

Effectiveness of an Integrated, Trauma-Informed Approach to Treating Women with Co-Occurring Disorders and Histories of Trauma: The Los Angeles Site Experience

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Effectiveness of an integrated trauma-informed approach to treating women with co-occurring disorders and histories of trauma was evaluated. Baseline and 12-month assessments were completed by 136 intervention- and 177 comparison-group women. The intervention group received

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Seeking Safety, a trauma-specific group treatment focusing on safety and coping skills, in the context of integrated substance abuse and mental health services. The comparison group received similar services but not trauma-specific group treatment. Intervention women showed significantly better treatment retention over three months and greater improvement on posttraumatic stress symptoms and coping skills. On most outcomes, those who completed treatment improved more than those who discontinued. Improvements on symptoms of distress and drug problem severity were partially mediated by gains in coping skills. © 2007 Wiley Periodicals, Inc.

A history of trauma has increasingly been recognized as a factor in co-occurring substance use disorders and mental illness among women (Chilcoat & Menard, 2003). According to the National Comorbidity Survey, for women, posttraumatic stress disorder (PTSD) tends to be associated with a woman's having been raped, sexual molested, physically attacked, threatened with a weapon, or physically abused as a child (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Among women with PTSD, 28% also met criteria for an alcohol use disorder and 27% for a drug use disorder, nearly three times the prevalence rate of substance use disorders among women without PTSD (Kessler et al., 1995). Women with co-occurring disorders also have been shown to have higher rates of other life burdens, for example, homelessness, HIV-positive status, other health problems, and unemployment (Brown, Huba, & Melchior, 1995). In general, women with co-occurring disorders have not been well served by the existing service system, which tends to be fragmented and unresponsive to their multiple needs (Grella, 2003). Dropping out of treatment is a major problem among women with multiple needs, especially among those with children (Brown et al., 1995; Martinez-Raga et al., 2002).

Harris and Fallot (2001) suggested that a trauma-informed approach to treatment should include therapists' recognizing that many of their clients' seemingly maladaptive behaviors may have developed as ways for these women to cope with and adapt to trauma. Substance use is often viewed by dually-diagnosed women as a coping strategy, particularly in times of perceived stress early in life (Gomez et al., 2000). Studies of substance use disorder treatment have shown that a focus on coping skills can be important in the recovery process (Marlatt, 1996; Monti, Rohsenow, Colby, & Abrams, 1995). Jerrell and Ridgely (1995) compared interventions based on behavioral skills training, case management, and 12-step recovery in a sample of dually diagnosed clients. They found the greatest reduction of symptoms among clients assigned to behavioral skills training, as well as some advantages of case management over the 12-step approach. In a treatment study of inpatients with both a substance use disorder and PTSD, Brown, Read, and Kahler (2003) found that those whose PTSD had remitted at follow-up reported significantly greater levels of positive coping and lower levels of negative coping than those whose PTSD had not remitted. Their results showed that individuals in substance abuse treatment experienced changes in coping from baseline to follow-up assessment and that these changes were associated with better substance abuse outcomes.

To address the unique needs of women with substance use disorder and PTSD, Najavits developed a group cognitive-behavioral therapy called "Seeking Safety" (Najavits, 2002; Najavits, Weiss, & Liese, 1996). The intervention focused on helping women manage negative feelings and learn relationship and problem-solving skills in conjunction with achieving abstinence; that is, on providing an alternative set of coping

strategies for reducing stress. Seeking Safety comprises 25 topics. Strong emphasis is placed on making treatment accessible and optimistic, and allowing clients to practice new skills during group sessions. Najavits and colleagues (Najavits, Weiss, Shaw, & Muenz, 1998) found that 63% of those enrolled completed at least six sessions, and that women who completed at least six sessions showed reduced substance use, a less dysfunctional attitude about substance use, a greater willingness to work hard, a lower suicide risk, improved social adjustment, and, at 3-month follow-up, fewer trauma-related symptoms.

The studies discussed above provide the basis for proposing an integrated, trauma-informed approach for treating women with co-occurring disorders and histories of trauma. In 1998, the Women, Co-occurring Disorders and Violence Study (WCDVS) was initiated to develop, implement, and evaluate a trauma-integrated services model within the public mental health and substance abuse systems (Huntington, Moses, & Veysey, 2005; Salasin, 2005).

Each of the nine sites from across the United States chosen to participate in the WCDVS had considerable flexibility in designing its treatment program, provided that the program included the following elements: a trauma-informed agency context; a women-specific program of services; comprehensive, integrated services; meaningful consumer involvement; and trauma-specific treatment. Sites were free to select any trauma-specific treatment approach. A nonequivalent comparison group design was chosen for the study, with each of the nine sites recruiting a local comparison group. Each site participated in a cross-site evaluation and conducted a site-specific evaluation (Giard et al., 2005).

