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Effectiveness of an Outpatient Intervention Targeting Suicidal Young Adults: Preliminary Results

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This study evaluated the effectiveness of a time-limited, outpatient intervention targeting suicidal young adults. Participants (N = 264) were randomly assigned to either the experimental treatment or the control condition (i.e., treatment as usual). In addition to intake assessments, participants completed follow-ups at 1, 6, 12, 18, and 24 months. Both treatment and control participants evidenced significant improvement across all outcome measures throughout the follow-up period. Reductions were reported in suicidal ideation and behavior, associated symptomatology, and experienced stress, along with marked improvement in self-appraised problem-solving ability. Results also indicated that the experimental treatment was more effective than treatment as usual at retaining the highest risk participants. Available data demonstrate the efficacy of a time-limited, outpatient intervention for suicidal young adults. Implications of current findings for intervention with and treatment of this population are discussed.

As documented in the literature, suicide and suicidal behavior have attracted increasing attention from researchers, academicians, and clinicians alike (Rudd, Rajab, & Dahm, 1994). This trend holds for adolescents and young adults in the United States, particularly those between 15 and 24 years of age. Estimated suicide rates for this age group have almost tripled in the last 40 years, going from 4.5 per 100,000 in 1950 to 13.2 per 100,000 in 1990, with approximately 5,000 adolescents and young adults taking their lives each year (National Center for Health Statistics, 1991; Shaffer, Garland, Gould, Fisher, & Trautman, 1988). It is not surprising that the development and implementation of both suicide prevention and early intervention programs has been a priority of funding organizations (Dew, Bromet, Brent, & Greenhouse, 1987). However, little has emerged in the literature with respect to effective prevention, early intervention, or treatment approaches specifically targeting those experiencing prominent suicidal ideation, exhibiting suicidal behavior, or considered at high risk to continue such behavior or eventually suicide.

The data that are available have led investigators to raise questions about (a) the appropriateness and actual efficacy of primary prevention programs (Dew et al., 1987; Shaffer et al., 1988, 1990), (b) their potential iatrogenic effects (Vieland, Whittle, Garland, Hicks, & Shaffer, 1991), (c) the accuracy of our understanding of the intra- and interpersonal dynamics that lead to suicidal behavior and ultimately suicide (Felner, Adan, & Silverman, 1992; Felner & Felner, 1988), and (d) our demonstrated ability to translate the limited knowledge available into coherent, theory-driven prevention and early intervention models and treatment programs (Felner et al., 1992).

Although questions have been raised about primary prevention programs and increased attention has alternatively focused on early intervention and treatment efforts, little empirical data are available regarding standardized approaches to those at high risk for suicidal behavior. Muehrer (1990) summarized available findings as disappointing at best and sim-

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ilarly raised concerns about the efficacy of traditional psychotherapeutic approaches, including inpatient and outpatient, as well as individual or group format. Although seriously limited in scope and specificity, available research emphasizes the following with suicidal populations: (a) the potential importance of lengthier interventions (Greer & Bagley, 1971), (b) the apparent effectiveness of longitudinal follow-up contact (Chowdhury, Hicks, & Kreitman, 1973; Hawton et al., 1981; Litman, 1976; Motto, 1976; Termansen & Bywater, 1975; Welu, 1977), (c) the observed usefulness of psychoeducational approaches (Deykin, Hsieh, Joshi, & McNamara, 1986), and (d) the apparent efficacy of cognitive–behavioral, problem-solving, and psychosocial interventions at reducing direct outcome measures of suicidal ideation and attempts and indirect measures such as depression, anxiety, or hopelessness or the continued need for emergency services (Blackburn, Bishop, Glen, Whalley, & Christie, 1981; Bromet, Dew, & Brent, 1985; Lerner & Clum, 1990; Liberman & Eckman, 1981; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991; Patsiokas & Clum, 1985). These findings are consistent with a diathesis-stress-hopelessness (D-S-H) paradigm, the most frequently cited theoretical model explaining the emergence and persistence of suicidal ideation and behavior (Dixon, Heppner, & Anderson, 1991; Dixon, Heppner, & Rudd, 1994; Rudd, Rajab, & Dahm, 1994; Schotte & Clum, 1982, 1987).

The gap in the existing literature is twofold. First, the efficacy of traditional, longer term approaches with an emphasis on hospitalization have been neither rigorously examined nor clearly supported. Possibly because of the high-risk nature of the population, the implicit assumption that more restrictive approaches are not only safer but also more effective, both over the short and long term, appears to be ubiquitous. Linehan et al. (1991) provided some initial evidence to the contrary, indicating that specific diagnostic subgroups such as borderline personality disorder can be effectively treated on an outpatient basis with limited hospitalization. And second, the clinical usefulness of outpatient and shorter term, time-limited approaches has yet to be adequately explored.

Overall, research to date has failed to answer some of the most fundamental questions about early intervention and treatment of those exhibiting suicidal behavior. Among the questions, can time-limited intervention or treatment programs targeting high-risk adolescents and young adults be implemented in a safe and effective manner in outpatient settings with access to traditional acute hospitalization as needed or indicated? Can such interventions prove effective both within specific and across the diverse range of diagnostic entities presented? If so, what is the nature of change (i.e., type and degree in terms of targeted variables and associated symptomatology) and its stability over time (i.e., duration of change)?

An even more fundamental need exists to explore and validate the efficacy of traditional approaches that have essentially become the standard of care by default, inpatient and outpatient alike. For the most part, treatment approaches with high-risk populations have traditionally been restrictive, expensive, and longer term, despite the lack of any definitive evidence to support such modalities. Many of the constraints on mental health care that have emerged over the last several decades create the need to explore alternative, less restrictive, shorter term, target-specific, and more theoretically integrated and empirically grounded approaches.

The present study evaluated the efficacy of a time-limited, outpatient intervention targeting deficient problem solving and overall adaptive coping in suicidal adolescents and young adults. Given that all participants were enrolled during or immediately after an acute suicidal crisis, it is assumed that initial intake scores were markedly elevated, reflecting the acute dysphoria typical of suicidal patients and consistent with the notion of a ceiling effect. Any return to premorbid functioning would essentially represent significant improvement and would be expected for all patients. Despite the expectation of equivalent short-term gain in both groups, partially because of a ceiling effect, it was hypothesized that, given the problem-solving and adaptive coping skills focus of the experimental intervention, treatment group participants would differ from controls in essentially two respects: (a) In addition to general symptom remission, including suicidal ideation and behavior, they would evidence more specific change (i.e., improved problem-solving skills) and (b) observed change would be more enduring, with the possibility of continued improvement secondary to fundamental skill acquisition and refinement over time. In accordance with these hypotheses, between-group differences were not anticipated with immediate posttreatment measures (i.e., 1 month) but were expected in 6- and 12-month follow-up data, particularly with respect to problem solving.

Method

An experimental design with randomization to treatment or control conditions was used. Linehan et al. (1991) and Teasdale, Fenell, Hibbert, and Aimes (1984) noted the ethical and practical constraints faced when devising a control group condition for suicidal patients, and in both studies the treatment as usual (i.e., TAU) control was recommended as the preferable alternative.

Procedures

Study participants followed six identifiable stages: (a) identification of potential patients by referral sources; (b) verification screening and enrollment by program staff; (c) randomization and group assignment; (d) baseline data collection, assessment, and interim monitoring; (e) intervention–treatment; and (f) follow-up monitoring and assessment.[1] Referral sources included two outpatient mental health clinics, a 22-bed inpatient service, and a hospital emergency room. Staff conducting all components of the treatment remained constant throughout the entirety of the 3-year treatment phase of the study. During the follow-up period, the staff was reduced; however, this was only secondary to diminished manpower requirements. The individual retained to continue follow-up services was one of the original staff members. Clinical staff included two licensed, doctoral-level psychologists, three licensed masters-level professionals (i.e., a professional counselor and two social workers), and one advanced level doctoral student who served as a research assistant but provided no direct clinical care.

