

Journal of Interpersonal Violence

<http://jiv.sagepub.com/>

Disorders of Extreme Stress (DESNOS) Symptoms Are Associated With Type and Severity of Interpersonal Trauma Exposure in a Sample of Healthy Young Women

Julian D. Ford, Patricia Stockton, Stacey Kaltman and Bonnie L. Green
J Interpers Violence 2006 21: 1399
DOI: 10.1177/0886260506292992

The online version of this article can be found at:
<http://jiv.sagepub.com/content/21/11/1399>

Published by:



<http://www.sagepublications.com>

On behalf of:

[American Professional Society on the Abuse of Children](#)

Additional services and information for *Journal of Interpersonal Violence* can be found at:

Email Alerts: <http://jiv.sagepub.com/cgi/alerts>

Subscriptions: <http://jiv.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations: <http://jiv.sagepub.com/content/21/11/1399.refs.html>

Disorders of Extreme Stress (DESNOS) Symptoms Are Associated With Type and Severity of Interpersonal Trauma Exposure in a Sample of Healthy Young Women

Julian D. Ford

University of Connecticut School of Medicine

Patricia Stockton

Stacey Kaltman

Bonnie L. Green

Georgetown University Medical Center

Childhood abuse and other developmentally adverse interpersonal traumas may put young adults at risk not only for posttraumatic stress disorder (PTSD) but also for impairment in affective, cognitive, biological, and relational self-regulation (“disorders of extreme stress not otherwise specified”; DESNOS). Structured clinical interviews with 345 sophomore college women, most of whom (84%) had experienced at least one traumatic event, indicated that the DESNOS syndrome was rare (1% prevalence), but DESNOS symptoms were reported by a majority of respondents. Controlling for PTSD and other anxiety or affective disorders, DESNOS symptom severity was associated with a history of single-incident interpersonal trauma and with more severe interpersonal trauma in a dose-response manner. Noninterpersonal trauma was associated with elevated prevalence of PTSD and dissociation but not with DESNOS severity. Study findings indicate that persistent posttraumatic problems with self-regulation warrant attention, even in relatively healthy young adult populations.

Keywords: *childhood interpersonal trauma; self-regulation; young adults*

Exposure to traumatic events is prevalent and often has a profound and lasting impact. More than half of the general population report experiencing

Authors' Note: This research was supported in part by National Institute of Mental Health Grants RO1 MH50332 (Bonnie L. Green, PI) and K23 MH01889-01A (Julian D. Ford, PI).

trauma at some point in their life (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Between 10% and 25% of people exposed to psychological trauma develop posttraumatic stress disorder (PTSD), which can be debilitating (Breslau, Davis, & Andreski, 1995; Kessler et al., 1995). When trauma occurs at critical ages or developmental transitions (Cicchetti & Rogosch, 2001) and involves abuse in the form of “betrayal” by caregivers (Freyd, 1994) or violation of self (Herman, 1992) or core values (e.g., war atrocities; Michultka, Blanchard, & Kalous, 1998), the risk of PTSD in adulthood is high. Interpersonal violence or violation in childhood is associated with particularly high (i.e., 50%-75%) risk of PTSD in adolescence or adulthood (Kessler et al., 1995).

Moreover, interpersonal trauma in childhood is associated with chronic problems in adulthood with biological and affective self-regulation (DeBellis, 2001; Manly, Kim, Rogosch, & Cicchetti, 2001) that place survivors at risk for chronic medical illness (e.g., cardiovascular, metabolic, immunologic, obesity; Schnurr & Green, 2004). Infants and young children exposed to interpersonal trauma are at risk for regulatory, attachment, anxiety, and affective disorders in infancy and childhood (Scheeringa & Zeanah, 2001). Adolescents who were exposed to interpersonal trauma in childhood are at risk for internalizing (Mazza & Reynolds, 1999), externalizing (Ford, 2002), and substance use (Gordon, 2002) disorders. Adult survivors of child abuse and family violence are at risk not only for PTSD (Duncan, Saunders, Kilpatrick, Hanson, & Resnick, 1996) but also for heightened anxiety (McCauley et al., 1997; Stein et al., 1996), depression and suicidality (Dube et al., 2001; Duncan et al., 1996; Felitti et al., 1998; McCauley et al., 1997), addiction (Duncan et al., 1996; Felitti et al., 1998; Gordon, 2002; McCauley et al., 1997), personality disorders (Zlotnick, Mattia, & Zimmerman, 2001), mental illness (Leverich et al., 2002; Lysaker, Meyer, Evans, Clements, & Marks, 2001), and sexual disorders (Felitti et al., 1998). Adult survivors of child abuse also are at risk for revictimization (Follette, Polusny, Bechtel, & Naugle, 1996; Whitfield, Anda, Dube, & Felitti, 2003).

These complex posttraumatic impairments have been described as “disorders of extreme stress not otherwise specified” (DESNOS) (Herman, 1992; Roth, Newman, Pelcovitz, van der Kolk, & Mandel, 1997; van der Kolk et al., 1996). DESNOS has been assessed by structured interview (Pelcovitz et al., 1997) in midlife and older adult community samples (Roth et al., 1997; van der Kolk et al., 1996), in inpatient (Ford, 1999; Ford & Kidd, 1998) and outpatient mental health (Roth et al., 1997; van der Kolk et al., 1996) and substance abuse (Ford & Frisman, 2002) samples, and among homeless adults (Ford & Frisman, 2002). DESNOS involves persistent alterations in

seven aspects of self-regulation and psychosocial functioning following exposure to traumatic stress: (a) affect and impulse regulation (i.e., persistent distress, risky behavior or self-harm), (b) biological self-regulation (i.e., somatization—pain or physical symptoms or impairments that cannot be fully medically explained), (c) attention or consciousness (i.e., dissociation), (d) perception of perpetrator or perpetrators (e.g., idealization, preoccupation with revenge), (e) self-perception (e.g., self as damaged or ineffective, profound shame or guilt), (f) relationships (e.g., inability to trust, revictimization, avoidance of sexuality), and (g) systems of meaning or sustaining beliefs (e.g., hopelessness, loss of faith).