This study reports site-specific results for the Los Angeles project. At the Los Angeles site, the most critical difference between intervention and comparison conditions was that women in the intervention group had Seeking Safety therapy integrated into their treatment program. We hypothesized that, compared with women in the comparison group, women in the intervention group would show better treatment retention and greater improvement on the key cross-site outcomes and on a site-specific index of coping skills. We further hypothesized that these differences would be more evident for women who completed treatment than for those who did not complete treatment. Finally, we hypothesized that changes in coping skills would mediate improvement on the key cross-site outcomes over time.

METHOD

Study Design

The outcome evaluation was organized around a quasi-experimental nonequivalent control group design using an intent-to-treat model. The women in the intervention group were treated at PROTOTYPES, Centers for Innovation in Health, Mental Health and Social Services. The evaluation included three PROTOTYPES locations: PROTOTYPES Women's Center in Pomona, a large residential program where most of the study participants received their treatment; the affiliated PROTOTYPES outpatient clinic; and PROTOTYPES Women's Center in Oxnard, a small residential program. Comparison group participants were treated at residential substance abuse treatment facilities for women run by two other agencies. The comparison group locations were in the same county but in a different Los Angeles Service Planning Area from the intervention group.

We report analyses of data collected at baseline and at 12 months, after treatment had been completed. To be included in the analyses, women had to have been interviewed within a 12-week window around the target 12-month interview date. Information about treatment retention was obtained by reviewing participants' charts at the conclusion of treatment.

Participants

The criteria for participation in the study were that the women be 18 years of age or older, meet diagnostic criteria for a mental health or personality disorder, meet diagnostic criteria for a substance use disorder, and have a history of violent or traumatic experiences (typically sexual or physical abuse). Either the mental health disorder or the substance use disorder must have been current and the other must have been symptomatic within the last 5 years, and the woman had to have had at least two prior episodes of mental health or substance abuse treatment.

From January 18, 2001, through February 15, 2002, 402 women were enrolled in the study, 187 of them from PROTOTYPES and 215 of them from the comparison group agencies. An additional 238 women (80 from PROTOTYPES and 158 from the comparison agencies) were screened for the study. Of these, 216 were ineligible for the study by at least one of the eligibility criteria and 22 were eligible. Of these 22, 13 left the agency before the baseline interview could be completed, and 9 were not interested in participating in the study. Baseline interviews took place an average of 18 days after women had entered their treatment agency, with 95% of the interviews occurring within the first month.

Across all intervention and comparison group agencies, 77.9% of women were found and interviewed for their 12-month followup within the 12-week window around the target interview date ($N = 313$). Attrition was largely due to our inability to locate the women; 17 were found after the 12-week window, and 4 actively withdrew from the study. Slightly more comparison group participants than intervention group participants were located and interviewed (82.3% versus 72.7%; chi square [$N = 402$, $df = 1$] = 5.35, $p < .05$).

Women's background characteristics are shown in Table 1. The intervention and comparison groups were well matched demographically. The intervention group had a higher frequency of having been in jail or prison and of having been court-mandated to treatment. The most troublesome drug, as reported by participants, varied between the groups; in particular, there was greater use of methamphetamine and marijuana by the intervention group and greater use of alcohol by the comparison group.

Measures

All nine WCDVS sites used the same instruments to measure drug and alcohol problem severity, mental health symptoms, posttraumatic symptoms, and traumatic event history. In Los Angeles, we added a site-specific measure of coping skills. All of the assessments described below were done at both baseline and follow-up, with the exception of the trauma history, which was done at baseline only.

Drug and alcohol. Drug and alcohol problem severity were assessed using sections from the Addiction Severity Index (ASI) (McLellan et al., 1992). Items assess frequency of

Table 1. Baseline Demographic and Clinical Characteristics of Study Population by Condition

