

Attending to Dissociation: Assessing Change in Dissociation and Predicting Treatment Outcome

Revised and Resubmitted to *Journal of Trauma & Dissociation*, July 2007.

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Acknowledgements: We thank the many clients and Victims of Violence Program clinicians whose efforts made this research possible. In addition, we express our appreciation to Chia-JungTsay, for her invaluable work as a research assistant. We also thank Maria Wong for her advice as a statistical consultant to this project. Finally, we thank Cambridge Health Alliance/Harvard Medical School for their support of trauma treatment training and research.

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Abstract

High dissociation has been linked to severe psychopathology. However, relatively little is known about the impact of dissociation on treatment outcome. We sought to examine 1) whether initial levels of dissociation predicted treatment outcome 2) whether changes in dissociation were associated with changes in other forms of psychopathology, and 3) to what extent individuals with high initial dissociation report meaningful symptom improvement. Participants (N=174) were patients at an outpatient trauma clinic. Initial dissociation was significantly associated with general symptom severity. Change in dissociation was significantly and positively associated with change in PTSD, depression, suicidal ideation and self-harm. Approximately 40% of high dissociators demonstrated reliable decreases in dissociation during treatment.

Attending to Dissociation: Assessing Change in Dissociation and Predicting Treatment Outcome

High dissociation has been linked to severe psychopathology in multiple domains (Feeny, Zoellner, Fitzgibbons & Foa, 2000; Gratz, Conrad & Roemer, 2002; Kisiel & Lyons, 2001; Low, Jones, McLeod, Power & Dugan, 2000; van der Kolk, Perry & Herman, 1991; Zlotnick, Mattia & Zimmerman, 1999). Clients with high levels of dissociation are often considered challenging and difficult to treat because of the complexity of their symptoms and numerous comorbid conditions (Putnam, 1989; Kluft & Fine, 1993). However, little is known specifically about the extent to which high dissociation changes over time, either spontaneously or in response to treatment. Furthermore, very little is known about whether decreases in dissociation are linked to other indices of clinical improvement. The current study was undertaken to assess to what extent initial dissociation levels are associated with treatment outcome, to examine to what extent change in dissociation is associated with change in other symptoms of distress, and to determine treatment response of subjects with high levels of dissociation.

Dissociation is generally described as an altered state of consciousness which results in diminished awareness of environmental events (Foa, Keene, & Freidman, 2000). With prolonged and repeated trauma, and especially with childhood trauma, the likelihood of dissociative pathology is increased. High levels of dissociation have been linked in several studies to the experience of chronic childhood abuse, especially sexual abuse (Butzel et al, 2000; Chu, Frey, Ganzel, & Matthews, 1999; Kisiel & Lyons, 2001; Low et al 2000; Pearson, 1997). Chu and colleagues (1999) reported that childhood sexual and physical abuse were significant predictors of dissociation in an adult female inpatient sample (N=90). Similarly, Kisiel & Lyons (2001) noted that women psychiatric patients (N=94) who indicated they had experienced childhood sexual abuse or adult physical abuse reported significantly higher dissociation levels

than did women who had not had these experiences. Dissociation scores were further significantly increased for those women who reported both childhood sexual abuse and adult physical abuse. Taken together, the results of these studies suggest that individuals with multiple traumatic experiences may be at risk for elevated levels of dissociation. In general, histories of multiple types of traumatic events and chronicity and severity of trauma appear to be associated with dissociative disorders or symptoms (Chu et al, 1999; Mulder et al, 1998; Nijenhuis, Spinhoven, van Dyck, van der Hart, and Vanderlinden, 1998).

Dissociative symptoms also have been associated with a variety of psychiatric diagnoses (Ozer, Best, Lipsey, & Weiss, 2003; Putnam et al, 1996; van der Hart, Nijenhuis, & Steele, 2005). Van der Hart and colleagues (2005) argue that structural dissociation is a critically under-recognized component of both simple and complex PTSD. Wilson, Friedman & Lindy (2001) note that some of the most disabling symptoms associated with PTSD are dissociative in nature. These include flashbacks, emotional numbing, and psychogenic amnesia for traumatic events. Of particular concern, dissociation also has been linked with self-harming behaviors in several studies (Feeny et al, 2000; Gratz et al 2002; Low et al 2000; van der Kolk, Perry & Herman, 1991; Zlotnick et al 1999). Gratz and colleagues (2002) assessed risk factors for self-harm in 159 college students and noted that dissociation was the strongest predictor of self-harm for both the men and women in their sample. Many researchers have noted that dissociation levels are higher in samples of psychiatric patients who report self-harming behaviors than in those who do not report such behaviors (Low et al 2000; Kisiel & Lyons, 2001; van der Kolk et al 1991; Zlotnick et al 1999).

