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NO. 7034

DISSOCIATION AND POST-TRAUMATIC STRESS DISORDER
IN WOMEN WHO HAVE EXPERIENCED TRAUMA
AND SEXUAL ASSAULT

THESIS

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

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Denton, Texas

August, 1994

Baldwin, Carol L., Dissociation and Post-traumatic Stress Disorder in Women who have Experienced Trauma and Sexual Assault. Master of Science (Clinical Psychology), August, 1994, 53 pp., 4 tables, references, 60 titles.

The relation between dissociative symptoms and post-traumatic stress disorder (PTSD) was investigated in women who had experienced trauma or sexual assault. Subjects were administered the Dissociative Experiences Scale (DES), the Sexual Experiences Scale (SES), and the PTSD Interview (PTSD-I). Subjects were grouped according to their scores on the SES and the PTSD-I. Analysis of variance revealed a relation between DES scores and PTSD symptom severity scores. Correlational analyses showed a relation between dissociative symptoms and PTSD symptom severity but not recency of trauma. Three factors from a previously published factor analysis of the DES were found to contribute to the DES scores of PTSD subjects.

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INTRODUCTION

U.S. Federal Bureau of Investigation (FBI) statistics indicate that approximately 102,555 rapes were reported in the United States in 1990 (FBI, 1992). This figure includes only forcible or attempted forcible rapes reported to law enforcement agencies, and the actual figure may be much higher. The National Crime Victimization Survey (NCVS), a survey which included an estimate of unreported as well as reported rapes, suggested that the number of rapes in 1990 was closer to 130,000 (Bureau of Justice Statistics, 1992). Foa and Riggs (1993) reported figures from the National Victim Center and Crime Victims Research and Treatment Center which estimated the number of rapes in 1992 to be 683,000. Symptoms of post-traumatic stress disorder (PTSD) are common sequelae to rape; many survivors of sexual assault have been diagnosed with acute or chronic PTSD (Foa, Olasov, & Steketee, 1987; Koss, 1990). Because of the prevalence of sexual assault in the U.S. today and the likelihood of subsequent onset of PTSD, it is important to identify PTSD symptomatology for treatment purposes. This paper will review current literature on rape-related PTSD and the psychological sequelae of sexual assault; and then propose a study to examine the presence of dissociation, a

common symptom of PTSD, in women who have experienced sexual assault.

Prevalence and Reporting of Rape

There are a number of possible reasons that the published estimates of incidence of sexual assault may be low. Rape may be underreported due to the legal non-classification of such experiences as statutory rape or rape by a spouse (Koss, 1983). The women themselves may not conceptualize a particular incident, such as date rape, coercive sexual encounter, or unwanted sexual encounter with a past sexual partner, as rape. Consequently, they may fail to report it as such (Kilpatrick, Best, Saunders, & Veronen, 1988; Koss, 1985; Miller & Marshall, 1987). The NCVS may have provided an inaccurately low estimation of rape due to methodological problems in surveying, as well as sociocultural factors associated with sexual assault. In the NCVS studies, residents of a sampling area were asked to report on members of their household who had been victims of various crimes within the past six months. Since sexual assault victims may not disclose their experiences to family members, the actual incidence of this crime is likely to be incorrectly reported. Also, since the investigator does not ask about rape unless there has been a positive response to a question about having been attacked, reports of some types of sexual assault may not be elicited. The significantly higher estimate of sexual assault for 1992 (Foa & Riggs,

1993) was taken from surveys that attempted to correct some of these methodological problems.

A recent study of over 3,000 college women reported that 27.5% of the women in the study had experienced either rape or attempted rape after the age of 14 (Koss, Gidycz, & Wisniewski, 1987). Other studies have reported that the likelihood of sexual assault sometime during a woman's lifetime ranges from 13.5% to 44% (Kilpatrick, Best, Veronen, Amick, Villeponteaux, & Ruff, 1985; Koss et al., 1987; Russell, 1982). Based upon epidemiological studies of adult women, Kilpatrick and Best (1990) estimated that at least 11.8 million of the current U.S. population of women age 18 or older (approximately 91.8 million) are sexually assaulted at some point in their lives (Resnick, Kilpatrick, & Lipovsky, 1991). They further estimated that only 4% to 15.9% of rape cases are reported to police or other authorities. Other studies (Koss, 1983; Koss et al., 1987; Koss & Oros, 1982; Miller & Marshall, 1987) have estimated that reported rapes comprise as few as 2% to 10% of actual incidence. Whatever the actual number of cases, it is clear that sexual assault is a widespread problem affecting a greater proportion of the population than is reflected in official crime statistics.

