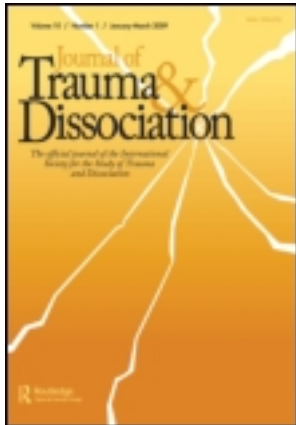


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Symptom Patterns in Dissociative Identity Disorder Patients and the General Population

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The authors used the Dissociative Disorders Interview Schedule to compare structured interview symptom patterns in a general population sample (N = 502) and a sample of patients with clinical diagnoses of dissociative identity disorder (N = 303). Based on the Trauma Model, the authors predicted that the patterns would be similar in the 2 samples and that symptom scores would be higher in participants reporting childhood sexual abuse in both samples. They predicted that symptom scores would be higher among women with dissociative identity disorder reporting sexual abuse than among women in the general population reporting sexual abuse, with the clinical sample reporting more severe abuse. These predictions were supported by the data. The authors conclude that symptom patterns in dissociative identity disorder are typical of the normal human response to severe, chronic childhood trauma and have ecological validity for the human race in general.

KEYWORDS *dissociative identity disorder, sexual abuse, symptom patterns*

The Trauma Model (Ross, 1997, 2004, 2007) is a testable scientific theory of the relationship between psychological trauma and a wide range of mental disorders and addictions. The model regards dissociative identity disorder (DID) as an extreme case of the normal human response to severe, chronic childhood trauma. This view of DID is not unique to the

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Trauma Model and is endorsed throughout an extensive literature (Bremner & Marmar, 1998; Chu, 1998; Cohen, Berzoff, & Elin, 1995; Dell & O'Neil, 2009; Gleaves, May, & Cardena, 2001; Michelson & Ray, 1996; Putnam, 1989; van der Hart, Nijenhuis, & Steele, 2006). However, the Trauma Model makes testable research predictions concerning DID that are not found in other writings about the disorder. These predictions of the Trauma Model are consistent with the views of many different authors but are not operationalized in the broader literature on DID.

The Trauma Model (Ross, 2007) hypothesizes that the hierarchy of comorbid disorders in DID, ranked in terms of their frequency, will predict the relationship between trauma and mental disorders in the general population. For example, major depressive disorder is a more common comorbid disorder in DID than is generalized anxiety disorder (Ellason, Ross, & Fuchs, 1996); therefore, in the general population, the percentage of people with a history of major depressive disorder who report severe childhood trauma should be greater than the percentage of people with generalized anxiety disorder who report severe childhood trauma.

The reason for this prediction is the assumption that DID reveals, through its pattern of comorbidity, how trauma-related the different disorders in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*) are: The more trauma-related a disorder is in the general population, the more frequently it should be comorbid with DID because of the extreme trauma histories reported by DID patients, and vice versa. This particular prediction of the Trauma Model could be tested by administering a structured interview that makes a wide range of Axis I and II diagnoses, and a comprehensive inventory of different forms of trauma, to a large sample of the general population.

The sociocognitive model of DID (Piper & Merskey, 2004a, 2004b; Spanos, 1996), in contrast, states that DID is an artifact of contamination and suggestion with no valid relationship to psychological trauma. The sociocognitive model states that there is nothing to learn from individuals with DID concerning the impact of trauma on human beings. Critiques of the sociocognitive model of DID are available in a number of different sources (Gleaves et al., 2001; Ross, 1997, 2007, 2009).

The Trauma Model encompasses both the continuum and taxon models of pathological dissociation and views both as trauma-related: If scores on the Dissociative Experiences Scale are analyzed in one way, they yield a continuous distribution (Ross, Joshi, & Currie, 1990), but if analyzed in another way, they yield a discrete dissociative taxon that includes DID (Waller, Putnam, & Carlson, 1996; Waller & Ross, 1997).