Given the consistent correlations between dissociation and multiple forms of psychopathology, it would be important to determine first, whether dissociation changes in

response to treatment and second, whether a decrease in dissociation is associated with reduction of other forms of psychological distress and specific pathological behaviors. A few researchers have specifically assessed whether dissociation levels change in response to treatment. Stalker and Fry (1999) measured general psychological distress, symptoms of PTSD, and dissociation levels before and after a 10-week psycho-educational intervention offered in individual and group formats to 65 adult survivors of childhood sexual abuse. These authors found that while distress and PTSD symptoms decreased post intervention, there was no significant difference in the level of dissociation reported by the treatment participants at the end of the intervention, nor at the six- and twelve-month follow-up assessments.

In contrast, two studies with longer treatment interventions did find significant changes in dissociation. Classen and her colleagues (2001), compared women with childhood sexual abuse histories who participated in 24-week treatment groups to women waitlisted for the groups, and found that the group participants reported significantly greater decreases in dissociation than the waitlisted controls at the six-month follow-up assessment. However, these authors also caution that the limited sample size (N=52) prevents generalization and suggest the need for studies with larger samples. Similarly, Bradley and Follingstad (2003) noted significant differences in dissociation after 18 treatment sessions for a sample of 13 group treatment participants in comparison to 18 controls, but again warned of limitations given the small sample size. To summarize: there are relatively few studies measuring change in dissociation in response to treatment, and little is known about the association between change in dissociation and general treatment outcomes.

Because high levels of dissociation are frequently associated with multiple comorbid disorders and suicidal and self-harming behavior, many highly dissociative individuals are

commonly excluded from treatment outcome studies. Westen and Morrison (2001) conducted a meta-analysis of treatment outcome studies of selected mood and anxiety disorders and noted that there is a clear association ($r=.41$) between the percentage of subjects excluded from a treatment outcome study and the reported rate of improvement. These authors assert that when stringent exclusion criteria are applied, reports of treatment efficacy may apply to only a limited portion of the population in question. Most PTSD treatment outcome research is based on similarly unrepresentative samples (Spinazzola, Blaustein and van der Kolk, 2005). These types of exclusions are also present in the very small literature on change in dissociation. One of the few studies of adults that found dissociation changed during or after treatment excluded individuals who expressed suicidal ideation or intent in the previous month (Classen et al, 2001).

In this study, by contrast, we investigated treatment outcomes in a highly symptomatic outpatient sample of patients seen in a clinic specializing in trauma-focused treatment. No subjects were excluded on the basis of previous or multiple diagnoses, suicidality, self-harming behavior, homelessness, substance use or use of psychotropic medication. All individuals presenting for trauma-focused treatment at the outpatient department of a community hospital were invited to participate in the study. The decision to include individuals presenting with comorbid diagnoses and complex trauma and treatment histories addresses a limitation in much of the treatment literature. The purpose of the current naturalistic study was to explore change in dissociation in patients undergoing outpatient treatment at a specialized trauma clinic. We sought to determine, first, whether changes in dissociation were associated with changes in other forms of psychopathology, including PTSD and depression. Measures of posttraumatic and depressive symptoms were chosen because mood and anxiety disorders have high rates of comorbidity in clinical populations in general (APA 2000) and because the most common

diagnoses given for individuals who present for treatment at this particular trauma clinic are Post-Traumatic Stress Disorder and Major Depressive Disorder. Next, we assessed the associations between initial level of dissociation and treatment outcome. Finally, we examined the extent to which individuals with high initial dissociation reported meaningful symptom improvement during treatment.

Methods

Participants

The participants in this study presented for treatment at an outpatient treatment program for trauma survivors located in the psychiatry department of a community hospital in a large Northeastern metropolitan area. Clients were referred for individual, group and/or psychopharmacological treatment, and many received multiple forms of treatment. Participants were not randomly assigned to various treatment conditions. Instead, this naturalistic study reflects the reality that many patients present with complicated symptom pictures and receive multiple forms of treatment from clinicians whose primary aim is to reduce distress and increase functioning.

