

Assertiveness and Problem-Solving Training for Mildly Mentally Retarded Persons With Dual Diagnoses

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This study investigated the differential effectiveness of assertiveness and problem-solving training on dually diagnosed patients' adaptive social behavior, distress and psychiatric symptoms, anger control, and problem-solving coping skills using a counterbalanced design. Assessments were conducted at pretreatment, midphase, posttreatment, and a 3-month follow-up examination. A combined assertiveness and problem-solving training package was effective for treatment of individuals with mild mental retardation with dual psychiatric diagnoses. Specifically, improvements occurred regarding both self-report measures of distress and caregiver ratings of adaptive functioning; however, no essential differences were found between these two treatment protocols. The importance of using self-regulatory models of therapy with this population is highlighted, and recommendations were made for future research.

Persons with dual diagnoses of mental retardation and mental illness are repeatedly cited as one of the most underserved populations with respect to mental health care (Stark, Menolascino, Albarelli, & Gray, 1988) despite data indicating that persons with mental retardation exhibit higher psychiatric prevalence rates and are more at risk for developing behavioral and emotional disorders than nonhandicapped individuals (Matson & Barrett, 1982).

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One reason for the increased vulnerability of mentally retarded individuals for psychopathology may involve the lack of opportunities to learn adaptive ways of coping with stress. Symptomatic behavior, such as aggression, destructive behavior, and emotional disturbance, actually may be the consequence of poor coping and self-regulatory abilities. For example, Benson (1985) reported recently that approximately 30% of mentally retarded persons seen at outpatient mental health clinics were referred for self-control problems, such as aggressive behavior. In the past, such patients commonly were managed with overuse of neuroleptic drugs (Gualtieri & Keppel, 1985), aversive contingencies or punishment procedures (McGee, 1988), or movement to more restrictive environments. As such, there is clearly a need to develop other treatment alternatives, especially since the treatment outcome literature, at present, does not reflect the actual mental health needs of mentally retarded persons with concomitant psychological problems (Small, 1989). Although the technology underlying various cognitive-behavior therapies offers an important option, few empirical investigations adapting such treatment strategies for this population exist. The major purpose of the present study, therefore, was to evaluate the effectiveness of two cognitive-behavioral treatment approaches aimed at increasing self-control skills, namely social problem solving and assertiveness training, in a population of mildly mentally retarded adults with dual psychiatric diagnoses.

Social problem-solving therapy is a cognitive-behavioral treatment approach by which patients are taught to understand better the nature of problems in living and direct their attempts at altering either the problematic nature of the situation itself, their reactions to them, or both (Nezu, 1987). Training in such skills has been found to be effective for a wide range of psychological disorders (Nezu & Nezu, 1991). With particular relevance to the present discussion, a problem-solving treatment model has been shown to be efficacious with regard to: (a) treating aggressive and impulsive nonhandicapped children (Kendall & Braswell, 1985), (b) increasing the overall social competence of a group of mildly and moderately retarded adults (Castles & Glass, 1986), and (c) decreasing aggressive responding of a group of mentally retarded adults (Benson, Rice, & Miranti, 1986). In addition, such training recently has been found to be both generalizable across problem areas and socially valid (Foxy, Kyle, Faw, & Bittle, 1989). Unfortunately, the Castles and Glass and Foxy et al. studies did not focus on dually diagnosed individuals, and the Benson et al. investigation did not include a waiting-list control condition against which to compare the effects of treatment.

With regard to the relevance of assertiveness training for this population, there has been significant support concerning the etiological role of interpersonal skill deficits in aggressive behavior in general (Bellack &

Morrison, 1982). In particular, persons with mental retardation often develop limited and maladaptive behavior patterns (e.g., underassertiveness, aggression) as a means of coping with frustration, anxiety, and negative social stress (Menolascino, 1977; Reiss & Benson, 1984). Although there are no controlled studies evaluating assertiveness training for treating aggression with mentally retarded psychiatric patients, evidence exists that this approach has been useful with nonhandicapped populations with similar target behaviors (Rimm, Hill, Brown, & Stuart, 1974).

