractiveness	.19					
Trustworthiness	-.29					

Table 4-7 Regression Analysis Predicting Post-Treatment Distress

Group/ predictor	Beta	Multiple R	R^2	R^2 change	F change	Prob F
Social Desirability	.09	.077	.006	.006	.08	.7815
Distress-Pre	.56	.469	.226	.22	21.00	.0001
Motivation		.295	.311	.086	3.85	.0266
State	-2.62					
Trait	2.44					
Ability		.162	.337	.026	2.37	.1288
Comprehension	-1.42					

However, only motivation contributed significant variance to the equation, beyond that which was contributed by social desirability and pretreatment distress. Thirty-four percent of the variance was accounted for by the equation, $\underline{R}^2=.34$, $\underline{F}(5,61)=6.20$, $\underline{p}<.001$ (see Table 4-7). In a second MR conducted to examine interaction effects no interaction reached the significance criterion for entry into the model

Prediction of Termination Status

Canonical discriminant function analysis was used to explore differences between successful completers and premature terminators in regard to various demographic and theoretically derived variables of this investigation. Originally, it was intended that the discriminant function analysis would include both pre and post treatment theoretical variables. Unfortunately, premature terminators did not complete the post-treatment surveys; thus, only pretreatment theoretical variables

Table 4-8 Discriminant Analysis of Termination Status

Predictor	Structure coefficient	*F*	Completers *M*	Completers *SD*	Terminators *M*	Terminators *SD*
Age	.03	.01	32.45	9.86	32.27	10.63
Years of School	.33	.69	11.94	2.09	11.57	1.98
# Prior IP Hosp's	.29	.48	.88	1.47	.67	1.24
# Prior OP Hosp's	.01	.00	.94	1.64	.93	1.55
# Bio-Relatives	.48	1.43	6.31	8.64	4.37	3.22
# NonBio-Relatives	.40	1.01	.24	.52	.13	.35
Social Desirability	.33	.68	3.94	2.92	3.40	3.15
State Motivation	.34	.71	4.08	.70	3.95	.79
Trait Motivation	.34	.71	3.12	.64	3.00	.54
Attitudes Pretreatment	-.02	.00	7.21	1.48	7.23	1.55
Distress Pretreatment	.37	.86	56.55	7.65	54.97	8.12

could be used in the analysis. The results of this analysis are presented in Table 4-8. Thirty-three percent (*n*=33) of subjects terminated treatment prematurely, whereas 67% (*n*=67) successfully completed treatment. This analysis did not yield a significant discriminant function. For the function as a whole, Wilks's lambda=.94, and the canonical correlation was .25.

Supplemental Analysis: Correlations Among Predictor Variables

Though the main purpose of this study was to investigate the capacity of demographic and theoretical variables to predict treatment outcomes, the inter-relatedness of theoretical variables is also of interest. Figure 2-1, which demonstrates the hypothetical central and peripheral routes to persuasion, indicates that a message recipient will be better able to engage in cognitive elaboration of a message when he or she is both motivated to examine and able to process the information contained in the message. High levels of motivation and ability are expected to yield more extensive cognitive processing (central route) while low levels are predicted to result in less extensive processing (peripheral route). When central route processing takes place and message quality is high, positive evaluations of the message are expected to predominate. The more positive the evaluation of the message, the greater the degree of attitude change in the direction advocated by the message. Under these circumstances, peripheral cues, such as counselor expertness, attractiveness, and trustworthiness, are expected to be less relevant, i.e., less predictive of attitude change.

Given these postulates and the presence of a sample of subjects who were both motivated and able to process therapeutic messages, one would expect motivation and ability (central route variables) to better correlate with evaluations of therapeutic messages than would perceptions of counselor EAT (peripheral route variables). Examination of the correlation matrix (Table 4-4) reveals that both state motivation and message comprehension were significantly correlated with subjects' confidence in the therapeutic suggestions they heard in treatment and with their perceptions of treatment as applicable to recovery from addiction. Subjects' ratings of counselor expertness, attractiveness, and trustworthiness were not significantly correlated with confidence in therapeutic messages. Only attractiveness was significantly correlated with subjects' perceptions of the applicability of treatment messages, though this correlation was somewhat smaller in magnitude than the correlations of state motivation and message comprehension to treatment applicability.

Additionally, one would expect message evaluations (central route) to better correlate with post-treatment attitudes than would perceptions of counselor expertness, attractiveness, and trustworthiness (peripheral route). Subjects' confidence in treatment, ratings of treatment applicability, and ratings of counselor expertness, attractiveness, and trustworthiness were all significantly correlated with post-treatment attitudes. Although message evaluations produced higher correlations with post-treatment attitudes than did counselor EAT variables, differences in the size of the correlations did not reach significance.

Examination of the correlation matrix also reveals that subjects' confidence in treatment, ratings of treatment applicability, and ratings of counselor expertness, attractiveness, and trustworthiness were all significantly correlated with post-treatment behavioral intentions. In this case the counselor rating correlations were larger than the message evaluation correlations, but these differences were not significant.

Supplemental Analysis: Comparison of Treatment Evaluations Across Modes

In order to further explore the nature of subjects' evaluations of treatment a supplemental analysis was conducted by determining the means and standard deviations of subject ratings of message frequency, treatment applicability, confidence in treatment messages, and message comprehension by treatment modality. The six treatment modes were: individual, family, group, activity therapy, education sessions, and A.A. meetings (see Table 4-9). Message frequency means ranged from 2.24 (family therapy) to 4.42 (A.A. meetings). Treatment applicability means ranged from 2.47 (family therapy) to 4.33 (group therapy). Confidence means ranged from 2.68 (family therapy) to 4.49 (A.A. meetings). Message comprehension means ranged from 2.83 (family therapy) to 4.43 (A.A. meetings).

Table 4-9 Means & Standard Deviations of Message Evaluations by Treatment Mode

Treatment Mode	Message Frequency		Treatment Applicability		Confidence in Treatment		Message Comprehension	
	M	SD	M	SD	M	SD	M	SD
Individual	3.33	1.60	4.03	1.24	4.25	1.24	4.10	1.55
Family	2.24	2.00	2.47	2.08	2.68	2.18	2.83	2.32
Group	3.90	2.32	4.33	0.89	4.34	0.88	4.39	1.28
Activity	3.18	1.42	3.55	1.32	3.82	1.35	4.27	1.40
Education	4.22	1.39	4.22	1.38	4.21	1.39	4.18	1.42
A.A. Meeting	4.42	1.17	4.18	1.42	4.49	1.02	4.43	1.22

CHAPTER 5: DISCUSSION

The main purpose of this study was to ascertain if outcomes of inpatient chemical dependency treatment could be predicted using variables derived from the Elaboration Likelihood Model. Specifically, it was hypothesized that post-treatment recovery-oriented attitudes, recovery-oriented behavioral intentions, post-treatment symptom distress, and termination status could be predicted on the basis of message source characteristics, message features, subject characteristics, and demographic variables. Correlation and multiple regression analyses were used in the statistical prediction of post-treatment attitudes, behavioral intentions, and symptom severity. Discriminant function analysis was used to determine if the variables in this investigation could be used to differentiate between subjects who successfully completed treatment and those who terminated prematurely.

A discussion of the results of this investigation will be facilitated by a brief review of the ELM. Specifically, the theory postulates that source, message, and recipient factors interact to produce attitude change. The means by which attitude change occurs (central versus peripheral route) and the direction of change (pro- versus counter-attitudinal) depends upon the existence of certain conditions. When a recipient's motivation and ability to cognitively examine a message are high, the elaboration likelihood is high and attitude change will result from the recipient's evaluation of the message. When message quality is high (i.e., based on sound reasoning as perceived by the recipient), the message evaluation will be positive and attitude change will occur in the direction advocated by the message. When message quality is poor (i.e., based on spurious claims), the evaluation will be negative and attitude change will not occur or will occur in a direction counter to the direction advocated in the message. This is the central route.