DESNOS symptoms thus differ from PTSD's symptoms of unwanted memories (intrusive reexperiencing), excess arousal (hyperarousal and hypervigilance), and conscious and automatic attempts to cope with these memories and the excess arousal (avoidance and emotional numbing; American Psychiatric Association, 1994). PTSD is an anxiety disorder, but DESNOS involves a broader set of self-regulatory impairment that takes the form of profound and enduring problems with overwhelming emotional distress, periods of severe dissociation, loss of a basic sense of trust in relationships and meaning in life, and chronic health problems that cannot be explained by medical causes. This view of DESNOS as posttraumatic self-dysregulation is consistent with findings which have been replicated with civilian clinical samples (Roth et al., 1997; van der Kolk et al., 1996) and military clinical samples (Ford, 1999) that DESNOS is most likely to occur following (a) trauma in early childhood when many self capacities are formed or malformed and (b) interpersonal violence or violation rather than noninterpersonal traumas such as serious accidents, disasters, or illnesses.

However, DESNOS has not been assessed among healthy young adults, despite evidence that this relatively protected and resilient population may be adversely affected by trauma exposure in childhood or adolescence (Green et al., 2000; Krupnick et al., 2004; Lauterbach & Vrana, 2001; Scarpa et al., 2002). Prior analyses with the present data set (Krupnick et al., 2004) showed that exposure to interpersonal trauma in adolescence increased young adults' risk of Axis I diagnoses (including PTSD) and borderline personality disorder (BPD) symptoms. BPD shares several features with DESNOS, and the two syndromes were highly comorbid in a clinical sample of women (McLean & Gallop, 2003). Early childhood trauma exposure was not examined in our prior studies, although it has been found to be predictive of both BPD and DESNOS (McLean & Gallop, 2003). Therefore, the present study was designed to extend the research literature on DESNOS and interpersonal trauma by examining the separate relationships of early

childhood and adolescent interpersonal trauma on the risk of DESNOS in healthy youth women. The rationale for restricting the sample to young adults (who were not currently experiencing trauma) was that this enabled us to examine the impact of childhood and adolescent trauma exposure in adulthood without the potential confound of exposure to trauma in adulthood. Because studies have shown that repeated exposure to traumatic stressors is associated with cumulative increases in the risk and severity of posttraumatic problems (Follette et al., 1996; Green et al., 2000; McCauley et al., 1997; Whitfield et al., 2003), we also examined the association of DESNOS with cumulative trauma exposure in two ways: (a) multiple incidents of traumatic exposure (vs. a single trauma incident) and (b) multiple perpetrators of interpersonal violence or violation (vs. one perpetrator).

We expected that clinically significant DESNOS would be rare in this population but that the core features of DESNOS would occur with sufficient frequency to determine if they were distinct from PTSD and other psychiatric disorders in their relationship to different types of past trauma exposure. Based on the evidence summarized above, that DESNOS are the sequelae of cumulative interpersonal trauma exposure in early childhood, we tested the following primary hypothesis:

Hypothesis 1: The likelihood of meeting criteria for each DESNOS feature will increase as the severity of trauma exposure increases successively from (a) no past trauma, to (b) single-incident noninterpersonal trauma, to (c) single-incident interpersonal trauma, to (d) ongoing (i.e., abuse) or multiple interpersonal traumas by one perpetrator, and finally to (e) abuse by more than one perpetrator or abuse plus one or more incidents of interpersonal trauma by another perpetrator.

Based on conflicting evidence that DESNOS may be either a complex and severe form of PTSD (van der Kolk et al., 1996) or a syndrome distinct from (although often comorbid with) PTSD and other anxiety and affective disorders (Ford, 1999), we also tested the following hypothesis:

Hypothesis 2: DESNOS will be related to severity of trauma exposure independent of the effects of (a) PTSD and (b) affective or other anxiety disorders.

Method

Sample and Procedure

As described in Green et al. (2000, 2001) and Krupnick et al. (2004), participants were college women recruited via mailings sent to all sophomore

women who were 24 years old or younger and were taking at least 9 credit hours per semester at six colleges and universities in the Washington, D.C., area. The mailings were sent during four consecutive semesters during 2 successive years and included a detailed description of the study, an assurance of confidentiality, and a packet of self-report questionnaires along with a self-addressed, postage-paid envelope. A separate consent form was provided for participants to indicate if they were interested in participating in the next phase of the study. In total, 10,722 questionnaires were mailed and 2,568 were returned (response rate = 24%). Of those returned, 65% gave permission to be contacted for the next phase of the study if they met study criteria. Approximately 700 women were interviewed by telephone to screen for specific and mutually exclusive traumatic event exposure histories. From this second screening, 363 women were interviewed in person. Women signed a separate consent form for the 2.5- to 3-hour interview and were paid \$25 for their time.

Interviewers were 6 women graduate clinical psychology students and 2 bachelor's-level female research assistants. Interviewers were trained to reliably conduct the Structured Clinical Interview for *DSM-IV* (SCID) and the Structured Interview for Disorders of Extreme Stress (SIDES) for DESNOS with training tapes, observation of skilled interviewers, practice with feedback, and supervision with careful review of each interview.