Collectively, the above results would suggest that cognitive-behavioral treatment approaches aimed at increasing coping skills and social competency, such as problem-solving and assertiveness training, would provide important avenues of treatment research. We decided to compare these two approaches due to their conceptual distinction concerning "general versus specific" levels of intervention. More specifically, problem solving has been characterized in the literature as a general coping strategy that provides individuals with a variety of potential alternative strategies with which to respond to stressful or problematic situations (Nezu, Nezu, & Perri, 1989). Assertiveness training, however, can be viewed as training on a more molecular level, that is, training one to behave and communicate in more assertive (as compared to aggressive) ways in anger-arousing situations. In other words, one outcome of the problem-solving process regarding an anger-arousing situation might involve responding in an assertive manner; however, many other possible solutions exist (e.g., leaving the situation, soliciting the help of a friend, attempting to solve the problem). Assertiveness training, on the other hand, advocates only one specific solution (i.e., assertive responding). In that light, we were interested in determining whether subjects trained in a general coping approach would fare better than those trained in a more specific one.

METHOD

Subjects

Potential subjects were drawn from a pool of mildly mentally retarded individuals consecutively referred to the Dual Diagnosis Project, an outpatient medical-school affiliated clinic designed specifically to provide mental health services to this population. Twenty-eight persons who met the study's inclusion/exclusion criteria (as outlined below) participated in this investigation. Their ages ranged between 22 and 53 years ($M = 36$). The sample included 18 men and 10 women; 26 subjects were white, and 2 were black. In addition to the diagnosis of mild mental retardation, subjects had dual diagnoses of anxiety disorder ($n = 7$), schizophrenia ($n = 2$), intermittent explosive disorder ($n = 4$), adjustment disorder ($n = 3$), and

various personality disorders ($n = 12$). Within this sample, nine were on antipsychotic medication, two received benzodiazepines, and two took antiseizure medication.

Inclusion criteria were: (a) classification of mild mental retardation based on recent intellectual (i.e., Wechsler Adult Intelligence Scales-Revised; Wechsler, 1981) and adaptive behavior functioning (i.e., Adaptive Behavior Scale-Revised, 1975) scores, (b) presence of a concomitant psychiatric diagnosis in addition to that of mild mental retardation (dual diagnosis), (c) problems of maladaptive social behavior (e.g., anger control, verbal or physical aggression, destructive behavior), and (d) if relevant, no changes in medication could occur either 1 month prior to study entry or during participation in the overall protocol. Exclusion criteria included the presence of active substance abuse, organic brain syndrome, acute psychotic symptoms (current hallucinations or delusions), and concurrent involvement in any other psychological treatment.

Psychiatric diagnoses were established reliably through (a) consistency of patients' scores on the Psychopathology Instrument for Mentally Retarded Adults (PIMRA; Kazdin, Matson, & Senatore, 1983; Matson, Kazdin, & Senatore, 1984; Senatore, Matson, & Kazdin, 1985), and (b) structured clinical interviews independently conducted by a psychiatrist and a psychologist. The PIMRA is an inventory of psychopathology symptoms designed specifically for mentally retarded adults as a measure of symptom severity and as an aid for the differential diagnosis of this population. The eight diagnostic scales (i.e., schizophrenia, affective disorder, psychosexual disorder, adjustment disorder, anxiety disorder, somatoform disorder, personality disorder, and inappropriate adjustment) contains 57 items that were based specifically on the DSM-III. This measure was used in this study as a source of data by the two independent interviewers as an aid in establishing reliable psychiatric diagnoses. Calculation of interrater diagnostic agreement yielded an overall reliability coefficient of greater than .94 (Kappa value).