After referral and confirmation that inclusion criteria had been met, all willing participants signed an informed consent form, and partici-

[1] A more detailed discussion of procedures, to include randomization and the various stages noted, can be obtained from M. David Rudd. Periodic quality assurance reports and available annual reports detail these procedures.

pants were assigned to conditions. Given that the experimental treatment used a group format that was closed, time limited, and operated on a rotational basis, a need existed to ensure a critical mass for each group. In other words, a treatment rotation could not be initiated if, for example, only three participants had been assigned. A treatment group threshold value of eight was established. Accordingly, randomization used disproportionate assignment rates to each condition.[2] Random assignment to groups was followed sequentially by baseline data collection and assessments, intervention–treatment, and follow-up monitoring and assessment.

The initial diagnostic interview and related testing were, in general, completed during a single day. However, a range of variables such as intensity or severity of the current crisis, associated symptomatology, patient fatigue, and simple scheduling problems and time constraints required some initial assessment batteries to be completed over a 2-day period. Follow-up assessments were completed at 1, 6, 12, 18, and 24-months.[3] All measures were scored by a computerized scoring and database system. The computerized scoring programs were checked for accuracy and reliability. Standard checks were also implemented as a quality assurance measure for data entry.[4]

Measures

Consistent with previous outcome studies, the primary dependent measures were suicidal ideation, hopelessness, depression, and problem solving. Additional measures addressed theoretically and clinically important variables useful in further study of treatment response and relapse.

Suicidal ideation. Suicidal ideation was measured by the Modified Scale for Suicidal Ideation (MSSI; Miller, Norman, Bishop, & Dow, 1986) and the Suicide Probability Scale (SPS; Cull & Gill, 1989). The 18-item MSSI has evidenced high internal consistency (coefficient alpha = .94 in previous studies) and interrater reliability, as well as good concurrent and construct validity (Miller et al., 1986). Scores range from 0 to 36, with clinically significant elevations considered to be 11 or greater. For the present study, coefficient alpha was estimated at .88. In addition to an overall summary score, the 36-item, self-report SPS provides four clinical subscales: hopelessness, suicidal ideation, negative self-evaluation, and hostility. Raw scores are converted to *T* scores, with *T* scores of 60 or greater considered of clinical significance. Both the full scale and individual subscales have evidenced sound psychometric properties across both clinical and nonclinical populations. Within the present study, coefficient alpha was estimated at .91 for the full scale, with subscale alphas ranging from .66 to .87.

Life stress. Life stress was measured by the Life Experiences Survey (LES). This 57-item self-report measure of life stress allows the respondent to indicate the occurrence of any of the 57 events, distinguish negative or positive impact, and rate the impact accordingly (Sarason, Johnson, & Siegel, 1978). Summary scores can be computed for positive, negative, and total life stress. The scale has evidenced adequate test–retest reliability (.63, .64) over 5- and 6-week intervals, respectively. For the current study, the time period targeted by the LES at intake was the year before initial referral and, during follow-up, the period from the last assessment.

Negative expectations. Hopelessness was measured by the Beck Hopelessness Scale (BHS), a 20-item true–false scale designed to measure the degree to which one's cognitions are dominated by negative future expectancies (Beck, Weissman, Lester, & Trexler, 1974). Scores range from 0 to 20, with scores in the range of 9–14 indicating moderate hopelessness and scores of 15 or greater indicating severe hopelessness. The BHS has evidenced high internal consistency reliability (Kuder-Richardson 20 [KR-20] = .93 in previous research), as well as high levels of concurrent and construct validity. The KR-20 for the present study was .94.

Depression. Depressive symptomatology was measured with the Beck Depression Inventory (BDI), a 21-item self-report scale. The BDI has been widely used and accumulated a considerable research base (Beck & Steer, 1987). Scores range from 0 to 63, with scores in the range of 17–29 indicating moderate depression and scores of 30 or greater indicating severe depression. It possesses sound psychometric properties with high internal consistency reliability (coefficient alpha = .89 in previous research) and associated high levels of concurrent and construct validity. Coefficient alpha for the present study was .92.

Problem-solving behavior and attitudes. General problem solving was measured with the Problem-Solving Inventory (PSI). The PSI (Form B; Heppner, 1988) is a 32-item self-report measure of an individual's perceptions of his or her own problem-solving behaviors and attitudes. Factor analysis indicates that the PSI comprises three factors: Problem-Solving Confidence, Approach-Avoidance Style, and Personal Control. Although no clear cutoff scores are indicated for the PSI, those below 88 approach college student norms. The PSI has evidenced good reliability (coefficient alphas ranged from .72 to .90, test–retest reliability coefficients ranged from .83 to .89 during a 2-week period in previous research). For the present study, coefficient alpha for the total scale was .93, with subscale alphas ranging from .76 to .87.

Personality traits, character features, and acute symptomatology. Personality traits, character features, and other acute symptomatology were assessed using the original Millon Clinical Multiaxial Inventory (MCMI-I), a 175-item, true–false inventory designed for use with psychiatric patients (Millon, 1983). It has 20 clinical scales divided into three groups: basic personality scales, severe personality patterns, and clinical syndromes (i.e., moderately severe and markedly severe). The MCMI-I has been extensively used in the clinical and research literature (Millon, 1983). Only measures of acute symptomatology have been included for the present study (i.e., the anxiety, dysthymia, alcohol, and drug abuse subscales). Indications of character pathology and the variations in scores over time are discussed elsewhere (Ellis, Rudd, Rajab, & Worley, in press; Rudd, Joiner, & Rajab, in press).

Psychiatric diagnoses. Diagnoses were made using the National Institute for Mental Health (NIMH) Diagnostic Interview Schedule, which was originally developed for use in the NIMH-sponsored Epidemiological Catchment Area study (Regier et al., 1984). It has since been modified to incorporate *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., revised; *DSM-III-R*; American Psychiatric Association, 1987) criteria, Version III-R (Robins, Helzer, Cottler, & Goldring, 1989). Given the purpose of the present investigation, only current or active diagnoses were used.

Intellectual functioning. Intelligence was estimated from the Shipley Institute of Living Scale. It is a brief, self-administered test originally designed to assess general intellectual functioning and to aid in detecting cognitive impairment (Zachary, 1989). The scale renders an estimated full-scale IQ based on the Wechsler Adult Intelligence Scale–Revised. The scale evidences sound psychometric properties (e.g., split-half and test–retest reliability, validity; Zachary, 1989).

Psychosocial history. Family and individual psychiatric history questions targeted depression, substance abuse, suicide, previous treatment, medications, and hospitalizations. Also included was an estimate of the number of suicide attempts for the 2-year period before treatment. A number of other questions also provided an opportunity for a qualitative appraisal of relationships with siblings and parents.

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[2] Materials detailing complete randomization procedures can be obtained from M. David Rudd, along with semiannual quality assurance reports verifying randomization.

[3] More detailed information regarding follow-up procedures can be obtained from M. David Rudd.

[4] Semiannual quality assurance reports are also available from M. David Rudd.

Participants

Inclusion and exclusion criteria. Three groups have consistently been identified in the clinical and epidemiological literature as being at high risk for eventual suicide or continued suicidal behavior constituting the inclusion criteria for the current study (Maris, Berman, Maltsberger, & Yufit, 1992): individuals who made an attempt precipitating referral; those suffering a mood disorder with concurrent ideation, to include mixed symptomatology and adjustment disorder diagnoses; and those abusing alcohol episodically with concurrent ideation. Exclusion criteria included substance dependence or chronic abuse requiring separate treatment, a psychotic component to the patient's presentation or a diagnosable thought disorder, and a personality disorder diagnosis of adequate severity to render outpatient group participation ineffective, disruptive, or inappropriate.

Inclusion and exclusion criteria were implemented by the referral sources, after an initial training and monitoring period by treatment staff. Weekly staffings and case reviews were conducted throughout the course of the study to ensure that criteria were effectively implemented. As an indication of how well the criteria were implemented, no participants were excluded after referral for Criterion 1 or 2 and only a single participant was excluded for Criterion 3.

Total sample. Participants included 302 individuals (248 male, 54 female), 181 in the treatment group and 121 in the control group. A total of 38 withdrew from the experimental treatment prematurely (i.e., either immediately after completion of the initial assessment or within the first 2 days of treatment), for a treatment group withdrawal rate of 21%, comparable with the rate for most published psychotherapy outcome studies (Rudd, Joiner, & Rajab, 1995). The resultant study sample included 143 who successfully completed the experimental treatment and 121 control participants, for a total of 264.