	Intervention (<i>N</i> = 187)	Comparison (<i>N</i> = 215)	Statistical test
Age (years)			
Mean (<i>SD</i>)	33.15 (8.45)	33.26 (8.89)	$F(1, 400) = 0.01, ns$
Education (years)			
Mean (<i>SD</i>)	11.60 (2.13)	11.61 (2.24)	$F(1, 397) = 0.00, ns$
Race/ethnicity (%)			$\chi^2 (N = 402, df = 1) = 2.36, ns$
Hispanic	26.74	26.06	
White	39.04	35.40	
Asian/Pacific Islander	0.53	0.93	
Black	20.86	24.11	
American Indian	10.70	12.57	
Biracial	2.14	0.92	
Relationship status (%)			$\chi^2 (N = 402, df = 2) = 0.29, ns$
Currently partnered	29.41	27.40	
Previously partnered	32.09	31.60	
Never partnered	38.50	40.90	
Number of children			
Mean (<i>SD</i>)	2.37 (1.87)	2.60 (2.22)	$F(1, 400) = 1.30, ns$
Confinement in jail (% ever)	91.44	80.47	$\chi^2 (N = 401, df = 1) = 9.64^{**}$
Required to be in treatment (% yes)	64.61	38.14	$\chi^2 (N = 402, df = 4) = 41.85^{***}$
Serious physical illness or disability (% yes)	40.32	34.41	$\chi^2 (N = 401, df = 2) = 5.20, ns$
Mental health case (% yes)	61.50	63.72	$\chi^2 (N = 402, df = 1) = 0.64, ns$
Childhood physical or sexual abuse (%)			$\chi^2 (N = 402, df = 3) = 1.03, ns$
None	28.88	28.37	
Low	32.62	34.41	
Moderate	24.06	20.46	
High	14.44	16.74	
Any interpersonal abuse in the last 6 months (% yes)	52.46	60.47	$\chi^2 (N = 393, df = 2) = 2.56, ns$
History of homelessness (% ever)	74.33	68.37	$\chi^2 (N = 402, df = 1) = 1.73, ns$
Most troublesome drug (%)			$\chi^2 (N = 402, df = 6) = 16.66^*$
Heroin	3.3	3.7	
Cocaine/crack	21.7	22.8	
Methamphetamine	38.6	32.6	
Alcohol	7.5	9.8	
Alcohol and drugs	12.1	18.1	
Polydrug	7.6	10.7	
Marijuana/hallucinogens/other	9.3	2.3	

Note. *ns* = not statistically significant.

* $p < .05$. ** $p < .01$. *** $p < .001$. **** $p < .0001$.

drug and alcohol use and abuse within the past 30 days, how bothered the individual is by her drug or alcohol problems, and how important treatment for her problem is to her. Higher composite scores indicate more severe problems. In our combined intervention and comparison sample, Cronbach's alpha was .84 for the alcohol score and .64 for the drug score. After completing the ASI, women were asked which substance was most troublesome for them. This information is included in Table 1.

Mental health. Mental health symptoms were assessed using the 53-item Brief Symptom Inventory (Derogatis, 1993). Interviewers asked respondents how much each symptom

had bothered them in the past 7 days (responses could range from *not at all to extremely*). The Global Severity Index (GSI) is the aggregate severity measure, with higher scores corresponding to greater distress. Following Derogatis, for respondents with fewer than 13 items missing, we calculated prorated scores. In our sample, Cronbach's alpha was .96. Following Derogatis, "caseness" was based on a respondent's exceeding a *T* score of .63 on the GSI (with raw scores standardized to a scale on which 50 corresponded to "average" in a nonpsychiatric population).

Posttraumatic symptoms. Posttraumatic symptoms were assessed using the PTSD Symptom Scale (PSS; Foa, Riggs, Dancu, & Rothbaum, 1993). The 17-item PSS includes the principal symptoms of posttraumatic stress disorder, which are avoidance, hyperarousal, and reexperiencing. Respondents rate how often each symptom has bothered them in the past month, with ratings ranging from 0 (*not at all or only one time*) to 3 (*5 or more times per week/almost always*). The sum of the ratings provides an overall indicator of PTSD symptom severity. For respondents with no more than 2 items missing, we calculated prorated scores. In our sample, Cronbach's alpha was .90.

Trauma. Trauma history was measured using the Life Stressor Checklist-Revised (LSC-R; Wolfe, Kimerling, Brown, Chrestman, & Levin, 1996), which was modified substantially for the cross-site study (McHugo, et al., 2005). Interviewers asked participants at baseline whether they had a history of childhood physical or sexual abuse and whether they had experienced any interpersonal abuse within the last 6 months (e.g., were physically assaulted, threatened, or forced to have sex). This information is included in Table 1.

Coping. Coping skills were assessed using a scale adapted with permission from an unpublished measure, the Core Components of Treatment Scale (Najavits, 1995). We adapted the scale specifically to measure acquisition of the skills taught in the Seeking Safety lessons (Najavits, 2002). We changed the language to make the description of each coping skill understandable to respondents who had not participated in the Seeking Safety sessions, and we shortened the scale. The modified coping skills scale contains 18 items, each scored on a 5-point scale to indicate frequency of use of the skill during the past month. Items include: "Walk away from a bad situation, distract yourself, or 'change the channel'"; "Make an action plan, such as, set a deadline, and let others know about it"; and "Do something to give yourself motivation, such as, carry a photograph, quotation, poem, or song that gives you hope." A higher score indicates better coping skills. In our sample, Cronbach's alpha was .90.