Measures

AAMD Adaptive Behavior Scale-Revised (ABS-R). The ABS-R (Nihira, Foster, Shellhaas, & Leland, 1975) is a behavior rating scale appropriate for mentally retarded, emotionally maladjusted, and developmentally disabled individuals. It was designed to provide an objective assessment of one's level of adaptive functioning. For the purpose of this study, the overall ABS-R was used to identify subjects' areas of deficiency and level of functioning to determine appropriateness for inclusion. Persons included in the study were required to function at least on an overall adaptive level of

60% comparable to that of individuals in the normative sample (496 institutionalized residents with range of IQ extending from profound to mild mental retardation) upon which the ABS-R manual was based.

Part II of the ABS-R additionally served as a dependent measure in this study to assess decreases in overall maladaptive functioning due to treatment. It provided data regarding the generalizability of treatment effects from ratings of current maladaptive social and personality dysfunctions across 15 areas (e.g., violent and destructive behavior, self-abusive behavior, psychological disturbances). Part II of the ABS-R has been shown to be sensitive to changes in adaptive functioning within a clinical population (Milham, Chilcutti, & Atkinson, 1976).

The ABS-R was filled out by each subject's caregiver (e.g., parent, group home staff member, foster parent) who received specific training instructions concerning the valid completion of the instrument. Random reliability checks by an independent observer (clinical psychology graduate student) indicated high levels of accuracy (mean $r = .89$ across three assessment points).

Brief Symptom Inventory (BSI). The BSI (Derogatis & Spencer, 1982) is a 53-item, self-report inventory of point-in-time, psychological symptom status that yields three global indices and nine dimensional scales. The General Severity Index (GSI) is the most sensitive of the global scales and provides an overall assessment of changes in psychiatric symptoms as a function of treatment. The BSI has been found to be consistent internally (Cronbach's coefficient alpha ranging from .71 to .85 across dimensions) and revealed high levels of test-retest reliability (e.g., stability coefficient for GSI = .90). The measure was verbally administered to all participants by a clinical psychology graduate student who was unaware of a subject's treatment assignment. The BSI assessed changes in psychiatric symptomatology as a function of treatment.

Problem-Solving Task (PST). This behavioral measure was designed for this study with specific regard to a population of mentally retarded individuals. It consists of five interpersonal problematic situations commonly experienced by such persons (e.g., making new friends, conflict resolution with another person) that are read to the subject. To control for individual preferences, the goal for each problem was provided (e.g., "Your goal is to make a new friend"). The subject was required to respond verbally to a series of four questions concerning the subject's means of problem resolution (e.g., "what is the actual problem?" "think of as many ideas to solve the problem as you can" "what are the positive and negative consequences of each idea?" "which idea do you think will solve the problem?"). All responses were audiotaped and later scored by two independent raters for the quality

of each response along a 5-point scale (1 = low quality; 5 = high quality). Depending on the specific question, response quality was defined by the effectiveness, accuracy, and/or relevance of the answer. For example, regarding the question of choosing a solution, a high quality response would be one that articulated an effective solution to the problem (i.e., one that has a high likelihood of solving the problem while maximizing the probability of additional positive effects and minimizing the likelihood of additional problems from occurring), whereas a low quality response would involve a solution that had a low probability of resolving the test problem. Lack of any response by the subject was scored as 0. Total PST scores were derived by summing across the four questions for the five problems (range = 0–100). Both raters remained unaware of subjects' assignment to experimental condition and the actual assessment point represented (e.g., pretreatment vs. posttreatment). Initial interrater agreement obtained from this study indicated high levels of consistency (i.e., $r = .83$). Previous pilot data indicated the PST to be reliable over time ($r = .79$). The measure was included as a "manipulation check" to assess the hypothesis that decreases in maladaptive behavior would be correlated with increases in problem-solving skills for those subjects receiving such treatment. Additionally, it was important to assess the differential effects on subjects' problem-solving ability that occurred as a function of assertiveness training.