Rape-Related PTSD

Many survivors of sexual assault develop symptoms of PTSD. A recent review of the literature suggested that rape

victims constitute the largest single group of PTSD sufferers (Steketee & Foa, 1987). In a study of ten types of traumatic events, Norris (1992) reported that sexual assault produced the highest rate of PTSD symptomatology in comparison to the nine other types of trauma (e.g., robbery, physical assault, tragic death, combat, car accident, fire). Bownes, O'Gorman, and Sayers (1991) found that 70% of the women in their sample of 51 rape victims showed symptoms of PTSD at an average of nine months post-assault. Foa, Rothbaum, Riggs, and Murdock (1991) found that 94% of rape victims met DSM-III-R criteria for PTSD (excluding the one-month duration) shortly after the incident, and 47% met criteria three months later. Burge (1988) reported that 86% of victims studied in rape crisis centers were either "moderately" or "extremely" affected by PTSD symptoms.

Koss (1990) noted that the physical, cognitive, and behavioral responses of many sexual assault victims are consistent with DSM-III-R criteria for the diagnosis of PTSD. Diagnostic criteria for PTSD require the experience of a traumatic event outside the range of normal human experience following which the victim displays symptoms in the following three categories: (a) intrusive reexperiencing of the event through memories, dreams, or flashbacks; (b) persistent avoidance of stimuli associated with the event or numbing of general responsiveness; and (c) symptoms of increased autonomic arousal, such as hypervigilance,

irritability, sleep disturbance, or difficulty concentrating. These symptoms must be present for at least one month in order to warrant a diagnosis of PTSD.

The traditional focus of PTSD assessment and research has been on combat-related PTSD, particularly in Vietnam veterans. However, increasing attention has been paid to the occurrence of PTSD as a result of such events as natural disasters, large-scale accidents, and human-caused violence such as terrorism or sexual assault. A nation-wide survey estimated that the prevalence rate of PTSD is 1% in the total U.S. population and 3.5% in civilians who have been exposed to physical attack (Helzer, Robins, & McEvoy, 1987).

Recent research has found that sexual assault survivors experience many of the same symptoms of PTSD as do Vietnam veterans, such as feelings of numbness and cycles of intrusive recollections and denial (Dye & Roth, 1991). Dahl (1991) found that the acute psychological response to rape within the first two weeks was consistent with the pattern of a general post-traumatic reaction lacking only the criterion of duration necessary for a formal diagnosis. In their review of the literature on Vietnam veterans and rape survivors, Dye and Roth (1991) report similarities between these groups in both the psychological experience of the trauma itself and the development of post-traumatic symptom patterns. Specific feelings common to these groups are a sense of violation of pre-existing schemata of the world as

benign and the self as good, a sense of alienation from others, and an absence of social and institutional support.

Rape differs from many other types of events associated with PTSD in that an intentional act by another human being is the source of trauma (Bownes et al., 1991). Studies comparing types of criminal victimization have found that offenses involving body contact tend to be more traumatic than non-assaultive offenses such as theft or robbery (Hanson, 1990; Kilpatrick et al., 1985; Resick, 1987; Wirtz & Harrell, 1987). Responses that seem more prevalent in victims of sexual assault than in victims of accidents or disasters are shame, guilt, and suicidal ideation (Dahl, 1991), as well as self-blame, dehumanization, and reduced capacity for intimacy (Moscarello, 1990). The beliefs most negatively affected by sexual assault are personal invulnerability, the perception of the world as meaningful, and a positive sense of self (Moscarello, 1990).

The etiology of PTSD following rape appears more complicated than its original formulation as a straightforward reaction to a life-threatening situation (Bownes et al., 1991; Dahl, 1991). Moscarello's (1990) review of the sexual assault literature identifies three general factors that appear to influence the occurrence and severity of PTSD response to rape: (a) characteristics of the assault situation, (b) personal characteristics of the victim, and (c) the victim's social support network.

Characteristics of the assault situation may be affected by the psychological characteristics of the perpetrator as well as by the nature of the attack itself. However, evidence regarding the effect of assault characteristics is inconclusive, and conflicting findings are common (Hanson, 1990). Level of force, brutality, and use of weapons have been associated with elevated PTSD symptoms in some analyses but not in others (Bownes et al., 1991). The most consistent finding has been that victims of completed rape fare worse than victims of attempted rape (Hanson, 1990). In terms of victim response, there is some indication that "blitz attacks" (involving sudden surprise) produce intrusive and avoidance symptoms, while "confidence attacks" (involving previous acquaintance and violation of trust) produce self-blame, guilt, shame, and loss of confidence (Moscarello, 1990).

Studies of the relations between specific aspects of the rape experience and immediate or long-term psychological trauma provide conflicting data on factors such as the victim's pre-assault functioning, age, psychological treatment history, physical health, and socioeconomic status (Bownes et al., 1991). Factors that appear to have some correlation with severity of PTSD response include concurrent life stressors, a history of sexual violation, and previous severe psychiatric symptoms (Moscarello, 1990). However, chronic symptoms of fear and anxiety following

assault have been found in women with no prior history of mental or emotional disturbance. It is not uncommon for rape trauma to have a major impact on the lives of women with no pre-existing psychopathology (Bownes et al., 1991).