Procedures

The university-based evaluation team (MG, KH, MO, and TR) hired, trained, and supervised interviewers. Interviewers were graduate students in social work, counseling psychology, or clinical psychology. Data collection took place in private, face-to-face interviews at the agency, or for women who had completed or discontinued treatment, at a location convenient for them. The interviewers obtained informed consent and recorded data on paper forms provided by the national coordinating center for the project. They collected data on coping skills on an additional site-specific form. To reduce the potential influence of interviewer expectancy, interviewers were blind to condition: they did not know which agencies administered the

intervention treatment and which administered the comparison treatment. To improve retention, when feasible, the same interviewers completed all interviews with the same participants. There were baseline, 6-, and 12-month interviews, each conducted face-to-face and lasting approximately 1½ hours, as well as three-month and nine-month brief interviews, typically by telephone. Participants received \$10 for the baseline interview and brief interviews and \$25 for the 6- and 12-month follow-up interviews. We present baseline and 12-month data here, in order to analyze outcomes after treatment had concluded.

Chart review provided information about dates of treatment admission and discharge. A county-mandated code used by agencies indicated whether the woman had been discharged following successful completion of the treatment program, had left early voluntarily, or had been asked to leave early.

Members of the university-based evaluation team (MG, TR) conducted semistructured interviews with staff—the administrator, substance abuse counselor, and mental health clinician (if available)—at each location to derive descriptions of the intervention and comparison conditions.

Intervention condition. PROTOTYPES's Women's Center in Pomona is a 12-month residential program for women built on concepts of therapeutic community. Both substance abuse and mental health services are available at the residential center. Two key treatment components were added to the PROTOTYPES program at this and the two other PROTOTYPES locations as part of this study: The Seeking Safety group intervention and concomitantly increased attention to trauma in managing each woman's treatment plan.

Ninety-minute Seeking Safety groups took place twice a week, for a total of 31 sessions. Groups were co-led by a mental health professional and a substance abuse counselor. The substance abuse counselor typically was a woman who was in recovery, had received mental health services, and was herself a survivor of trauma. The curriculum followed the Seeking Safety treatment manual (Najavits, 2002). Prior to beginning the Seeking Safety groups, leaders participated in a training workshop led by Lisa Najavits and a 10-week training led by two PROTOTYPES staff members (VB, ER).

Comparison condition. Two comparison agencies operated residential substance abuse treatment programs at multiple locations. Five locations were included in the study—a large residential facility operated by one agency, and four small residential programs in converted houses operated by the other agency. All comparison study locations were for women only. The comparison agencies had programs for women who were dually diagnosed; but, compared to the intervention agency, the comparison agencies provided a greater proportion of mental health treatment by referral to other mental health agencies. Two locations had on-site programs for survivors of domestic violence; others referred women to off-site domestic violence programs. Consumer involvement was part of the treatment program at both agencies. The residential program at one comparison agency was 9 to 10 months in duration. The program at the other comparison agency was 6 months long and was typically followed by referral to residential aftercare.

Analyses

Baseline differences between groups were analyzed using chi-square tests for categorical data and *t*-tests or analysis of variance (ANOVA) for continuous variables or scores

on questionnaires. We determined through preliminary analyses that the two comparison agencies could be combined to form one comparison group without affecting baseline differences or tests of change over time. We evaluated the effects of attrition from the study with two-way ANOVA, comparing baseline measures by study condition for women who participated in the 12-month follow-up with baseline measures for women who did not participate in the follow-up. We used the interaction between study condition and participation status to test whether the difference between the level of symptoms for the women who remained in the study and the women who left the study varied by study condition.

We evaluated treatment retention based on dates of admission and dates of discharge in participants' charts. Because of differences in duration of treatment programs at the different agencies, we focused on whether women dropped out of treatment within the first 12 weeks. We used a repeated measures ANOVA comparing week-by-week dropout for intervention and comparison conditions and looked for a significant time-by-condition interaction to test whether dropout increased over time differentially for the intervention group versus the comparison group.

To evaluate outcomes, we employed repeated measures ANOVA to test for change over time by intervention and comparison condition. We used an intent-to-treat model, in which women were included in the analysis regardless of the amount of treatment they completed. The repeated measures ANOVA allowed comparison of post-test outcomes by condition, controlling for any differences between groups on the same measure at baseline or between groups due to attrition.

We performed additional analyses using repeated measures ANOVA with two independent variables—study condition and treatment completion status—to test whether the degree of change differed between treatment completers and noncompleters, with treatment completion ascertained from the county completion codes recorded in the women's charts.

Finally, we used repeated measures ANOVA with study condition and gain in coping skills to test whether change on the other outcomes differed between women who improved on coping skills and those who did not.