Role-Play Test of anger arousing situations (RPT). The RPT (Benson et al., 1986) used in this study consisted of five potentially anger-arousing situations (e.g., being teased, receiving criticism) that are enacted within a role-play, videotaped situation with a confederate. Raters were trained to code subjects' responses to these situations independently along a 7-point scale of appropriateness (1 = very inappropriate; 7 = very appropriate) according to the guidelines outlined by Benson et al. (1986). Overall, scores ranged between 5 and 35 (i.e., total across the five situations). Percent of interrater agreement previously had been found to range between .87 and .94 (Benson et al., 1986). In this study, interrater reliability was found to be .91. Again, raters were unaware of subjects' experimental condition and assessment point. This measure assessed the effects of treatment regarding appropriate behavioral responding to situations that often serve as a stimulus for underassertive or aggressive behavior. In addition, it was important to observe differential effects regarding subjects' adaptive, assertive behavior related to the two forms of treatment included in this investigation.

Subjective Units of Distress Scale (SUDS). The SUDS was adopted for the purpose of the study as a measure of patients' subjective level of psychological distress. The SUDS measure used in this study was designed for a

developmentally disabled population by the present authors and consisted of a picture of an "upset thermometer" for which subjects were asked to mark how "upset" or "distressed" they felt during the previous week. The scale on the "upset thermometer" ranged from 1 to 10, with 10 indicating "the most upset," and was patterned after similar scales (Wolpe & Lazarus, 1966).

Procedure

The 28 subjects meeting inclusion/exclusion criteria were assigned randomly to one of three conditions: (a) Problem Solving-Assertiveness (PS-A; $n = 9$), (b) Assertiveness-Problem Solving (A-PS; $n = 9$), and (c) a Waiting-List Control (WLC; $n = 10$). Subjects in the PS-A condition received five weekly 1-h group sessions of problem-solving training, followed by five weekly 1-h group sessions of assertiveness training. A-PS members received the assertiveness training first, followed by the problem-solving training. WLC subjects did not receive any treatment during this time, but were seen twice monthly for supportive sessions. Each treatment group contained between four and five subjects, thus yielding two actual groups per experimental condition. All groups were co-led by a doctoral level psychologist (senior author) and a clinical psychology graduate student. The two treatment protocols were based on specific therapy manuals that outlined the content and nature of each treatment session. These components are described below.

Assertiveness training. Assertiveness training was included to provide an opportunity for individuals who have experienced faulty social learning to remediate some of these deficits by decreasing inhibition of assertive responding (Goldfried & Davison, 1976). Session 1 included an overall orientation to this treatment approach, including definitions and modeled examples of assertive, underassertive, and aggressive behavior. The goals of assertiveness training were discussed as an opportunity to build new interpersonal skills to cope better with stressful situations, especially those associated with aggressive responding. In essence, training focused on substituting aggressive behavior with assertive behavior. Components of assertive behavior included voice intensity (loud vs. soft), latency of response (impulsive vs. appropriate), duration of response (focused vs. lengthy), eye contact (focused vs. unfocused), voice quality (angry vs. assertive), body language (threatening vs. appropriate), and listening ability (listening to other person vs. talking constantly). Examples of various anger-provoking situations were elicited from the group to allow the therapists to model assertive versus aggressive responses. For example, in

response to the situation where "a friend falsely accuses you of stealing his cigarettes," subjects were taught to: respond only when the person has finished talking and not interrupt; use a calm voice, not threaten the person and call him names; look directly at the person when talking; concretely tell the person that you did not take the cigarettes; tell the friend how that accusation made you feel; and listen carefully to what the friend says in response to your behavior. All information was provided in language appropriate to this population (e.g., concrete terms).

During sessions 2 through 5, treatment continued to focus on eliciting personally relevant situations from each group member as a means of role-playing, modeling, and coaching subjects' practice of assertive behavior. Role-plays utilized videotape feedback and social reinforcement as additional learning strategies. Subjects were encouraged to practice these skills in situations that occurred outside of the therapy sessions. Such experiences were discussed and reviewed at the beginning of each session.