Based on listwise deletion, 18 respondents were not included in the final data sample because of missing data on one or more of the measures. Excluded respondents did not differ from the 345 for whom analyses will be reported on any demographic or study variables. Five participant subgroups were defined to reflect trauma severity based on a structured trauma history interview (see below). Only events or experiences that met criteria of the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* for PTSD Criterion A were used to define participant subgroups. Abuse was defined as sexual or physical assault occurring at least five times by the same perpetrator within any 12-month period. For children, age 11 years old or younger sexual assault had to be by an individual at least 5 years older. At age 12 or older, unless the perpetrator was a family member, sexual assault had to involve physical force or physical threat (including a weapon) against the respondent's will or while she was helpless. Physical assault had to involve intentional harm by another person that caused demonstrable injury, threat with a potentially lethal weapon, or infliction of extreme pain (e.g., exposure to extremes of heat or cold). Fights between peers younger than 12 and fights or assaults by siblings were excluded.

A no trauma (NT) subgroup ($n = 56$) included participants who reported no past traumatic events on the screening questionnaire or in the subsequent interview. A single-incident noninterpersonal (SNI) subgroup ($n = 33$) included participants who reported one accidental injury or bereavement trauma (loss of a family member or very close friend by homicide, suicide, or accident) in childhood or adolescence and no other trauma events. A single-incident interpersonal trauma (SIT) subgroup included participants ($n = 76$) who reported a single incident of physical or sexual assault. An ongoing or multiple interpersonal trauma (OMIT) subgroup ($n = 104$) included participants who reported past physical or sexual abuse, or multiple assaults, with only one perpetrator. A cumulative abuse trauma (CAT) subgroup ($n = 76$) included participants reporting past physical and/or sexual abuse by more than one perpetrator (11%) or abuse by one perpetrator and at least one other incident of interpersonal trauma by a different perpetrator (89%).

Measures

Stressful Life Events Screening Questionnaire (SLESQ). The 13-item SLESQ (Goodman, Corcoran, Turner, Yuan, & Green, 1998) screens for past Criterion A1 stressor events—"actual or threatened death or serious injury, or a threat to the physical integrity of self or others" (American Psychiatric Association, 1994, p. 427)—plus one item for traumatic loss. SLESQ items do not assess Criterion A2 (reactions to exposure). The retest correlation for number of events reported by a sample of 140 male and female college students when the SLESQ was readministered 2 weeks after a first testing was .89, and individual item kappa coefficients for retest reliability ranged from .31 to 1.00 ($Mdn = .73$). Criterion validity was supported by a .77 correlation between the total number of events identified on the SLESQ and in a face-to-face interview covering the same events, with item kappas ranging from .26 to .90 ($Mdn = .64$).

SIDES. The SIDES (Pelcovitz et al., 1997) structured interview assesses the presence of 48 symptoms by asking if the participant had experienced the symptom "since the event or for as long as you can remember." A total score, seven subscale scores, and a dichotomous classification score (present vs. absent) can be calculated using rules described by Pelcovitz et al. (1997). The SIDES subscales correspond to the seven DESNOS features described above. In this study, respondents in the NT and SNI groups had no perpetrator, so the fourth SIDES subscale (Altered Perceptions of Perpetrators) was not utilized. Pelcovitz et al. reported evidence of adequate

interrater reliability and internal consistency for the SIDES total score and subscale scores in community and clinical samples.

SCID-NP. Lifetime anxiety (including PTSD) and affective disorders were assessed using the SCID (First, Spitzer, Gibbon, & Williams, 1996), a structured interview that follows diagnostic criteria defined by the *DSM-IV* of the American Psychiatric Association (1994). Reliability for diagnosis ratings was conducted on a sample of 52 interviews from this study in which one interviewer conducted the interview and a second observed and rated. Kappas for the reliability of the ratings for lifetime disorders were .81 for acute stress disorder, 1.00 for PTSD, .92 for major depressive disorder, .78 for alcohol abuse, .79 for alcohol dependence, and .48 to 1.00 for all other diagnoses.

Data Analyses

First, summary statistics, bivariate correlations of the SIDES subscales, and comparisons of the prevalence of DESNOS subscales for respondents with or without a history of PTSD were calculated. To test Hypothesis 1, cross-tabulations and chi-square analyses were conducted to test the relative likelihood of meeting criteria for PTSD and each DESNOS feature across all five trauma subgroups. As a further test of Hypothesis 1, a series of logistic regression analyses were conducted comparing pairs of trauma subgroups on the relative likelihood of meeting criteria for PTSD and each DESNOS feature. To test Hypothesis 2, we conducted a general linear model analysis of variance (ANOVA) and subsequent analyses of covariance (ANCOVA) to determine if different types of trauma exposure were associated with level of DESNOS symptoms after controlling for the effects of lifetime diagnosis of (a) PTSD and (b) any affective or other anxiety disorder.

Results

As expected, full DESNOS was rare (3 cases; < 1% prevalence). Affect dysregulation was the least commonly endorsed SIDES feature (Table 1). Somatization, altered self-perceptions, and dissociation also were endorsed by fewer than half the respondents. Alterations in relationships and sustaining beliefs each was endorsed by about half the sample. The SIDES features were moderately intercorrelated (Table 1), sharing up to 17% variance (r^2). Affect dysregulation and somatization were particularly distinct, sharing between 1%

and 10% variance with each other subscale. Thus, although interrelated, the DESNOS features were relatively independent of one another in this sample.