Mean age for the total sample was 22 years ($SD \pm 2.3$ years). The final sample of 264 included a total of 217 (82%) male and 47 (18%) female participants. Most were White, with fair representation of other ethnic groups (60.6% White [$n = 160$], 25.8% African American [$n = 68$], 10.6% Hispanic [$n = 28$], 1.5% Native American [$n = 4$], and 1.5% other [Asian and Pacific Islanders; $n = 4$]). Over 39% ($n = 104$) of the participants were married, 42% ($n = 111$) had never been married, 6.8% ($n = 18$) were divorced, 11.4% ($n = 30$) were separated, and one (0.4%) was widowed. In terms of highest educational achievement, 70.1% ($n = 185$) reported completing high school, 9.8% ($n = 26$) completed 1 year of college, 6.8% ($n = 18$) had 2 years of college, 0.8% ($n = 2$) had 3 years of college, and 1.9% ($n = 5$) completed 4 years of college. A total of 28 participants (10.6%) reported that they did not graduate from high school but later received a general equivalency diploma (GED) certificate.

Seventy-nine participants (29.9%) reported a history of previous psychiatric hospitalizations, with the modal number cited as one. Sixty-two (23.5%) reported a family history of depression, 141 (53.4%) reported a family history of alcohol or other substance abuse, and 30 (11.4%) noted a family history of suicide. Additionally, 67 (25.4%) participants reported current use of psychotropic medication, predominantly antidepressants and anxiolytics. The total sample included 110 referred specifically for suicidal ideation, 107 single attempters, and 47 multiple attempters (i.e., simply more than one lifetime attempt).

Because the experimental treatment was time limited, with a specified number of treatment days and sessions required for successful completion, the withdrawal rate was not difficult to calculate. Those in the control condition, however, presented a more complex problem. TAU included varied combinations of inpatient and outpatient services, as well as individual and group treatments, without a specified number of sessions or time period required for successful completion of treatment. Accordingly, a treatment withdrawal rate for control participants would be incomprehensible.

Psychiatric diagnoses. The distribution of diagnoses is provided in Table 1, along with a total frequency count, and the percentages of those in the identified category with at least one other diagnosis. Mood and anxiety disorders were the most frequent diagnoses received. Among primary diagnoses, approximately 72% (190 of 264) of participants received a diagnosis of a mood disorder, the most frequent being nosologic depression, as indicated by diagnoses of major depression, single episode or recurrent, dysthymia, bipolar depressed or atypical, and depressive disorder not otherwise specified. Somewhat surprising, anxiety disorders represented the most frequent diagnoses accounting for 36.9% of all diagnoses given. Closer scrutiny, however, revealed that almost 66% (188 of 284 total diagnoses) of all anxiety disorder diagnoses were phobias. Phobia diagnoses represented secondary comorbid diagnoses as evidenced by the fact that anywhere from 94% to 100% of those receiving such a diagnosis received at least one additional diagnosis, most frequently a primary mood disorder. Overall, participants evidenced considerable comorbidity, particularly with respect to comorbid substance abuse disorders. Almost 18% of all diagnoses received involved substance abuse. Comorbidity in the sample is discussed in detail elsewhere (Rudd, Dahm, & Rajab, 1993).

Treatment Conditions

The experimental treatment differed from traditional approaches and the control condition in essentially three ways. First, it was an outpatient intervention, although acute hospitalization was used as clinically indicated. Second, it was an intensive, structured, time-limited group treatment. Although individual crisis intervention was required from time to time, all formal treatment for the experimental participants was delivered within the group context. Third, it was structured within a problem-solving and social competence paradigm targeting fundamental skill development in addition to improved social functioning and adaptive coping.

Some of the experimental treatment participants (i.e., 21%) required at least acute hospitalization for stabilization purposes before intervention. Every effort was made to limit the inpatient stay to only what was clinically essential, with these patients monitored daily. For those who were hospitalized, experimental treatment inpatient stays averaged slightly over 3 days. Not unexpectedly, the average inpatient stay for control patients, 7 days, was comparable with the mean inpatient stay for the psychiatric unit as a whole and over twice that for the treatment group.

The experimental treatment was structured in a partial or day hospital format in which patients spent approximately 9 hrs each day at the treatment facility for a 2-week period. Patients returned home each evening and on the weekend. The intervention was time limited and operated on a rotational basis, with each new rotation ideally comprising 12 to 14, but a minimum of 8, individuals. While awaiting critical mass for a new rotation, participants were involved in a weekly monitoring group, basically an unstructured 2-hr weekly support group with a problem-solving focus. Ongoing treatment was not provided during the 24-month follow-up period. Participants were not, however, restricted from accessing routinely available services when needed or indicated. Follow-up assessments allowed for recording any treatment (i.e., inpatient or outpatient), medical, or emergency services accessed.

The experimental treatment included three basic components:[5] a traditional experiential-affective group, psychoeducational classes, and an extended problem-solving group. The experiential group focused on both the precipitant to the suicidal incident and relevant history. The goal of the group was to promote individual insight into the connection between past and present experiences (e.g., previous history of abuse), with particular emphasis on their suicidal crisis (or crises). The group

[5] A more detailed description of the treatment program and applicable class outlines are available from M. David Rudd.

Table 1
Distribution of Selected Current Diagnoses and Percentages With at Least One Other Diagnosis

Diagnosis[a]	Frequency	%[b]	% with at least one other diagnosis
Mood disorders	**190**	**24.8**	—
Depressive disorders	*137*	*17.8*	—
Major depression, single episodes	16		68.75
Major depression, recurrent episodes	89		85.40
Dysthymia	15		100.00
Depressive disorder NOS	17		94.12
Bipolar disorders	*53*	*6.90*	—
Manic	2		100.00
Depressed	25		100.00
NOS	26		88.46
Anxiety disorders	**284**	**36.9**	—
Panic disorder	*11*		
With agoraphobia	8		100.00
Without agoraphobia	3		100.00
Phobias	**188**	**24.5**	—
Social phobia	71		94.37
Simple phobia	90		95.56
Agoraphobia without panic disorder	27		100.00
Other	**85**		
Obsessive–compulsive disorder	5		100.00
Posttraumatic stress disorder	60		96.67
Generalized anxiety disorder	20		95.00
Somatoform pain disorder	**63**	**8.2**	92.10
Psychoactive substance abuse	**135**	**17.6**	—
Alcohol abuse–dependence	117		86.32
Cannabis abuse–dependence	10		100.00
Cocaine abuse–dependence	3		66.67
Hallucinogen abuse–dependence	5		100.00
No diagnosis	**20**	—	—

Note. NOS = not otherwise specified. Dashes indicate data not applicable.
[a] Total number of diagnoses for the 264 individuals given the Diagnostic Interview Schedule (DIS) was 746. A total of 20 individuals did not receive a DIS diagnosis but qualified for *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.) diagnoses of adjustment disorders, which the DIS does not cover. Three individuals had missing data. For those who received a DIS diagnosis, the average number of diagnoses was 3.1 per patient. Three participants had missing or incomplete data. This table is not comprehensive and only summarizes the most frequent diagnoses. [b] Percentage of current diagnoses; $N = 746$.

addressed not only interpersonal problem-solving deficits that most likely precipitated the crisis but also underlying adaptive and experiential issues leading to apparent hopelessness.

The psychoeducational classes included eight 1-hr classes taught in didactic format from detailed outlines. They covered the following topics: goal setting, self-awareness, interpersonal trust, communication, impulsivity and anger control, emotion regulation, stress management and relaxation, and developmental issues. Homework assignments were provided for each session. Extended problem-solving groups taught a standard six-step approach to problem solving consistent with that detailed by Nezu, Nezu, and Perri (1989). The sequence offered to participants included problem orientation, problem identification and goal setting, generation of alternatives, evaluation of alternatives, implementation, and evaluation of initial efforts. Sessions revolved around active problem solving, emphasizing the use of behavioral rehearsal, role playing, modeling, and actual implementation of alternatives with subsequent evaluation of efficacy. Given the emphasis of the experimental treatment on problem solving, social competence, and adaptive coping, a disproportionate amount of time was dedicated to the problem-solving component of treatment. Approximately 3.5 hr, or the entire afternoon, was dedicated to this component each day.