In contrast, when motivation and ability to examine the issues are low, a recipient will not engage in cognitive elaboration and will instead rely on peripheral cues (e.g., apparent expertise or attractiveness of the source), or simple decision rules, in formulating an opinion. This is the peripheral route.

Both high and low elaboration likelihood conditions could exist in actual treatment environments. This possibility was used as a basis for this study. It was reasoned that by measuring subjects' motivation and ability to process therapeutic messages, treatment outcomes could be predicted. Therefore, the question of which elaboration likelihood condition predominated in this investigation is important.

Although the degree to which motivation for treatment and motivation to cognitively elaborate therapeutic messages are similar is an empirical question (which was not addressed in this study), one can speculate that the subjects who participated were relatively high in motivation to examine messages encouraging abstinence because the majority of subjects had volunteered to undergo inpatient treatment. Furthermore, most analyses were conducted on data provided by the 67 subjects who remained in treatment, and the average state motivation score for treatment completers was 4.07 out of a possible 5. The items in the Need for Treatment Survey (the measure of state motivation) were designed to tap subjects' perceptions that they would receive benefits and avoid negative consequences if they listened to and seriously considered the suggestions made by treatment staff. In sum, most subjects in this investigation were probably motivated to engage in cognitive elaboration of therapeutic messages.

The subjects of this study should also have been able to comprehend therapeutic messages given that they had an average of 11.94 years of schooling. However, a high school education diploma does not guaranty an average level of ability given that many functionally illiterate individuals graduate from high school each year. Thus it is possible that a portion of the subjects of this study may not have adequately comprehended therapeutic messages even with if they were high school graduates. However, in contrast to laboratory subjects, they would have had many opportunities during treatment to elicit clarification from staff regarding concepts they did not understand.

It appears therefore that high elaboration likelihood (i.e., central route) conditions predominated and that low elaboration likelihood (i.e., peripheral route) conditions did not exist for many subjects. If this was indeed the case, then it creates the unfortunate circumstance of a restricted range of responses on the theoretical variables of interest. Consequently, hypotheses about the ELM's peripheral route may not have been adequately tested.

Bivariate Correlation Analyses

If one considers only the correlation matrix, then it appears that both central and peripheral route variables were predictive of post-treatment attitudes and behavioral intentions but not post-treatment distress. Specifically, post-treatment recovery-oriented attitudes were significantly correlated with message evaluations (i.e, confidence that therapeutic messages would help the subjects remain abstinent and perceptions that treatment was applicable to their problem of addiction) and with peripheral cues (i.e, counselor expertise, attractiveness, and trustworthiness).

A significant correlation also existed between message frequency and post-treatment attitudes. It is unclear whether message frequency facilitated cognitive elaboration or acted as a peripheral cue. It is possible that both occurred: some subjects may have been better able to cognitively process therapeutic messages as the messages were repeated while others may have decided to endorse pro-recovery attitudes simply because they perceived a larger number of message repetitions to be associated with the correct attitude. It is also possible that some subjects may have perceived an excessive amount of message repetition and devalued the messages. If so, these subjects probably would not have experienced a significant increase in pro-recovery attitudes. However, the positive correlation indicates that on average message frequency corresponded to higher recovery attitudes.

Post-treatment behavioral intentions were significantly correlated with: counselor attractiveness and expertness, frequency of message exposure, post-treatment attitudes, confidence in treatment, counselor trustworthiness, and perceptions of treatment as applicable to addiction. These variables are listed in descending order of the magnitude of their correlation to behavioral intentions. As was the case with post-treatment attitudes, both central and peripheral route variables predicted behavioral intention outcomes. Although there was a tendency for peripheral route variables to be more highly correlated with post-treatment behavioral intentions than were central route variables, these differences were not significant.

Post-treatment distress was positively correlated with number of previous inpatient hospitalizations, pretreatment symptom severity, and number of prior outpatient treatments for addiction. It was negatively correlated with education and ability to understand therapeutic messages. These findings make intuitive sense: the more extensive a subject's history of previous pathology (as indicated by the number of previous treatments), the greater the subject's distress. Also, a greater ability to understand the language of therapy (as approximated by education and subjects' ratings of their ability) would allow subjects to do the therapeutic work (i.e., cognitive elaboration) that would result in lower post-treatment distress.

Prediction of Post-treatment Attitudes Using Multiple Regression

Multiple regression analysis revealed that when pretreatement attitudes were controlled, 11 percent of the variance in post-treatment attitudes was explained by subject's confidence in therapeutic messages and their perceptions of these messages as applicable to their problems. Subjects' message comprehension (i.e., their ratings of their ability to understand therapeutic messages) also entered into the stepwise model, however, it did not reach statistical significance. The salience of message evaluations is expected to be higher than other variables when central route conditions exist, thus, one would expect message evaluations to account for a larger proportion of variance than other variables. Since central route conditions appear to have existed in this study and message evaluations explained unique variation in post-treatment attitudes after controlling for pretreatment attitudes, this analysis provided support for the ELM.

A significant interaction between subjects' perceptions of counselor trustworthiness and their trait-motivation explained an additional 10 percent of the variance in post-treatment attitudes. The interaction (see figure 4-1) can be interpreted in a manner consistent with the ELM. Subjects who were relatively low in need for cognition and who perceived their counselors as relatively less trustworthy had the lowest recovery-oriented attitudes. The subjects who viewed their counselors as relatively more trustworthy and who had a relatively low need for cognition had the highest post-treatment attitudes. These subjects might be said to have relied on peripheral cues and accepted therapeutic arguments on faith. This result is consistent with the treatment philosophy of the data collection sites which emphasized an American Disease/Alcoholics Anonymous approach. This approach requires its participants to accept on faith the existence of a higher power and to turn their will over to this power.

The attitudes of both high need-for-cognition groups fell between the low trustworthiness, low need-for-cognition subjects and the high-trustworthiness, high need-for-cognition subjects and were nearly equal. The low-trustworthiness, high need-for-cognition subjects had slightly higher post-treatment attitudes than the high trustworthiness, high need-for-cognition subjects. There are a number of possible explanations for this outcome. Possibly subjects high in need for cognition engaged in more cognitive elaboration and were less affected by their perceptions of counselor trustworthiness. In other words, a relatively high need for cognition may coincide with independent thinking. Another possibility, which still coincides with increased cognitive elaboration, is that high need-for-cognition subjects engaged in greater intellectualization and reached their post-treatment attitude through biased elaboration. Subjects, who rated their counselors to be high in trustworthiness and who also had a high need for cognition, may have engaged in more cognitive elaboration (i.e., they might not have accepted their counselors arguments on faith) than those subjects who rated their counselors as high in trustworthiness but, who were low in need for cognition. If these high need-for-cognition subjects did engage in a greater degree of cognitive elaboration, they may have recognized logical flaws in the A.A. model. If so, this would explain why they did not endorse pro-recovery attitudes to the same degree as their low need-for-cognition counterparts. Also, high need-for-cognition subjects who perceived their counselors to be relatively less trustworthy may have engaged in more cognitive processing than low need-for-cognition subjects who viewed their counselors as relatively less trustworthy. Based on their greater cognitive elaboration they may have recognized strengths of the A.A. model and therefore endorsed pro-recovery attitudes to a greater extent than did low need-for-cognition subjects. All of the above explanations are speculations intended to elaborate a number of possible meanings for the interaction effect that was discovered. They ultimately may have little substantive meaning given that an analysis of variance revealed no significant differences of post-treatment attitudes among the four groups of subjects identified in the interaction effect. Should further research reveal stability of this interaction, then greater effort to determine the meaning of the interaction would be appropriate.