The same logic can be applied to any form of psychopathology. For example, a person who consumes no alcohol at all is clearly in a different category from someone who drinks a bottle of vodka per day, and only the latter meets criteria for substance abuse (American Psychiatric Association,

1980, 2000). However, it is simultaneously true that alcohol consumption occurs on a continuum: One person drinks the occasional beer, the next drinks one martini per day, the next drinks two beers per day but a few extra ones at sporting events, and the next person drinks three beers per day but eight per day on the weekends. There is no exact cutoff point at which all observers agree that a transition has been made from normal to pathological. Yet all observers agree that the person who never drinks does not have a substance abuse problem, whereas the person who drinks a bottle of vodka per day does. The continuum and taxon models are not mutually exclusive anymore than wave and particle models of light are mutually exclusive in physics.

In the context of that perspective, we decided to test several predictions of the Trauma Model by examining structured interview data from a large general population sample ($N = 502$) and a large sample of individuals with clinical diagnoses of DID ($N = 303$). We predicted that the symptom patterns in individuals with DID would be the same as those in the general population, but with higher scores in the DID group. Based on prior research (Ross, 1997; Ross & Ellason, 2005), we predicted that, overall, symptom patterns would be similar in men and women with DID and in men and women in the general population.

For women only, we predicted that symptom cluster scores on the Dissociative Disorders Interview Schedule (Ross, 1997; Ross, Duffy, & Ellason, 2002) would be higher in women reporting childhood sexual abuse than in women not reporting childhood sexual abuse, in both the general population and in women with DID. Moreover, we predicted that the higher levels of symptoms in women with DID with sexual abuse histories compared to women in the general population with sexual abuse histories would be linked to more severe sexual abuse among the women with DID. We analyzed only the women in this regard because there were fewer men reporting childhood sexual abuse in the general population sample and fewer men in the DID sample. We expect that the same patterns would prevail in men if larger samples were available. We did not examine a wide range of different forms of psychological trauma because the Dissociative Disorders Interview Schedule inquires about only physical and sexual abuse.

In general, we tested the proposition that symptom patterns in DID are typical of the trauma response in the general population but to an extreme degree related to extreme trauma. This is a way of testing the conceptual and ecological validity of the symptom patterns in DID, including dissociative symptoms and a range of other comorbidities.

METHODS

In prior research, the Dissociative Disorders Interview Schedule and the Dissociative Experiences Scale (Bernstein & Putnam, 1986) were

administered to a stratified cluster sample of the general population of Winnipeg, Canada (Ross, 1991; Ross & Ellason, 2005; Ross & Joshi, 1992a, 1992b; Ross, Joshi, et al., 1990; Waller & Ross, 1997). The sample was representative of the city of Winnipeg compared to official census data for the city. All respondents were interviewed in their homes and gave written informed consent. The study was approved by the Ethics Review Committee of the Faculty of Medicine at the University of Manitoba.

In the first round of the study, 1,055 participants completed the Dissociative Experiences Scale and provided demographic data; in the second round, 502 of these individuals completed the Dissociative Disorders Interview Schedule. Participants who completed the structured interview did not differ from those who did not on demographic measures or scores on the Dissociative Experiences Scale.

The participants with clinical diagnoses of DID were interviewed as part of a series of research projects, with data collection beginning in 1986 (Ellason & Ross, 1997; Ross, 1997; Ross & Ellason, 2005; Ross, Miller, et al., 1990). All individuals with DID gave written informed consent, and data collection was approved by a series of academic and private institutions in Canada and the United States.

The Dissociative Experiences Scale is the most widely used self-report measure of dissociation (Bernstein & Putnam, 1986; Carlson et al., 1993; Dell, 2002; van IJzendoorn & Schuengel, 1996). It has excellent psychometric properties, including split-half reliability and test-retest reliability, and has been analyzed using a variety of advanced statistical techniques (Carlson et al., 1993; Waller et al., 1996; Waller & Ross, 1997).

The Dissociative Disorders Interview Schedule has been used in a series of research projects in North America, Turkey, and China (Ross et al., 2002, 2008; Sar & Ross, 2009; Xiao et al., 2006). It is a 131-item structured interview that inquires about a range of symptoms and diagnoses, as well as childhood abuse. The Dissociative Disorders Interview Schedule has good concurrent validity with the Dissociative Experiences Scale, the Structured Clinical Interview for *DSM-IV* Dissociative Disorders (Steinberg, 1995), and a clinical interview (Ross et al., 2002).