The TAU control condition participants routinely received a combination of inpatient and outpatient care. Inpatient stays varied in accordance with the clinical features for each case, with the average length of stay, 7 days, being equivalent to that for the psychiatric unit as a whole. Outpatient care most frequently involved a combination of individual and group treatment, with the theoretical approach used and the frequency and duration of treatment varying from case to case depending on both the specifics of the case and the provider's orientation. Control participants were, at some level, potentially exposed to a problem-solving treatment approach depending on the provider's theoretical orientation and whether individual or group treatment was used. Available group alternatives for control participants included a time-limited stress management group and an open-ended, process-oriented support group.

Intervention Targets

Treatment targets were divided into affective, behavioral (i.e., interpersonal), and cognitive domains. The primary affective target was to facilitate direct, appropriate, and constructive affective expression and experience. The primary behavioral or interpersonal target was to

reduce self-destructive and other maladaptive behaviors, as well as enhance general interpersonal and communication skills, resulting in improved overall social competence and adaptive coping. Specific targets included reductions in suicidal behaviors, associated ideation, and other self-destructive or high-risk behaviors such as chronic self-mutilation, episodic substance abuse, or risk taking (e.g., driving at excessive speeds). In terms of cognitive targets, we focused on reductions in suicidal ideation, hopelessness, and related cognitive distortions (e.g., dichotomous thinking, overgeneralization).

Treatment Administration and Monitoring

The experiential group was led by two doctoral-level psychologists serving as cofacilitators for all treatment rotations. The psychoeducational classes were taught by the three masters-level clinicians using extensive and detailed outlines.[6] The problem-solving group was facilitated by M. David Rudd with the three masters-level clinicians serving as small group facilitators, allowing the large group to be subdivided into 3 to 4 smaller groups,[7] for more intensive work including behavioral rehearsal and role playing. During treatment rotations, daily clinical meetings were held for review, monitoring, supervision, and general planning purposes. Additionally, treatment components were filmed on a periodic and rotational basis to ensure treatment fidelity as well as supervision and planning. Filming was periodically reviewed at daily clinical meetings, but formal ratings were not used to address fidelity. Given that the therapists did not change during the study, nor did related responsibilities, investigation of between-therapists differences was not appropriate.

Results

Preliminary Analyses

Means and standard deviations for all outcome variables are presented in Table 2. Comparisons between treatment and control groups with respect to demographic characteristics, psychiatric diagnoses, and outcome measures at intake revealed only two significant differences. The treatment group had a higher percentage of women (22.4% [n = 32] vs. 12.4% [n = 15]), $\chi^2(1)$ 4.46, p = .035, suicide attempts by cutting (12.8% [n = 18] vs. 4.0% [n = 4]), $\chi^2(1)$, = 5.97, p = .015), in comparison with control participants. The distribution of women in both groups was inordinately low, however, given that the study was completed at a major military medical center in the southwest United States with a catchment area of 60,000. The sample distribution is consistent with the distribution of women at the military installation specifically and combat-oriented military facilities in general. Analyses of variance (ANOVAs) were used for continuous variables and chi-square tests for categorical ones.

Posttreatment and follow-up scores were converted to residualized gain scores to control for any subtle initial between group differences, high intercorrelations among outcome variables, and measurement error inherent in repeated measures on the same assessment instrument (Beutler & Hamblin, 1986; Manning & Dubois, 1962; Mintz, Luborsky, & Christoph, 1979). There was no need to explore potential Therapist × Group × Rotation interactions because the same therapists completed the same components of the intervention for each treatment rotation. Accordingly, therapist variables were not considered.

Attrition

Attrition was explored from two perspectives. First, we considered attrition from the experimental treatment; that is, those not successfully completing the intervention. As detailed previously, the withdrawal rate was 21%. Also, as was noted, treatment withdrawal for control participants was not applicable. Those that withdrew prematurely from the experimental treatment were compared with those that successfully completed the intervention. ANOVAs for continuous variables and chi-square tests for categorical ones were performed to identify any differences across demographic variables, the distribution of diagnoses, and all outcome measures. No significant differences were discovered, suggesting comparability between the two groups. Actual comparisons and implications of the findings are detailed elsewhere (Rudd, Joiner, & Rajab, 1995).

Attrition was also explored throughout the 24-month follow-up period. Table 3 details retention and attrition rates with the total N at each follow-up point, along with relative percentages for each group. Attrition was considerable for both groups, something to be expected given the high-risk nature of the sample as well as the military setting in which the study was performed. Of concern, less than one third of the total sample was available at 12 months posttreatment. Markedly smaller percentages were available at both 18 and 24 months, primarily because of the rotational basis of follow-up, with 18- and 24-month follow-up continuing.

The possibility of selective or differential attrition of the highest risk or lowest functioning participants warrants attention. It is possible, given the high-risk sample targeted, that only the highest functioning in each group were available at each follow-up point. It is also possible that the two treatments were differentially effective at retaining the highest risk participants. An implicit assumption when exploring differential attrition is that retention during follow-up is comparable with improved social or global functioning. Accordingly, those that relocated during the follow-up period were presented with multiple opportunities to continue their participation through a combination of mailings and telephone contact.

Figure 1 provides a comparison of those in each group that continued sequentially from intake to each subsequent follow-up point with those that dropped out or attrited at 1 and 6 months. Given the pivotal role played by problem solving in the D-S-H paradigm and the focus of the experimental treatment, the PSI total score (PSI-T) was used. Figure 1 provides a listing of the mean PSI-T scores for those at intake who continued to the 1-month follow-up point (e.g., 108 control participants continued from intake to the 1-month follow-up and 45 participants from 1 month to 6 months), those at 1 month who con-

[6] One of the masters-level clinicians left the project approximately 3 months before the end of the treatment phase of the study. Accordingly, she did not participate in teaching the psychoeducational classes for that period. However, classes were routinely rotated among the three. For the final 3-month period, classes were taught by the two remaining clinicians; as noted earlier, no new staff was hired.

[7] As referenced earlier, the absence of the clinician during the final 3 months of the treatment phase resulted in the use of only two to three small groups.

