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# Interactions between psychotherapy procedures and patient attributes that predict alcohol treatment effectiveness: A preliminary report

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**Abstract**

This study examined interactions between patient attributes and therapist interventions on alcoholism treatment outcome. Process analyses of an early psychotherapy session from either cognitive–behavioral (CBT) or family systems (FST) therapy and baseline patient information ($N$=47) were used to measure theory-based therapy and patient variables. Hierarchical linear regression was used to test the effect of each patient–therapy interaction on changes in drinking behavior. Two disordinal interactions were predictors of alcohol use during the maintenance phase of treatment. Patients high in emotional distress did best when their therapy addressed emotional experiences, and the converse was observed for patients low in distress. Patients high in reactance had better drinking outcomes when their therapy was nondirective, and patients low in reactance improved more with directive therapy. In contrast to the interactions between patient attributes and the therapy process, the interactions between patient attributes and treatment model (CBT versus FST) were not reliable predictors of alcohol use. 

*Keywords:* Alcohol; Treatment; Psychotherapy; Process; Patient attribute

## 1. Introduction

Empirical research on the efficacy of psychosocial treatments for alcoholism has been broadly based and has produced decidedly mixed results. On one hand, there has been

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support for the utility of cognitive–behavioral group therapy (CBT, Oei & Jackson, 1984), self-control training (Connors, Maisto, & Ersner-Hershfield, 1986), behavior therapy (Telch, Hannon, & Telch, 1984), behavioral marital therapy (O'Farrell, 1994), and social skills training (Oei & Jackson, 1980). On the other hand, there is also evidence of the ineffectiveness of each of these treatments. Group CBT has failed to reduce alcohol consumption among repeated drunk driving offenders (Rosenberg & Brian, 1986), behavioral self-control training has failed to induce long-term changes in alcohol use (Rychtarik, Foy, & Scott, 1987), and marital therapy based upon a family systems orientation (Zweben, Pearlman, & Li, 1988), and coping skills training for chronic alcoholics (Walker, Sanchez-Craig, & Bornet, 1982) have both failed to significantly reduce drinking behaviors. As a general rule, moreover, comparisons of different treatment models have failed to reveal large differences, supporting instead the so-called Dodo Bird Verdict that all have won and all must have prizes (Luborsky, Singer, & Luborsky, 1975; Wampold et al., 1997).

While methodological inconsistencies (e.g., poor implementation of a given treatment) and/or design flaws may explain some of the discrepant findings about alcoholism treatments, it is also likely that variations in patient responsiveness within treatments masked the effects. The Institute of Medicine (1990) concluded that no single treatment for alcoholism is effective for all patients, and that the effectiveness of a specific treatment is moderated by specific characteristics of each patient or sample.

Analyses of the interactions between patient attributes and treatments have arisen in the field of alcoholism research to address this issue. This body of work, often referred to as patient–treatment matching research, has also produced equivocal findings. In the largest randomized clinical trial of alcoholism treatments to date, Project MATCH (1997a, 1997b) analyzed the effects of 21 patient variables as moderators of treatment effectiveness. Among these variables, only four interacted with treatment modality. Project MATCH (1997a) found that outpatients who were low in global psychiatric severity at pretreatment improved more in the months following a 12-step-based treatment than after CBT (although this difference was no longer present at the 1-year follow-up). Aftercare patients high in alcohol dependence responded better to 12-step than to CBT, and the reverse was found for patients low in alcohol dependence. Further, patients in states of high anger responded better to motivational enhancement therapy than to CBT at both the 1- and 3-year follow-up (Project MATCH, 1997b, 1998). The most robust finding in Project MATCH was at the 3-year follow-up, in which patients with a social network that supported drinking did better following 12-step treatment than after a motivational enhancement treatment (Project MATCH, 1998).

In other research, male alcoholics with high levels of sociopathy and psychopathology were shown to improve more from coping skills training than from an interactional group treatment; patients low in sociopathy improved more in response to the interactional group treatment (Litt, Babor, DelBoca, Kadden, & Cooney, 1992). Similar findings were observed among a sample of female alcoholics who received the same treatments as used by Kadden, Cooney, Getter, and Litt (1989) and Litt, Babor, DelBoca, Kadden, and Cooney (1992). The importance of these patient variables in moderating treatment effectiveness was not replicated in Project MATCH (1997b). However, the treatments used by Kadden et al. and Litt et al.

differed substantially from Project MATCH both in terms of content and format (i.e., group versus individual).

Additionally, individuals with an external locus of control have been found to respond better to a structured, coping skills training approach than to an interactional treatment (Hartman, Krywonis, & Morrison, 1988). Patients with low education levels, high urges to drink, and high levels of anxiety exhibited a greater reduction in drinking after communication skills training than after cognitive–behavioral mood management training (Rohsenow et al., 1991).

Despite the heuristic value of these findings, the amount of variance accounted for by the interactions of treatment models and patient variables is generally small. There is evidence that unpacking treatment manuals and classifying their interventions into functional groups that represent similar objectives or qualities might improve prediction. In this way, similar procedures from different manuals and theories may be found to share common outcomes. This approach may lay the groundwork for bridging interventions across theoretical boundaries and help to explain the Dodo Bird Verdict of equivalence across theoretically different treatments.