RESULTS

Baseline Differences and Attrition Analyses

Scores on the treatment outcome variables at baseline were compared for intervention and comparison groups using two-way ANOVA (Study Condition \times Participation Status). On both the ASI alcohol and drug subscale scores, the analyses showed a significant main effect for condition, indicating that at baseline women in the comparison group reported somewhat more severe alcohol problems, $F(1, 398) = 10.29$; $p < .001$, and drug problems, $F(1, 395) = 7.81$; $p < .01$, than women in the intervention group. There was a main effect for participation status on the drug subscale score, $F(1, 395) = 5.49$; $p < .05$, indicating that those with worse drug problems at the outset were less likely to be retained in the study, regardless of study condition. Finally, there was a statistically significant interaction effect, $F(1, 398) = 7.41$; $p < .01$, for the PSS score. This interaction was caused by a higher level of traumatic stress reported at baseline by comparison group women who left the study ($M = 24.26$) relative to comparison group women who remained in the study ($M = 19.05$), a pattern that was not evident

in the intervention group ($M = 18.25$ for women who left the study, and $M = 20.43$ for women who remained in the study.).

Treatment Retention

Figure 1 shows cumulative dropout during each of the first 12 weeks of the study for each group. By the end of 12 weeks, the dropout rate was 34.0% for the intervention group and 41.5% for the comparison group. Repeated measures ANOVA showed a significant interaction between condition and time, $F(11, 3905) = 1.95$, $p = .03$, indicating that there were significantly different trajectories of dropout for intervention and comparison conditions.

Treatment Outcomes

Repeated measures ANOVA results are shown in Table 2. As indicated by the significant effects for time, all women showed significant improvement on the two ASI subscales, the GSI, and the PSS, regardless of whether they were in the intervention group or the comparison group. For the ASI alcohol and drug subscales, there was a main effect for intervention versus comparison group, indicating that the intervention group showed lower severity at both baseline and 12 months.

The hypothesis of greater improvement for the intervention group than for the comparison group was supported by significant interaction effects on both trauma symptoms and coping skills. Women in the intervention group improved more on PSS scores than did women in the comparison group. In the intervention group, women's use of coping skills increased from baseline to 12 months, but in the comparison

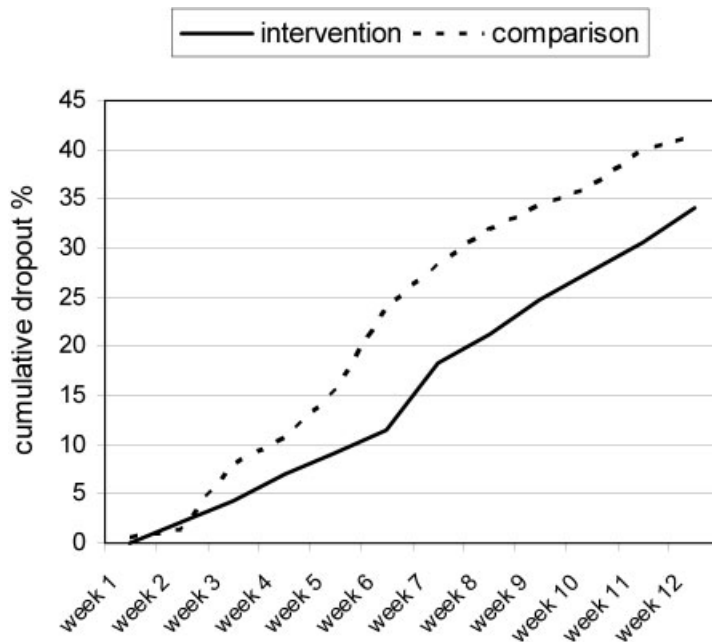


Figure 1. Retention in treatment for first 12 weeks, by condition.

Table 2. Mean Scores at Baseline and 12 Months^a, and Results of Repeated Measures ANOVA on Treatment Outcomes

	Intervention group	Comparison group	Statistical test
ASI alcohol	N = 136	N = 177	IC: $F(1, 311) = 10.01^{**}$
Baseline <i>M</i> (<i>SD</i>)	0.18 (0.29)	0.27 (0.35)	Time: $F(1, 311) = 55.96^{****}$
12 mos <i>M</i> (<i>SD</i>)	0.06 (0.17)	0.13 (0.23)	X: $F(1, 311) = 0.53, ns$
ASI drug	N = 135	N = 176	IC: $F(1, 309) = 18.13^{****}$
Baseline <i>M</i> (<i>SD</i>)	0.19 (0.15)	0.25 (0.14)	Time: $F(1, 309) = 330.39^{****}$
12 mos <i>M</i> (<i>SD</i>)	0.04 (0.07)	0.08 (0.11)	X: $F(1, 309) = 1.23, ns$
GSI	N = 136	N = 177	IC: $F(1, 311) = 0.25, ns$
Baseline <i>M</i> (<i>SD</i>)	1.07 (0.68)	1.09 (0.69)	Time: $F(1, 311) = 35.48^{****}$
12 mos <i>M</i> (<i>SD</i>)	0.80 (0.72)	0.86 (0.77)	X: $F(1, 311) = 0.34, ns$
PSS	N = 136	N = 177	IC: $F(1, 311) = 0.00, ns$
Baseline <i>M</i> (<i>SD</i>)	20.43 (10.22)	19.05 (11.84)	Time: $F(1, 311) = 60.91^{****}$
12 mos <i>M</i> (<i>SD</i>)	13.78 (11.10)	15.11 (12.91)	X: $F(1, 311) = 3.99^*$
Coping skills	N = 134	N = 173	IC: $F(1, 305) = 0.23, ns$
Baseline <i>M</i> (<i>SD</i>)	52.61 (17.83)	54.26 (17.51)	Time: $F(1, 305) = 0.96, ns$
12 mos <i>M</i> (<i>SD</i>)	56.32 (20.15)	52.96 (20.09)	X: $F(1, 305) = 4.12^*$