Table 2
Means and Standard Deviations for Primary Outcome Measures

Measure	Pretreatment		1 month		6 months		12 months		18 months		24 months	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Treatment group												
MSSI	23.0	9.9	5.6	9.6	4.2	9.0	3.1	9.0	2.2	9.4	1.0	2.4
LES-Negative	18.9	11.5	12.9	11.7	11.5	12.9	10.1	13.0	4.7	5.5	13.1	15.8
BHS	8.9	6.5	4.8	4.7	4.4	4.4	4.2	5.0	4.3	5.3	3.6	3.9
BDI	20.2	11.4	9.2	9.2	8.2	8.2	7.9	10.6	6.5	7.0	7.7	9.8
SPS-Total	66.9	9.3	60.5	9.3	57.5	12.0	55.6	13.2	55.2	11.0	54.0	11.1
SPS-SI	17.8	8.0	13.0	6.5	12.2	6.5	11.5	6.5	10.5	4.7	10.8	5.8
SPS-HP	24.6	7.6	18.7	6.8	17.6	8.5	16.9	8.8	16.3	6.3	15.4	6.8
SPS-NSE	17.4	4.8	16.1	4.5	15.5	4.7	15.3	4.6	14.6	4.0	15.4	5.5
SPS-HOS	14.2	4.8	12.0	4.1	11.5	4.8	11.0	5.0	10.7	4.3	11.7	6.0
PSI-Total	110.1	24.9	101.5	23.6	93.0	24.4	88.3	29.4	89.1	20.8	71.0	28.7
PSI-CON	33.8	10.0	30.5	8.9	28.7	9.7	25.9	9.6	26.4	7.4	22.8	8.4
PSI-AA	55.0	13.6	51.3	12.4	47.7	12.6	44.6	16.4	47.1	10.5	36.7	16.1
PSI-PC	21.6	5.1	19.1	4.5	17.6	6.8	16.4	6.5	15.1	4.9	12.1	4.1
MCMI												
Anxiety	88.6	20.8	62.9	24.5	63.6	27.3	51.4	21.1	43.1	17.3	40.0	20.5
Dysthymia	87.3	19.7	59.6	26.2	61.1	26.4	45.8	25.4	42.3	18.1	45.0	19.0
Alcohol Abuse	59.4	19.0	50.6	20.9	50.1	21.7	39.9	19.6	36.3	20.8	37.3	10.7
Drug Abuse	59.8	21.5	66.1	22.8	66.0	23.6	61.6	19.6	64.2	21.1	56.2	28.0
IQ (SILS)	101.6	9.7	—	—	—	—	—	—	—	—	—	—
Control group												
MSSI	22.9	10.5	4.7	8.6	3.3	7.8	0.8	3.8	0.0	0.0	0.0	0.0
LES-Negative	17.6	11.6	11.7	11.5	9.8	11.7	6.7	6.6	6.4	5.3	3.0	3.3
BHS	8.2	6.3	5.2	5.4	4.9	5.6	3.4	4.1	2.7	2.4	2.4	1.3
BDI	18.2	12.5	9.9	10.4	8.9	9.2	6.3	7.4	4.9	6.2	3.2	4.4
SPS-Total	66.6	10.0	60.7	10.6	58.8	12.6	57.4	10.4	55.5	12.9	45.8	13.2
SPS-SI	19.0	8.2	13.0	6.4	13.1	6.5	11.3	4.7	11.6	6.2	9.0	1.4
SPS-HP	24.6	8.2	19.6	8.1	19.3	7.7	16.2	6.0	17.6	7.1	13.6	5.6
SPS-NSE	16.7	4.6	15.6	4.5	15.2	4.8	15.3	4.3	12.5	4.3	11.5	2.5
SPS-HOS	14.5	4.9	12.6	4.6	11.8	4.1	11.3	4.2	11.6	4.2	9.6	4.0
PSI-Total	104.9	25.0	92.4	28.7	91.8	23.0	86.6	26.2	89.7	19.1	73.8	36.2
PSI-CON	31.5	9.0	28.4	10.4	27.8	8.7	26.9	10.5	27.1	8.6	23.8	11.3
PSI-AA	52.4	14.6	46.9	15.8	47.2	13.2	44.7	14.0	45.0	12.4	36.6	17.5
PSI-PC	20.7	5.4	16.7	5.6	17.3	5.0	15.8	5.4	15.0	4.1	13.4	7.7
MCMI												
Anxiety	86.1	20.9	64.2	26.3	61.5	27.5	53.1	27.9	52.8	32.3	34.5	38.4
Dysthymia	84.1	19.1	60.3	25.9	58.0	24.5	50.5	25.0	43.9	28.7	37.5	32.8
Alcohol Abuse	60.9	16.0	50.2	18.1	49.9	15.3	46.1	18.9	52.1	21.3	44.3	18.6
Drug Abuse	66.8	14.8	68.9	14.1	66.8	14.4	70.4	10.9	71.9	15.7	74.0	5.3
IQ (SILS)	99.4	9.9	—	—	—	—	—	—	—	—	—	—

Note. Dashes indicate data not applicable. MSSI = Modified Scale for Suicide Ideation; LES-Negative = Life Experiences Survey–Negative Life Stress score; BHS = Beck Hopelessness Scale; BDI = Beck Depression Inventory; SPS-Total = Suicide Probability Scale, total score; SPS-SI = SPS Suicide Ideation subscale; SPS-HP = SPS Hopelessness subscale; SPS-NSE = SPS Negative Self-Evaluation subscale; SPS-HOS = SPS Interpersonal Hostility subscale; PSI-Total = Problem-Solving Inventory, total score; PSI-CON = PSI Confidence subscale; PSI-AA = PSI Approach-Avoidance subscale; PSI-PC = PSI Personal Control subscale; MCMI = Million Clinical Multiaxial Inventory (its subscales are Anxiety, Dysthymia, Alcohol Abuse, and Drug Abuse); IQ = Wechsler Adult Intelligence Scale—Revised.

tinued to the 6-month follow-up point, and so on, compared with mean PSI-T scores for those who dropped out at 1 and 6 months. Mean PSI-T scores among control participants are higher for those who dropped out at 1 and 6 months relative to those who continued. In other words, those who dropped out at 1 and 6 months and did not continue in follow-up appraised themselves as markedly less effective problem solvers, consistent with the D-S-H paradigm. The difference in mean PSI-T scores at 6 months, for control participants who continued (M = 82.7) to 12 months versus those who dropped out (M = 97.3), proved significant (p = .03). Essentially, the control group was not effective at retaining the highest risk or poorest problem solvers and experienced differential attrition.

In contrast to control participants, those in the treatment group who continued to each sequential follow-up point were comparable with those who dropped out. Neither the 1-month nor the 6-month comparison proved significant. The experimental treatment did not experience differential attrition and was more effective at retaining poor problem solvers throughout the follow-up than the control condition.

Table 3
Retention and Attrition Rates During 24-Month Follow-Up Period

Group and cumulative total	*n* (and %)				
	1 month	6 months	12 months	18 months	24 months
Treatment (n = 143)	120 (84)	75 (53)	46 (32)	19 (13)	9 (6)
Control (n = 121)	91 (75)	55 (46)	25 (21)	11 (9)	5 (4)
Cumulative total 264	211 (80)	130 (49)	71 (27)	—[a]	—

Note. To date, all study participants have either completed or passed the 12-month posttreatment marker with longer term, 24-month follow-up continuing. Attrition at 18 and 24 months appears inordinately high, primarily because not all study participants have reached those follow-up markers. More detailed analyses using the complete 24-month follow-up data set will be completed in future studies, to include prediction of both recovery and relapse over time.

[a] As noted previously, current results addressed follow-up data through 12 months only. As such, summary data are not included.

From a different perspective, the experimental treatment successfully retained 33% (i.e., 22 of 67) of those originally classified as poor problem solvers through 12 months, relative to 15% (i.e., 7 of 48) for control participants (see Table 4). In other words, the experimental treatment retained a little over twice as many poor problem solvers throughout the year follow-up, compared with control participants, $\chi^2(1) = 4.94$, $p = .026$. Differential attrition between treatment and control groups over the 12-month follow-up period was confirmed by examining overall group attrition rates. Control participants experienced a 12-month attrition of 79% relative to 68% for the treatment group, a difference that proved significant, $\chi^2(1) = 4.41$, $p = .036$. As indicated earlier, a disproportionate number were from those classified as poor problem solvers at intake. It appears that the experimental intervention was significantly more effective at retaining high-risk participants defined as relatively poor problem solvers.

Treatment Outcome

Outcome measures were grouped into five categories (a) suicidal ideation and behavior (i.e., the MSSI and SPS),[8] (b) symptom measures (i.e., BHS, BDI, MCMI-I Anxiety and Dysthymia subscales, (c) substance abuse (i.e., MCMI-I Alcohol and Drug Abuse subscales), (d) problem solving (i.e., the PSI), and (e) stress (i.e., the LES-negative life stress score). Although participants completed the entire MCMI-I at intake as well as at all follow-up points, only the subscales noted above were used, inasmuch as the personality scales are assumed to be trait measures and relatively stable over time.

Immediate posttreatment (1 month). Table 2 provides the means and standard deviations for all outcome measures both at intake and each follow-up point. As anticipated, and consistent with the notion of a ceiling effect, no between-group differences were uncovered at 1-month. Between group differences at immediate posttreatment were explored with univariate ANOVAs, with $F(1, 210)$ values for all outcome variables <1.

Follow-up (6 and 12 months). We anticipated marked improvement for both groups not only at immediate posttreatment but also at 6- and 12-month follow-up points. Additionally, between-group differences were expected in terms of more specific (i.e., problem solving) and enduring change for those in the experimental group[9].

Between-groups differences. As was the case with immediate posttreatment measures, no significant between-group differences were observed at 6 and 12 months. ANOVAs evidenced essentially uniform improvement among both treatment and control participants across all outcome variables. For the most part, F values (for 6 months, dfs = 1 and 110; for 12 months, dfs = 1 and 62) hovered around 1.00, ranging from 0.05 to 2.31, indicating comparability between the two groups.