One in 9 ($n = 38$, 11%) respondents met criteria for lifetime (i.e., current or past) PTSD diagnosis, comparable to prevalence figures reported for women in community samples (Breslau et al., 1995; Kessler et al., 1995; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). The fact that this relatively normative prevalence level was observed despite oversampling of respondents with a trauma history may reflect the protective influence of education on PTSD risk (Ullmann & Brecklin, 2002). The relatively low proportion of the sample with retraumatization and chronicity most likely reflects the sampling strategy, which was designed to oversample respondents with a single trauma episode. More than one third ($n = 125$) of the sample met criteria for lifetime affective (i.e., major depression, dysthymic disorder) or other anxiety (i.e., panic, agoraphobia, social phobia, obsessive-compulsive disorder, generalized anxiety disorder) disorders.

Although the low prevalence of full DESNOS does not permit us to examine the convergence or divergence of full DESNOS and PTSD, bivariate correlations showed that a history of PTSD was most strongly related to altered self-perceptions and significantly, but less strongly, related to each other DESNOS feature (Table 1). Cross-tabulations were done to compare respondents for whom lifetime PTSD and each DESNOS subscale were present or absent (Table 2). Concordance was particularly strong for the least prevalent DESNOS features, affect dysregulation, somatization, and altered self-perceptions. At least 80% of respondents showed a correspondence between lifetime PTSD and each of these three DESNOS features. The more prevalent DESNOS features frequently were discordant with (i.e., occurred in the absence of) PTSD: dissociation (32% discordance) and altered relationships and systems of meaning (42%-43% discordance). Thus, although there is a great deal of overlap between PTSD and each DESNOS feature, DESNOS features often occurred separately from PTSD and may constitute distinct subclinical posttraumatic sequelae (Ford, 1999).

Cross-tabulations comparing the five trauma subgroups resulted in statistically significant differences in the likelihood of lifetime PTSD and each DESNOS feature: $\chi^2(df = 4) = 12.1-56.4$, $p < .015$. As shown in Table 3, the prevalence of lifetime PTSD was between 9% and 10% for the SNI, SIT, and OMIT groups but 20% for the CAT group. In logistic regression analyses testing the likelihood of PTSD, the NT, SNI, SIT, and OMIT groups did not differ, but CAT participants were significantly more likely than OMIT participants to meet PTSD diagnostic criteria (odds ratio, OR = 3.23, 95% confidence interval, CI = 1.35-7.70), $\chi^2(df = 2) = 6.9$, $p < .01$.

Table 1
Prevalence and Bivariate Correlations of DESNOS Subscales

Variable	Prevalence (%)	I	II	III	V	VI	VII
I. SIDES affect dysregulation	8	—					
II. SIDES somatization	17	.27***	—				
III. SIDES dissociation	36	.19***	.28***	—			
V. SIDES altered self-perception	25	.22***	.33***	.38***	—		
VI. SIDES altered relationships	50	.10	.27***	.30***	.41***	—	
VII. SIDES altered sustaining beliefs	47	.19***	.19***	.35***	.33***	.23***	—
Lifetime PTSD	11	.21***	.24***	.28***	.38***	.22***	.21***

Note: $N = 334$ for all variables (listwise deletion of missing data). SIDES = Structured Interview for Disorders of Extreme Stress; PTSD = posttraumatic stress disorder.

*** $p < .001$, two-tailed.

Table 2
Co-Occurrence of Lifetime PTSD and Each DESNOS Feature

DESNOS Subscale		Lifetime PTSD Absent	Lifetime PTSD Present
I. SIDES affect dysregulation	Absent (%)	83	8
	Present (%)	6	3
II. SIDES somatization	Absent (%)	77	6
	Present (%)	12	5
III. SIDES dissociation	Absent (%)	60	3
	Present (%)	29	8
V. SIDES altered self-perception	Absent (%)	72	3
	Present (%)	17	8
VI. SIDES altered relationships	Absent (%)	48	2
	Present (%)	41	9
VII. SIDES altered sustaining beliefs	Absent (%)	50	3
	Present (%)	39	8
SIDES symptom count	<i>M</i>	5.4	14.9
	<i>SD</i>	5.7	7.7

Note: $N = 345$ for all variables based on listwise deletion of missing data. DESNOS = disorders of extreme stress not otherwise specified; PTSD = posttraumatic stress disorder; SIDES = Structured Interview for Disorders of Extreme Stress. Percentages in bold represent a discrepancy between PTSD and the DESNOS feature.

Affect dysregulation and somatization were the least frequently reported DESNOS features overall (Table 3), showing a pattern of relationships to the trauma groups similar to that of PTSD: no occurrences in the NT group, low levels for the SNI, SIT, and OMIT groups (except that somatization was reported by more than 20% of the OMIT group), and higher levels of occurrence in the CAT group. Altered self-perceptions were also uncommon but were most frequently reported by participants with an abuse history (i.e., either OMIT or CAT). Dissociation, altered relationships, and altered sustaining beliefs were relatively rare (but not absent) in the NT group, more common in the SNI and SIT groups, and most often reported by both the OMIT and CAT groups.