The participants in this study come from two samples: 82 patients who completed initial and follow-up questionnaires while engaged in individual psychotherapy and 92 patients who completed the same set of questionnaires before and after completing a trauma-focused group. For the patients in individual psychotherapy, the amount of time in treatment varied. About 25% of the participants completed the follow-up assessment less than six months after intake, 50% responded between six months and one year, and 25% responded between one year and 2.25 years after the initial assessment. None of these patients participated in any trauma-focused

groups during the assessment period. However, 44% of these patients received psychotropic medication during the course of treatment.

The second sample includes data on 110 completed trauma-focused group cycles. Seventy six individuals completed one group, 14 completed two groups, and two individuals completed three groups. Group therapy was rarely the sole treatment modality; 78% of the group participants were also in individual therapy, and 66% reported taking psychotropic medications during the course of the groups. Therefore, treatment outcome cannot be attributed to the group treatment alone. Most groups lasted approximately three to four months. About one third of the participants were in groups for between six and nine months. In contrast, participants in individual therapy were assessed six months to two years after starting treatment. However, time in treatment was not significantly correlated with change in distress or follow-up scores in the two subsamples. Thus, they have been combined into one larger sample with treatment outcome data for 192 treatment courses representing 174 individuals.

The majority of the participants were female (83%), Caucasian (75%), and single (73%) (see Table 1). The average age of treatment participants was 36 (SD=9.99). Participants were diagnosed most often with PTSD (n=131), followed by Major Depressive Disorder (n=74), Bipolar I or II (n=18), and dissociative disorders, primarily Dissociative Disorder NOS (n=18). Additional diagnoses of participants included Dysthymia (n=16), Alcohol Dependence (n=12), Bulimia (n=8), Generalized Anxiety Disorder (n=5), and Schizoaffective Disorder (n=3). About half the participants (n=97) had two or more diagnoses. Approximately one fourth (26%) of the participants worked full-time. In general, most of the patients at this center were eligible for free care on the basis of their incomes and/or mental health disability status.

Recruitment of study participants. Prospective patients called a central office requesting treatment or were scheduled for intake appointments by case workers after an inpatient hospital stay. Clinicians invited patients to complete a packet of self-report measures early in treatment, usually just after an initial intake session of approximately 90 minutes. Patients read over an informed consent form and then indicated whether they wished to participate in this IRB approved study. All patients had the right to treatment regardless of their decision to complete the self-report measures. At the time of the initial and follow-up assessments, clinicians who worked with the participants completed an information sheet with diagnoses and the types of treatment each patient was receiving. Clinicians were licensed staff psychologists or social workers or trainees in these fields being supervised by the licensed staff members.

Approximately six months after the initial assessment, clinicians providing individual psychotherapy received reminders from the research team to invite patients to complete the follow-up self-report measures. Clinicians continued to receive monthly reminders as long as the patient remained in treatment, unless they indicated that the patient had chosen not to participate. When patients completed the follow-up assessment, clinicians were provided with a summary of the patient's intake and follow-up scores and were encouraged to share these with their patients. Patients were invited to participate in follow-up assessments each six-month period that they remained in treatment. For the purposes of this study, only the data from the first (initial) and second (follow-up) assessments of patients in individual treatment were analyzed. Clinicians providing group psychotherapy invited their patients to complete a packet of self-report measures at the beginning and end of each group.

Among those individuals who completed an initial self-report packet, roughly 39% of the patients in individual treatment sample and 61% of the patients in the group treatment completed

the follow-up assessment. Many patients (n=149) evaluated for individual treatment completed the initial self report packet but did not complete the follow-up assessment. Reasons included: dropping out of treatment (45%), completing treatment but not participating in the follow-up assessment prior to termination (20%), remaining in treatment but refusing to participate in the follow-up assessment (13%) and unknown reasons (22%). Similarly, for the 71 group treatment participants who did not complete the follow-up assessment: 31% dropped out, 25% completed the group but chose not to participate in the follow-up assessment, and for 44% the reason is unknown. There were no significant differences in demographic characteristics or in initial levels of PTSD, depression or dissociation between the individuals who completed a follow-up assessment and those who dropped out or chose not to complete the follow-up assessment.