Social problem-solving training. This intervention was based on the social problem-solving treatment manual contained in Nezu et al. (1989) and included systematic training in five problem-solving processes: problem orientation (developing a rationale and adaptive set toward problems in living), problem definition and formulation (correctly identifying the nature of the problem and setting realistic goals), generation of alternative solutions (brainstorming a list of possible alternative solutions), decision making (reviewing the consequences of each solution idea and selecting ones that are optimal given the specific problem), and solution implementation and verification (carrying out the solution and monitoring its effects to determine one's success in problem resolution). This model was adapted in this study for a developmentally disabled population. For example, instructions were provided in a concrete manner and the problem-solving processes were modeled and practiced through videotaped role-play situations using a "think out loud" strategy.

Session 1 included an overall orientation to this approach and focused on training in problem orientation by teaching participants to: (a) label emotions (e.g., feelings of anger) as a "signal" to the presence of a problem (e.g., "when I feel angry I should try to see a 'red flashing traffic light' that tells me that a problem exists"), (b) inhibit the tendency to respond automatically (e.g., "the red light means that I should stop myself from hurting others"), and (c) develop a rational set toward the existence of problems (e.g., "instead of getting upset and hurting others and throwing things, I should try to solve the problem"). Training and practice in the four remaining steps occurred during sessions 2 through 5, with an emphasis on maintaining a rational orientation throughout. In an attempt to maximize therapeutic gain for each subject, as well as to encourage compliance, therapists

attempted to ensure that the treatment protocol was made relevant to the problems specific to each participant's life (e.g., coping with social rejection, interacting with an impatient workshop supervisor). Subjects were encouraged to use these skills outside of the sessions; such experiences also were reviewed and discussed at subsequent sessions.

Assessment Points

The major assessment points included pretreatment, the end of the first treatment phase (midphase), and the end of the second treatment phase (posttreatment). In the ABS-R, Part II was completed only at the pre- and posttreatment periods. All other dependent measures were obtained at all three assessment points.

Follow-up data regarding all measures were obtained at 3 months after treatment for both treatment conditions. No follow-up data were recorded for WLC subjects because of ethical concerns of withholding treatment for this population for such a lengthy time.

RESULTS

Validity Checks

Several validity checks were conducted first to determine: (a) treatment integrity, (b) presence of outcome differences between treatment groups within an experimental condition, and (c) effectiveness of the randomization procedure. To assess whether the therapy protocols were properly implemented in accordance with their respective guidelines, each treatment session was videotaped. Two graduate student research assistants independently rated the degree to which therapists adhered to the protocol. Raters received both treatment manuals in addition to the tapes (which were provided in a random order), and were unaware of whether the sessions they observed concerned the PS-A condition or the A-PS condition. Results indicated that both raters identified with 100% accuracy when a session involved problem-solving training or when it represented an assertiveness training session.

The second validity check concerned the possibility of pretreatment and/or outcome differences between the two therapy groups within each treatment condition. An overall repeated measures multivariate analysis of variance (MANOVA) revealed no differences as a function of group assignment within each treatment condition; therefore, data across the two therapy groups within each condition were collapsed.

Last, to assess the integrity of the randomization procedure, results from the above MANOVA were reviewed regarding pretreatment differences

concerning all dependent measures via individual comparisons among conditions (i.e., univariate F -tests). In addition, a one-way MANOVA including various demographic variables (age, IQ, level of adaptive functioning), as well as a series of Chi-square analyses regarding the polychotomous variables of sex, ethnicity, psychiatric diagnosis, and medication usage were conducted to determine further any pretreatment differences among subjects in the three conditions. According to these results, no significant pretreatment differences were identified. Table 1 provides the means and standard deviations for all dependent measures calculated for each assessment point.

Analyses of Treatment Effects

The overall pre-midphase-posttreatment analysis incorporating all four major dependent variables (i.e., BSI, SUDS, PST, RPT) involved a 3 (condition) \times 3 (assessment point) repeated measures Wilk's Lambda MANOVA approach (multiple profile analysis) using the Systat computer program. Follow-up data were not included in this initial analysis because, for ethical reasons, subjects in the waiting-list control condition were provided treatment immediately after the posttreatment assessment point. As such, a true 3 (condition) \times 4 (all assessment points) MANOVA was compromised.