Systematic treatment selection (STS) is a model that attempts to accomplish just this task. STS (Beutler & Clarkin, 1990) proposes that multiple relationships between patient and treatment characteristics may impact an individual's response to psychotherapy. The STS theory postulates that patient characteristics relevant in treatment matching include level of emotional distress, the relative balance of internalizing and externalizing coping style, and psychological reactance level (propensity to resist assistance) (Beutler & Clarkin, 1990; Gaw & Beutler, 1995). Corresponding treatment dimensions postulated to be relevant in patient–treatment matching include the therapist's attempts to increase or decrease the patient's level of emotional arousal by focusing on affect, the within-session focus on insight or behavior change, and the directiveness of the therapist's interventions (Beutler & Clarkin, 1990; Gaw & Beutler, 1995).

Hypotheses about which treatment works best with which patient along some of these dimensions have been tested empirically among a nonalcoholic population. For example, behaviorally oriented treatment was shown to be superior to insight-oriented treatment for depressed individuals who tended to use an externalizing coping style (Calvert, Beutler, & Crago, 1988). Also, patients high in reactance (i.e., more defensive) were shown to improve more in a nondirective treatment for depression (Beutler et al., 1991).

In the area of alcoholism treatment, the STS theory has not been empirically examined. An evaluation of this theory applied to alcoholism treatment may further explain the interactions between treatments for alcoholism and the alcoholics themselves.

The purpose of the present study was therefore to examine how the effectiveness of alcoholism treatment varies as a function of who the patient is and how the therapist delivers the treatment. This study empirically evaluated multiple aspects of the STS patient and treatment matching theory (Beutler & Clarkin, 1990) that have not been analyzed in alcoholism research. We anticipate that few differences will emerge between the outcomes of CBT and family systems therapy (FST), supporting the Dodo Bird

conclusion. Instead, we anticipate that differences in outcomes will be more closely related to dimensions that cut across treatment and that result in fitting particular classes of interventions with patient qualities.

Drawing upon Beutler and Clarkin's (1990) theoretical work, we hypothesized that patients' alcohol use would be predicted by disordinal interactions between: (1) patient emotional distress and the focus on patient affect in treatment, (2) patient coping style and the relative focus on behavioral or insight treatment, and (3) patient psychological reactance and the directiveness of therapist interventions.

*Hypothesis 1:* This predicted optimal drinking outcomes when affect-focused interventions were used with patients low in distress and when non-affect-focused interventions were used with patients high in distress.

*Hypothesis 2:* This predicted optimal drinking outcomes when behavior-focused interventions were used with patients high in externalization and when insight-focused interventions were used with patients low in externalization.

*Hypothesis 3:* This predicted optimal drinking outcomes when directive interventions were used with patients low in reactance and when nondirective interventions were used with patients high in reactance.

We further hypothesized that patient–treatment interactions that involve the therapy process would be more predictive of outcome than interactions between patient attributes and treatment model.

## 2. Method

### *2.1. Participants*

Forty-seven patients who participated in an outpatient couples alcoholism treatment program and that attended at least one session of psychotherapy were the sample for this study. The partners of these patients participated in treatment, but were not a focus of this study. A total of 97 patients (80 men and 17 women) were initially screened for participation in the program. Inclusionary criteria for patients entering the project included a Michigan Alcoholism Screening Test (MAST, Selzer, 1971) score greater than six, alcohol use as a primary problem, and being in a committed relationship for at least 6 months. The presence of psychotic symptoms was an exclusionary criterion, though no patients presented for screening with these symptoms. Of this group, 22 individuals chose not to participate. The remaining 75 patients gave informed consent to participate in the study and were randomly assigned to one of two treatments. Patients were also randomly assigned to a therapist, though therapist availability to accept new patients occasionally influenced these assignments. From the treatment sample of 75 patients (63 men and 12 women), 27 patients either could not be located or refused to participate in the follow-up assessment at the end of treatment. This attrition occurred despite extensive efforts to

obtain follow-up data that included home visitations, certified letters, and contact with collaterals. For one additional patient, no videotape material of the patient's treatment was available. Given the amount of missing data from these patients, we decided not to impute scores out of concern that imputation would inappropriately alter the findings. Analyses therefore included only those patients with complete data ($n$=47, 63% of the treatment sample).

No significant differences were found between patients for whom follow-up data were and were not available on the basis of age, education, employment status, marital status, MAST score, previous alcohol treatment, use of illicit drugs, global functioning, emotional distress, and treatment assignment. Also, the relationships between the patient attribute and therapy process variables (i.e., the interactions central to the hypotheses of the study) did not differentiate who was and was not available for follow-up. Patients with and without follow-up data did differ on ethnicity ($\chi^2$=4.43, $P$<.05). Sixty-nine percent of Caucasian patients were available for follow-up and 36% of non-Caucasian patients were available. Patients who were available also tended to be less interpersonally reactant (Wald=3.69, 1 *df*, $P$=.055) and received more nondirective therapy (Wald=7.28, $P$<.01) than those who were not.