The presence of a strong social support network appears important to the resolution of rape trauma. Nadelson (1989) found a relation between social support and reduced depression following rape. Moscarello (1990) found that the social support system is the most important single predictor of successful integration of the traumatic experience.

Post-traumatic symptoms often appear immediately after sexual assault and the resulting psychological trauma may continue for years (Moscarello, 1990). Hanson (1990) reports that the immediate impact of rape is very distressing to nearly all victims and that about 25% of women raped years earlier continue to experience negative effects. The decline of symptoms over time varies across individuals, although general symptom elevation tends to subside by the fourth month (Bownes et al., 1991). However, follow-up and retrospective studies show that a proportion of rape victims remain symptomatic for years following the assault, and anxiety reactions may become chronic in nature (Bownes et al., 1991). Both short- and long-term clinical repercussions of sexual assault can contribute to the development of eating disorders, substance abuse, and sleep disturbances, as well as PTSD (Nadelson, 1989).

Even though some authors have pointed out the seemingly unique aspects of rape trauma (e.g., Moscarello, 1990), PTSD following sexual assault is generally similar to PTSD which follows other types of trauma. It is now commonly accepted that PTSD can arise in response to a large variety of severe life stressors (Wolfe & Keane, 1990). Kolb (1990) reported that clinical experience with both civilian and military PTSD sufferers suggests similar long-term psychopathology, regardless of the etiology of the traumatic experience.

Dissociation

One of the core features of PTSD is the presence of dissociative phenomena. Dissociation can be defined as a "lack of the normal integration of thoughts, feelings, and experiences into the stream of consciousness and memory" (Bernstein & Putnam, 1986). Pierre Janet articulated most of the important concepts in dissociation at the end of the nineteenth century, as well as making the connection between traumatic experiences and dissociative psychopathology (Putnam, 1989). In contrast to modern views of dissociation, Janet believed it was a phenomenon experienced only in certain psychiatric disorders and was absent in normal individuals (Putnam, 1989). However, Janet defined dissociation in a narrow and precise manner such that it referred to a pathological separation between ideas or behaviors and consciousness, and always involved the presence of amnesia (Putnam, 1989). Defined more broadly,

dissociation has come to be viewed as a process existing on a continuum from everyday normal experiences such as daydreaming or "spacing out" to psychiatric disorders such as psychogenic fugue or multiple personality disorder (MPD; Bernstein & Putnam, 1986).

Clinical definitions of dissociation have focused on distinguishing between normal and abnormal dissociative experiences (Bernstein & Putnam, 1986; Putnam, 1989). Putnam named three principles that can be used to differentiate pathological from normal dissociation. First, there is an experience of a significant alteration in the individual's sense of identity (e.g., psychogenic amnesia, MPD, depersonalization syndrome, flashbacks). Second, the individual experiences memory disturbances, such as amnesia for events that took place during the dissociated state. Third, dissociative symptoms and disorders appear closely linked to traumatic experiences, and are considered by some to be part of an adaptive process that allows the individual to continue to function. Ludwig (1983) lists seven major functions of dissociation:

This mechanism has great individual and species survival value. Under certain conditions, it serves to facilitate seven major functions: (1) the automatization of certain behaviors, (2) efficiency and economy of effort, (3) the resolution of irreconcilable conflicts, (4) escape

from the constraints of reality, (5) the isolation of catastrophic experiences, (6) the cathartic discharge of certain feelings, and (7) the enhancement of herd sense (e.g. the submersion of the individual ego for the group identity, greater suggestibility, etc.). (p. 93)

An additional function of dissociation can be analgesia, or the ability to ignore pain (Putnam, 1989).

Dissociation appears to involve several psychological mechanisms. There have been three factor analytic studies published on dissociation measures (Fischer & Elnitsky, 1990; Ray, June, Turaj, & Lundy, 1992; Ross, Joshi, & Currie, 1991) that shed some light on the components of the dissociative experience. Ross et al. (1991) investigated the Dissociative Experiences Scale (DES), a screening device for detecting the presence of dissociative phenomena (Bernstein & Putnam, 1986). They found the DES to have three factors (Absorption-Imaginative Involvement, Activities of Dissociated States, and Depersonalization-Derealization), which accounted for 47.1% of the variance. Ross and his colleagues suggested that factor 1 (Absorption-Imaginative Involvement) is comprised of benign experiences common to most individuals. In contrast, factor 2 (Activities of Dissociated States) and factor 3 (Depersonalization-Derealization) are comprised of experiences rare in the general population, with factor 2

also tapping secondary features of MPD. Ross et al. suggested that factors 2 and 3, therefore, are likely to predict dissociative disorders, while factor 2 may be able to differentiate MPD from other dissociative disorders.