Repeated measures analyses. Repeated measures ANOVAs confirmed marked improvement for both groups from intake to posttreatment, across all measures, but revealed no between group differences. In general, a significant time effect was confirmed across all variables but not a significant Group × Time interaction or main group effect,[10] rendering a review of within-group change inappropriate.

Clinically significant change. Clinically significant improvement was defined in two ways. First, treatment responders were defined as those that evidenced 40% change from pretreatment scores, consistent with the concept of treatment responder presented by Borkovec and Costello (1993). The 40% change

[8] Reported suicide attempts during the follow-up period were limited, potentially because of differential attrition rates as well as the legal implications for continued behavioral problems in a military setting. At the 6-month follow-up, only 2 treatment participants and 1 control participant reported attempts, $\chi^2(1) = 0.98$, $p = .754$. At 12 months, 2 treatment participants and no control participants reported attempts $\chi^2(1) = 1.23$, $p = .7267$. None of the attempts were lethal, nor did they require medical attention or hospitalization. A single suicide occurred during the course of the study. After initial screening in the outpatient clinic, the individual was recommended for mandatory hospitalization. He escaped while waiting to be processed into the hospital and later committed suicide.

[9] A summary table of ANOVA results is available from M. David Rudd.

[10] A summary table of ANOVA results is available from M. David Rudd.

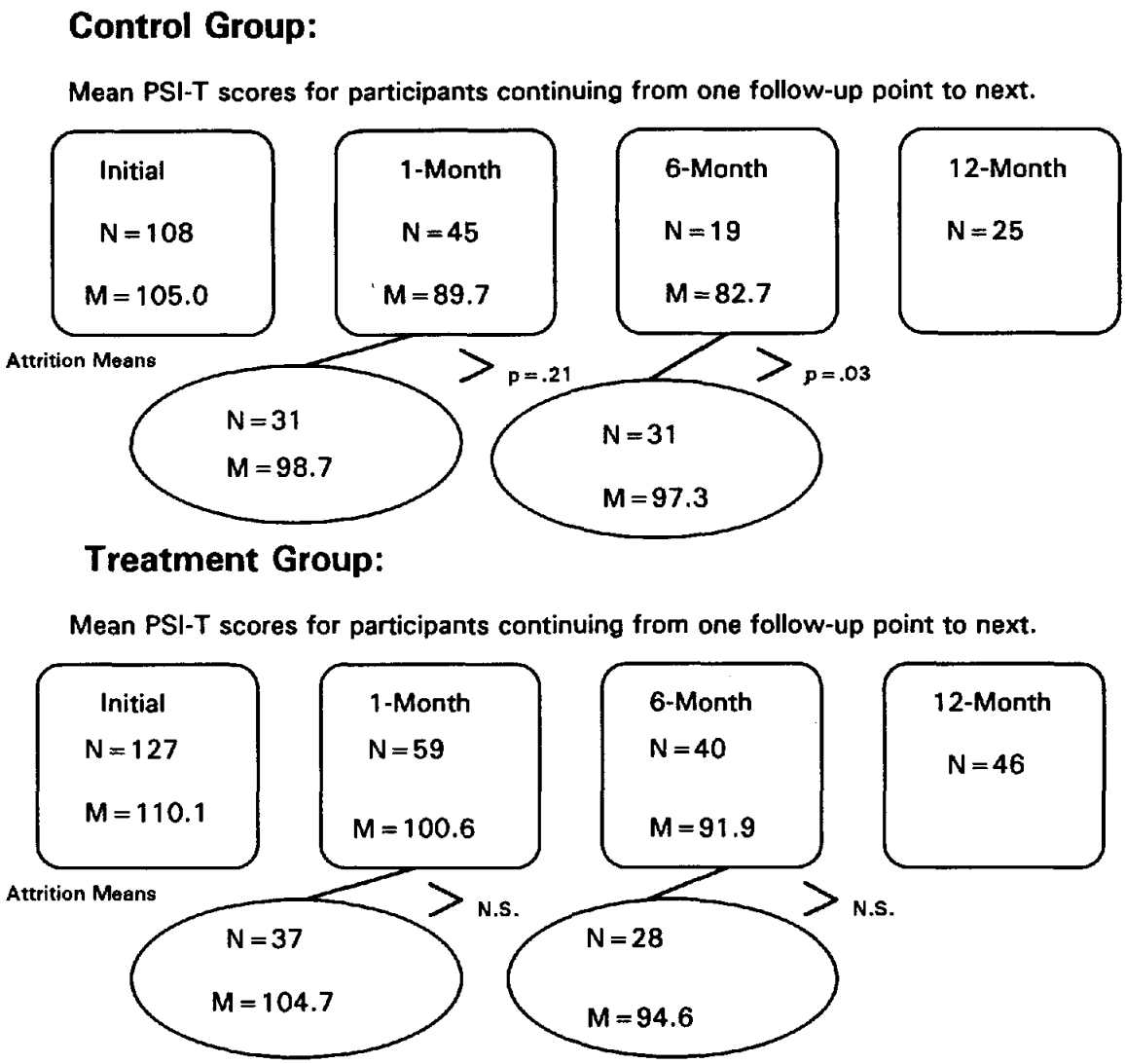

Figure 1. Differential attrition between treatment and control participants during follow-up. Total *N* at each point is dependent on the number of available participants with complete PSI data and, accordingly, may vary from previously cited overall attrition figures. PSI-T = Problem-Solving Inventory, total score.

was used rather than the 20% used by Borkovec and Costello (1993) given the nature of the sample and questions raised regarding a possible ceiling effect at intake. Second, we defined endstate functioning, or posttreatment successes or failures at 12 months, as outcome scores that fell within normal limits as defined by the original author of the scale on the basis of applicable normative data. This definition is consistent with the recommendation of Kendall and Grove (1988).

Table 5 provides a summary of the frequency and percentages of participants classified as responders and treatment successes or failures in each group (i.e., addressing endstate functioning within normal limits), as well as probabilities of applicable chi-square tests. Percentages addressing responder status in both groups were comparable at 6 and 12 months, with only the 6-month PSI value approaching significance ($p = .07$). Additionally, comparable percentages of treatment and control participants received scores that fell within normal limits for the measures listed at 12 months, as indicated by the endstate functioning column. The relatively high percentages of participants at 12 months that received scores that fell within normal limits, ranging from 56% to 95% across all measures, would lend additional credence to the notion of selective attrition. In other words, only the most high-functioning individuals were available for follow-up at 6 and 12 months.

It is possible to define treatment successes and failures in a more rigorous fashion rather than exploring isolated change in a single variable. We identified a constellation of symptoms of critical importance in monitoring suicidal patients, including depressive symptoms (i.e., BDI), hopelessness (i.e., BHS), and suicidal ideation and behavior (i.e., MSSI). We defined comprehensive clinical improvement, again consistent with the recommendation of Kendall and Grove (1988) as a score on each

Table 4
A Comparison of Retention Rates for Good and Poor Problem Solvers Among Treatment and Control Participants

Pretreatment and follow-up point	*n* (and %) for: Treatment[a] Good PS	Treatment[a] Poor PS	Control Good PS	Control Poor PS
Pretreatment *n*	73	67	70	48
Follow-up				
1 month	61 (84)	56 (84)	54 (77)	35 (74)
6 months	36 (49)	37 (55)	31 (44)	22 (46)
12 months	24 (33)	22 (33)	18 (26)	7 (15)

Note. A median split for the Problem-Solving Inventory, total (i.e., 109.5) score was used to determine good and poor problem solvers at intake. PS = problem solvers.
[a] Percentages are relative, based on the number of those in the good and poor problem-solving groups at intake.

of these measures at 12 months that fell within normal limits. Participants were required to meet all three criteria to be considered comprehensively clinically improved. At the 12-month follow-up point, 23 treatment participants (64%) were considered improved relative to 10 control participants (48%). Despite the greater percentage of treatment participants classified as improved relative to control participants, the difference did not prove significant, $\chi^2(1) = 1.44$, $p = .23$.