The vast majority of the 47 patients in the present report were male (85%) and Caucasian (91.5%). The average age of the patients was 38.8 years old (S.D.=9.1). Seventy-two percent of patients were employed and patients worked 31.3 h/week on average (S.D.=19.6). Thirty-seven percent had a college degree and 93.5% graduated from high school. The average MAST score was 29.7 (S.D.=9.1) and 54% of the sample had received prior treatment for alcohol use. The patients had maintained fairly longstanding relationships with their partners (mean=8.7 years, S.D.=8.8). Though the female participants (mean=42 years old, S.D.=7.4) were somewhat older than their male counterparts (mean=37 years old, S.D.=9), men and women did not differ significantly on any of the patient or treatment variables of interest. Given these similarities and the relatively small number of women in the study, male and female patients were included together in all analyses.

### 2.2. Treatments

The alcoholism treatment project used manualized CBT (Wakefield, Williams, Yost, & Patterson, 1996) and FST (Rohrbaugh, Shoham, Spungen, & Steinglass, 1995). Both treatments were delivered in a 20-session format that included the problem drinker's partner or spouse. The first 12 sessions were designed as an acute phase of treatment when patients and their partners would attend two 90-min sessions per week for a span of 6 weeks. The final eight sessions comprised the maintenance phase of treatment and generally lasted 3–4 months. The sample for this study attended between 12 and 20 sessions (mean=18, S.D.=2) over a span of 7–58 weeks (mean=27, S.D.=10).

CBT focused on the relationships between the thoughts, feelings, and behaviors of the problem drinker in an effort to identify patterns of use and to develop strategies to achieve and maintain abstinence. Relationship issues were addressed to the extent that interactions between the patient and his or her partner either promoted or discouraged the patient's alcohol

use. The CBT track required that patients achieve abstinence by the end of the acute phase of treatment, and the patients contracted to strive for this goal.

FST conceptualized problem drinking as an integral part of family relationships and focused on how relational interactions maintained drinking. The treatment therefore aimed to alter key interactional patterns that were related to alcohol use. The overall goal of treatment was abstinence; however, FST therapists initially assumed a neutral stance regarding changes in patients' drinking patterns. Therapists regularly "consulted" with patients regarding their desire to change their drinking behavior. After a patient and his or her partner mutually agreed on a goal for changes in alcohol use, the therapists assumed an active role in helping patients achieve their individualized goals.

For each treatment condition, authors of the treatment manual trained the therapists. Training consisted of didactic and role-play experiences. All therapists were supervised weekly. Senior clinicians conducted supervision using videotaped therapy material. The supervisors also conducted weekly fidelity checks on treatment compliance. One therapist was subjected to a period of retraining and was subsequently dropped from the program because of failure to reach fidelity criteria. All others maintained compliance with a standard of acceptable performance as rated by experts in the modality.

### *2.3. Therapists*

A total of 18 therapists delivered treatment for the project. An initial group of 8 therapists was selected out of a pool of 53 applicants. The other 10 therapists were recruited as needed over the course of the project. Despite these staff changes, each patient had only one therapist. Among the 18 therapists, 1 held a PhD and the other 17 held a master's degree. All therapists had at least 1 year of experience in substance abuse treatment and had letters of recommendation from mental health professionals in the community. Given that master's-level clinicians often provide treatment services to alcoholic patients, clinicians with this educational background were heavily represented to enhance the ecological validity of the treatments. The 18 therapists were equally divided across the two treatments. The CBT treatment had four male and five female therapists and the FST treatment had two male and seven female therapists.

### *2.4. Data collection procedures*

The data used in this study included pretreatment assessment information on patient attributes, observer ratings of the psychotherapies, and a drinking outcome measure assessed at the end of treatment.

### *2.5. Patient attributes*

The pretreatment assessment of patient attributes was based on standardized questionnaires. The patient attributes of interest were emotional distress, externalizing coping style, and psychological reactance.

*2.5.1. Emotional distress*

This attribute was assessed using the Global Severity Index (GSI) *t* score from the Symptom Checklist 90-Revised (SCL-90-R, Derogatis, 1983). The GSI score provides a self-report measure of global distress experienced by each patient. High scores are associated with high levels of emotional distress (Derogatis, 1983). These *t* scores were based upon an outpatient psychiatric normative sample.

*2.5.2. Externalizing coping style*

The average of the Pd and Pa clinical scales from the Minnesota Multiphasic Personality Inventory-2 (MMPI-2, Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) was used to measure externalization. This index was used in previous research (Beutler et al., 1991) in which its correlations with other measures of coping style supported its construct validity. High scores on this measure indicate a high degree of externalization (i.e., acting out, blaming others, and avoidance).

*2.5.3. Psychological reactance*

The average of the Taylor Manifest Anxiety Scale and the Edwards Social Desirability Scale from the MMPI-2 (Butcher et al., 1989) were used to measure reactance. This measure was described by Asendorpf and Scherer (1983) as anxious resistance and has demonstrated construct validity in previous research (Beutler et al., 1991). High scores indicate high levels of reactance (i.e., defensiveness, unwillingness to be influenced by others).