Logistic regression analyses comparing pairs of trauma groups sequentially showed that the SNI group was more likely than the NT group to report dissociation (OR = 4.00, 95% CI = 1.23-13.03), $\chi^2(df = 1) = 5.3, p < .05$. The SNI and SIT groups did not differ significantly on any DESNOS feature. The OMIT group was more likely than the SIT group to report dissociation (OR = 1.98, 95% CI = 1.05-3.83), $\chi^2(df = 1) = 4.5, p < .05$, altered relationships (OR = 2.08, 95% CI = 1.16-3.97), $\chi^2(df = 1) = 6.1, p < .01$, and altered

Table 3
Posttraumatic Stress Sequelae of Different Types of Trauma Exposure

	I. Affect Dysregulation %	II. Somatization %	III. Dissociation %	V. Altered Self- Perception %	VI. Altered Relations %	VII. Altered Sustaining Beliefs %	DESNOS Features %	<i>M</i>	<i>SD</i>
All respondents	11	8	17	36	25	50	47	7.2	5.4
No trauma ^a	0	0	0	9	4	14	24	1.2	1.8
Single-incident noninterpersonal trauma ^b	9	3	12	30	9	27	42	3.4	3.4
Single-incident interpersonal trauma ^c	10	6	11	31	21	42	35	5.2	5.1
Ongoing/multiple interpersonal trauma ^d	10	9	21	47	33	65	54	8.2	7.3
Cumulative abuse trauma ^e	20	16	30	48	36	72	70	10.6	7.0

Note: DESNOS = disorders of extreme stress not otherwise specified; PTSD = posttraumatic stress disorder.

a. *n* = 56.

b. *n* = 33.

c. *n* = 76.

d. *n* = 104.

sustaining beliefs ($OR = 2.10$, $95\% CI = 1.19-4.02$), $\chi^2(df = 1) = 6.4$, $p < .01$. The CAT group was more likely than the OMIT group to report altered sustaining beliefs ($OR = 1.92$, $95\% CI = 1.03-3.57$), $\chi^2(df = 1) = 4.3$, $p < .05$.

The ANOVA comparing the five trauma groups on overall DESNOS symptoms yielded a significant finding, $F(4, 340) = 26.2$, $p < .001$. Post hoc Tukey honestly significant difference tests ($p < .05$) showed that the CAT and OMIT groups did not differ from each other (Table 3) but had higher levels of DESNOS symptoms than the SIT, SNI, and NT groups. In addition, the SIT group's mean level of DESNOS symptoms was greater than that for the NT group. The SIT and SNI groups were comparable, as were the SNI and NT groups. The ANCOVA comparing the five trauma groups on the number of DESNOS symptoms while controlling for the presence of a lifetime PTSD or other Axis I psychiatric disorder also produced a significant finding, $F(4, 338) = 12.0$, $p < .001$. The adjusted mean numbers of DESNOS symptoms still were comparable and significantly higher for CAT (8.7) and OMIT (7.8) than for SIT (5.6), SNI (4.3), and NT (3.1). SIT participants had significantly more DESNOS symptoms than NT participants, whereas the SNI group was comparable to both the SIT and NT participants.

Discussion

Our results suggest that well-educated young women who experienced trauma in childhood or adolescence—particularly as abuse or by multiple perpetrators—may suffer from complex forms of posttraumatic biopsychosocial dysregulation that are independent of either PTSD or other Axis I psychiatric disorders. Independent of the effects of PTSD and other Axis I psychiatric disorders, even a single incident of interpersonal trauma was sufficient to be associated with elevated levels of DESNOS symptoms (compared to no trauma), but a single incident of noninterpersonal trauma was not. The finding that few respondents met all DESNOS criteria suggests that posttraumatic dysregulation is not pervasive or debilitating for most of these young, educated, and relatively resource-rich women even if they were subjected to abuse or other interpersonal trauma earlier in their lives. However, subclinical problems with self-regulation were common among these women if they had experienced abuse or multiple perpetrator interpersonal violence and more common if they had experienced even a single interpersonal assault than if they had no history of trauma.

Subclinical problems with self-regulation have been shown to occur and cause impairment among young adults who have been exposed to childhood

abuse (Miltenburg & Singer, 1999), especially following abuse by multiple perpetrators (Cole-Detke & Kobak, 1998) or abuse combined with other interpersonal trauma. There also is evidence that subthreshold PTSD is associated with significant psychosocial (Stein, Walker, Hazen, & Forde, 1997) and physical health (Schnurr & Green, 2004) impairment and that subclinical psychiatric symptomatology is associated with both current impairment and risk of future psychiatric morbidity (Katzelnick et al., 2001; Pearson et al., 1999). Therefore, research is needed to determine if the DESNOS symptomatology reported by many of the respondents is sufficient to cause either current impairment or place them at risk of future clinically significant problems. Prospective longitudinal follow-up studies also are needed to determine if and for whom these self-regulatory problems persist and if chronicity of DESNOS into and through adulthood is associated with increasing psychosocial impairment—and if predictors of resilience and recovery can be identified (Binder, McNiel, & Goldstone, 1996).

Our results suggest that interpersonal violence or violation (abuse) or multiple interpersonal traumas each are more strongly associated with problems in self-regulation than either a single episode of noninterpersonal or interpersonal trauma. This finding replicates results of prior studies of DESNOS with other populations (Ford, 1999; Ford & Kidd, 1998; van der Kolk et al., 1996) and is consistent with evidence that child abuse is associated with serious biopsychosocial dysregulation (Cicchetti & Rogosch, 2001; DeBellis, 2001; Heim & Nemeroff, 2001; Kaufman, Plotsky, Nemeroff, & Charney, 2000; Perry & Pollard, 1998). Our findings extend this research literature by suggesting that this dysregulation may be present early in adulthood even among women who have sufficient resources and coping skills (Binder et al., 1996) to be able to achieve ongoing college attendance.