The five way interaction which approached significance at the .01 level is virtually uninterpretable because of its complexity. Cohen and Cohen (1983) argue that there is a relatively high probability of discovering spuriously significant higher order interactions in multiple regression analysis. This problem is compounded by the small cell sizes in the current study. Thus this 5-way interaction is not expected to be replicable. If this interaction is replicated in future research, an effort should be made to interpret it.

Prediction of Behavioral Intentions Using Multiple Regression

The ELM does not explicitly address behavioral intentions, yet it does postulate that when attitude change occurs under central route conditions, in the direction supported by the message, behavior will also change to reflect the new attitudinal position. In the absence of the ability to follow up subjects to assess their actual post-treatment behaviors, a measure of post-treatment behavioral intentions was used as a proxy.

When theoretically relevant variables were analyzed using multiple regression, perceptions of message frequency accounted for 12 percent of the variance in behavioral intentions. Perceptions of counselor expertness, attractiveness, and trustworthiness collectively accounted for 8 percent of the variance but did not attain statistical significance. Given that message frequency is hypothesized by the ELM to be a variable which affects attitude change this findings provides some support for the model. However, as was discussed in regard to post-treatment attitudes, the interpretation of message frequency as a central versus peripheral route variable is unclear in this study.

Prediction of Post-treatment Distress Using Multiple Regression

In the multiple regression analysis predicting distress, measures of state and trait motivation collectively accounted for 9 percent of the variance beyond the variance accounted for by pretreatment distress. The beta weight of state motivation (Need for Treatment) was negative, suggesting that higher pretreatment motivation correlated with lower post-treatment distress. In contrast, trait-motivation was positively correlated with post-treatment distress, which indicates that there was a slight tendency for subjects high in need-for-cognition to have greater post-treatment distress. From a purely speculative position there may be at least two reasons for this: (a) high need-for-cognition subjects became aware of the severity of their addiction and thus remained distressed after treatment, or (b) some high need-for-cognition subjects recognized logical flaws in the therapeutic messages they had heard, were less impacted by treatment, and remainded distressed.

Prediction of Termination Status Using Discriminant Analysis

The canonical discriminant function analysis revealed that demographic variables and theoretically-derived pretreatment variables did not contribute to the ability to differentiate between subjects who completed treatment and those who terminated treatment prematurely. This result indicates that these two groups of subjects were fairly similar in regard to their status on the pretreatment variables and that the variables which distinguish these subjects are either other pre-existing characteristics which were not measured or changes that occurred in the subjects during treatment.

Discussion of Supplemental Analyses

The supplemental analyses provided support for the hypothesis that motivation and ability to engage in cognitive elaboration can predict message evaluations which in turn predicted post-treatment attitudes and behavioral intentions. They also revealed that the hypothetical peripheral cues of counselor expertness, attractiveness, and trustworthiness correlated with post-treatment attitudes and behavioral intentions. Although the correlations of treatment confidence and applicability to post-treatment attitudes were larger than the correlations of counselor ratings to post-treatment attitudes, these correlations did not differ statistically. This finding is also congruent with the ELM, which postulates that similar degrees of attitude change can be achieved through either central or peripheral routes (Petty & Cacioppo, 1986).

In this study the Counselor Rating Expertness, Attractiveness, and Trustworthiness were used as separate scales as intended by Barak and LaCrosse (1975). They were also considered to be distinct peripheral cues in the bivariate correlations. Given the high intercorrelation among the three subscales, this may be inappropriate. Instead they may collectively reflect a single counselor favorabiliy factor. The grouping procedure that was used in the multiple regressions resulted in treatment of the three EAT variables as one factor.

The calculation of means and standard deviations of perceptions of message frequency, treatment applicability, confidence in treatment, and message comprehension by treatment mode revealed that, on average, subjects perceived family therapy messages, to be the least frequent, the least applicable, the least likely to help them remain abstinent, and the most difficult to understand. On average subjects rated A.A. meetings as containing the most messages addressing their problem of addiction. Messages from A.A. meetings were also rated to be the most understandable, and subjects gave the highest confidence ratings to these messages. Messages heard in group therapy had the highest mean applicability rating. This description of the differences should not be interpreted to imply the existence of statistically significant differences between treatment modes. Overall, little variation existed across treatment modes. A MANOVA was not conducted to assess differences because all of these means were derived from the same instrument and could not be considered to be independent.

Conclusions

In summary, several.of the findings of this investigation were in a direction supportive of the ELM. The regression predicting post-treatment attitudes was most directly relevant to the model. The entry of message evaluations into the model provided the strongest evidence in support of the Elaboration Likelihood Model. The supplemental analyses were also consistent with expected outcomes because state-motivation and message comprehension correlated with message evaluations, and message evaluations correlated with post-treatment attitudes and behavioral intentions. These correlations correspond to expectations when central route conditions exist. Counselor ratings of expertness, attractiveness, and trustworthiness, which are hypothesized by Petty and Cacioppo (1986) to be peripheral route variables, also correlated with post-treatment attitudes and behavioral intentions. These findings indicate that both central and peripheral route conditions may have been present.

It was expected that there might be an interaction between motivation, ability, message evaluations, and counselor ratings such that high motivation, high ability, and positive evaluations would predict higher pro-recovery attitudes, while at the same time low motivation, low ability, and neutral or negative evaluations in conjunction with counselor ratings would predict lower pro-recovery attitudes. The failure to find this type of interaction may have been due to a lack of power in the study or due to the restricted range of subject motivation. The sixty-seven subjects who completed treatment were probably motivated and able to engage in cognitive elaboration of therapeutic messages.

Given that behavioral intentions and post-treatment distress had not previously been investigated in the context of the ELM, there were no firm theoretical expectations about what patterns might exist. It was merely speculated that variables from the ELM might be used to predict these types of outcomes. ELM variables did not contribute collectively to the prediction of behavioral intentions. Only perceptions of message frequency contributed significantly to the explanation of variance in post-treatment behavioral intentions. Given limitations in this study, it could not be determined if message frequency acted as a central route variable, a peripheral route variable, or both. In regard to post-treatment distress, only state and trait motivation explained significant variance after controlling for social desirability and pretreatment distress. Message comprehension also entered the model but did not account for significant variation; it might attain significance in a study with increased power. Given this relationship between motivation and distress it is somewhat surprising that message evaluations did not also contribute to the model. Intuitively one would expect confidence in treatment to correspond with lower post-treatment distress.

Limitations

There are limitations in this investigation which affect its ability to explain the relationship of social influence variables to treatment outcomes. For example, the minimal number of subjects (relative to the number of variables studied) may have adversely limited the statistical power of the study. A second major limitation was the lack of a specific measure of subjects' actual ability to engage in a cognitive examination of issue/therapy relevant messages. An attempt was made to get a better sense of subjects' motivation and ability by eliciting information from the subjects' therapists. Unfortunately, therapists who had agreed to complete surveys on the subjects failed to complete a sufficient number of surveys to provide useful data. The lack of specific measures of subjects' ability to engage in cognitive elaboration has been a limitation of most prior ELM research with the exception of some lab studies in which ability was experimentally manipulated. Future research should place more emphasis on this variable.