*2.6. Therapy dimensions*

Three therapy dimensions from the STS model were selected to correspond with each of the patient dimensions. They were (1) the extent to which therapy sought to increase or decrease the emotional arousal of the patient by addressing affective experiences, (2) the extent to which therapy focused on insight or behavior change, and (3) the extent to which therapy was directive or nondirective. These variables were determined by independent ratings of therapist activity using the STS Therapy Rating Scale (TRS) that contains subscales to measure each of these constructs (Fisher, Karno, Sandowicz, Albanese, & Beutler, 1995).

Videotaped therapy sessions of the FST and CBT treatments were source material for the ratings. One psychotherapy session was randomly selected from among the first six sessions of treatment for each patient. These ratings represent therapist activity early in treatment. A preliminary analysis suggested that therapist activity later in treatment did not predict alcohol use. We therefore only present data on the early treatment session. Two consecutive 20-min segments (40 min total) were rated from the session. A single, nontime varying score for each treatment dimension was determined by averaging the two ratings from the session. Across the study, ratings on the sessions were randomized such that they were made on either the first 40 min or the last 40 min of a session.

Doctoral candidates in psychology were recruited to serve as treatment raters. Two raters were selected based on their experience and successful completion of training. Each rater had over 3 years of clinical experience. Four hours of training were provided for the raters by the

first author of the study. Training familiarized them with the items and response procedures on the psychotherapy rating scale. During this training period, questions by the raters about the meaning of questionnaire items were addressed. Training then involved multiple trial ratings on sample cases until satisfactory agreement between raters was reached. Disagreements and inconsistencies that arose from these practice ratings were discussed. The criteria for satisfactory interrater agreement was an intraclass correlation (ICC) >.7 using the ICC (2,1) described by Shrout and Fleiss (1979). Both raters surpassed this level of independent agreement by the conclusion of the training period.

*2.6.1. Focus on affect*

The extent to which the therapist sought to increase or decrease levels of patient emotional arousal by focusing on patient affect was assessed using the Therapeutic Arousal subscale of the TRS (Fisher et al., 1995). This scale is a set of five Likert-scale items to which independent raters respond after viewing the session segments on videotape. Two of these items address the extent to which the therapist focuses on painful or emotionally charged material. Three of these items address the extent to which the therapist uses reassurance and directs the patient away from emotionally painful topics. The ratio of the averages of these two sets of items was the score for therapeutic arousal for a given segment. Ratio scores were used to convey information about the use of certain techniques relative to other techniques. For example, scores greater than one indicated predominant use of affect-focused interventions. Affect–focus scores across both segments were then averaged to obtain a single indicator for the session.

This scale demonstrated good interrater reliability in this study (ICC>.70). As evidence of construct validity, this subscale correlated negatively with the behavior focus scale ($r=-.38$) and the directiveness scale ($r=-.55$) of the same instrument. These are expected directions in that insight-focused and nondirective therapy are likely to allow more experiencing of emotions during treatment.

*2.6.2. Behavior versus insight focus*

The extent to which the therapist focused on behavior change or on helping the patient gain insight into her/his problems was assessed with the Behavior/Insight subscale of the TRS (Fisher et al., 1995). This scale includes 10, Likert-scale items to which independent raters will respond after viewing each session segment on videotape. Five of these items address the extent to which the therapist uses behavioral techniques and focuses on behavior change. The other five items address the extent to which the therapist addresses early experiences, recurring conflicts, and helps the patient gain understanding about her/his problems. The ratio of the averages of these two sets of items was the score for behavior versus insight focus for a given segment. Scores greater than one indicated predominant use of behavior-focused therapy techniques. Scores less than one indicated more use of insight-oriented therapy techniques. Scores across both segments were averaged to obtain a single indicator of this variable. Interrater reliability in this study was high (ICC>.8). As evidence of construct validity, this scale correlated fairly highly with the directiveness subscale on the instrument ($r=.7$). This relationship was in the expected direction as behavior-focused therapy may be

more directive than insight-focused treatment. Despite this correlation, we kept these two constructs separate because of the theoretical distinction that the STS theory makes regarding behavior focus and directiveness in patient–treatment matching.

#### 2.6.3. Directiveness

The extent to which the treatment was directive or nondirective was assessed with the Directiveness subscale of the TRS (Fisher et al., 1995). This scale has 11, Likert-scale items to which independent raters will respond after viewing portions of treatment on videotape. Six of these items assess treatment directiveness by measuring therapist confrontation of patients, therapist initiation of topics, and the extent to which therapists assume a teacher-stance toward patients. Five items address the extent to which treatment is nondirective as indicated by the therapists' use of open-ended questions, paraphrasing, and allowing patients to select topics for discussion. The ratio of the averages of these two sets of items was the score for directiveness for a given segment. Scores greater than one indicated predominant use of directive therapy techniques. Scores across both segments were averaged to obtain a single indicator of treatment directiveness. Interrater reliability for this scale was good (ICC>.7). Evidence of construct validity was deemed acceptable on the basis of its relationship to the other subscales on the TRS described above.