Measures

Dissociative Experiences Scale (DES) (Bernstein-Carlson & Putnam, 1986). The most commonly used measure of dissociation is the Dissociative Experiences Scale (DES). This 28-item scale is based on diagnostic interviews with individuals with dissociative disorders and is intended to assess the following types of dissociative experiences: amnesia, depersonalization, derealization, absorption and imaginative involvement (Carlson & Putnam, 1993). Carlson and Putnam report test-retest reliability of .79 to .96, and a Cronbach's alpha of .95. Cronbach's alpha in this study was .95. Several studies have provided evidence of good convergent and discriminate validity for the DES (Carlson & Putnam). For each item, respondents are asked to indicate where they fall along a continuum of one to 100 percent of the time by placing a mark on a 100-mm line. The DES total score is based on the mean of all item scores. In general, a score of 30 or above is considered to indicate high dissociation (Carlson & Putnam). It is important to note, however, Waller, Putnam and Carlson (1996) suggested that dissociation may

be better represented as a taxon or a discrete typology than as a continuum. These authors argued the utility of assessing “pathological” dissociation, a scale made up of eight DES items that they suggest better captures pathological aspects of dissociation. Other researchers have disagreed, however, suggesting that identification of individuals with dissociative disorders is not improved with this new “pathological” or taxon score (e.g. Leavitt, 1999). In light of this ongoing debate, we calculated the taxon scores and total mean scores for the DES and tested the association between the two scores in this sample. The two scores were found to be extremely highly correlated ($r=.93$ $p<.000$). Therefore in the results reported below, the total DES score was reported.

Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1995; Foa et al., 1997). The PDS was used to assess the frequency of symptoms of PTSD. The PDS is a 49-item self-report instrument that yields the following summary information: Symptom Severity score, number of symptoms endorsed, specifiers related to onset and duration of symptoms, Symptom Severity rating, and level of impairment in functioning. The PDS has demonstrated good sensitivity and specificity, internal consistency and test-retest reliability, and concurrent and convergent validity (Foa et al., 1997). The PDS total score reported in these analyses is the Symptom Severity score. Cronbach’s alpha in this study was .88. For the PDS, a cut off score of 28 indicates symptom severity at a level that is consistent with a diagnosis of PTSD (Foa et al, 1997).

Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock & Erbaugh, 1961). The BDI is a commonly used inventory designed to assess current severity of depression. This 21-item questionnaire assesses attitudes and symptoms consistent with depression and participants are asked to rate the severity of each item on an ordinal scale from 0 to 3. The BDI is scored by summing the ratings. The BDI exhibits high internal consistency as well as strong

construct validity (Beck, Steer & Garbin, 1988). Cronbach's alpha in this study was .89. A score of 17 or above on the BDI has been used to effectively differentiate among individuals with and without Major Depressive Disorder (Beck et al, 1961).

Self-Harm and Risk Behaviors Questionnaire is made up of eight items concerning suicidal and self-harming behavior taken from Linehan's (1996) Suicidal Behaviors Questionnaire (Revised). Participants indicate ideation and behavior in the past three months for self-harm and suicide on a five point scale ranging from never to daily. In addition, they report their perception of the likelihood that they will attempt to kill themselves in the next three months as well as whether they have no plan, a vague plan or a definite plan.

Statistical Analyses

To meet the stated goals of this study, bivariate correlational analyses, hierarchical regression analyses, and three measures of symptom improvement were employed. Correlational analyses were used to assess the associations among initial symptom levels and change in symptoms over time. Three hierarchical regression analyses were utilized to examine the associations among the predictor variables of initial dissociation, PTSD, and depression scores and each outcome or follow-up score. We chose to use hierarchical regression analyses so that we could examine the unique variance contributed by initial dissociation as a predictor of dissociation, depression and PTSD at the follow-up assessment. Next, for participants with high initial dissociation scores (N=55), three measures of symptom change were employed. First, initial and follow-up group means were compared by means of paired t-tests. Second, we reported the percentage of high dissociators whose follow-up scores were below the identified clinical cut off score on each distress measure. Finally, we utilized a reliable change index (RCI, Jacobson & Traux, 1991) to assess the amount of change that would represent meaningful

symptom improvement for high dissociators on the PTSD, depression and dissociation measures. To calculate a RCI, each subject's pretreatment score (X_1) is subtracted from each post-treatment score (X_2) and then divided by the standard error of the difference between the two test scores ($RCI = X_2 - X_1 / S_{diff}$). The standard error of the difference is computed using the standard error of measurement (SE) where $S_{diff} = \sqrt{2(SE)^2}$ (Jacobson & Traux, 1991).