Results from this omnibus repeated measures MANOVA indicated a significant overall interaction effect, $F(11, 16) = 4.48, p < .004$ and a significant overall effect due to trials, $F(11, 16) = 10.21, p < .001$. The overall effect relating to the condition factor was not significant, $F(1, 26) = 0.33, p > .05$. Based on the emergence of this significant omnibus interaction effect, individual repeated measures analyses for each dependent measure were then conducted to investigate the actual source of this significant effect. For all four dependent measures, significant trials \times condition interaction effects were also found (see Table 2). Individual pair-wise comparisons (Dunn's t -test) were considered appropriate to conduct regarding each measure, and were adjusted according to the Bonferroni procedure to control for family-wise error rates (all significant results reported below are at least $p < .05$).

Midphase. At the midphase assessment point, analyses indicated that: (a) subjects in both treatment conditions report significantly less psychiatric (BSI) and less distress symptoms (SUDS) than their pretreatment levels, whereas no changes in BSI and SUDS scores were found to occur for WLC subjects; (b) subjects in both treatment conditions were found to demonstrate significantly higher levels of assertive behavior according to the RPT as compared to their pretreatment scores, whereas no changes on the RPT

TABLE 1.
Means and Standard Deviations for All Dependent Measures Across Four
Assessment Points for Each Condition

	Conditions		
	PS-A	A-PS	WLC
Pretreatment			
BSI	1.29 (0.69) ^{A,a}	1.38 (0.65) ^{A,a}	1.13 (0.39) ^{A,a}
SUDS	7.11 (2.09) ^{A,a}	7.56 (1.88) ^{A,a}	7.10 (2.64) ^{A,a}
PST	41.56 (10.69) ^{A,a}	46.00 (16.36) ^{A,a}	41.50 (19.03) ^{A,a}
RPT	15.33 (2.39) ^{A,a}	14.33 (4.15) ^{A,a}	10.80 (3.62) ^{A,a}
ABS-II	73.00 (26.20) ^{A,a}	65.89 (19.41) ^{A,a}	75.07 (21.66) ^{A,a}
Midphase			
BSI	0.85 (0.38) ^{B,a}	0.89 (0.49) ^{B,a}	1.18 (0.38) ^{A,b}
SUDS	3.56 (2.40) ^{B,a}	4.03 (3.91) ^{B,a}	6.30 (2.98) ^{A,b}
PST	56.22 (15.11) ^{B,a}	49.44 (25.45) ^{A,a}	42.10 (19.29) ^{A,b}
RPT	25.00 (7.05) ^{B,a}	23.78 (6.23) ^{B,a}	12.40 (5.02) ^{A,b}
Posttreatment			
BSI	0.76 (0.49) ^{B,a}	0.71 (0.48) ^{B,a}	1.22 (0.35) ^{A,b}
SUDS	2.44 (2.29) ^{C,a}	3.63 (3.83) ^{B,a}	7.40 (3.27) ^{A,c}
PST	61.67 (15.09) ^{B,a}	70.00 (25.49) ^{B,a}	41.00 (17.88) ^{A,b}
RPT	24.78 (5.61) ^{B,a}	26.00 (6.52) ^{B,a}	13.70 (6.02) ^{A,b}
ABS-II	52.33 (18.37) ^{B,a}	54.00 (16.98) ^{B,a}	74.90 (19.99) ^{A,b}
Follow-up			
BSI	0.75 (0.49) ^{B,a}	0.73 (0.49) ^{B,a}	
SUDS	2.67 (2.85) ^{C,a}	2.89 (2.77) ^{C,a}	
PST	63.11 (15.49) ^{B,a}	67.11 (20.33) ^{B,a}	
RPT	28.11 (5.87) ^{B,a}	24.00 (5.32) ^{B,a}	
ABS-II	51.79 (19.12) ^{B,a}	53.81 (17.34) ^{B,a}	

Numbers in parentheses represent standard deviations.
 PS-A = Problem Solving-Assertiveness; A-PS = Assertiveness-Problem Solving;
 WLC = Waiting-List Control; BSI = Brief Symptom Inventory; SUDS =
 Subjective Units of Distress Scale; PST = Problem-Solving Task; RPT = Role-Play
 Assertiveness Test; ABS-II = Adaptive Behavior Scale - Revised, Part II.