Discussion

Despite the lack of identified between-group differences and indications of both treatment and control participants improving significantly across all measures, current results lend themselves to a number of conclusions with respect to the original questions raised. Perhaps foremost among them, the question as to whether outpatient alternatives can be implemented in a safe and effective manner with high-risk suicidal patients is of paramount importance. Current data indicate that high-risk patients can be treated as effectively in an intensive outpatient, time-limited group alternative specifically targeting problem-solving skills and general social competence as with traditional approaches such as hospitalization or long-term individual psychotherapy. Results also provide evidence that those presenting complex diagnostic pictures, with considerable comorbidity, can be treated effectively with alternative approaches. Despite the outpatient nature of the experimental treatment, the availability of and access to acute hospitalization for this population cannot be overemphasized. Somewhat surprising given the brief and outpatient nature of the experimental treatment, observed gains were, for the most part, comprehensive and enduring, with initial gains maintained over the 12-month follow-up period. This is potentially even more surprising if the high-risk nature of the targeted sample is considered.

In a review of the literature addressing the issue of treatment duration and outcome in psychotherapy, Steenbarger (1994) noted that brief, symptom-centered, and prescriptive interventions appear to be most effective with relatively insightful and motivated clients, without reference to the severity of experienced symptomatology or particular diagnostic groupings. Current findings would appear to expand Steenbarger's (1994) conclusions, indicating that brief, albeit intensive, interventions can be effective over the long term for a percentage of those experiencing severe and potentially extreme pathology such as suicidal behavior.

Also somewhat of a surprise, the experimental treatment was more effective at retaining those initially classified as poor problem solvers and higher risk in comparison with control participants. This finding is of particular importance, given that these are individuals that are assumed at greatest risk for continued suicidal behavior, in accordance with the D-S-H framework (Schotte & Clum, 1982, 1987). Whether these individuals tend to capitalize on existing skills or compensate for identifiable deficits by developing and refining new skills is unclear; nonetheless, it is an area warranting further longitudinal research. With respect to the existing literature, current findings support the efficacy of cognitive–behavioral, problem-solving, and psychosocial interventions in treating suicidal ideation and behavior (Blackburn et al., 1981; Bromet et al., 1985; Lerner & Clum, 1990; Liberman & Eckman, 1981; Linehan et al., 1991; Patsiokas & Clum, 1985).

Both groups evidenced quick remission of reported symptoms and significant improvement across all areas or domains assessed, including suicidal ideation and behavior, symptomatology, and general problem solving lending some credence to the concept of a potential ceiling effect at intake with acutely suicidal patients. In other words, initial intake scores are likely to be acutely elevated to such a degree that any return to premorbid functioning will reflect significant improvement regard-

Table 5
Frequencies and Percentages of Participants in Each Group Meeting Criteria for Clinically Significant Change at Immediate Posttreatment, at 6 and 12 Months and at 12-Month Follow-Up With Endpoint Scores

Measure	*n* (and %) for: Responder status Treatment	Responder status Control	Endstate functioning Treatment	Endstate functioning Control
6-month measures				
MSSI	59 (86)	45 (90)	—	—
SPS, total score	7 (10)	2 (4)	—	—
BHS	46 (63)	27 (54)	—	—
BDI	45 (63)	31 (62)	—	—
PSI, total score	7 (11)	1 (2)	—	—
12-month measures				
MSSI	34 (89)	21 (95)	34 (89)	21 (95)
SPS, total score	6 (13)	1 (5)	28 (62)	13 (56)
BHS	32 (71)	16 (67)	37 (83)	21 (88)
BDI	32 (74)	16 (64)	30 (70)	19 (76)
PSI, total score	5 (12)	2 (10)	25 (60)	13 (62)

Note. Dashes indicate data not applicable. MSSI = Modified Scale for Suicide Ideation; BHS = Beck Hopelessness Scale; BDI = Beck Depression Inventory; SPS-Total = Suicide Probability Scale, total score; PSI-Total = Problem-Solving Inventory, total score.
[a] Percentages differ because of missing values at each point.
* $p = .07$.

less of the treatment or intervention modality. Accordingly, caution is encouraged in terms of interpreting short-term gains, particularly with respect to between group differences in treatment outcome studies of acutely suicidal patients. Significant short-term improvement is likely to be the standard for this population, given the nature of their initial presentation. Also, a plausible explanation for the lack of between-group differences is the limited use of hospitalization for both groups, an area of treatment overlap, most likely a consequence of the military setting in which the study was performed and the related emphasis on short-term treatment.

Specific predictors of treatment response, the course of recovery over time, and relapse, both between and across groups, are beyond the scope of this article but will be covered in subsequent publications. Gender and premorbid functioning are among variables to be explored further in subsequent analyses incorporating 24-month follow-up data.

The present study has a number of identifiable limitations. As with previous studies, the generalizability of present findings is hampered by the military setting in which the study was performed, the limited representation of women, the focus on late adolescents and young adults, and attrition during the follow-up period. Additionally, the experimental treatment study is a relatively complex one with three identifiable components. Accordingly, it is impossible to know which specific component led to the observed effect (or effects). Also, specific therapist variables were not measured but could be of considerable importance in terms of interpreting treatment efficacy in general or specific between-group differences. This may well prove to be of particular importance in light of some recent findings regarding the nature of help negation among acutely suicidal patients (Rudd, Joiner, & Rajab, 1995). Finally, the high dropout rate during the follow-up period is a significant concern, despite relative equivalence between the treatment and control groups.

Conversely, the current sample offers a number of strengths relative to previous research. More specifically, the target group of late adolescents and young adults represents that segment of the population disproportionately affected by suicide and suicidal behavior. Additionally, the sample offers a relatively diverse ethnic distribution. Also in contrast to previous work, the present study accessed a large representative sample of young adults and allowed for longitudinal follow-up. Despite the availability of an adequate sample at 6- and 12-months follow-up, the considerable attrition is both a concern and somewhat expected when working with high-risk samples. The need to refine follow-up methodology and experiment with alternative techniques for tracking high-risk participants is clearly indicated.

References

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders.* (3rd ed., rev.). Washington, DC: Author.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders,* (4th ed.). Washington, DC: Author.

Beck, A., Kovacs, M., & Weissman, A. (1979). Assessment of suicidal intention: The scale for suicide ideation. *Journal of Consulting and Clinical Psychology, 47,* 343–352.

Beck, A., & Steer, R. (1987). *Beck Depression Inventory manual.* San Antonio, TX: Psychological Corporation.

Beck, A., Weissman, A., Lester, D., & Trexler, L. (1974). The measure of pessimism: The Hopelessness Scale. *Journal of Consulting and Clinical Psychology, 42,* 861–865.

Beutler, L., & Hamblin, D. (1986). Individualized outcome measures of internal change: Methodological considerations [Special issue]. *Journal of Consulting and Clinical Psychology, 23,* 305–310.

Blackburn, I., Bishop, S., Glen, A., Whalley, L., & Christie, J. (1981). The efficacy of cognitive therapy in depression: A treatment trial using cognitive therapy and pharmacotherapy, each alone and in combination. *British Journal of Psychiatry, 139,* 181–189.

Blouin, A., Perez, E., & Blouin, J. (1988). Computerized administration of the Diagnostic Interview Schedule. *Psychiatry Research, 23,* 335–344.

Bongar, B. (1992). *Suicide: Guidelines for assessment, management, and treatment.* New York: Oxford University Press.

Borkovec, T., & Costello, E. (1993). Efficacy of applied relaxation and cognitive–behavioral therapy in the treatment of generalized anxiety disorder. *Journal of Consulting and Clinical Psychology, 61,* 611–619.

Bromet, E., Dew, M., & Brent, D. (1985). *Suicide prevention: A review* (Contract No. 85M059146401S). Washington, DC: National Institute of Mental Health, Center for Affective Disorders.

Burke, J. (1986). Diagnostic categorization by the Diagnostic Interview Schedule (DIS): A comparison with other methods of assessment. In J. Barrett & R. Rose (Eds.), *Mental disorders in the community* (pp. 255–285). New York: Guilford Press.

Chowdhury, N., Hicks, R., Kreitman, N. (1973). Evaluation of an aftercare service for parasuicide (attempted suicide patients). *Social Psychiatry, 8,* 67–81.

Cowdry, R., & Gardner, D. (1988). Pharmacotherapy of borderline personality disorder. *Archives of General Psychiatry, 45,* 111–119.