Sanders (1986) developed the Perceptual Alteration Scale to measure perceptual experiences related to dissociation and binge eating. She proposed three factors (affect, control, and cognition) as dimensions underlying the dissociative experience. In their investigation of the PAS and the DES in a normal population, Fischer & Elnitsky (1990) found that neither scale measured these three factors. Instead, one factor emerged for each scale, a dimension of cognition-control on the DES and affect-control on the PAS.

Riley (1986) developed the Questionnaire of Experiences of Dissociation (QED), a true-false format measure of dissociation, and tested it in the general population. Ray, June, Turaj, & Lundy (1992) investigated research versions of the DES (RDES) and the QED (RQED) in a college population and found that the RDES produced seven factors and the RQED six.

The DES was chosen as the instrument for this study for several reasons. It has good psychometric properties and has been validated in both clinical and nonclinical populations. It appears to measure a variety of

dissociative experiences and can discriminate dissociative disorders from other disorders in clinical groups.

A consistent finding in the PTSD literature supports the notion that a significant number of individuals experience dissociative phenomena during and/or shortly after a traumatic episode (Spiegel & Cardena, 1990). Spiegel and Cardena suggested that dissociative phenomena, especially depersonalization and derealization, may help the individual maintain a sense of detachment in the face of overwhelming physical and emotional helplessness. Rose (1986) reported that a common experience of women who had been raped was a sense of floating above their own bodies, feeling sorry for the person undergoing the assault. Thus, dissociative phenomena appear to be involved in the response to rape-related trauma. However, no empirical studies have been published that examine the presence of dissociation in women who have been sexually assaulted. This study was designed to investigate the nature of dissociation and PTSD in women who have experienced sexual assault and other types of trauma-producing events.

The Present Study

Purpose

The purpose of this study was to investigate the relation of dissociative symptoms to PTSD symptomatology in victims of sexual assault and other non-combat-related trauma. Although sexual assault victims characteristically

show symptoms of PTSD, including dissociative symptoms, no published studies have investigated the presence of dissociation in a sexual assault population.

Dissociative symptoms appear to contribute substantially to the psychopathology of PTSD (Putnam, 1989). Dissociative symptoms may be a marker for sexual assault-related PTSD, and their presence may help identify cases of "hidden" or unreported rape. Although PTSD symptoms appear to decline over time, a substantial number of women remain symptomatic years later. If a reliable means of screening for sexual assault-related PTSD can be developed, it may be clinically useful for identifying cases that otherwise might go untreated.

The Dissociative Experiences Scale (DES) might be such a screening device. The DES appears to tap several factors involved in dissociation (Ross et al., 1991). Using the overall DES score, this study investigated the dissociative elements of PTSD and their relation to general PTSD symptom severity. This study also investigated the previously identified factors of the DES for their ability to detect severity of PTSD symptoms and to differentiate non-PTSD from PTSD subjects in a rape-related population.

Hypotheses

Since dissociation is thought to be a primary component of PTSD (Putnam, 1989), subjects with PTSD were hypothesized to have higher scores on the DES than subjects without PTSD

(hypothesis 1a). This was expected whether the PTSD was the result of sexual assault or some other type of trauma.

The most common symptom pattern following sexual assault is that symptoms are strongest shortly after the assault, diminishing gradually over a period of months or years (Hanson, 1990). Bownes et al. (1991) reported that general symptom elevation tends to drop by the fourth month. In their review of the sexual assault literature, Steketee and Foa (1987) found evidence that, with the exception of fear and anxiety, most PTSD symptoms dissipate within three to four months. Most victims show intense distress immediately after the assault, but, in the majority of women (75%-80%), symptoms appear to diminish by one year post-attack (Hanson, 1990). Another, less common, symptom pattern is often present in victims of prolonged, severe stress. These individuals exhibit few symptoms immediately after escape from the trauma, but are at risk for delayed symptom presentation (Hanson, 1990). Because the first symptom pattern appears far more prevalent, the DES score was hypothesized to be positively related to recency of trauma, with the more recently traumatized individuals showing higher DES scores (hypothesis 1b).

Because of the likely pattern of symptom reduction over time, recency of trauma is a potentially confounding variable in attempting to establish the relation between dissociative symptoms and sexual assault. However, with

recency of trauma statistically controlled, DES scores were still hypothesized to be higher for PTSD subjects than for non-PTSD subjects, with no differences predicted between the sexual assault group and other-trauma group (hypothesis 1c).