### 2.7. Outcome measure

#### 2.7.1. Alcohol use

Following the recommendations of Ling, Shoptaw, Rawson, and Klett (1995) we computed a summary measure of alcohol use across the maintenance phase of treatment. The assessment was conducted at or shortly after the end of treatment, which was defined as the last session attended by each patient. The assessment covered a time period that averaged 5 months (S.D.=2.5 months). Variations in the amount of time included in the assessment were primarily due to differences in the length of time that patients remained in the maintenance phase of treatment. No relationship was observed between alcohol use and time in the maintenance phase.

The alcohol use measure consisted of a summary rating from two independent clinicians who reviewed all available information on patient drinking patterns. The information available to the clinicians included results from the Time-Line Follow-Back drinking interview (Sobell, Maisto, Sobell, & Cooper, 1979), the Alcohol Use Inventory (Wanberg & Horn, 1985), Breathalyzer tests, patient self-report, collateral reports, therapist session notes, and review of videotaped therapy sessions. Given that the videotaped treatment sessions were available for the clinicians to review it was not possible to keep them blind to the treatment modality. By using two clinicians for the ratings, we sought to minimize the risk of bias. Additionally, the clinicians were blind to the patient and therapy scores used in the present study.

A summary measure of this type is recommended both because it relies on multiple sources of information, thus reducing the effect of error in any one source (Breslin, Sobell, Sobell, & Sobell, 1997), and because it minimizes data loss. Because it is a summary rating that utilizes

all available sources of information, it is not reliant on any single measure that may be missing for some individuals. By incorporating multiple sources of information, the summary score in the present study reduced both the risk of spurious data and the amount of missing data that would have been present if only a single source of outcome was used.

To determine the summary score, pairs of clinicians reached consensus on the pattern of each patient's alcohol consumption during the maintenance phase of treatment. The clinicians used a 100-point scale that assessed pattern of alcohol consumption on the basis of frequency (e.g., never, episodic, or steady) and quantity of use (e.g., abstinence, light, moderate, or heavy). A score of 100 equated total abstinence and a score of 1 equated steady, heavy drinking. Heavy drinking was defined as five or more standard drinks per day. Correlations between these ratings and the Time-Line Follow-Back at different time points ranged from .58 to .72.

### *2.8. Data analysis*

A preliminary analysis of the main effect of treatment modality on the drinking outcome was conducted using analysis of variance with baseline drinking entered as a covariate. Separate hierarchical linear regression analyses were then used to examine each patient–therapy interaction as a predictor of alcohol use during the maintenance phase of treatment. Each regression analysis included baseline drinking and treatment modality as covariates in the first step. The second step of each analysis included the patient and therapy main effects. The third step of each analysis included the interaction between the patient and therapy effects. A second set of regression analyses was conducted to examine the interactions between the patient attributes and treatment modality as predictors of alcohol use. This latter set of analyses allowed a comparison between effects involving the therapy process and those involving treatment modality. An $\alpha$ level of .05 was used for all statistical tests.

## 3. Results

### *3.1. Assumption checks*

Several procedures were used to assess for assumption violations. We conducted univariate and multivariate tests of normality and outliers. To evaluate linearity, we examined normal probability plots, partial regression plots, and plots of standardized residuals with predicted scores. Standardized residual plots were used to evaluate homogeneity of variance. We evaluated the homogeneity of regression assumption for the covariates in the models by testing for interactions between the covariates and the independent variables. The results suggested no violations of linearity, homogeneity of variance, and homogeneity of regression.

The normality tests showed that the variable of directiveness exhibited positive skewness and kurtosis. We transformed the directiveness variable and reanalyzed the data. The results were not substantively different from the analysis using untransformed data. We therefore

retained the nontransformed variable to make interpretation of results easier. Checks for outliers revealed one outlier on each of the following variables: the externalization main effect, the interaction between externalization and the behavior/insight focus, and the interaction between directiveness and resistance. These three outlying scores were Winsorized such that they were assigned a new value equal to one point greater than the next highest score on the respective variable.

As a final data check, we looked for suppressor effects in our results. To do so, we compared the bivariate correlations between each independent variable and the dependent variable with the standardized regression coefficients. These checks provided no evidence that suppressor effects were present.

### 3.2. Preliminary analysis of treatment main effects

A preliminary analysis of the two treatment modalities (CBT and FST) showed a significant main effect of treatment on the alcohol use outcome ($F$=4.98, $P$<.05). Controlling for baseline drinking, patients in CBT ($n$=19) had significantly better drinking outcomes (mean=75.1, S.D.=28.1) than patients in FST ($n$=28, mean=57.7, S.D.=32.1) at the end of treatment. This effect accounted for 9.2% of the variance in outcome scores. Given the presence of this significant main effect, we included treatment modality as a covariate in each of the analyses to test the patient–therapy interaction effects.

### 3.3. Distributions of variables

Descriptive statistics of the patient and therapy variables are shown in Table 1. Variability was quite broad for all of the variables. Distress scores ranged from below average to high levels of distress compared to outpatient psychiatric norms. Coping style scores indicated that, compared to the MMPI-2 average score of 50, this sample population was about one standard deviation above average in terms of externalization. Scores on psychological reactance indicated that subjects exhibited a below average level of reactance.