Although a determined effort was made to construct face valid measures of motivation to engage in cognitive elaboration, message evaluations, and relevant attitudes, the lack of formal validation of some of the measures must be acknowledged as a third limitation of the study. A fourth limitation of this study was the lack of a measure of message quality. Message quality was not included in this study because the nature of treatment made it exceedingly difficult to measure message quality objectively and accurately. True experiments provide a better means for examining message quality because in natural treatment settings, like the present ones, it is unlikely that a satisfactory degree of control could ever be attained over message quality. Also it would be unethical to expose real clients intentionally to poor quality interventions. The lack of experimental control, including the inability to randomly select subjects, is a fifth limitation of this study, which diminishes the generalizability of the results. The correlational nature of the study is a sixth limitation which precludes causal inferences from being drawn. A seventh limitation of the study is its failure to account for the interactional nature of influence in real life counseling. In actual counseling, the counselor might be as subject to influence from the client as the client is from the counselor. There does not appear to be any prior social influence or elaboration likelihood model literature which explores this possibility.

Implications for Future Research

The theoretical structure of the ELM, with its emphasis on "routes" to persuasion, and the results of this study suggest that causal modeling may be an appropriate research design to use in the investigation of Elaboration Likelihood Model variables. An analysis of variance design which involves, for example, comparing the top third of the subjects to the lowest third of the subjects in regard to their motivation and ability to engage in cognitive elaboration, is another possible design that could be used to explicate the relationship between ELM variables and outcomes of counseling. Future research will be enhanced by the use of therapeutic environments which contain subjects who can be clearly identified as having either high or low motivation and ability to engage in cognitive elaboration of therapeutic messages.

Because trait motivation (i.e., need for cognition) did not contribute to the prediction of post-treatment attitudes or behavioral intentions in the bivariate correlational analyses, further research is needed to explore its relationship to attitude changes occurring in therapy. It is possible that there was an insufficient range in need for cognition to have permitted prediction of these outcomes. Perhaps the state motivation of subjects undergoing counseling is the crucial variable and the psychological need of an individual to think about and use their mental ability to solve problems is of lesser importance to actual clients. There are many possible areas for continued research on the implications of the ELM for counseling. Among these are: the need to develop more refined measures of subjects' motivation and ability to cognitively elaborate treatment messages, and to identify conditions in counseling that have an effect on motivation, ability, and the salience of peripheral cues.

The development of refined measures of state motivation will entail careful attention to the issue specificity of the measure and to the subjects' degree of issue involvement. In other words, measures of state motivation to engage in cognitive elaboration need to be specific to the issues contained in therapeutic messages. Also, these measures need to tap a subject's level of issue involvement. One criterion for assessing the validity of an ELM instrument is whether or not it measures a subject's motivation to cognitively process information contained in the message and whether or not the message is targeted at issues about which the subject is concerned. For example, several questions in the Need For Treatment Survey were worded to tap motivation to examine issues involving spiritual, physical, emotional, and social functioning by inquiring into subjects' perceptions of the likelihood of positive consequences to be derived from listening to and seriously considering the suggestions of treatment staff. Other questions examined subjects' perceptions of the likelihood of negative consequences if they failed to listen to and seriously consider the feedback of treatment staff. Still other questions asked subjects to indicate their willingness to consider suggestions and advice on recovery from addiction.

It may also be possible to develop measures which tap trait motivation of subjects to use their cognitive abilities to think about and solve problems of a personal or psychological nature. This measure might be designed as a variation of the Need for Cognition Scale. The item "I find satisfaction in deliberating hard and long for hours" from the Need for Cognition Scale, could be reworded to state "I find satisfaction in deliberating in depth and for long hours about personal problems and relationships". The Approach-Avoidance Style scale, a subscale of the Problem Solving Inventory (Heppner, 1988) which measures an individual's tendency to approach or avoid problem-solving behaviors, might also reveal data regarding trait motivation.

Various measures of intelligence and/or problem-solving ability might be used to assess subjects' ability to engage in cognitive elaboration. However, research which addresses subjects' ability to cognitively process the particular persuasive messages of interest will be needed to fully support the ELM.

A question of related interest is problem solving self-confidence. Although self-confidence is not equivalent to ability, investigation of subjects' problem solving self-confidence might aid in the explanation of treatment outcomes from an ELM perspective. The Problem Solving Inventory (Heppner, 1988) includes problem solving self-confidence and perceived personal control scales in addition to the previously mentioned approach-avoidance scale.

The refinement of measures of ELM variables will be enhanced by consideration of the reading level needed to comprehend the instrument.

Regardless of whether an instrument is intended to assess motivation, ability, message evaluations, or some other ELM variable, its utility will be improved by assuring that its reading level is not too difficult for the subjects included in the study. This issue was not formally investigated in this study, however, informal piloting prior to the study revealed minor difficulties which were addressed prior to actual data collection. Future research will benefit from systematic assessment of the reading level required for various instruments.

An additional means for refining measures of ELM variables would be to systematically and formally validate measures on appropriate subject populations. Normative data could be obtained and factor analysis could be used to assure that measures intended to measure a single construct actually do so.

In addition to the refinement of measures, there are several other avenues for the application of the ELM to counseling research and for the enhancement of the investigation of the interface between social influence and counseling. Factors which may affect motivation include: counselor sensitivity to the presenting problem, subject perceptions of counselor expertness, attractiveness, and trustworthiness, and subject perceptions of the degree of difficulty required to change. Clients who perceives thier counselor to be expert, attractive, and trustworthy will probably have more motivation to think about therapeutic messages than clients who perceive their counselor to lack these qualities. Subjects who view change as easily attained will lack motivation. Also, subjects who feels overwhelmed may perceive their situation to be so hopeless that it makes little sense to even try to process therapeutic messages.

Additionally, message quality may affect perceptions of counselor EAT;

a counselor who uses messages that match the client's language and helps the client attain desired changes is more likely to be perceived as an attractive trustworthy expert. Some support for this hypothesis may already exist (see Heppner & Claiborn, 1989). These hypotheses need further empirical validation and provide an abundant source of future research.

It was noted in the previous section that one limitation of this study was the lack of a measure of message quality and it was suggested that true experiments create better opportunities to address this issue. In the context of counseling and therapy experimental analogue studies will allow appropriate control while avoiding the short comings of manipulating message quality with actual clients.

One thing which became very clear during the course of this investigation was that the complexity of the model is so great that it is unlikely that any single study could adequately examine all relevant variables. Therefore an final implication for future research relates to the level of complexity of the study. Future studies may prove beneficial if a micro instead of a molar approach is used. Studies could be conducted that focus specifically on motivation issues, while other studies might focus specifically on ability to cognitively elaborate messages. As these issues are clarified in the counseling context, studies could be designed that experimentally control these variables while focusing on other variables like the nature of message evaluation and or the effects of peripheral cues.

Implications for Counseling Practice

Given that application of the ELM to counseling is still in the early stages, implications for treatment need to be offered tentatively.

One implication maybe that the impact of therapeutic interventions is likely to be enhanced by an understanding of a client's motivation and ability to examine the specific issues of treatment. As was recognized by Strong (1971), clients often come to treatment as a result of problematic behavior in which they are highly invested. Thus, while many clients may be motivated to achieve a reduction in distress, they frequently may not be motivated to examine relevant issues carefully.

Another practical implication is that enhanced understanding of conditions which increase clients' motivation and ability to process therapeutic messages cognitively should contribute to a counselor's ability to assist clients to engage in self-persuasion. This would need to be combined with the use of therapeutic messages that are known to be of high message quality because increasing the elaboration likelihood while using poor quality messages would probably result in negative evaluations of therapeutic messages and, possibly even firmer commitment to previously held opinions.