TABLE 2.
F-Ratios Emanating from Overall Individual
Repeated Measures MANOVAs (Multiple
Profile Analysis) for Each Dependent Measure
Concerning the Effects due to Condition, Trials,
and Condition \times Trials Interaction (Pre-, Mid-,
& Posttreatment)

	Condition ^a	Trials ^b	Interaction ^c
Measure			
BSI	0.67	12.83***	4.37**
SUDS	2.53	8.89***	4.38**
PST	2.20	10.48***	2.75*
RPT	11.48***	10.85***	4.37**

^a*df* = 2,25; ^b*df* = 2,24; ^c*df* = 4,48.

p* < .05, *p* < .01, ****p* < .001.

BSI = Brief Symptom Inventory; SUDS = Subjective Units of Distress Scale; PST = Problem-Solving Task; RPT = Role-Play Assertiveness Test.

were found for WLC individuals; (c) such changes in BSI, SUDS, and RPT scores were found to be equivalent across PS-A and A-PS subjects; and (d) PS-A members evidenced significant improvement in their problem-solving scores, whereas both A-PS and WLC subjects did not.

Posttreatment. At the end of both treatment phases, results indicated that: (a) WLC members showed no changes on any measures at posttreatment as compared to their pre and midtreatment scores (i.e., they reported significantly higher distress and psychiatric symptom levels, less assertive behavior, and less effective problem solving at posttreatment than either treatment condition); (b) PS-A subjects showed continued decreases in distress scores at a marginally significant level (*p* < .08), whereas mid-to-posttreatment differences for A-PS subjects regarding SUDS scores were not found to be significant; (c) no significant changes occurred (either increases or decreases) concerning the BSI, SUDS, and RPT scores for either treatment condition; and (d) subjects receiving problem-solving training during this period (i.e., A-PS subjects) were found to have significantly improved PST scores from midphase, whereas PS-A members were not.

Adaptive functioning. Because Part II of the ABS-R was administered only at pre- and posttreatment, the general analysis used to assess treatment effects involved a 3 (condition) \times 2 (assessment point) repeated measures MANOVA (Wilk's Lambda). Again, individual comparisons (Dunn's *t*-test) were adjusted according to the Bonferroni procedure. Results of the

MANOVA initially indicated a significant main effect for condition ($F(2, 25) = 4.74, p < .01$), a significant main effect for trials ($F(1, 25) = 18.73, p < .001$), and a significant condition \times trials interaction effect ($F(2, 25) = 5.12, p < .01$). Individual comparisons among means indicated significant improvement for both treatment conditions, whereas WLC subjects showed no changes during this time. Specifically, at the posttreatment phase, both treatment groups were found to show significantly lower ABS-R scores (indicating less maladaptive social and personal functioning) than WLC subjects. No differences, however, emerged between the two treatment conditions.

Additional analyses. To evaluate the hypothesis that changes in problem-solving ability and/or assertive behavior at posttreatment were related to changes in psychiatric symptoms, distress level, and adaptive functioning, two simultaneous multiple regression analyses were conducted. These analyses incorporated BSI, SUDS, and ABS change scores as independent variables regarding changes in problem solving and assertiveness. Results concerning problem solving revealed an overall significant adjusted $R^2(24) = .38, p < .004$, where improvements in problem solving were further found to be related significantly to decreases in BSI, SUDS, and ABS scores (beta values of $-39, -45, -33$, respectively, all $p < .02$). The regression analysis focusing on assertiveness indicated a significant overall adjusted $R^2(24) = .31, p < .01$, where improvements in assertiveness were found to be significantly associated with decreases in both BSI and ABS scores (beta values of -32 and -30 , respectively, all $p < .05$), but not with changes in SUDS scores (beta value of -21).