Table 1
Descriptive statistics of patient and therapy variables

| | Mean | S.D. | Min | Max |
|---|---|---|---|---|
| *Patient variables* | | | | |
| Emotional distress | 63.30 | 10.66 | 45.00 | 81.00 |
| Externalizing coping style | 57.34 | 7.35 | 42.50 | 73.50 |
| Psychological reactance | 32.00 | 6.79 | 20.00 | 45.00 |
| *Therapy variables* | | | | |
| Focus on patient affect | 0.89 | 0.30 | 0.38 | 1.78 |
| Focus on behavior | 1.14 | 0.53 | 0.42 | 2.21 |
| Therapist directiveness | 0.68 | 0.18 | 0.44 | 1.29 |

Therapy scores indicated that on average, treatments were not predominantly affect-focused (scores <1), though a wide range of emphasis on emotional experiences was present. Treatments on average focused more on behavior change, though they ranged from being very behavior-oriented to very insight-oriented. Treatments also tended to be nondirective though again there was considerable variability.

The correlations between the patient and therapy variables in each model were very low, ranging from $r=-.02$ to $r=-.06$. In order to minimize the correlations between the main effects and the interaction term in each model, all variables were mean-centered prior to the analysis. The resulting correlations between the main effect terms and the interaction terms ranged from $r=-.19$ to $r=.35$.

### 3.4. Patient attribute and therapy process effects

Two of the three patient–therapy interactions under investigation were significant predictors of drinking at the end of treatment. Results from the three analyses are presented in Tables 2–4.

The largest of these significant effects was the interaction between patient emotional distress and the extent to which the therapist addressed the patient's emotional experiences ($t=3.09$, $P<.01$; see Table 2). After controlling for baseline drinking and treatment modality, this effect accounted for 14.8% of unique variance in alcohol use. This interaction is depicted in Fig. 1. The interaction was disordinal. Patients who entered treatment experiencing low levels of distress (defined as one standard deviation below the sample mean) had the best drinking outcomes when early in therapy their treatment did not focus on emotional experiences. For these same patients, poor outcomes were associated with the use of therapy interventions that addressed affect.

Table 2
Hierarchical regression analysis predicting alcohol use from patient emotional distress and therapist focus on affect ($N$=47)

| Variable | $B$ | S.E. $B$ | $t$ | Unique $R^2$ per step (%) | Cumulative $R^2$ per step (%) |
|---|---|---|---|---|---|
| *Step 1* | | | | | |
| Baseline drinking | 0.57 | 0.23 | 2.48* | 18.8 | 18.8 |
| Treatment (FST=0, CBT=1) | 19.27 | 8.64 | 2.23* | | |
| *Step 2* | | | | | |
| Patient emotional distress | −0.24 | 0.40 | −0.61 | 2.7 | 21.5 |
| Therapist focus on affect | −15.60 | 15.11 | −1.03 | | |
| *Step 3* | | | | | |
| Distress×Focus on affect | 5.39 | 1.74 | 3.09** | 14.8 | 36.3 |

* $P\leq.05$.
** $P\leq.01$.

Table 3
Hierarchical regression analysis predicting alcohol use from patient coping style and therapist focus on behavior ($N$=46)[a]

| Variable | $B$ | S.E. $B$ | $t$ | Unique $R^2$ per step (%) | Cumulative $R^2$ per step (%) |
|---|---|---|---|---|---|
| *Step 1* | | | | | |
| Baseline drinking | 0.57 | 0.23 | 2.43* | 18.8 | 18.8 |
| Treatment (FST = 0, CBT = 1) | 19.38 | 8.87 | 2.19* | | |
| *Step 2* | | | | | |
| Externalizing coping style | 0.64 | 0.64 | 1.01 | 2.1 | 20.9 |
| Therapist focus on behavior | −1.43 | 17.43 | −0.08 | | |
| *Step 3* | | | | | |
| Coping × Focus on behavior | −1.99 | 1.19 | −1.68 | 5.2 | 26.1 |

[a] MMPI-2 data were unavailable for one subject, thus for this analysis $N$ = 46.
* $P \leq .05$.

The converse set of relationships was observed for patients high in emotional distress (defined as one standard deviation above the sample mean). The best drinking outcomes were associated with the use of interventions early in treatment that emphasized emotional experiences and the worst drinking outcomes were associated with interventions that did not address patient affect.

The interaction between patient externalizing coping style and the relative behavior/insight focus of therapy was not significant ($t$ = −1.68, $P$ = .10; see Table 3). The effect accounted for 5.2% of unique variance in drinking outcomes.

The second significant interaction was between psychological reactance and therapist directiveness ($t$ = −2.19, $P$ < .05; see Table 4). After controlling for baseline drinking and treatment modality, this effect accounted for 7.9% of unique variance in alcohol use. This

Table 4
Hierarchical regression analysis predicting alcohol use from patient reactance and therapist directiveness ($N$=46)[a]

| Variable | $B$ | S.E. $B$ | $t$ | Unique $R^2$ per step (%) | Cumulative $R^2$ per step (%) |
|---|---|---|---|---|---|
| *Step 1* | | | | | |
| Baseline drinking | 0.57 | 0.23 | 2.43* | 18.8 | 18.8 |
| Treatment (FST = 0, CBT = 1) | 19.38 | 8.87 | 2.19 | | |
| *Step 2* | | | | | |
| Psychological reactance | 0.90 | 0.63 | 1.42 | 7.4 | 26.2 |
| Therapist directiveness | −44.96 | 29.30 | −1.53 | | |
| *Step 3* | | | | | |
| Reactance × Directiveness | −11.03 | 5.04 | −2.19* | 7.9 | 34.1 |

[a] MMPI-2 data were unavailable for one subject, thus for this analysis $N$ = 46.
* $P \leq .05$.