It is also possible that means could be developed to assess a client's motivation and ability to engage in cognitive elaboration at the outset of counseling. For clients low in these qualities peripheral cues might be used to engage the client in counseling, and/or methods might be developed to enhance their motivation and ability to process therapeutic interventions. Heppner and Claiborn (1989) made a similar suggestion. Alternatively, an awareness of low elaboration likelihood might lead to the use of peripheral persuasion techniques in brief therapy, since a client who is not motivated or able to engage in cognitive processing of therapeutic messages may not wish to attend several weeks or even months of talk therapy.

Appendix A

Demographic Data Sheet

1. Date of Birth: ___/___/___ 2. Sex: M__ F__

3. Marital Status: Never-married__ Married__ Separated__ Divorced__

4. Are you employed? Part-time___ Full-time___ No___

 4a. If you are employed, what is your job title? _______________

 4b. If you are not employed, what was your last occupation?

 ____

5. How long have you been with the company for which you now work?____

6. Highest level of level of education achieved: Junior High School__ GED__ High School Graduate__ Some College (no degree)__ Associates Degree__ Bachelors Degree__ Masters Degree__, Doctoral Degree__

 6a. How many years of school have you completed? ________

7. Have you ever undergone outpatient treatment for substance abuse or chemical dependence? ___ If yes, how many times? __________

8. Have you ever undergone inpatient treatment for substance abuse or chemical dependence? _____ If yes, how many times? ________

9. Did or do any of the following members of your family have a problem with drug or alcohol addiction? (When appropriate, please indicate the number of relatives who have a drug problem. For example, 1 sister, 3 uncles, and 2 cousins.)

 ___Father ___Mother ___Sister(s) ___brother(s)

 On your father's side of the family:

 ___Grandfather ___Grandmother ___Aunt(s) ___Uncle(s) ___Cousin(s)

 On your mother's side of the family:

 ___Grandfather ___Grandmother ___Aunt(s) ___Uncle(s) ___Cousin(s)

9a. Indicate any other non-biological relatives, such as step-parents or non-biological aunts/uncles with whom you lived during your youth, who have or had a drug problem: ________________________

Appendix B

COUNSELOR RATING FORM

On the following page, each characteristic is followed by a five-point scale that ranges from "not very" to "very". Circle the number that best represents how you viewed your primary therapist. For example:

FUNNY
not very 1 [✓ 2] 3 4 5 very

WELL DRESSED
not very 1 2 3 4 [✓ 5] very

These ratings might show that the therapist did not joke around much, but was dressed well. Though all of the following characteristics are desirable, therapists may differ in their strengths. We are interested in knowing how you view these differences.

FRIENDLY
not very 1 2 3 4 5 very

EXPERIENCED
not very 1 2 3 4 5 very

HONEST
not very 1 2 3 4 5 very

LIKEABLE
not very 1 2 3 4 5 very

EXPERT
not very 1 2 3 4 5 very

RELIABLE
not very 1 2 3 4 5 very

SOCIABLE
not very 1 2 3 4 5 very

PREPARED
not very 1 2 3 4 5 very

SINCERE
not very 1 2 3 4 5 very

WARM
not very 1 2 3 4 5 very

SKILLFUL
not very 1 2 3 4 5 very

TRUSTWORTHY
not very 1 2 3 4 5 very

Appendix C

Treatment Evaluation Questionnaire

Listed below are twenty-four questions designed to measure your reactions to the treatment you have received at this center. Read each item carefully, then circle the number from "1" to "5" that comes closest to your feelings about the treatment described.

If you did not participate in any sessions of individual therapy during your stay here, skip questions 1 through 4 and begin with item 5.

1. During your individual therapy, how often did you hear messages or arguments intended to influence your opinions about the use of drugs?

1	2	3	4	5
Not at all				Extremely often

2. To what extent did suggestions made by your therapist apply to the problem of drug or alcohol addiction?

1	2	3	4	5
Not at all applicable				Extremely applicable

3. How confident are you that the suggestions made to you during your individual therapy will help you to lead a drug/alcohol free lifestyle?

1	2	3	4	5
Not at all confident				Extremely confident

4. During your individual therapy sessions did your therapist use words, language, and suggestions that you were able to understand?

1	2	3	4	5
No! Not at all				Yes! Always

If you did not participate in any family therapy sessions during your treatment here, skip questions 5 through 8 and proceed with item 9.

5. During your family therapy, how often did you hear messages or arguments, intended to influence your opinions about the use of drugs?

1	2	3	4	5
Not at all				Extremely often

6. To what extent did suggestions made by your therapist during family therapy apply to the problem of drug or alcohol addiction?

1	2	3	4	5
Not at all applicable				Extremely applicable

7. How confident are you that suggestions made during family therapy will help you to lead a drug/alcohol free lifestyle?

1	2	3	4	5
Not at all confident				Extremely confident

8. During family therapy sessions did your therapist use words, language, and suggestions that you were able to understand?

1	2	3	4	5
No! Not at all				Yes! Always

If you did not participate in any group therapy sessions during your treatment here, skip questions 9 through 12 and proceed with item 13.

9. During your group therapy, how often did you hear messages or arguments intended to influence your opinions about the use of drugs?

1	2	3	4	5
Not at all				Extremely often

10. To what extent did suggestions made by your therapist during group therapy apply to the problem of drug or alcohol addiction?

1	2	3	4	5
Not at all applicable				Extremely applicable

11. How confident are you that suggestions made during group therapy will help you to lead a drug/alcohol free lifestyle?

1	2	3	4	5
Not at all confident				Extremely confident

12. During group therapy sessions did your therapist use words, language, and suggestions that you were able to understand?

1	2	3	4	5
No! Not at all				Yes! Always

If you did not participate in any activity-therapy sessions during your treatment here, skip questions 13 through 16 and proceed with item 17.

13. During your activity therapy, how often did you hear messages or arguments intended to influence your opinions about the use of drugs.

1	2	3	4	5
Not at all				Extremely often

14. To what extent did suggestions made by your activity therapist apply to the problem of drug or alcohol addiction?

1	2	3	4	5
Not at all applicable				Extremely applicable

15. How confident are you that suggestions made during activity therapy will help you to lead a drug/alcohol free lifestyle?

1	2	3	4	5
Not at all confident				Extremely confident

16. During activity therapy sessions did the therapists use words, language, and suggestions that you were able to understand?

1	2	3	4	5
No! Not at all				Yes! Always

If you did not participate in any education sessions during your treatment here skip questions 17 through 20 and proceed with item 21.

17. During your education sessions, how often did you hear messages or arguments, intended to influence your opinions about the use of drugs?

1	2	3	4	5
Not at all				Extremely often

18. To what extent did suggestions made to you during education sessions apply to the problem of drug or alcohol addiction?

1	2	3	4	5
Not at all applicable				Extremely applicable

19. How confident are you that suggestions made to you during your education sessions will help you to lead a drug/alcohol free lifestyle?

1	2	3	4	5
Not at all confident				Extremely confident

20. During education sessions did the group leaders use words, language, and suggestions that you were able to understand?

1	2	3	4	5
No! Not at all				Yes! Always

If you did not attend any A.A. or N.A. meetings during your treatment here do not respond to items 21 through 24. You may return the survey to the experimenter.

21. How often did you hear messages or arguments, intended to influence your opinions about the use of drugs, during your N.A./A.A. meetings?

1	2	3	4	5
Not at all				Extremely often

22. To what extent did suggestions made during N.A./A.A. meetings apply to the problem of drug or alcohol addiction?

1	2	3	4	5
Not at all applicable				Extremely applicable

23. How confident are you that suggestions made to you during N.A./A.A. meetings will help you to lead a drug/alcohol free lifestyle?