Results

Descriptive Statistics

Most of the participants reported experiencing more than one type of traumatic event in their lifetime ($M=4.78$, $SD=2.86$; see Figure 1). When asked to indicate what type of traumatic experience bothered them most, the majority of participants (60%) marked sexual assaults/sexual abuse. These traumatic events occurred more than five years ago for the majority of the participants (71%).

The participants were highly symptomatic at the beginning of treatment (see Table 2). Many reported symptoms of depression (68%) and PTSD (55%) at or above the clinical cut off scores identified for each of these measures. Approximately 60% of the sample reported suicidal ideation; 24% reported frequent ideation in the past three months. Eighteen participants (10%) indicated there was a 25% or greater chance they would attempt to kill themselves in the next three months. Finally, using the clinical cut off score of 30 on the DES, there were 55 participants (29%) who were high dissociators at the outset of treatment.

Associations among Dissociation, Change in Dissociation and General Distress

Correlational analyses were conducted to test the relationships among reported symptoms of dissociation, PTSD and depression. As hypothesized, initial levels of dissociation were significantly associated with initial PTSD ($r=.543$, $p=.000$, $N=188$), depression ($r=.530$, $p=.000$,

N=191), suicidal ideation ($r=.468, p=.001, N=188$) and self-harming ideation scores ($r=.445, p=.001, N=184$). However, initial dissociation scores were not significantly associated with the amount of change in PTSD ($r=-.055, p=.461, N=183$), depression ($r=-.052, p=.477, N=188$) or amount of change in self harming behaviors ($r= -.116, p=.115, N=186$). Initial dissociation scores approached a significant association with change in suicidal ideation ($r= -.135, p=.066, N=187$) for participants. Only change in dissociation was significantly and negatively associated with the initial level of dissociation ($r= -.309, p=.000, N=190$). Thus initial high dissociation scores did not predict the extent to which PTSD, depression or self-harming behaviors decreased or increased over the course of treatment.

In contrast, change in dissociation was significantly and positively associated with change in PTSD ($r=.394, p=.000, N=181$) and with change in depression ($r=.308, p=.000, N=186$). Furthermore, change in dissociation was also positively and significantly associated with changes in suicidal and self-harming ideation ($r=.192, p=.009$ and $r=.199, p=.007, N=184$). Thus, when a participant's reported symptoms in one area decreased, symptoms in other areas tended to decrease as well.

Initial Dissociation as a Predictor of Distress after Treatment

We employed three separate hierarchical regression analyses to examine the extent to which initial level of dissociation, as compared to initial level of depression and PTSD, contributed as a predictor to PTSD, depression and dissociation at follow up. Suicidal and self-harming ideation were not included in these analyses as these variables were assessed by single items. Use of psychotropic medication was significantly associated with higher distress scores on each measure at the initial and follow-up assessments; thus psychotropic medication use was entered as a control variable in each regression analyses. Forty participants did not indicate

whether they used psychotropic medication, thus the sample size for the hierarchical regressions was reduced.

In the hierarchical regression predicting PTSD at follow-up, initial PTSD, time in treatment and use of psychotropic medications were entered in the first step (see Table 3). Next, initial dissociation and then initial depression were entered in sequential steps. Initial PTSD ($\beta = .612$, R^2 change = .387, $p = .000$) and initial dissociation ($\beta = .230$, R^2 change = .034, $p = .006$) were significant predictors of PTSD post-treatment, and initial depression approached significance as a predictor ($\beta = .145$, R^2 change = .014, $p = .075$). In the hierarchical regression predicting depression at follow-up, initial depression and use of psychotropic medications were entered in the first step (See Table 4). Next, initial dissociation and then initial PTSD were entered sequentially. Initial depression ($\beta = .655$, R^2 change = .469, $p = .000$) and initial dissociation ($\beta = .118$, R^2 change = .026, $p = .009$) were significant predictors of depression post-treatment. Finally, in the hierarchical regression predicting dissociation at follow-up, initial dissociation and use of psychotropic medications were entered in the first step (See Table 5). Next, initial PTSD, and then, initial depression were entered sequentially. Only initial dissociation ($\beta = .742$, R^2 change = .564, $p = .000$) was a significant predictor of dissociation post-treatment.