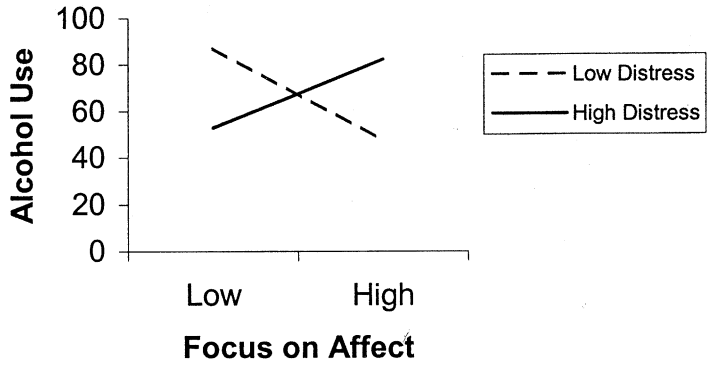


Fig. 1. Interaction between patient emotional distress and therapist focus on affect as a predictor of alcohol use. Note: Higher scores indicate lower alcohol consumption.

disordinal interaction is depicted in Fig. 2. Among patients low in reactance, the best outcomes were observed following more directive therapy; less positive outcomes were associated with a nondirective therapeutic stance.

Patients high in reactance had the best drinking outcomes in response to a nondirective therapist style early in treatment. In contrast for these patients, high therapist directiveness was associated with more drinking.

To explore further the significant interactions we conducted follow-up regression analyses in which the therapy process variables were dismantled into their component parts. For example, therapist focus on affect was separated into the two main effects of (1) therapeutic techniques that addressed emotional experiences and (2) therapeutic techniques that directed patients away from experiencing affect. Therapist directiveness was also separated into two main effects: (1) directive therapeutic techniques and (2) nondirective therapeutic techniques. These component parts were entered simultaneously in each regression model. In this way we were able to determine which specific aspect of the therapists' interventions carried the relationship with the drinking variable.

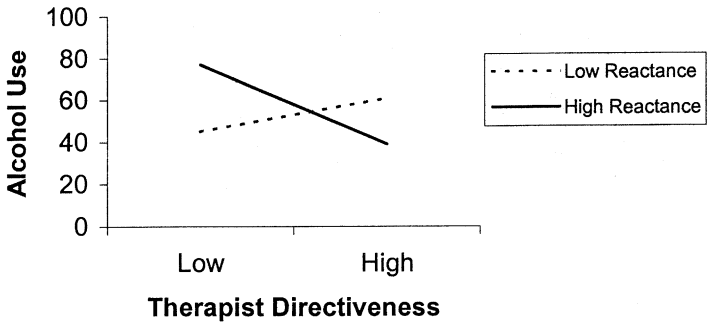


Fig. 2. Interaction between psychological reactance and therapist directiveness as a predictor of alcohol use. Note: Higher scores indicate lower alcohol consumption.

The results indicated there was a significant interaction between patient distress and therapeutic techniques that addressed emotional experiences ($t$=2.73, $P$<.01). This interaction was disordinal such that optimal drinking outcomes were observed among high distress patients whose therapy had a high focus on emotional experiences and among low distress patients whose therapy did not emphasize emotional content. Interestingly, no significant interaction was observed between patient distress and therapeutic techniques that directed patients away from emotional experiences.

The follow-up analysis of therapist directiveness showed that, when treated as separate variables, neither directive nor nondirective interventions significantly interacted with patient reactance to predict alcohol use. We believe this finding was related to the fairly high correlation between directiveness and nondirectiveness ($r$=−.66). Given that therapist directiveness (when computed as a ratio of directive to nondirective interventions) did significantly interact with patient reactance in our primary analysis, this follow-up analysis suggests that the two types of interventions should not be treated as separate (i.e., orthogonal) effects.

### *3.5. Patient attribute and treatment modality effects*

The only patient attribute that moderated the effectiveness of the FST and CBT treatments was emotional distress ($t$=−2.14, $P$<.05). This interaction was ordinal wherein CBT was more effective than FST for patients low in distress, yet CBT's superior effectiveness decreased as patient distress increased. For patients high in distress, the two treatments did not differ in effectiveness. This effect accounted for 7.9% of unique variance in the alcohol use outcome.

To confirm the salience of the two interaction effects involving patient distress (i.e., distress with treatment modality and distress with therapist focus on affect), an additional analysis was conducted. This analysis simultaneously tested both interactions in a single regression model. The results indicated that the interaction between patient distress and treatment modality was no longer significant ($t$=−1.5, $P$=.13) and explained only 3.5% of outcome variance. However, the interaction between patient distress and therapist focus on affect remained a significant predictor of alcohol use ($t$=2.53, $P$<.05) that uniquely accounted for 9.6% of the variance in outcome.