1	2	3	4	5
Not at all confident				Extremely confident

24. During N.A./A.A. meetings did the group leaders use words, language, and suggestions that you were able to understand?

1	2	3	4	5
No! Not at all				Yes! Always

Appendix D

Marlow-Crowne Social Desirability Scale - Short Form

Personal Reaction Inventory

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you personally. Respond by placing a T (true) or F (false) in the blank to the right of each statement.

1. It is sometimes hard for me to go on with my work if I am not encouraged. ____
2. I sometimes feel resentful when I don't get my way. ____
3. On a few occasions, I have given up doing something because I thought too little of my ability. ____
4. There have been times when I have felt like rebelling against people in authority even though I knew they were right. ____
5. No matter who I'm talking to, I'm always a good listener. ____
6. There have been times when I took advantage of someone. ____
7. I'm always willing to admit when I make a mistake. ____
8. I sometimes try to get even, rather than forgive and forget. ____
9. I am always courteous, even to people who are disagreeable. ____
10. I have never been irked when people expressed ideas very different from my own. ____
11. There have been times when I was quite jealous of the good fortune of others. ____
12. I am sometimes irritated by people who ask favors of me. ____
13. I have never deliberately said something that hurt someone's feelings. ____

Appendix E

Need for Treatment Survey

CHEMICAL DEPENDENCE IS AN ADDICTION TO ANY DRUG INCLUDING ALCOHOL. THE QUESTIONS BELOW ARE INTENDED TO MEASURE ASPECTS OF THE PERCEPTIONS OF OTHERS AND YOUR OWN PERCEPTIONS ABOUT YOUR NEED FOR TREATMENT FOR THE PROBLEM OF OF CHEMICAL DEPENDENCE. PLEASE ANSWER ALL OF THE ITEMS HONESTLY. REMEMBER THAT THIS INFORMATION WILL NOT BE SHARED WITH THE TREATMENT STAFF.

Part One: Perceptions of Others

1a. Did any of the following people suggest to you that you need treatment for a problem with drugs or alcohol or both? (Check all that apply)

___ your parents

___ girl/boyfriend

___ your lawyer

___ outpatient therapist

___ A.A./N.A. sponsor

___ husband/wife

___ your children

___ probation officer

___ a judge

___ friend or acquaintance

If you indicated that at least one person, suggested that you enter treatment, please consider the extent to which suggestions from that person or these persons influenced your decision to enter treatment and respond to the following statement. (Circle your answer.)

1b. My decision to enter treatment was based completely on the suggestions made by others.

1	2	3	4	5
Strongly disagree				Strongly agree

2a. Did any of the following people demanded or require that you get inpatient treatment because they believe you have a problem with drugs or alcohol or both? (Check all that apply)

___ your parents

___ girl/boyfriend

___ your lawyer

___ outpatient therapist

___ A.A./N.A. sponsor

___ husband/wife

___ your children

___ probation officer

___ a judge

___ friend or acquaintance

If you indicated that at least one person, in the above list demanded or required that you enter treatment, please consider the extent to which this requirement influenced your decision to enter treatment and respond to the following statement. (Circle your answer.)

2b. My decision to enter treatment was based completely on the demandes made on me by others.

1	2	3	4	5
Strongly disagree				Strongly agree

Part Two: Your Perceptions

INDICATE YOUR LEVEL OF AGREEMENT OR DISAGREEMENT WITH EACH STATEMENT BY CIRCLING THE NUMBER THAT SHOWS HOW YOU FEEL.

3. I will experience serious negative consequences to my spiritual well-being if I do not listen to the recommendations of the staff at this center.

1	2	3	4	5
Strongly disagree				Strongly agree

4. I will experience an improvement in my physical health if I listen to and seriously consider the suggestions of the staff at this center.

1	2	3	4	5
Strongly disagree				Strongly agree

5. I definitely need to receive inpatient treatment for the problem of chemical dependence.

1	2	3	4	5
Strongly disagree				Strongly agree

6. There will be serious negative consequences for my emotional health if I do not listen to the recommendations made to me by the staff at this center.

1	2	3	4	5
Strongly disagree				Strongly agree

7. I am very motivated to receive inpatient treatment for chemical dependence.

1	2	3	4	5
Strongly disagree				Strongly agree

8. I will experience an improvement in my social relations (e.g., in my mariage, in my friendships, in my relations to my children, etc.) if I listen to and seriously consider the suggestions of the staff at this center.

1	2	3	4	5
Strongly disagree				Strongly agree

9. It is extremely unlikely that I will leave treatment before my doctor and therapists tell me I have successfully completed treatment.

1	2	3	4	5
Strongly disagree				Strongly agree

Answer item 10a if you are currently employed - if you are unemployed answer item 10b (Do not answer both 10a & 10b).

10a. If I do not follow the recommendations made to me by the staff at this center my work performance will worsen, my relationships with coworkers will worsen and eventually I will loose my job.

1	2	3	4	5
Strongly disagree				Strongly agree

10b. If I do not listen to and seriously consider the suggestions made to me by the staff at this center my chances to regain employment and to keep a job will be seriously hurt.

1	2	3	4	5
Strongly disagree				Strongly agree

11. I will remain in treatment and do the work required of me to cope with my alcohol/drug problem even though it will be difficult and emotionally painful.

1	2	3	4	5
Strongly disagree				Strongly agree

12. I will experience serious problems with the law, for example, going to jail or prison or having lengthy court battles if I do not listen to the recommendation of the staff at this center.

1	2	3	4	5
Strongly disagree				Strongly agree

13. If I listen to the suggestions made to me by the staff at this center I will experience a spiritual awakening that will help me to begin recovering from my addiction.

1	2	3	4	5
Strongly disagree				Strongly agree

14. If it were not for the pressure put on me by other people I would not have sought out treatment for chemical dependence.

1	2	3	4	5
Strongly disagree				Strongly agree

15. If I do not follow the recommendations made to me by the staff at this center I will experience a serious decline in my physical health that could eventually result in my death because of my addiction.

1	2	3	4	5
Strongly disagree				Strongly agree

16. I am willing to talk about all of my behaviors which are related to or have contributed to my addiction.

1	2	3	4	5
Strongly disagree				Strongly agree

17. If I do not listen to and seriously consider the suggestions made to me by the staff at this center I will experience major problems and losses in my social relationships, such as, divorce, loss of friends, being disowned by my parents or children.

1	2	3	4	5
Strongly disagree				Strongly agree

18. I will seriously consider the suggestions and advice regarding my recovery from addiction, that will be given to me by the staff at this center.

1	2	3	4	5
Strongly disagree				Strongly agree

19. I will experience a definite improvement in my emotional health if I listen to and seriously consider the suggestions of the staff at this center.

1	2	3	4	5
Strongly disagree				Strongly agree

Answer item 20a if you are currently employed - if you are unemployed answer item 20b (Do not answer both 20a & 20b).

20a. If I follow the recommendations made to me by the staff at this center my work performance will improve, my relationships with coworkers will improve and eventually I will be able to advance my career.

1	2	3	4	5
Strongly disagree				Strongly agree

20b. If I listen to and seriously consider the suggestions made to me by the staff at this center my chances to regain a job and to stay employed will be definitely improve.

1	2	3	4	5
Strongly disagree				Strongly agree

21. I will avoid serious legal problems, such as going to jail or prison, if I listen to and seriously consider the suggestions made to me by the staff at this center.