To summarize, as expected, the initial level of each type of distress was the strongest predictor of that type of distress at follow-up. Although initial dissociation was a significant predictor of post-treatment PTSD and depression, the amount of variance that was contributed by the initial dissociation score was very small (R^2 change = .026 to .034) suggesting that initial dissociation scores did not substantially affect post-treatment distress levels of PTSD and depression.

Symptom Improvement in High Dissociators

Paired t-tests were used to assess symptom change among high dissociators. High dissociators ($N=55$) improved significantly on dissociation ($M=6.549$; $SD=16.719$; $t(54)= 2.905$, $p=.005$), PTSD ($M=4.652$; $SD=9.312$; $t(54)= 3.705$, $p=.000$), and depression ($M=4.447$; $SD=8.60$; $t(54)= 3.833$, $p=.000$). Group averages, however, do not convey the percentage of individuals who report meaningful improvement in their symptoms. Two additional ways to note meaningful change in symptom severity are to report the number of participants who demonstrate reliable change (Jacobson & Traux, 1991), and the number of participants whose symptoms improve so that their follow-up assessment score is no longer in the clinical range. Reliable improvement on the dissociation measure required a score decrease of at least 11.59 points, on the PTSD measure a decrease of 10.17, and on the depression scale, a drop of at least 10.29. Twenty two (40%) highly dissociative participants demonstrated reliable decreases in dissociation, and 18 (33%) had dissociation scores in the nonclinical range at the second assessment. Fifteen patients (27%) demonstrated reliable improvement in PTSD and 18 (33%) shifted into the nonclinical range on this measure at follow-up. Finally, nine patients (16%) showed reliable change in the BDI, and the same number shifted into the non clinical range on this measure.

Discussion

The goals of this naturalistic study were to explore whether initial dissociation levels are predictive of distress over the course of trauma-focused treatment, to determine to what extent change in dissociation is associated with change in other symptoms of distress, and to examine whether participants with high dissociation showed evidence of symptom improvement. Initial dissociation levels were significantly associated with reported symptoms of PTSD, depression, self harming ideation and suicidal ideation. Thus, individuals who were high in dissociation also

tended to report more severe symptoms in general. These findings replicate the clearly established links among dissociation and multiple forms of psychopathology in the research literature (Feeny et al, 2000; Gratz et al, 2002; Low et al, 2000; Putnam et al, 1996). Furthermore, initial dissociation was a significant predictor of dissociation, PTSD and depression post treatment. However, when predicting follow-up PTSD or depression, the amount of variance explained by initial dissociation, as compared to initial PTSD or depression, was relatively small. Thus, while higher initial dissociation does appear related to less improvement in other symptoms, it has a comparatively lesser effect on post treatment levels of other forms of psychopathology (e.g., depression and PTSD). Next, the results of the correlational analyses indicate that changes in an individual's level of dissociation were associated with change in symptoms of PTSD, depression, and suicidal and self-harming ideation. Given the scarcity of research examining the relationships between change in dissociation and other forms of pathology, further research is necessary before causal attributions can be made about these associations. However, these findings suggest that explicitly attending to dissociation in treatment may help to improve other symptoms as well.

Finally, 40% of the high dissociators reported reliable improvement in dissociation and 33% improved into the nonclinical range at the follow-up assessment. Classen et al (2001) and Bradley and Follongstad (2003) also found significant decreases in dissociation when they compared treatment and control samples. However, since only group mean differences were reported, it is unclear to what extent patients' improvement was clinically meaningful in these studies. Results from this study indicate that a substantial portion of high dissociators demonstrated clinically significant reduction of dissociation over the course of treatment. In addition, approximately one fourth (27%) of high dissociators demonstrated reliable

improvement in symptoms of PTSD and 16% improved reliably on depression. These participant specific statistics illustrate the range of possible responses of high dissociators to treatment and suggest the need to explore the reasons that some individuals with high dissociation appear responsive to treatment whereas others do not show substantial change.