The impact of persistent or repeated childhood or adolescent abuse is indicated by the finding that the CAT subgroup reported the most DESNOS symptoms overall (although not significantly different from the OMIT group because of substantial within-group variances). The CAT subgroup also was most likely to have altered sustaining beliefs, had the highest prevalence of lifetime PTSD, and was associated with high levels of the least common DESNOS features (i.e., affect dysregulation, somatization). Thus, even among relatively resilient, advantaged, and otherwise low-risk individuals, ongoing childhood interpersonal violence or violation appears to be associated with severe and persistent forms of self-regulatory impairment (Cole-Detke & Kobak, 1998; DeBellis, 2001; Perry & Pollard, 1998; Scheeringa & Zeanah, 2001; Schore, 2001).

Although dissociation and PTSD were most common for women who had experienced cumulative abuse, single-incident noninterpersonal or

interpersonal traumas also were associated with an increased risk of both dissociation and PTSD compared to no history of trauma. Thus, even a single incident of accidental, illness-related, bereavement, or assault trauma may be associated with PTSD and impairment in the regulation of consciousness.

However, single-incident trauma was associated with higher overall DESNOS levels only if the trauma was interpersonal. Single-incident interpersonal trauma was associated with higher likelihood of reporting several specific DESNOS features (i.e., affect dysregulation, altered self-perceptions and relationships), compared with noninterpersonal trauma or no trauma. Interpersonal assault is prevalent in childhood and adolescence and is associated with PTSD, depression, and substance abuse (Duncan et al., 1996). Our findings add the possibility that interpersonal assault, even when it occurs as a single incident, may be associated with lasting stress-related dysregulation. This finding underscores the importance of developing and broadly implementing effective violence prevention and social competence programs for children and adolescents.

Generally, the DESNOS symptoms were not reported by respondents with no trauma history, except for 1 in 4 who reported alterations in sustaining beliefs and about 1 in 10 who endorsed dissociation and altered relationships. The substantial jump in the likelihood of reporting all of the DESNOS features, especially dissociation, when even a single incident of trauma had occurred and the still greater increase in prevalence when abuse or multiple interpersonal trauma had occurred suggest that trauma (and not just more routine stressors or developmental challenges) may cause otherwise healthy and productive young women to suffer potentially problematic self-regulatory difficulties. This finding replicates and extends prior results from this data set that single-incident noninterpersonal trauma is associated with functional impairment (Green et al., 2001).

Several limitations suggest caution in interpreting the findings. Trauma history was assessed retrospectively and without external confirmation. However, the presence and specific type of trauma was independently determined by an intensive interview after first being identified with a comprehensive screening questionnaire (the SLESQ) that has shown good evidence of reliability and validity with this (Green et al., 2000) and similar (Goodman et al., 1998) populations. We did not examine the exact timing of trauma in childhood or adolescence. Given evidence that the timing of trauma in infancy (Scheeringa & Zeanah, 2001) and throughout childhood and adolescence (Thornberry, Ireland, & Smith, 2001) may affect critical outcomes, future studies should examine the effects of trauma's timing and the interpersonal and cumulative effects tested in this study.

The self-report interview measure used to assess DESNOS, the SIDES, has shown evidence of reliability, but the criterion and construct validity of the SIDES subscales are uncertain. Our finding that the SIDES subscales were interrelated but largely distinct provides additional support for their validity and for the syndromal coherence of DESNOS (Ford, 1999; Roth et al., 1997).

Findings from this socioeconomically advantaged sample of young women cannot of course be generalized to men or to older or more disadvantaged populations. However, the study shows that DESNOS may be present and be of concern even in a relatively healthy population and in the populations in which trauma and psychopathology are more typically investigated (e.g., Follette et al., 1996; Ford, 1999; McGloin & Widom, 2001; Stein et al., 1996; van der Kolk et al., 1996; Zlotnick et al., 2001). Replication of the findings concerning DESNOS and trauma exposure is warranted with other apparently psychologically healthy individuals for whom stress reactivity may lead to impaired functioning (e.g., medically compromised individuals; Schnurr & Green, 2004).

In conclusion, it appears that interpersonal trauma—and particularly childhood and adolescent abuse—place even relatively advantaged and well-functioning young women at risk for not only PTSD but also for stress-related impairment in biopsychosocial self-regulation. The hierarchical dose-response pattern of the relationship among no trauma, single-incident traumas, and abuse with DESNOS severity was independent of other sequelae of trauma, including PTSD (Cloitre, Scarvalone, & Difede, 1997) or affective or other anxiety disorders (Stein et al., 1996; Zlotnick et al., 2001). Therefore, careful health care screening and interventions designed specifically to address the adverse impact of interpersonal trauma in any form and abuse in particular, and posttraumatic self-dysregulation (e.g., Cloitre, Koenen, Cohen, & Han, 2002), are important not only with clinical populations but also as approaches to secondary prevention with relatively low-risk groups of apparently healthy and high-achieving youths or young adults.

References

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Binder, R. L., McNiel, D. E., & Goldstone, R. L. (1996). Is adaptive coping possible for adult survivors of childhood sexual abuse? *Psychiatric Services*, *47*, 186-188.
- Breslau, N., Davis, G. C., & Andreski, P. (1995). Risk factors for PTSD-related traumatic events. *American Journal of Psychiatry*, *152*, 529-535.
- Cicchetti, D., & Rogosch, F. (2001). The impact of child maltreatment and psychopathology on neuroendocrine function. *Development and Psychopathology*, *13*, 783-804.