To receive a diagnosis of PTSD, symptoms must be present for a minimum of one month. However, sexual assault victims often exhibit PTSD symptoms without satisfying this criterion. Since both PTSD symptomatology and dissociation are conceptualized as existing on continua of severity, it was hypothesized that there would be a positive relation between severity of PTSD symptoms and DES scores, whether or not the subject satisfied all PTSD criteria (hypothesis 2).

In their factor analysis of the DES, Ross and his colleagues (1991) suggested that DES scores in the general population would be primarily made up of items on factor 1. Following this logic, hypothesis 3a predicted that DES scores of the non-PTSD group would be comprised of relatively more factor 1 (Absorption-Imaginative Involvement) experiences than factor 2 or factor 3 experiences (hypothesis 3a).

Hypothesis 3b follows similar logic to that of Hypothesis 3a. Ross et al. suggested that factor 3 scores might be able to predict dissociative disorders, while factor 2 scores might predict the presence of MPD. Thus, DES scores of the PTSD group were hypothesized to be characterized by relatively more factor 3

(Depersonalization-Derealization) experiences than DES scores of the non-PTSD group.

It was also expected that the most severe cases of PTSD would exhibit more severe dissociative symptoms. Thus, the severity of symptoms in PTSD subjects was expected to be positively related to factor 2 (Activities of Dissociated States) experiences (hypothesis 4).

METHOD

Subjects

Subjects were recruited from local survivor groups, private therapists, crisis centers for sexual assault victims and battered women, undergraduate students enrolled at the University of North Texas, and the general public. There were 172 subjects in all. Data from two subjects were deleted due to missing information, leaving a total of 170. Data from the PTSD-I were missing on 28 subjects so these subjects were eliminated from analyses using that measure. The majority of subjects were undergraduate college students, as recruitment from other sources was relatively unsuccessful. One hundred sixty-three female undergraduate psychology students and seven women from the community participated on a strictly voluntary basis. Each student received extra course credit for participation.

The study included four groups consisting of (1) women with current PTSD who have been sexually assaulted, (2) women without PTSD who have been sexually assaulted, (3)

women who have not been sexually assaulted but have PTSD from some other trauma, and (4) women who have neither PTSD nor a history of trauma (see Table 1). Since the number of subjects in the group with PTSD from non-sexual trauma was low ($n = 8$) and there were no significant differences on demographic data between this group and the group of subjects with sexually-related PTSD ($F = .21$, $df = 1, 27$, $p > .65$ for age; $F = 1.4$, $df = 1, 27$, $p > .25$ for DES scores; $F = .007$, $df = 1, 27$, $p > .93$ for PTSD severity), the two groups were combined. There were 29 subjects in this combined group, all at least 18 years of age.

Table 1

Demographic Characteristics of Subjects

	Group 1	Group 2	Group 3	Overall
N	35	78	29	142
Age (in years)				
<u>M</u>	20.0	23.9	27.6	24.0
<u>SD</u>	2.8	9.5	9.8	8.6
Youngest	18	18	18	18
Oldest	29	76	47	76
Race				
Caucasian	27(77)	67(86)	25(86)	119(84)
Hispanic	3(9)	5(6)	3(10)	11(7)

(table continues)

	Group 1	Group 2	Group 3	Overall
African-American	0	4 (5)	1 (4)	5 (4)
Asian	3 (9)	2 (3)	0	5 (4)
Not indicated	2 (5)	0	0	2 (1)
Undergraduate	35 (100)	75 (96)	25 (86)	135 (95)
Non-undergraduate	0	3 (4)	4 (14)	7 (5)

Note. Group 1 = no trauma and no PTSD; Group 2 = history of trauma but no current PTSD; Group 3 = trauma and current PTSD; values for categorical variables are raw frequencies with percentages in parentheses.

Instruments

Four instruments were administered to all subjects. These included the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), the PTSD Interview (PTSD-I; Watson, Juba, Manifold, Kucala, & Anderson, 1991), the Sexual Experiences Survey (SES; Koss & Oros, 1982), and a demographics questionnaire.

The DES was developed by Bernstein and Putnam (1986) as a screening device for measuring dissociation. The DES is a 28-item self-report questionnaire containing items that tap a range of dissociative experiences from normal to abnormal. Items are answered by marking a 100-millimeter line to indicate the percentage of time that a particular experience

happens to the respondent. Items were developed from clinical interview data, memory-loss scales, and consultation with experts on dissociation. The DES has a test-retest coefficient of .84 and split-half coefficients ranging from .71 to .96 across different diagnostic categories (Bernstein & Putnam, 1986). Both normal and clinical groups show the leptokurtic distribution typical of dissociative phenomena (Putnam, 1989). The DES has been found to differentiate MPD from schizophrenia and panic disorder (Ross, Heber, Norton, & Anderson, 1989) and to discriminate subjects with MPD from other diagnostic groups and normal control subjects (Bernstein & Putnam, 1986; Ross, Anderson, Fleisher, & Norton, 1991; Ross, Norton, & Anderson, 1988).