Cull, J., & Gill, W. (1989). *The Suicide Probability Scale manual.* Los Angeles: Western Psychological Services.

Dew, M., Bromet, E., Brent, D., & Greenhouse, J. (1987). A quantitative literature review of the effectiveness of suicide prevention centers. *Journal of Consulting and Clinical Psychology, 55,* 239–244.

Deykin, E., Hsieh, C., Joshi, N., & McNamara, J. (1986). Adolescent suicidal and self-destructive behavior: Results of an intervention study. *Journal of Adolescent Health Care, 7,* 88–95.

Dixon, W., Heppner, P., & Anderson, W. (1991). Problem-solving appraisal, stress, hopelessness, and suicide ideation in a college population. *Journal of Counseling Psychology, 38,* 51–56.

Dixon, W., Heppner, P., & Rudd, M. (1994). Problem-solving appraisal, hopelessness, and suicidal ideation: Evidence of a mediational model. *Journal of Counseling Psychology, 41,* 91–98.

Ellis, T., Rudd, M., Rajab, M., & Worley, T. (in press). A cluster analysis of MCMI scores of suicidal psychiatric patients: Four personality profiles. *Journal of Clinical Psychology.*

Felner, R., Adan, A., & Silverman, M. (1992). Risk assessment and prevention of youth suicide in schools and educational contexts. In R. Maris, A. Berman, J. Maltsberger, & R. Yufit (Eds.), *Assessment and prediction of suicide.* New York: Guilford Press.

Felner, R., & Felner, T. (1988). Prevention programs in the educational context: A transactional–ecological framework for program models. In L. Bond & B. Compas (Eds.), *Primary prevention in the schools.* Beverly Hills, CA: Sage.

Greer, S., & Bagley, C. (1971). Effect of psychiatric intervention in attempted suicide: A controlled study. *British Medical Journal, 1,* 310–312.

Gunderson, J. (1986). Pharmacotherapy for patients with borderline personality disorder. *Archives of General Psychiatry, 4,* 698–700.

Hawton, K., Bancroft, J., Catalan, J., Kingston, B., Stedeford, A., & Welch, N. (1981). Domiciliary and out-patient treatment of self-poisoning patients by medical and non-medical staff. *Psychological Medicine, 11,* 169–177.

Heppner, P. (1988). *Manual for the Problem-Solving Inventory.* Palo Alto, CA: Consulting Psychologists Press.

Heppner, P., & Peterson, C. (1982). The development and implications of a personal problem-solving inventory. *Journal of Counseling Psychology, 29,* 66–75.

Kendall, P., & Grove, W. (1988). Normative comparisons in therapy outcome. *Behavioral Assessment, 10,* 147–158.

Lerner, M., & Clum, G. (1990). Treatment of suicide ideators: A problem-solving approach. *Behavior Therapy, 21,* 403–411.

Liberman, R., & Eckman, T. (1981). Behavior therapy vs. insight-oriented therapy for repeated suicide attempters. *Archives of General Psychiatry, 38,* 1126–1130.

Linehan, M., Armstrong, H., Suarez, A., Allmon, D., & Heard, H. (1991). Cognitive–behavioral treatment of chronically parasuicidal borderline patients. *Archives of General Psychiatry, 48,* 1060–1064.

Litman, R. (1976). Anti-suicide program conducts controlled study. *Evaluation, 3,* 36–37.

Manning, W., & Dubois, P. (1962). Correlational methods in research on human learning. *Perceptual and Motor Skills, 15,* 287–321.

Maris, R., Berman, A., Maltsberger, T., & Yufit, R. (1992). *Assessment and prediction of suicide.* New York: Guilford Press.

Miller, I., Norman, W., Bishop, S., & Dow, M. (1986). The modified scale for suicidal ideation: Reliability and validity. *Journal of Consulting and Clinical Psychology, 54,* 724–725.

Millon, T. (1983). *Millon Clinical Multiaxial Inventory manual.* Minneapolis, MN: Interpretative Scoring Systems.

Mintz, J., Luborsky, L., & Christoph, P. (1979). Measuring the outcomes of psychotherapy: Findings of the Penn psychotherapy project. *Journal of Consulting and Clinical Psychology, 47,* 319–334.

Motto, J. (1976). Suicide prevention for high-risk persons who refuse treatment. *Suicide and Life-Threatening Behavior, 6,* 223–230.

Muehrer, P. (1990). *Conceptual research models for preventing mental disorders* (DHHS Publication No. ADM 90-1713). Rockville, MD: National Institute of Mental Health.

National Center for Health Statistics. (1991). *Vital statistics of the United States: Vol 2. Mortality–Part A* [for the years 1966–1988]. Washington, DC: U.S. Government Printing Office.

Nezu, A., Nezu, C., & Perri, M. (1989). *Problem-solving therapy for depression.* New York: Wiley.

Patsiokas, A., & Clum, G. (1985). Effects of psychotherapeutic strategies in the treatment of suicide attempters. *Psychotherapy, 22,* 281–290.

Regier, D., Myers, J., Kramer, J., Robins, L., Blazer, D., Hough, R., Eaton, W., & Locke, B. (1984). The NIMH epidemiologic catchment area program. *Archives of General Psychiatry, 41,* 941.

Robins, L., Helzer, J., Cottler, L., & Goldring, E. (1989). *Manual for NIMH Diagnostic Interview Schedule, Version III–Revised.* St Louis, MO: Washington University School of Medicine.

Rudd, M., Dahm, P., & Rajab, H. (1993). Diagnostic comorbidity in persons with suicidal ideation and behavior. *American Journal of Psychiatry, 150,* 928–934.

Rudd, M., Joiner, T., & Rajab, H. (in press). Exploring the relationship between suicide ideators, attempters, and multiple attempters. *Journal of Abnormal Psychology.*

Rudd, M., Rajab, H., & Dahm, P. (1994). Problem-solving appraisal in suicide ideators and attempters. *American Journal of Orthopsychiatry, 64,* 136–149.

Rudd, M. D., Joiner, T. E., & Rajab, M. H. (1995). Help negation after acute suicidal crisis. *Journal of Consulting and Clinical Psychology, 63,* 499–503.

Sarason, I., Johnson, J., & Siegel, J. (1978). Assessing the impact of life changes: Development of the Life Experiences Survey. *Journal of Consulting and Clinical Psychology, 46,* 932–946.

Schotte, D., & Clum, G. (1982). Suicide ideation in a college population: A test of a model. *Journal of Consulting and Clinical Psychology, 50,* 690–696.

Schotte, D., & Clum, G. (1987). Problem-solving skills in suicidal psychiatric patients. *Journal of Consulting and Clinical Psychology, 55,* 49–55.

Shaffer, D., Garland, A., Gould, M., Fisher, P., & Trautman, P. (1988). Preventing teenage suicide: A critical review. *Journal of the American Academy of Child and Adolescent Psychiatry, 27,* 675–687.

Shaffer, D., Vieland, V., Garland, A., Rojas, M., Underwood, M., & Busner, C. (1990). Adolescent suicide attempters: Response to suicide prevention programs. *JAMA: Journal of the American Medical Association, 264,* 3151–3155.

Steenbarger, B. (1994). Duration and outcome in psychotherapy: An integrative review. *Professional Psychology: Research and Practice, 25,* 111–119.

Teasdale, J., Fennell, M., Hibbert, G., & Amies, P. (1984). Cognitive therapy for major depressive disorder in primary care. *British Journal of Psychiatry, 144,* 400–406.

Termansen, P., & Bywater, C. (1975). S.A.F.E.R.: A follow-up service for attempted suicide in Vancouver. *Canadian Psychiatric Association Journal, 20,* 29–34.

Vieland, V., Whittle, B., Garland, A., Hicks, R., & Shaffer, D. (1991). The impact of curriculum-based suicide prevention programs for teenagers: An 18-month follow-up. *Journal of the Academy of Child & Adolescent Psychiatry, 30,* 811–815.

Welu, T. (1977). A follow-up program for suicide attempters: Evaluation of effectiveness. *Suicide and Life-Threatening Behavior, 7,* 17–30.

Zachary, R. (1989). *Manual for the Shipley Institute of Living Scale.* Los Angeles, CA: Western Psychological Services.

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