- Cloitre, M., Koenen, K., Cohen, L., & Han, H. (2002). Skills training in affective and interpersonal regulation followed by exposure: A phase-based treatment for PTSD related to childhood abuse. *Journal of Consulting and Clinical Psychology, 70*, 1067-1074.
- Cloitre, M., Scarvalone, P., & Difede, J. (1997). Posttraumatic stress disorder, self- and interpersonal dysfunction among sexually retraumatized women. *Journal of Traumatic Stress, 10*, 437-452.
- Cole-Detke, H., & Kobak, R. (1998). The effects of multiple abuse in interpersonal relationships: An attachment perspective. *Journal of Aggression, Maltreatment and Trauma, 2*, 189-205.
- DeBellis, M. (2001). Developmental traumatology. *Psychoneuroendocrinology, 27*, 155-170.
- Dube, S., Anda, R., Felitti, V., Chapman, D., Williamson, D., & Giles, W. (2001). Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: Findings from the Adverse Childhood Experiences Study. *Journal of the American Medical Association, 286*, 3089-3096.
- Duncan, R. D., Saunders, B. E., Kilpatrick, D. G., Hanson, R. F., & Resnick, H. S. (1996). Childhood physical assault as a risk factor for PTSD, depression, and substance abuse: Findings from a national survey. *American Journal of Orthopsychiatry, 66*, 437-448.
- Felitti, V., Anda, R., Nordenberg, D., Williamson, D., Spitz, A., Edwards, V., et al. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine, 14*, 245-258.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1996). *Structured Clinical Interview for Axis I and II DSM-IV Disorders—Non-Patient Edition (SCID-IV/NP)*. New York: New York State Psychiatric Institute, Biometrics Research Department.
- Follette, V., Polusny, M., Bechtle, A., & Naugle, A. (1996). Cumulative trauma. *Journal of Traumatic Stress, 9*, 25-36.
- Ford, J. D. (1999). Disorders of extreme stress following war-zone military trauma. *Journal of Consulting and Clinical Psychology, 67*, 3-12.
- Ford, J. D. (2002). Traumatic victimization in childhood and persistent problems with oppositional-defiance. *Journal of Trauma, Maltreatment, and Aggression, 11*, 25-58.
- Ford, J. D., & Frisman, L. (2002). Complex PTSD among homeless and addicted women. *Proceedings of the International Society for Traumatic Stress Studies, 18*, 58.
- Ford, J. D., & Kidd, P. (1998). Early childhood trauma and disorders of extreme stress as predictors of treatment outcome with chronic PTSD. *Journal of Traumatic Stress, 11*, 743-761.
- Freyd, J. (1994). Betrayal trauma. *Ethics and Behavior, 4*, 307-329.
- Goodman, L. A., Corcoran, C., Turner, K., Yuan, N., & Green, B. L. (1998). Assessing traumatic event exposure: The Stressful Life Events Screening Questionnaire. *Journal of Traumatic Stress, 11*, 521-542.
- Gordon, H. (2002). Early environmental stress and biological vulnerability to drug abuse. *Psychoneuroendocrinology, 27*, 115-126.
- Green, B. L., Goodman, L. A., Krupnick, J. L., Corcoran, C. B., Petty, R. M., Stockton, P., et al. (2000). Outcomes of single versus multiple trauma exposure in a screening sample. *Journal of Traumatic Stress, 13*, 271-286.
- Green, B. L., Krupnick, J. L., Stockton, P., Goodman, L., Corcoran, C., & Petty, R. (2001). Psychological outcomes associated with traumatic loss in a sample of young women. *American Behavioral Scientist, 44*, 817-837.
- Heim, C., & Nemeroff, C. (2001). The role of childhood trauma in the neurobiology of mood and anxiety disorders. *Biological Psychiatry, 49*, 1023-1039.
- Herman, J. L. (1992). Complex PTSD. *Journal of Traumatic Stress, 5*, 377-391.