The DES has also been investigated in the general population (Ross, Joshi, & Currie, 1990; Ross et al., 1991). In a random sample of over 1000 non-clinical adults, Ross et al. (1990) found that scale scores were not influenced by gender, income, employment status, education, birth place, or religious affiliation, although dissociative experiences tended to decline with age. The mean DES score for this group was 10.8. Dissociative experiences were common in the general population, with 5.0% of subjects scoring above 30 on the DES, 8.4% above 25, and 12.8% above 20, inclusive. Scores above 20 are indicative of a substantial number of dissociative experiences in a person's life in non-clinical

populations. Clinical studies of the DES suggest that scores above 30 are associated with a high likelihood of PTSD or MPD (Ross et al., 1991; Ross et al., 1990).

Several studies have provided further validation of the DES (Ensink & Otterloo, 1989; Frischholz et al., 1990; Ross et al., 1988). Studies of the DES on clinical groups include geriatric patients (Ross, Ryan, Anderson, Ross, & Hardy, 1989), borderline and MPD patients (Fink & Golinkoff, 1990), eating disorder patients (Demitrack, Putnam, Brewerton, Brandt, & Gold, 1990), patients with eating disorders, panic disorders, and schizophrenia (Ross et al., 1989), and Vietnam veterans with PTSD (Branscomb, 1991). Other DES studies have investigated males and females with MPD (Loewenstein & Putnam, 1990), somatic symptoms in MPD and multiple sclerosis patients (Ross, Fast, Anderson, Auty, & Todd, 1990), dissociative experiences and aggression in psychiatric inpatients (Quimby & Putnam, 1991), traumatic childhood memories (Sanders, McRoberts, & Tollefson, 1989), normal adults who have psychic experiences (Richards, 1991), and dissociation in alternative healers (Heber, Fleisher, Ross, & Stanwick, 1989).

The PTSD-I was developed by Watson et al. (1991) based upon DSM-III-R criteria. This interview and rating scale provides a means of establishing the presence or absence of PTSD, as well as quantifying the severity of PTSD symptomatology and establishing the frequency and recency of

the traumatic experience(s). The instrument appears reliable, yielding a test-retest reliability coefficient of .95 and an alpha internal consistency coefficient of .92 (Watson et al., 1991). Validity of the PTSD-I was supported by comparing it to the National Institute of Mental Health Diagnostic Interview Schedule (DIS Version III-A). The calculated biserial correlation between these two interviews for a stress disorder diagnosis was .94.

Several probe questions were added to the PTSD interview in the present study. These probes were included to provide for the possibility that a subject would indicate more than one traumatic experience. Also, if the person did not indicate an incident judged to be a clinical trauma, the interview was completed by asking for the "worst remembered experience." This was done in order to generate PTSD symptom data on control subjects.

The SES was developed by Koss and Oros (1982) to identify individuals who have experienced sexual aggression or victimization. It consists of twelve questions concerning sexual acts or intercourse involving varying degrees of threat, coercion, or actual physical force. One study found an internal consistency (Cronbach's alpha) of .74 for women subjects (Koss & Gidycz, 1985). Koss (1985) found a test-retest reliability coefficient of .73 ($p < .001$).

The demographics questionnaire (see Appendix B) was used to acquire information not obtained in the other measures. Among other things, questions solicited information on age, race, SES, and the nature of any past sexual assault.

Procedure

Subjects were solicited in several ways. Announcements were posted at the University of North Texas campus and at a life planning service center. Therapists at crisis centers and facilitators of therapy groups were asked to distribute a written description of the study to clients. Announcements were made in undergraduate psychology classes and students were offered extra credit. Since the majority of the first group of subjects fell into the control group, a prescreening measure was given in several large classes to develop a list from which potential subjects for the PTSD groups could later be called. This prescreening measure was the SES with two additional questions about possible traumatic experiences. Although this procedure generated subjects for the desired groups, it also engendered a self-selection process through which traumatized individuals may have chosen not to participate in the study.

Subjects were asked to read and complete an informed consent form (see Appendix A) before administration of the measures. All subjects gave written consent and each subject was provided with a copy of the consent form, which

contained referral information in case participants desired psychological services.

The DES was administered first, followed by the SES and the demographics questionnaire. These three instruments are self-report measures. The PTSD-I was then administered by the investigator or a trained graduate student. All measures were completed in one session. Before leaving, the participant was given a debriefing interview to discuss any aspects of the session that might have elicited distress. Included on the consent form, a copy of which was given to the subject, was a list of referral sources for psychological services, including counseling and support groups.