1	2	3	4	5
Strongly disagree				Strongly agree

Appendix F

Need For Cognition Scale

INSTRUCTIONS: Please read each item carefully. Then indicate the degree to which you agree or disagree with each statement by circling the number between "1" and "5" which comes closest to how you feel. There are no right or wrong answers.

1. I would prefer complex to simple problems.

1	2	3	4	5
not very characteristic of me				very characteristic of me

2. I like to have the responsibility of handling a situation that requires a lot of thinking.

1	2	3	4	5
not very characteristic of me				very characteristic of me

3. Thinking is not my idea of fun.

1	2	3	4	5
not very characteristic of me				very characteristic of me

4. I would rather do something that requires little thought than something that is a sure challenge to my thinking.

1	2	3	4	5
not very characteristic of me				very characteristic of me

5. I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something.

1	2	3	4	5
not very characteristic of me				very characteristic of me

6. I find satisfaction in deliberating hard and for long hours.

1	2	3	4	5
not very characteristic of me				very characteristic of me

7. I only think as hard as I have to.

1	2	3	4	5
not very characteristic of me				very characteristic of me

8. I prefer to think about small, daily projects to long-term ones.

1	2	3	4	5
not very characteristic of me				very characteristic of me

9. I like tasks that require little thought once I've learned them.

1	2	3	4	5
not very characteristic of me				very characteristic of me

10. The idea of relying on thought to make my way appeals to me.

1	2	3	4	5
not very characteristic of me				very characteristic of me

11. I really enjoy a task that involves coming up with new solutions to problems.

1	2	3	4	5
not very characteristic of me				very characteristic of me

12. Learning new ways to think doesn't excite me very much.

1	2	3	4	5
not very characteristic of me				very characteristic of me

13. I prefer my life to filled with puzzles I must solve.

1	2	3	4	5
not very characteristic of me				very characteristic of me

14. The notion of thinking abstractly is appealing to me.

1	2	3	4	5
not very characteristic of me				very characteristic of me

15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.

1	2	3	4	5
not very characteristic of me				very characteristic of me

16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort.

1	2	3	4	5
not very characteristic of me				very characteristic of me

17. It's enough for me that something gets the job done; I don't care why or how it works.

1	2	3	4	5
not very characteristic of me				very characteristic of me

18. I usually end up deliberating about issues even when they do not affect me personally.

1	2	3	4	5
not very characteristic of me				very characteristic of me

Appendix G

THOUGHTS & FEELINGS LIST

In the space below, please list all of the thoughts and feelings you have regarding your problem of chemical dependence and how you may best maintain your recovery from it. Please identify each separate thought or feeling by numbering it (1, 2, 3, ...,).

Use space on other side if needed.

Appendix H

Therapist's Evaluation Form

In which of the following treatment modalities did this patient -
____________________ - participate? (Check all that apply)

___ Individual	___ Group	___ Family
___ Activity	___ Ed. Sessions	___ A.A./N.A. Meetings

Please respond to the following statements to the best of your ability based on your experience with the patient. Circle the number from 1 to 5 which most closely approximates what you believe to be true.

This patient was highly motivated to discuss and engage in a thoughtful consideration of the issues (e.g., maintaining abstinence, breaking away from drug using acquaintances, following the 12 Steps) relevant to his or her recovery from addiction.

1	2	3	4	5
Strongly disagree				Strongly agree

This patient was not motivated to listen to and seriously consider the advice, suggestions, and recommendations given to her or him during treatment.

1	2	3	4	5
Strongly disagree				Strongly agree

This patient clearly demonstrated an adequate or more than adequate comprehension of the words, language, suggestions, and recommendations that I presented in the various treatment modalities in which we worked together.

1	2	3	4	5
Strongly disagree				Strongly agree

This patient had adequate or more than adequate intellectual ability and verbal skills to have understood the words, language, suggestions, and recommendations that I presented in the various treatment modalities in which we worked together.

1	2	3	4	5
Strongly disagree				Strongly agree

Now, please take a few moments to study the attached sheet on which the patient has listed his/her recollections of the themes and issues that were discussed during therapy. Then respond to the following items.

These statements demonstrate a clear understanding by the patient of the arguments, suggestions, and recommendations that I used in various therapy sessions.

1 2 3 4 5
Strongly disagree ... Strongly agree

These statements indicate a change in the patient's attitudes regarding drug use relative to the attitudes he or she held at the beginning of treatment.

1 2 3 4 5
Strongly disagree ... Strongly agree

These statements indicate a change in the patient's attitudes regarding what is necessary for him or her to do in order to maintain recovery from chemical dependence relative to the attitudes he or she held at the beginning of treatment.

1 2 3 4 5
Strongly disagree ... Strongly agree

Appendix I

JUDGEMENTS OF DRUG USING AND RECOVERY ORIENTED BEHAVIORS

Listed below are descriptions of behaviors related either to drug and alcohol use or to recovery from chemical dependence. Following each description are statements you can use to indicate your opinions about whether or not each behavior is something you should do. Please circle the number that comes closest to what you believe is true. Make all four judgements in response to each statement. See the sample item.

Sample item: Listening to music tomorrow will be ...

extremely somewhat neither somewhat extremely

harmful	1	2	3	4	5	6	[✓ 7]	8	9	beneficial
good	1	[✓ 2]	3	4	5	6	7	8	9	bad
unpleasant	1	2	3	4	5	6	7	8	[✓ 9]	pleasant
rewarding	1	2	3	[✓ 4]	5	6	7	8	9	punishing

1. My use of drugs or alcohol for fun at any time in the future will be ...

extremely somewhat neither somewhat extremely

harmful	1	2	3	4	5	6	7	8	9	beneficial
good	1	2	3	4	5	6	7	8	9	bad
unpleasant	1	2	3	4	5	6	7	8	9	pleasant
rewarding	1	2	3	4	5	6	7	8	9	punishing

2. My use of drugs or alcohol to cope with problems at any time in the future will be ...

extremely somewhat neither somewhat extremely

harmful	1	2	3	4	5	6	7	8	9	beneficial
good	1	2	3	4	5	6	7	8	9	bad
unpleasant	1	2	3	4	5	6	7	8	9	pleasant
rewarding	1	2	3	4	5	6	7	8	9	punishing

3. Admitting on a daily basis that I am powerless over my addiction will be ...

	extremely		somewhat		neither		somewhat		extremely	
harmful	1	2	3	4	5	6	7	8	9	beneficial
good	1	2	3	4	5	6	7	8	9	bad
unpleasant	1	2	3	4	5	6	7	8	9	pleasant
rewarding	1	2	3	4	5	6	7	8	9	punishing

4. Believing that a power greater than myself can help me overcome my addiction will be ...

	extremely		somewhat		neither		somewhat		extremely	
harmful	1	2	3	4	5	6	7	8	9	beneficial
good	1	2	3	4	5	6	7	8	9	bad
unpleasant	1	2	3	4	5	6	7	8	9	pleasant
rewarding	1	2	3	4	5	6	7	8	9	punishing

5. Turning my will and life over to the care of GOD during treatment and throughout the rest of my life will be ...

	extremely		somewhat		neither		somewhat		extremely	
harmful	1	2	3	4	5	6	7	8	9	beneficial
good	1	2	3	4	5	6	7	8	9	bad
unpleasant	1	2	3	4	5	6	7	8	9	pleasant
rewarding	1	2	3	4	5	6	7	8	9	punishing

6. When I leave treatment, ending my relationships with the people I used drugs or alcohol with will be ...

	extremely		somewhat		neither		somewhat		extremely	
harmful	1	2	3	4	5	6	7	8	9	beneficial
good	1	2	3	4	5	6	7	8	9	bad
unpleasant	1	2	3	4	5	6	7	8	9	pleasant
rewarding	1	2	3	4	5	6	7	8	9	punishing