- Katzelnick, D., Kobak, K. A., DeLeire, T., Henk, H. J., Greist, J. H., Davidson, J. R., et al. (2001). Impact of generalized social anxiety disorder in managed care. *American Journal of Psychiatry, 158*, 1999-2007.
- Kaufman, J., Plotsky, P., Nemeroff, C., & Charney, D. (2000). Effects of early adverse experiences on brain structure and function: Clinical implications. *Biological Psychiatry, 48*, 778-790.
- Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the national comorbidity survey. *Archives of General Psychiatry, 52*, 1048-1060.
- Krupnick, J. L., Green, B. L., Stockton, P., Goodman, L., Corcoran, C., & Petty, R. (2004). Mental health effects of adolescent trauma exposure in a female college sample: Exploring differential outcomes based on experiences of unique trauma types and dimensions. *Psychiatry, 67*, 264-279.
- Lauterbach, D., & Vrana, S. (2001). The relationship among personality variables, exposure to traumatic events, and severity of posttraumatic stress symptoms. *Journal of Traumatic Stress, 14*, 29-45.
- Leverich, G., McElroy, S., Suppes, T., Keck, P., Denicoff, K., Nolen, W., et al. (2002). Early physical and sexual abuse associated with an adverse course of bipolar illness. *Biological Psychiatry, 51*, 288-297.
- Lysaker, P., Meyer, P., Evans, J., Clements, C., & Marks, K. (2001). Childhood sexual trauma and psychosocial functioning in adults with schizophrenia. *Psychiatric Services, 52*, 1485-1488.
- Manly, J., Kim, J., Rogosch, F., & Cicchetti, D. (2001). Dimensions of child maltreatment and children's adjustment. *Development and Psychopathology, 13*, 759-782.
- Mazza, J., & Reynolds, W. (1999). Exposure to violence in young inner-city adolescents. *Journal of Abnormal Child Psychology, 27*, 203-213.
- McCauley, J., Kern, D., Kolodner, K., Dill, L., Schroeder, A., DeChant, H., et al. (1997). Clinical characteristics of women with a history of childhood abuse: unhealed wounds. *Journal of the American Medical Association, 277*, 1362-1368.
- McGloin, J., & Widom, C. (2001). Resilience among abused and neglected children grown up. *Development and Psychopathology, 13*, 1021-1038.
- McLean, L., & Gallop, R. (2003). Implications of childhood sexual abuse for adult borderline personality disorder and complex posttraumatic stress disorder. *American Journal of Psychiatry, 160*, 369-371.
- Michultka, D., Blanchard, E. B., & Kalous, T. (1998). Responses to civilian war experiences. *Journal of Traumatic Stress, 11*, 571-578.
- Miltenburg, R., & Singer, E. (1999). Culturally mediated learning and the development of self-regulation by survivors of child abuse. *Human Development, 42*, 1-17.
- Pearson, S., Katzelnick, D., Simon, G., Manning, W., Helstad, C., & Henk, H. (1999). Depression among high utilizers of medical care. *Journal of General Internal Medicine, 14*, 461-468.
- Pelcovitz, D., van der Kolk, B., Roth, S., Mandel, F., Kaplan, S., & Resick, P. (1997). Development of a criteria set and a structured interview for disorders of extreme stress (DESNOS). *Journal of Traumatic Stress, 10*, 3-16.
- Perry, B. D., & Pollard, R. A. (1998). Homeostasis, trauma, and adaptation. *Child and Adolescent Psychiatric Clinics of North America, 7*, 33-51.
- Resnick, H. S., Kilpatrick, D. G., Dansky, B. S., Saunders, B. E., & Best, C. L. (1993). Prevalence of civilian trauma and post-traumatic stress disorder in a representative national sample of women. *Journal of Consulting and Clinical Psychology, 61*, 984-991.

- Roth, S., Newman, E., Pelcovitz, D., van der Kolk, B., & Mandel, F. (1997). Complex PTSD in victims exposed to sexual and physical abuse. *Journal of Traumatic Stress, 10*, 539-555.
- Scarpa, A., Fikretoglu, D., Bowser, F., Hurley, J., Pappert, C., Romero, N., et al. (2002). Community violence exposure in university students: A replication and extension. *Journal of Interpersonal Violence, 17*, 253-272.
- Scheeringa, M., & Zeanah, C. (2001). A relational perspective on PTSD in early childhood. *Journal of Traumatic Stress, 14*, 799-816.
- Schnurr, P. P., & Green, B. G. (Eds.). (2004). *Trauma and health: Physical health consequences of exposure to extreme stress*. Washington, DC: American Psychological Association.
- Schore, A. (2001). The effects of early relational trauma on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal, 22*, 201-269.
- Stein, M. B., Walker, J., Anderson, G., Hazen, A., Ross, C., Eldridge, G., et al. (1996). Childhood physical and sexual abuse in patients with anxiety disorders and in a community sample. *American Journal of Psychiatry, 153*, 275-277.
- Stein, M. B., Walker, J., Hazen, A., & Forde, D. (1997). Full and partial posttraumatic stress disorder: Findings from a community survey. *American Journal of Psychiatry, 154*, 1114-1119.
- Thornberry, T., Ireland, T., & Smith, C. (2001). The importance of timing. *Development and Psychopathology, 13*, 957-979.
- Ullman, S. E., & Brecklin, L. R. (2002). Sexual assault history, PTSD, and mental health service seeking in a national sample of women. *Journal of Community Psychology, 30*, 261-279.
- van der Kolk, B., Pelcovitz, D., Roth, S., Mandel, F., McFarlane, A., & Herman, J. (1996). Dissociation, somatization, and affect dysregulation: Complexity of adaptation to trauma. *American Journal of Psychiatry, 153* (7 Festschrift Suppl.), 83-93.
- Whitfield, C., Anda, R., Dube, S., & Felitti, V. (2003). Violent childhood experiences and the risk of intimate partner violence in adults. *Journal of Interpersonal Violence, 18*, 166-186.
- Zlotnick, C., Mattia, J., & Zimmerman, M. (2001). Clinical features of survivors of sexual abuse with major depression. *Child Abuse and Neglect, 25*, 357-367.

Julian D. Ford, PhD, is an associate professor in the Department of Psychiatry at the University of Connecticut School of Medicine. His research interests include the etiology and effects on physical and mental health and treatment outcome of complex posttraumatic stress disorder.

Patricia Stockton, PhD, is a health services researcher who has conducted studies of the prevalence and treatment of mental disorders in community-based populations in both the United Kingdom and the United States. As research assistant professor in the Division of Psychosocial Research, Department of Psychiatry, Georgetown University Medical Center, her recent work has focused on studies of traumatic stress in nonclinical populations and the management of depression by community-based psychiatrists.

Stacey Kaltman is an assistant professor in the Department of Psychiatry, Georgetown University School of Medicine. She is a licensed clinical psychologist and trauma researcher. Currently, she is the co-PI of an National Institute of Mental Health-funded grant addressing the development and evaluation of a novel posttraumatic stress disorder intervention for low-income battered women.

Bonnie L. Green, PhD, is professor of psychiatry and director of research in the Department of Psychiatry at Georgetown University Medical School in Washington, DC. Her recent focus is the mental health needs of poor women with trauma histories who obtain health care in primary care settings serving low-income patients.