There are clear limitations to this study. There was no untreated control group to compare with treatment participants and thus we cannot conclude that change in dissociation was in fact due to treatment. Given the chronic distress reported by these clients prior to entering treatment, it is likely that the changes observed during the course of their treatment can be attributed to treatment. However, studies of representative samples of trauma survivors with comparison samples will be necessary to determine to what extent individual, group, and/or combined trauma-focused treatments can effectively reduce dissociation. Additional limitations include the large percentage of patients who failed to complete the follow-up assessment and who therefore were excluded from the study.

In summary, we located no other studies that have focused on the response of high dissociators to trauma-focused treatment or examined the associations between change in dissociation and other forms of psychopathology. The results of this study involving multiply traumatized and highly symptomatic patients receiving outpatient trauma treatment suggest that dissociation may decrease in response to treatment and, perhaps more critically, that high levels of initial dissociation are not necessarily predictive of poorer general treatment outcome. In this study, a substantial portion of highly dissociative individuals' overall symptoms, including symptoms of dissociation, improved during treatment. Although the lack of a control group precludes drawing firm conclusions about the effectiveness of the treatments these participants completed, these data suggest the potential for trauma-focused treatment to aid in recovery for

highly dissociative clients who present with comorbid symptoms and complex histories of interpersonal violence.

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Table 1: Sample Demographics (N=192)

Gender	83% Female	17% Male
Ethnicity	75% Caucasian	10% African American
	4% Hispanic American	11% Other
Marital Status	73% Single	27% Married/with partner
Employed	26% Full-time	17% Part-time
	18% Disability	6% Occasional work
	12% No income	20% Not reported
Diagnoses	68 % PTSD	38% Major Depressive D/O
	9% Bipolar I or II	
Psychotropic Medication	56% Yes	21% No
	22% Not reported	

Table 2: Range of initial (T1) and follow-up (T2) scores on the DES, PDS, and BDI scales.

Scale	Time	N	MIN	MAX	Mean SD
DES	T1	190	1.81	76.43	23.581 (17.641)
	T2	188	0.14	77.96	21.633 (18.109)
PDS	T1	186	3.00	51.00	29.245 (10.708)
	T2	185	0.00	51.00	25.944 (11.224)
BDI	T1	189	0.00	49.00	22.915 (11.073)
	T2	186	0.00	51.00	19.104 (11.234)

Table 3: Hierarchical regression analysis predicting to PTSD post treatment (N=140)

<u>Step 1</u>	β	SE	p	F	df	R^2 change
Initial PTSD	.612	.073	.000	28.664	(3,136)	.387
Psychotropic	-.027	1.810	.704			
Time	-.114	.006	.101			

<u>Step 2</u>	β	SE	p	F change	df	R^2 change
Initial dissociation	.230	2.577	.006	7.916	(1,135)	.034

<u>Step 3</u>	β	SE	p	F change	df	R^2 change
Initial depression	.145	.084	.075	3.229	(1,134)	.014

Total Adjusted $R^2 = .414$

Table 4: Hierarchical regression analysis predicting to depression post treatment (N=141*)

<u>Step 1</u>	β	SE	p	F	df	R^2 change
Initial depression	.655	.069	.000	61.380	(2,139)	.387
Psychotropic	.085	1.671	.189			
<hr/>						
<u>Step 2</u>	β	SE	p	F change	df	R^2 change
Initial dissociation	.188	2.263	.009	7.014	(1,138)	.026
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<u>Step 3</u>	β	SE	p	F change	df	R^2 change
Initial PTSD	-.038	.084	.633	.228	(1,137)	.014
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Total Adjusted $R^2 = .481$						

Table 5: Hierarchical regression analysis predicting to dissociation post treatment (N=142)

<u>Step 1</u>	β	SE	p	F	df	R^2 change
Initial dissociation	.742	.075	.000	90.651	(2,140)	.564
Psychotropic	.037	.060	.524			

<u>Step 2</u>	β	SE	p	F change	df	R^2 change
Initial PTSD	.006	.003	.929	.008	(1,139)	.000

<u>Step 3</u>	β	SE	p	F change	df	R^2 change
Initial depression	.046	.003	.509	.438	(1,138)	.001

Total Adjusted $R^2 = .553$

Figure 1: Frequency of traumatic events