To protect confidentiality, all subjects were assigned a code number. Demographic and SES data were coded numerically. All SES questions were coded yes or no. DES data were coded by scores on individual questions and the overall average score was calculated. Average scores on the three factors from the Ross et al. (1991) study were calculated, as well as the ratio of each factor score to the overall DES score. On the PTSD-I, presence or absence of trauma was scored according to clinical judgment. If there was a question regarding presence or absence of trauma, this was discussed among four researchers and determined by group consensus. PTSD-I symptom severity scores were derived from

17 of the structured-interview questions which were rated using a Likert-type scale ranging from zero to seven.

RESULTS

Hypothesis 1a predicted that subjects with PTSD would have higher scores on the DES than subjects without PTSD, regardless of the etiology of the trauma. Since the number of subjects with current PTSD from non-sexual trauma was low ($n = 8$), it was not possible to reliably compare these two groups, and the second portion of the hypothesis was not tested. For the analysis, these subjects were combined with subjects who had current PTSD from sexually-related trauma ($n = 21$) for a total of 29 subjects. This group was then compared with the two group of subjects who did not have PTSD (no trauma, no PTSD; trauma, but no PTSD).

A oneway analysis of variance was performed with the DES as the dependent variable and group membership as the independent variable. A group effect was found ($F = 4.65$, $df = 2, 139$, $p < .0111$). Using a least-significant difference (LSD) procedure for multiple comparisons, a significant difference between Group 1 and Group 3 ($p < .05$) was found. A significant linear trend was found ($F = 9.2$, $df 1, 139$, $p < .0028$), with Group 2 falling approximately halfway between Groups 1 and 3. Based on this finding, post hoc comparisons were made between Groups 1 and 2 ($F = 3.79$, $df = 1, 111$, $p < .054$) and Groups 2 and 3 ($F = 2.79$, $df 1,$

105, $p < .097$) but the latter difference did not reach a critical significance level. Results showed that subjects with current PTSD scored highest on the DES ($M = 18.48$). Subjects who had a past history of trauma, but whose PTSD symptoms did not meet DSM-III-R criteria at the time of the study, scored lower than subjects with current PTSD ($M = 14.00$), but higher than subjects with no history of trauma or PTSD ($M = 9.77$). Means and standard deviations for each group are presented in Table 2.

Table 2

Dissociative Experiences Scale (DES) Scores and PTSD-Interview (PTSD-I) Scores for PTSD and non-PTSD subjects (N=142)

	N	<u>DES Score</u>		<u>PTSD-I Score</u>	
		<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Group 1	35	9.8 ^a	7.8	37.7 ^c	15.3
Group 2	78	14.0 ^{ab}	11.7	52.0 ^d	16.7
Group 3	29	18.5 ^b	13.9	77.0 ^e	15.6

Note. Group 1 = no trauma and no PTSD; Group 2 = trauma with no PTSD; Group 3 = trauma and PTSD; means with common superscripts are not significantly different ($p < .05$).

For more information, a post hoc oneway analysis of variance was performed using severity of trauma as the dependent variable and group membership as the independent variable. A significant group effect was found ($F = 48.12$, $df = 2, 139$, $p < .0001$) and all three groups were significantly different from one another at the $p < .05$ level (see Table 2).

Recency of trauma was considered to be a possible confounding variable in elevation of DES scores. To test this hypothesis, a Pearson product moment correlation was calculated between overall DES score and recency of trauma (in months). A one-tailed test of significance was used. This was followed up with correlations by criterion group to investigate possible group differences on this variable. The correlation between DES scores and recency of trauma was $-.0155$ ($p < .43$). Follow-up correlations by criterion group revealed no significant correlations regardless of group membership ($r = .0167$, $p < .44$ for the trauma with no PTSD group; $r = -.0211$, $p < .46$ for the PTSD group). Thus, there appears to be no correlation between severity of dissociative symptoms and time elapsed since the traumatizing experience.

Since recency of trauma was thought to be a possible confounding variable in DES scores, recency of trauma was covaried in an analysis of covariance with DES scores as the dependent variable and group membership as the independent

variable. Mean DES scores when time since trauma was controlled did not differ significantly from mean DES scores when this variable was not controlled ($\underline{M} = 9.7$, $\underline{M} = 14.0$, $\underline{M} = 18.5$, for Groups 1, 2, and 3 respectively). Thus it appears that months since trauma was not a significant covariate ($\underline{F} = .303$, $df = 1, 137$, $\underline{p} < .583$). This result is consistent with the finding that there was no significant correlation between DES scores and recency of trauma.

Hypothesis 2, that there would be a positive relation between severity of PTSD symptoms and DES scores, whether or not the subject satisfied all PTSD criteria, was tested using a Pearson product moment correlation between PTSD-I severity scores and overall DES scores and a one-tailed test of significance. A significant positive correlation of .27 ($\underline{p} < .0005$) was found between DES and PTSD-I severity scores. Follow-up correlations by criterion group revealed no significant correlations based on group membership ($\underline{r} = .2104$, $\underline{p} < .113$ for controls; $\underline{r} = .1250$, $\underline{p} < .138$ for the non-PTSD group; $\underline{r} = .1606$, $\underline{p} < .203$ for the PTSD group).