^aAll women included in these analyses were interviewed within a 12-week window around target interview date. On ASI, GSI, and PSS, higher scores indicate more severe symptoms. On coping skills, higher scores indicate greater skills. IC = main effects for intervention versus comparison condition. Time = main effects for baseline versus 12 months, X = interaction between condition and time. *ns* = not statistically significant.

* $p < .05$. ** $p < .01$. *** $p < .001$. **** $p < .0001$.

group, for which coping skills was not a focus of treatment, women's use of these skills decreased slightly from baseline to 12 months.

Effects of Treatment Completion on Outcome

Three-way repeated measures ANOVA tested whether women who completed their treatment program differed from those who did not. Main effects for time, main effects for condition, and interaction effects for Time \times Condition replicated results obtained in the two-way repeated measures ANOVA and therefore are not presented. For GSI and PSS scores, there was a main effect for completing treatment, with completers less distressed at both baseline and 12 months: GSI: $F(1, 311) = 11.13, p < .001$; PSS: $F(1, 296) = 5.36, p < .05$. This result indicates that women who were more distressed were less likely to complete treatment, regardless of condition. There were significant Time \times Completion interactions for ASI alcohol and drug scores, GSI scores, and coping skills scores: ASI alcohol: $F(1, 308) = 3.93, p < .05$; ASI drug: $F(1, 306) = 5.96, p < .05$; GSI: $F(1, 311) = 4.38, p < .05$; coping skills: $F(1, 305) = 5.12, p < .05$. These results demonstrate that women who completed treatment showed more improvement on most outcomes than women who did not complete treatment.

Finally, as shown in Figure 2, there was a three-way interaction between intervention versus comparison group, treatment completion, and time for coping skills, $F(1, 305) = 6.28, p < .01$. Examination of the mean scores shows that this interaction arose because gains on coping skills occurred only for the women in the intervention group who completed treatment.

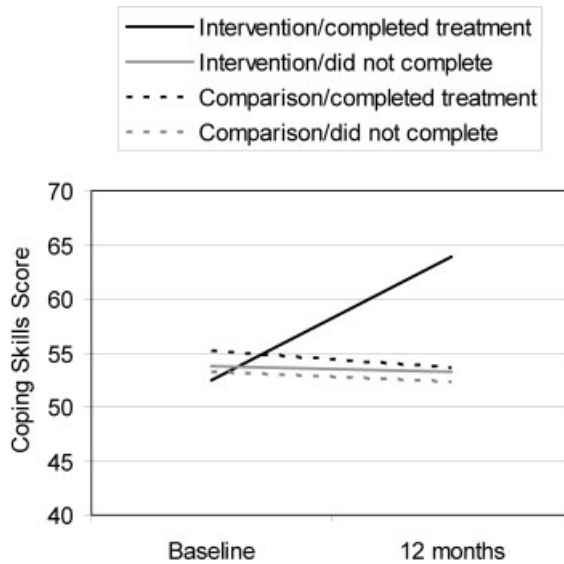


Figure 2. Baseline and 12-month scores for coping skills for those who completed treatment and those who did not, by condition.

Effects of Gain in Coping Skills on Outcome

Three-way repeated measures ANOVA tested whether the outcomes for women who improved on their coping skills differed from those who did not, and whether this differential improvement varied by treatment condition. With improvement in coping skills defined as at least a 1-point gain, 149 women improved and 158 did not improve. For GSI and PSS scores, there were significant Time \times Coping Improvement interactions: GSI: $F(1, 323) = 13.10, p < .001$; PSS: $F(1, 321) = 5.85, p < .05$. There was no triple interaction involving condition. This result indicates that women who gained in coping skills over the 12 months improved more on these other outcomes regardless of condition. The same was true for the ASI drug score, $F(1, 320) = 6.44, p < .05$, but not for the ASI alcohol score, $F(1, 322) = 1.19, ns$. The means for the significant interactions are plotted in Figure 3 by treatment condition. These results suggest that improvement on coping skills mediated improvements on emotional distress (GSI and PSS) and substance use (ASI drug) outcomes.