Follow-up study. The omnibus follow-up analysis utilized a 2 (condition) \times 2 (posttreatment-follow-up) repeated measures MANOVA (Wilk's Lambda). At the 3-month follow-up assessment, analyses indicated that (a) subjects in both treatment conditions showed no changes from posttreatment on measures of psychiatric symptoms (BSI), assertive behavior (RPT), or problem-solving effectiveness (PST); and (b) no differences emerged concerning distress symptoms (SUDS) between treatment groups. However, the A-PS subjects reported significantly lower SUDS scores compared to their own posttreatment scores, whereas the PS-A subjects showed no change from posttreatment to follow-up on this measure, thus, in a sense, "catching up" with their PS-A counterparts. With regard to changes in adaptive functioning, as measured by the ABS-R, follow-up analyses indicated no change for either treatment condition from posttreatment assessment. Collectively, these follow-up analyses indicate maintenance of treatment gains for both experimental conditions across all dependent measures.

DISCUSSION

The results of this study provide initial evidence that a combined problem-solving and assertiveness skills training package is an efficacious intervention for treating individuals with mental retardation and a variety of dual psychiatric diagnoses. Specifically, improvements occurred regarding both self-report measures of psychological symptoms and distress (i.e., BSI and SUDS scores) as well as caregiver ratings of adaptive functioning (i.e., ABS-R). As such, this study not only is consistent with previous research that found treatment strategies focusing on training self-regulatory skills to be effective with individuals with mental retardation (e.g., Benson et al., 1986; Castles & Glass, 1986; Foxx et al., 1989), but also underscores their efficacy regarding the reduction of aggressive responding in a dually diagnosed—mentally retarded population. In addition, these results provide data in support of recent calls that advocate for the increased use of self-regulatory treatment procedures with this population (Meichenbaum, 1990; Whitman, 1990).

Results further indicate that problem-solving training tends to impact on both problem-solving skills and assertive responding, whereas assertiveness training serves to impact on assertiveness skills only (refer to results at midphase). Because both components appear to influence positive outcomes in general (i.e., no significant differences between these two treatment protocols emerged at midphase regarding the BSI and SUDS scores), it would appear that both are potentially useful as clinical strategies for mentally retarded patients with dual diagnoses initially exhibiting sufficient maladaptive behaviors that warrant referral to a psychiatric clinic. Although focusing on a different population (i.e., male undergraduates), the present results, therefore, are consistent with a study that found problem-solving and assertiveness training equally effective as anger-reducing treatment approaches (Moon & Eisler, 1983).

Despite these initial significant results, the present study can be regarded only as a preliminary investigation because of the small sample size. For example, although the effects in this study are associated with adequate power to detect differences between a treatment component and the wait-list control condition, the small n per condition does not allow for a powerful test to detect differences between the two treatment components. It is important for future investigations, therefore, to assess the effects of such cognitive-behavioral interventions with larger samples. In addition, future studies also should focus on groups that are more homogenous with regard to concomitant psychiatric diagnoses. There may be, for example, specific diagnostic groups for which such strategies are better suited (e.g., affective disorders vs. schizophrenia). Moreover, because the present study included only individuals with mild mental retardation, it is unclear whether such approaches are generalizable to persons with moderate or severe retardation.

Last, although the patients in this study had undergone no medication changes for 1 month prior to study entry and during the period of time assessed, it would be extremely important to examine both the independent and combined effects of psychopharmacological and cognitive-behavioral approaches to increasing self-regulatory behavior. Currently, there is a lack of well-controlled investigations of either the unique or synergistic effects of medication and cognitive-behavior therapy for the treatment of aggression or destructive behavior with mentally retarded adults. Yet, these behaviors remain a chief source of referral for patients with dual diagnoses. Findings from such studies might have a powerful impact regarding mental health treatment alternatives for this population.

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