Data were analyzed using two-tailed *t* tests for continuous data and chi-square tests for dichotomous data.

RESULTS

A number of analyses were conducted to test the predictions of the study.

Men and Women in the General Population

Based on prior research and the dissociative disorders literature (Ross, 1997; Sar & Ross, 2009), we predicted that men and women in the general

TABLE 1 Differences in Average Scores Between Women and Men in the General Population of Winnipeg, Canada

DDIS symptom	Women (<i>N</i> = 318)	Men (<i>N</i> = 184)	<i>t</i>	<i>p</i>
Somatic	1.5	0.5	5.59	.0001
Schneiderian	0.6	0.5	0.51	<i>ns</i>
Secondary features of DID	0.7	0.6	0.60	<i>ns</i>
Borderline criteria	0.6	0.5	0.79	<i>ns</i>
ESP/paranormal experiences	1.5	1.2	1.85	<i>ns</i>
Suicide attempts	0.07	0.03	1.27	<i>ns</i>

Notes: DDIS = Dissociative Disorders Interview Schedule; DID = Dissociative Identity Disorder; ESP = extrasensory perception.

population would report similar symptom profiles and trauma histories to one another, except that women would report more sexual abuse.

As shown in Table 1, men and women endorsed similar symptom patterns except that the women reported more somatic symptoms. The same was true with regard to *DSM-IV-TR* diagnoses based on the Dissociative Disorders Interview Schedule, except for higher rates of depression in the women, which is typical for the general population. There were no cases of somatization disorder. The percentage of respondents positive for the other diagnoses was as follows: substance abuse, women = 4.1%, men = 8.2% ($\chi^2 = 3.66$, $df = 1$, *ns*); major depressive disorder, women = 24.2%, men = 16.3% ($\chi^2 = 4.35$, $df = 1$, $p = .04$); borderline personality disorder, women = 2.2%, men = 2.2% ($\chi^2 = 0.00$, $df = 1$, *ns*); and DID, women = 3.5%, men = 2.2% ($\chi^2 = 0.45$, $df = 1$, *ns*).

Concerning childhood trauma histories, the women reported higher rates of abuse: sexual abuse, women = 11.6%, men = 2.7% ($\chi^2 = 12.09$, $df = 1$, $p = .0005$); physical abuse, women = 9.7%, men = 4.3% ($\chi^2 = 4.74$, $df = 1$, $p = .03$).

Men and Women with DID

Our prediction that the patterns in DID would be the same as in the general population was confirmed, as shown in Table 2. Again, the women reported more somatic symptoms, but in the clinical group the men reported higher rates of borderline personality disorder. The percentage of respondents positive for each *DSM-IV-TR* disorder was as follows: somatization disorder, women = 42.1%, men = 18.4% ($\chi^2 = 7.32$, $df = 1$, $p = .007$); substance abuse, women = 54.9%, men = 68.4% ($\chi^2 = 0.99$, $df = 1$, *ns*); major depressive disorder, women = 84.4%, men = 89.5% ($\chi^2 = 1.48$, $df = 1$, *ns*); and borderline personality disorder, women = 68.4%, men = 84.2% ($\chi^2 = 3.76$, $df = 1$, *ns*).

Concerning childhood trauma histories, the women reported higher rates of childhood sexual abuse (women = 90.2%, men = 73.7% [$\chi^2 = 17.26$,

TABLE 2 Differences in Average Scores Between Women and Men with DID

DDIS symptom	Women (<i>N</i> = 266)	Men (<i>N</i> = 37)	<i>t</i>	<i>p</i>
Somatic	16.0	10.2	4.53	.0001
Schneiderian	6.5	6.7	0.31	<i>ns</i>
Secondary features of DID	10.6	10.2	0.67	<i>ns</i>
Borderline criteria	5.4	6.3	2.41	.02
ESP/paranormal experiences	5.9	5.4	0.79	<i>ns</i>
Suicide attempts	2.2	1.9	0.90	<i>ns</i>

Notes: DDIS = Dissociative Disorders Interview Schedule; DID = Dissociative Identity Disorder; ESP = extrasensory perception.