DISCUSSION

Our results show that the treatment provided by both the intervention group and comparison group agencies led to improvements in substance use behavior and symptoms of emotional distress. Further, improvement on symptoms of distress, measured by both the BSI and the PSS, was greater for those women who completed their respective treatment programs compared to those who did not complete treatment. The women in the trauma-informed integrated treatment intervention group improved significantly more on posttraumatic stress symptoms and on use of coping skills than the women in the comparison group. Improvement in coping skills was tied to treatment

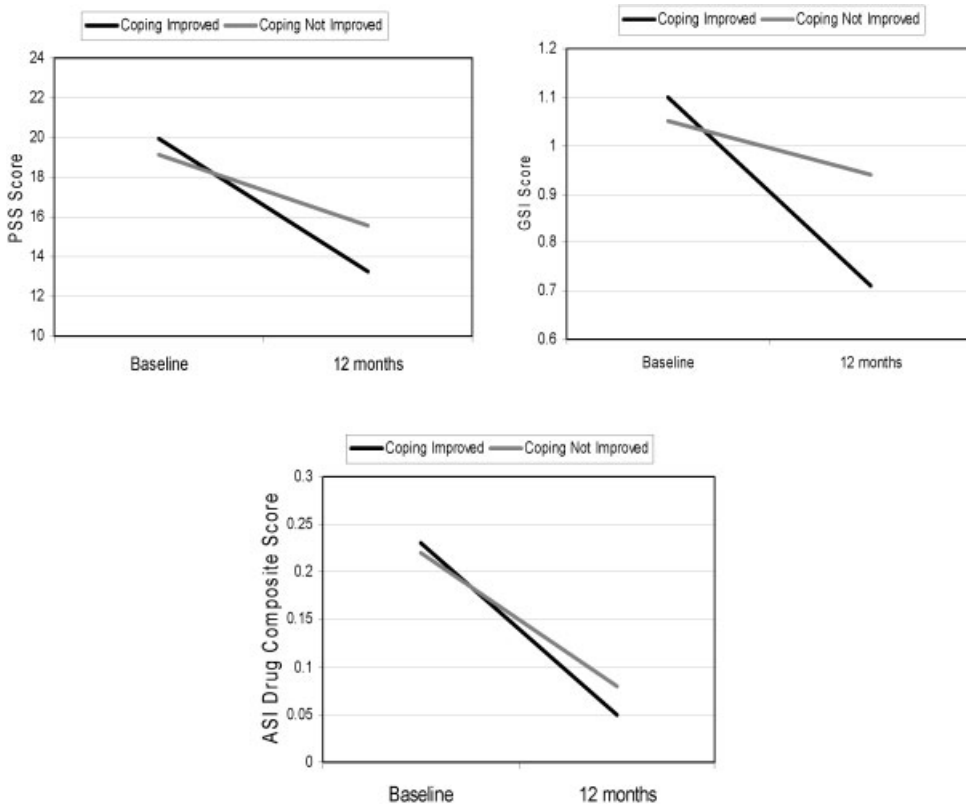


Figure 3. Baseline and 12-month scores for PTSD Symptom Scale, Global Severity Index, and ASI Drug Composite subscale for those who improved on coping skills and those who did not.

completion for women in the intervention condition. These differences between the treatment and comparison conditions support the effectiveness of a trauma-specific intervention—in this case, Seeking Safety (Najavits, 2002)—implemented in the context of trauma-informed integrated treatment. Finally, women's improvement over time on the two measures of symptoms of distress and on drug problems was mediated, in part, by gains in coping skills.

The rate of retention in treatment was significantly higher in the trauma-informed integrated treatment group than in the comparison group. Dropout was higher in the comparison condition than in the intervention condition throughout the first 12 weeks of treatment. Further, in the comparison condition but not in the intervention condition, the severity of trauma symptoms was greater among those who dropped out of the study than among those who remained in the study. This observation replicates a similar observation by Najavits et al. (1998), who unexpectedly found that those who completed treatment had more severe symptoms at baseline than those who dropped out. This finding may indicate that Seeking Safety contributes to treatment retention among a group who would otherwise be at risk for attrition.

Morrissey et al. (2005) have reported results across all nine WCDVS sites, finding significantly greater improvement on both posttraumatic stress and mental health symptoms for women in the intervention condition than in the comparison condition.

(Coping skills were not measured across sites.) In Los Angeles, we did not find this differential improvement on mental health symptoms, possibly because the comparison agencies did provide mental health services and increased the level of on-site mental health counseling offered over the course of the study.