Results of the analyses for patient externalization and reactance showed that these variables did not significantly interact with treatment modality and the interaction effects explained small amounts of variance (3.4% and 1.8%, respectively).

## 4. Discussion

This study demonstrated that alcoholism treatment effectiveness can be predicted by the interaction between baseline patient characteristics and the in-session process of psychotherapy assessed early in treatment. Specifically, the relationships between (1) emotional distress and therapist focus on affect and (2) patient reactance and therapist directiveness were important predictors of alcohol use during the maintenance phase of treatment. Further, these interactions between patient attributes and the therapy process were better

predictors of alcohol use than were the interactions between patient attributes and treatment modality. The finding that interactions between patient attributes and therapy process, but not between patient attributes and treatment modality, predicted alcohol use may help explain the failure of Project MATCH to find more matching effects. Project MATCH focused on treatment modality and did not test interactions involving process variables.

Interestingly, a treatment main effect was also observed in which CBT was superior to FST, on average. Such an effect is quite unusual in psychotherapy research that compares two presumably therapeutic treatments and is not consistent with the expectation of null differences between treatment modalities.

The direction of the patient distress and affect–focus interaction effect was actually contrary to the hypothesized relationships described in the STS theory (Gaw & Beutler, 1995). The theory posited that patients high in emotional distress would improve best in response to therapy that decreased emotional arousal by not addressing affect and that patients low in distress would improve the most if their emotional arousal was increased. The opposite of these hypotheses was observed in the present study; patients high in distress benefited the most from being given an opportunity to explore their emotional experiences in therapy. Conversely, patients low in distress benefited most from therapy that did not emphasize emotional experience.

This finding is also not consistent with some previous research. Alcoholic patients high in pretreatment role-play anxiety had better drinking outcomes in communication skills training than in cognitive–behavioral mood management therapy (Rohsenow et al., 1991). The authors posited that the better response of the anxious patients to skills training over CBT was related to interference caused by anxiety in learning and using cognitive strategies. The effectiveness of the skills training may therefore have been partly the result of not focusing on the patients' anxiety.

It is evident that the relationship between patients' emotional distress and the emphasis on emotional states during treatment is complex and may require further operationalization of "distress." The present study used a global indicator of distress whereas the study by Rohsenow et al. (1991) measured anxiety exhibited during a role-play exercise that was rated by an observer. The specific type of distress that is measured may therefore influence the direction of this interaction.

The presence of a significant interaction effect for patient reactance and therapist directiveness converges with earlier psychotherapy findings on related variables. This effect supports the interaction between anger and treatment modality observed in Project MATCH (1997b) in which patients high in anger responded best to a motivational enhancement therapy that avoided confrontation and emphasized patient control. Trait anger and interpersonal reactance may well be related constructs, and the anger variable in Project MATCH was a composite of trait and state scores. Additionally, research in the treatment of depression has found that patients high in reactance improved with self-directed treatment while patients low in reactance improved with CBT (Beutler et al., 1991; Beutler, Machado, Engle, & Mohr, 1993). The present finding suggests that in these earlier studies therapist directiveness may have moderated the effect of patient reactance level on response to treatment.

Contrary to findings among a nonalcoholic patient population (Beutler et al., 1993; Calvert et al., 1988), coping style did not significantly interact with the behavior focus of treatment in predicting changes in alcohol consumption. This finding is also dissimilar to alcohol research findings that patients with an external locus of control improved in coping skills training while patients with an internal locus of control improved in insight-oriented treatment (Hartman et al., 1988).

These findings provide evidence that tailoring treatments to patients based on specific personal characteristics can enhance the effectiveness of alcoholism treatment. The data suggest that assessing key patient attributes at the beginning of treatment can be used to meaningfully shape how psychotherapy is delivered. For example, patients who enter treatment in high global distress can be treated with interventions that address their emotional experiences. Also, patients who tend to resist relinquishing control in interpersonal situations can be treated using nondirective interventions such as open-ended questions and paraphrasing. Taken as a whole, these findings offer some specific guidelines for personalizing the treatment of alcoholics.

It is important to note that the evidence in support of these patient and therapy relationships is preliminary. Several limitations of this study need to be recognized, foremost of which are the small sample size and moderate follow-up rate. The limited sample size precluded the inclusion of multiple control variables in the analyses (e.g., demographic variables). Also, because patients who were not followed up were more reactant and had a different ethnic composition than those who were followed, the generalizability of the findings is reduced. Additional research that examines these relationships among a larger patient population will increase our understanding of these patient and therapy interaction effects. Finally, this study did not address the complex interchanges that occur between patients and therapists during the course of treatment. A single session early in treatment was sampled and only the therapists' actions were evaluated. Therapist behavior is very likely to be influenced by patient behavior, and we presume that a wealth of information could be gleaned from more fine-grained analyses of in-session interactions. This study presents a substantially more modest analysis of the therapy process. However, the findings suggest that even a modest analysis of the therapy process can provide valuable insights into the effectiveness of alcohol treatment.

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