TABLE 3 Differences Between Women in the General Population with and without Sexual Abuse Histories

DDIS symptom	Sexual abuse (<i>N</i> = 37)	No sexual abuse (<i>N</i> = 281)	<i>t</i>	<i>p</i>
Somatic	2.4	1.3	2.70	.007
Schneiderian	1.7	0.4	5.17	.0001
Secondary features of DID	1.3	0.6	4.08	.0001
Borderline criteria	1.7	0.5	5.69	.0001
ESP/paranormal experiences	2.4	1.3	3.71	.0001
Suicide attempts	0.4	0.02	6.66	.0001

Notes: DDIS = Dissociative Disorders Interview Schedule; DID = Dissociative Identity Disorder; ESP = extrasensory perception.

$df = 1$, $p = .0001$) but not physical abuse (women = 83.8%, men = 83.8% [$\chi^2 = 0.31$, $df = 1$, *ns*]).

Women in the General Population with and without Sexual Abuse Histories

We predicted that women in the general population with sexual abuse histories would report much higher levels of symptoms than women in the general population without childhood sexual abuse histories. This was confirmed, as shown in Table 3. Concerning *DSM-IV-TR* diagnoses, the percentage of women positive for each disorder was as follows: substance abuse, sexual abuse = 8.1%, no sexual abuse = 3.6% ($\chi^2 = 1.73$, $df = 1$, *ns*); major depressive episode, sexual abuse = 48.6%, no sexual abuse = 21.0% ($\chi^2 = 13.62$, $df = 1$, $p = .0002$); borderline personality disorder, sexual abuse = 8.1%, no sexual abuse = 1.4% ($\chi^2 = 15.82$, $df = 1$, $p = .0001$); and DID, sexual abuse = 10.8%, no sexual abuse = 2.5% ($\chi^2 = 18.01$, $df = 1$, $p = .0001$).

Women with DID with and without Sexual Abuse Histories

We predicted that the same patterns would be observed among women with DID. This was confirmed, as shown in Table 4. Concerning *DSM-IV-TR*

TABLE 4 Differences Between Women with DID with and without Sexual Abuse Histories

DDIS symptom	Sexual abuse (<i>N</i> = 240)	No sexual abuse (<i>N</i> = 26)	<i>t</i>	<i>p</i>
Somatic	16.0	10.2	4.53	.0001
Schneiderian	6.7	4.6	3.73	.0001
Secondary features of DID	10.9	7.8	4.64	.0001
Borderline criteria	5.5	4.4	2.60	.01
ESP/paranormal experiences	6.1	4.0	3.01	.003
Suicide attempts	2.3	1.4	2.36	.02

Notes: DDIS = Dissociative Disorders Interview Schedule; DID = Dissociative Identity Disorder; ESP = extrasensory perception.

diagnoses, the percentage of women found positive was as follows: somatization disorder, sexual abuse = 45.4%, no sexual abuse = 11.5% ($\chi^2 = 11.05$, $df = 1$, $p = .0009$); substance abuse, sexual abuse = 55.0%, no sexual abuse = 53.8% ($\chi^2 = 0.01$, $df = 1$, ns); major depressive disorder, sexual abuse = 95.4%, no sexual abuse = 84.6% ($\chi^2 = 5.14$, $df = 1$, $p = .03$); and borderline personality disorder, sexual abuse = 70.8%, no sexual abuse = 46.2% ($\chi^2 = 6.61$, $df = 1$, $p = .01$).

Severity of Sexual Abuse Histories in Women in the General Population and in Women with DID

We predicted that the sexual abuse histories of the women with DID would be more severe than those of the women in the general population. For this analysis, we included only women in the two groups reporting childhood sexual abuse. This prediction was confirmed, as shown in Table 5.

DISCUSSION

Our predictions were supported by the data. Overall, men and women in both the general population and in a clinical sample of patients with DID endorsed the same symptom patterns, except that the respondents with DID reported much more severe trauma and more severe symptoms.

TABLE 5 Sexual Abuse Histories in Women with DID and Women in the General Population

Variable	DID (<i>N</i> = 240)	General population (<i>N</i> = 37)	<i>t</i>	<i>p</i>
Duration of abuse in years	15.4	2.5	6.90	.0001
Number of perpetrators	3.2	1.0	6.68	.0001
Number of types of sexual abuse	6.2	1.5	8.33	.0001

Notes: DID = Dissociative Identity Disorder.