Limitations

The most crucial limitation of the present study is the absence of random assignment. Interpretations of treatment effects in nonequivalent control group designs must always be presented within the context of possible differences in the sample populations. In this study, the intervention and comparison samples were remarkably similar on a wide variety of demographic and other characteristics at baseline. Significantly, there were no differences on background variables related to posttraumatic stress disorder. Histories of homelessness, childhood sexual or physical abuse, and recent experiences of interpersonal abuse were similar. Further, there were no differences at baseline on levels of psychological distress, traumatic distress, and coping skills across the study samples. However, women in the intervention group had a higher rate of having been mandated to treatment and a higher rate of having been in jail or prison. There were also baseline differences in drugs of choice.

An associated threat to the internal validity of differential treatment effects over time is differential attrition. Women in the comparison group who were not reinterviewed at the 12-month follow-up reported higher levels of traumatic stress at baseline than did those who were reinterviewed 12 months later. This difference did not occur in the intervention group. Though unlikely to be fully responsible for the greater treatment effect in the intervention than in the comparison group and unrelated to the mediational effects of gains on coping skills, this differential attrition may have influenced findings for traumatic stress symptoms.

Further, the study design offered external validity at the expense of internal validity. Therefore, the observed effects cannot be pinpointed to a particular aspect of the intervention. In order to characterize how the intervention and comparison treatment programs differed, we conducted site visits, semistructured interviews with staff, and chart review. The chief difference was that Seeking Safety was provided to intervention group women and not to comparison group women, although domestic violence treatment was available at some comparison group agency locations, and, over the course of the study, there was a general elevation of awareness at comparison agencies of the need to treat trauma. There was also somewhat greater integration of mental health services for women in the intervention than in the comparison condition. Some staff members at comparison agencies viewed PROTOTYPES as more willing than other agencies to accept women with severe mental health problems into treatment, but both intervention and comparison agencies treated women who were dually diagnosed. Intervention and comparison agencies were most similar in their approach to substance abuse treatment. Thus, it was not surprising that there were no differences in the improvement experienced by women in the intervention and comparison groups on substance abuse problems or symptoms of psychological distress. However, the measures for which differences were observed (i.e., trauma symptoms and coping skills) reflect the most salient differences between the intervention and comparison conditions.

Other nonequivalent aspects of the programs were differences in the duration of treatment, and the fact that 27 of the intervention group women were treated as

outpatients. The difference in duration of formal treatment was somewhat mitigated because the agency with the shortest treatment program typically referred those who completed its program to another residential setting where access to substances was controlled rather than to community-based aftercare.

Although these limitations must be considered, our conclusions are based on a study with a relatively large sample, a good retention rate for a population that typically is difficult to follow, essential equivalence of demographic characteristics for intervention and comparison groups, and fairly specific differences in the treatment programs for the two conditions.

CONCLUSION AND IMPLICATIONS FOR PRACTICE

The findings of this study provide encouraging evidence that a trauma-informed integrated treatment program can be successful in meeting the needs of women with co-occurring disorders and histories of trauma by increasing their use of coping skills. Trauma-informed interventions such as Seeking Safety are designed to focus on trauma survivors' core issues (Najavits, 2003). In our experience, the intervention resonates with women, who see this aspect of the treatment program as intensely personally relevant. They become more engaged in treatment and less likely to drop out (see also Amaro, Chernoff, Brown, Arévalo, & Gatz, this issue). Our results confirm that women who remain in treatment improve more markedly than those who do not. Additionally, those who complete the trauma-informed program show more gains in coping skills.

Our results draw attention to the need for substance abuse treatment programs to assess for trauma in the women they serve. We were able to screen nearly every new client at all study locations during the study enrollment period, and 65% of women entering these facilities met eligibility criteria for this study. In other words, among women seeking substance abuse treatment, 65% had both substance use and mental health problems, a history of exposure to trauma, and previous failed treatment attempts. As the baseline demographic data indicate, they also tended to have other conditions that put them at elevated risk for further treatment failure, e.g., homelessness, continued exposure to interpersonal violence, physical health problems, lack of a high school education, and dependent children.

The approach to treatment for women in the trauma-informed integrated condition reflects recommendations from a number of authors, including Chaikin and Prout (2004), Harris and Falot (2001), and Najavits (2003). Trauma-specific elements include using group processes to provide a context for bonding and a sense of safety, educating clients about the relationship between trauma and other symptoms, and helping clients learn new coping skills and find meaning in their lives. These elements must be integrated in the context of comprehensive services addressing these women's other needs, including substance abuse and mental health treatment, medical care, parenting classes, and vocational training.

Our findings highlight in particular the important role of coping skills. Along with Brown et al. (2003), Jerrell and Ridgely (1995), Marlatt (1996), and Monti et al. (1995), we suggest that women's learning new coping skills is key to their recovery process. Seeking Safety provides a structured cognitive-behavioral framework for teaching these coping skills.

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