7. Attending Alcoholics Anonymous, Narcotics Anonymous, or Cocaine Anonymous meetings on a daily basis for three months or more after I complete my in patient treatment will be ...

extremely somewhat neither somewhat extremely

harmful	1	2	3	4	5	6	7	8	9	beneficial
good	1	2	3	4	5	6	7	8	9	bad
unpleasant	1	2	3	4	5	6	7	8	9	pleasant
rewarding	1	2	3	4	5	6	7	8	9	punishing

8. Attending Alcoholics Anonymous, Narcotics Anonymous, or Cocaine Anonymous meetings two or three times per week for a year after I complete my in patient treatment will be ...

extremely somewhat neither somewhat extremely

harmful	1	2	3	4	5	6	7	8	9	beneficial
good	1	2	3	4	5	6	7	8	9	bad
unpleasant	1	2	3	4	5	6	7	8	9	pleasant
rewarding	1	2	3	4	5	6	7	8	9	punishing

9. Conducting a thorough moral inventory of my past behaviors, making a list of those I have harmed, and becoming willing to make amends (whenever possible) to all of them will be ...

extremely somewhat neither somewhat extremely

harmful	1	2	3	4	5	6	7	8	9	beneficial
good	1	2	3	4	5	6	7	8	9	bad
unpleasant	1	2	3	4	5	6	7	8	9	pleasant
rewarding	1	2	3	4	5	6	7	8	9	punishing

10. Maintaining complete abstinence from alcohol and all other mood altering drugs each day for the rest of my life will be ...

extremely somewhat neither somewhat extremely

harmful	1	2	3	4	5	6	7	8	9	beneficial
good	1	2	3	4	5	6	7	8	9	bad
unpleasant	1	2	3	4	5	6	7	8	9	pleasant
rewarding	1	2	3	4	5	6	7	8	9	punishing

Appendix J

Statement of Behavioral Expectations

PLEASE READ EACH ITEM CAREFULLY. REMEMBER THAT WE ARE NOT INTERESTED IN INDIVIDUAL RESPONSES, WE WISH TO LEARN ABOUT GROUP PATTERNS. THEREFORE YOUR ANSWERS WILL REMAIN CONFIDENTIAL AND WILL NOT BE SHARED WITH MEMBERS OF THE TREATMENT STAFF. IN THIS SURVEY YOU ARE ASKED TO JUDGE HOW LIKELY OR UNLIKELY IT IS THAT CERTAIN EVENTS RELATED TO YOUR RECOVERY WILL HAPPEN. CIRCLE THE NUMBER FROM 1 TO 5 WHICH COMES CLOSEST TO WHAT YOU BELIEVE IS TRUE.

1. How likely is it that you will remain completely abstinent from mood altering chemicals; that is how likely is it that you will not use any mood altering drug (alcohol, marihuana, cocaine, or other illicit drugs). Answer 1a through 1c.

1a. How likely is it that you will remain abstinent for one week to a month?

1	2	3	4	5
Not at all likely				Extremely likely

1b. How likely is it that you will remain abstinent for one month to six months?

1	2	3	4	5
Not at all likely				Extremely likely

1c. How likely is it that you will remain abstinent for six months to a year?

1	2	3	4	5
Not at all likely				Extremely likely

2. How likely is it that you will attend at least one A.A., N.A., or C.A. meeting per day for the next 90 days.

1	2	3	4	5
Not at all likely				Extremely likely

3. How likely is it that you will attend at least three A.A., N.A., or C.A. meetings per week for the next three months.

1	2	3	4	5
Not at all likely				Extremely likely

4. How likely is it that you will find a sponsor from A.A., N.A., or C.A. within the next month?

1	2	3	4	5
Not at all likely				Extremely likely

5. How likely is it that a year from now you will have experienced at least one slip; that is, how likely is it that you will have used a mood altering chemical on at least one occasion without returning to your pretreatment level of use?

1	2	3	4	5
Not at all likely				Extremely likely

6. How likely is it that by a year from now you will have experienced a relapse; that is, how likely is it that you will have returned to your pretreatment level of use, even if only for a few days?

1	2	3	4	5
Not at all likely				Extremely likely

7. How likely is it that you will seek outpatient counseling from a qualified professional (i.e., psychologist, clinical social worker, or certified substance abuse counselor) during the next month to help you in your recovery from chemical dependence.

1	2	3	4	5
Not at all likely				Extremely likely

Appendix K

COMPLETION OF TREATMENT FORM

This form is to be used by the investigator to indicate if a subject successfully completed treatment or if the subject left treatment prematurely. THIS FORM IS NOT TO BE COMPLETED BY THE SUBJECT.

Subject number: ____

Check the answer which applies.

___ The subject completed all recommended phases of treatment and was discharged according to medical advice.

Premature Termination

___ Subject left against medical advice.

___ Subject was discharged for medical reasons (but before treatment was completed).

___ Subject was discharged before completing treatment because of lack of compliance (e.g., violence, violation of rules).

Appendix L

CONSENT TO PARTICIPATE IN RESEARCH

1. I agree to participate in the study conducted by Kenneth G. Dugan, under the supervision of Robert W. Lent, Ph.D. I understand that this study is not part of my treatment and my decision to participate or not participate will not affect the services I receive in this center.

2. The nature of this study has been explained to me. I understand that my participation will involve completing six brief surveys when I first start treatment and six more surveys when I complete treatment. I understand that one survey is used to gather demographic information and that the remaining questionnaires measure aspects of my perceptions about myself, drug use, and about treatment. In addition, my termination status (discharge according to medical advice or premature termination) will be obtained from medical records. The total amount of time that it will take me to complete these surveys is not expected to exceed one hour (about 25 to 35 minutes when I start treatment and 20 to 30 minutes when I finish treatment).

3. I understand that my participation is completely voluntary, and that I can discontinue participation in this research at any time that I choose.

4. My participation or lack of participation will not affect my eligibility for services nor the type of service that I will receive at this hospital now or in the future. I understand that my involvement in this study does not guarantee any special benefits to me.

5. I understand that the data resulting from this research will be kept in strict confidence and that I will never be personally identified in any report of this study or in any summary of the data. Only those individuals directly involved in the collection of data will have access to my responses. I am aware that the surveys I complete will not contain my name.

6. In the even that I have any questions or concerns about this study or if I feel I have experienced negative consequences as a result of my participation in this study, I am aware that I may directly contact the principle investigator: Kenneth G. Dugan.

Signature: ________________________ Date: __________

Print Name: ________________________

Witnessed By: ________________________ Date: __________

Appendix M

CONSENT TO PERMIT THERAPIST TO REVIEW THOUGHT LIST

At this time we would like to thank you for your help. Your assistance has been greatly appreciated.

In order to provide further data to support this research it would be quite helpful to us if were able to allow your therapist review your responses to the thought list survey so that he or she may respond to a very brief survey and share his or her impressions of your responses to treatment. (Only aspects of the therapist's impressions that are relevant for this study will be inquired of your primary therapist.)

I understand that my permission to allow my primary therapist to review my thought listing survey is completely voluntary and will not affect any services that I may receive from (name of treatment center) in the future.

I am aware that the primary therapist I had during treatment will not have access to my responses to any other questionnaire which I have completed as part of this study. I am also aware that the conditions of the consent form that I signed at the beginning of my involvement in this study have not changed. To the extent that action has not occurred based on my permission I may withdraw this permission at any time.

Signature: ______________________ Date: ____________

Witness: ______________________ Date: ____________

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