We also compared women with DID to women in the general population but left the men out of this analysis because of both the small number of men in the general population reporting childhood sexual abuse and the small number of men in the DID sample. In this second round of analysis, we compared women with and without childhood sexual abuse histories in both groups. We focused on sexual abuse, as opposed to physical abuse, for these comparisons because the differences in sexual abuse histories were more striking in the initial analysis.

Both in DID and in the general population, a wide range of symptoms and diagnoses are more severe on Axis I and Axis II in individuals with sexual abuse histories. When sexually abused women with DID are compared to sexually abused women in the general population, the women with DID have much more severe symptoms and much more severe sexual abuse histories. We interpret these findings as consistent with the Trauma Model (Ross, 2007) in general and the Trauma Model of DID in particular.

In general, the Trauma Model predicts that greater symptoms across Axis I and Axis II are linked to more severe trauma. The dose–response curve for this relationship is not linear; rather, it is S-shaped. At low doses of trauma, such as one episode of indecent exposure at age 16, the symptom response is predicted to be minimal: no one, to our knowledge, proposes that DID ever arises from one incident of indecent exposure at age 16. At extreme trauma doses there is a ceiling effect, and no incremental increases in symptoms occur in response to increasing trauma. At intermediate trauma doses the curve is more linear in shape, with increasing symptoms in response to increasing trauma. At ultra-extreme trauma doses there may be complete system collapse. Such an S-shaped dose–response curve is typical of most inputs and responses in most biological systems.

In our data, we examined only sexual abuse in detail. Sexual abuse is only one component of the chronic complex trauma relevant to the Trauma Model, which includes physical abuse, family violence, neglect, loss of primary caretakers, extreme poverty, malnutrition, war, endemic diseases, natural disasters, surgery, and other forms of trauma. Even when we look only at this one component of overall trauma exposure, however, the findings are clear and striking. DID is not an anomaly or aberration; rather, people with DID exhibit the characteristic human trauma response at high exposure levels. The same symptom pattern is observed at lower exposure levels but with a quantitative reduction in symptoms. When the childhood sexual trauma dose exposure is zero, in the general population, the symptom levels represent a near-baseline response condition.

The Trauma Model predicts that if a large study were conducted in which the full range of types of trauma were systematically inquired about, the S-shaped dose–response curve would be confirmed. Such a study would provide illuminating data on the base rates of different symptom clusters and *DSM-IV-TR* disorders in the general population in the absence of

measurable trauma. The Trauma Model predicts that the levels of many *DSM-IV-TR* disorders would be negligible in the absence of significant trauma.

As can be seen from the present study and from previous research (Ross & Ellason, 2005; Ellason et al., 1996; Ross, 1997, 2004), the trauma response includes psychotic symptoms, not just dissociation, borderline personality disorder, and other symptoms and diagnoses more commonly linked to trauma. It appears that somatic symptoms as defined by the *DSM-IV-TR* criteria for somatization disorder may be particularly strongly linked to sexual abuse and may be more common in women than in men, even when sexual trauma exposure is controlled. The question of whether there are specific relationships between types of trauma and types of symptoms awaits further research (Sack, Lahmann, Jaeger, & Hennington, 2007).

In conclusion, our data and previous research indicate that with increasing severity of sexual abuse, there is an increase in symptoms across Axis I and II. DID illustrates the principles and logic of the Trauma Model in two ways: DID is typical of the human trauma response in general but illustrates it to the extreme degree; and, simultaneously, individuals with DID are at the high end of the dose-response curve and belong to a separate taxon from individuals on the low end of the trauma exposure continuum.

In our view, our data support the ecological validity of DID and its comorbidity as a characteristically human response to severe, chronic childhood trauma. The findings are inconsistent with the sociocognitive model of DID. Additional research in a variety of populations and cultures is required to provide full support for, or refutation of, the Trauma Model. Our study is limited to one general population sample in one language and culture and to a DID sample gathered by researchers working with the senior author of the present study. Future research will require additional measures of symptoms and diagnoses as well as additional population samples. Therefore, our findings support but do not prove the Trauma Model of mental disorders.

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