Factor scores were computed for each of the DES factors identified by Ross and his colleagues (see Table 3). However, in order to address hypotheses 3a and 3b, these values had to be converted into ratios of each factor score to the overall DES score (see Table 4).

Table 3

Dissociative Experiences Scale (DES) Factor Scores to
Overall DES Scores

	N	Factor 1		Factor 2		Factor 3	
		<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
PTSD	29	29.0	20.4	4.9	7.2	14.3	14.9
no PTSD	114	21.2	16.0	3.3	6.1	8.0	9.8
overall population	143	22.8	17.1	3.7	6.3	9.3	11.2

Note. Factor 1 = Absorbtion-Imaginative Involvement; Factor 2 = Activities of Dissociated States; Factor 3 = Depersonalization-Derealization.

The relation of DES scores to PTSD-I severity scores was examined in terms of the previously reported factors of the DES (Ross et al., 1991). Hypothesis 3a predicted that DES scores of non-PTSD subjects, more so than for PTSD subjects, would be based more upon factor 1 (Absorbtion-Imaginative Involvement) items than factor 2 or factor 3 items. This hypothesis was tested using an analysis of variance with the ratio of factor 1 to the DES as the dependent variable and PTSD as the independent variable. No main effect of PTSD on the ratio of factor 1 scores was found ($F = 1.79$, $df = 1, 141$, $p > .15$). In fact, factor 1

accounted for a majority of the elevation of DES scores in both non-PTSD ($\underline{M} = .70$) and PTSD ($\underline{M} = .73$) subjects.

Table 4

Dissociative Experiences Scale (DES) Factor Score Ratios to Overall DES Scores

	N	RFactor 1		RFactor 2		RFactor 3	
		\underline{M}	\underline{SD}	\underline{M}	\underline{SD}	\underline{M}	\underline{SD}
PTSD	29	.70	.12	.03	.03	.14	.07
no PTSD	114	.73	.12	.03	.03	.12	.10
overall population	143	.72	.12	.03	.03	.13	.10

Note. RFactor 1 = Absorbtion-Imaginative Involvement ratio; RFactor 2 = Activities of Dissociated States ratio; RFactor 3 = Depersonalization-Derealization ratio.

Hypothesis 3b, that DES scores would be relatively higher on factor 3 (Depersonalization-Derealization) for PTSD subjects, was tested using an analysis of variance with the ratio of factor 3 to the DES as the dependent variable and PTSD as the independent variable. No significant difference was found in mean ratios of factor 3 to overall DES scores between PTSD ($\underline{M} = .14$) and non-PTSD ($\underline{M} = .12$) subjects.

Finally, hypothesis 4 predicted that DES factor 2 (Activities of Dissociated States) scores would be higher in subjects with higher severity scores on the PTSD-I. This hypothesis was tested using a Pearson product moment correlation between PTSD-I severity scores and DES factor 2 scores. A one-tailed test of significance was used. A significant positive correlation ($r = .1809$, $p < .016$) was found between DES factor 2 and PTSD-I severity scores.

DISCUSSION

The present study investigated post-traumatic stress symptomatology in women who had experienced trauma from both sexual assault and sexually-unrelated trauma. PTSD symptomatology was investigated in terms of severity of symptoms in sub-threshold subjects as well subjects who met full DSM-III-R PTSD criteria. Results provide support for the use of the DES as a measure of dissociative symptoms in this population, whether or not subjects qualified for a full diagnosis of post-traumatic stress disorder.

The DES appears sensitive to PTSD symptomatology. Results from the first hypothesis showed that subjects with current PTSD scored higher on the DES than subjects without PTSD, as predicted. Subjects who had a past history of trauma, but did not meet full PTSD criteria at the time of the study, scored higher than subjects with no history of trauma or PTSD. Mean DES scores for subjects who had never experienced trauma ($M = 9.8$) closely approximated those of

the general population ($\bar{M} = 10.8$; Ross et al., 1990). Mean DES scores for subjects with a history of trauma but who did not qualify for PTSD diagnosis at the time of the study were higher ($\bar{M} = 14.0$) than never-traumatized subjects, but lower than subjects who met criteria for current PTSD ($\bar{M} = 18.4$). It appears that the DES is able to discriminate levels of dissociative symptoms related to PTSD in these three groups. Because the LSD procedure produced ranges that were only slightly overlapping, it is possible that lack of power, given the modest sample size, is all that prevented demonstration of differences in groups.

The experience of traumatic stress appears to engender dissociative symptoms that may remain over long periods of time. No relation was found between time since trauma and level of dissociation, which was unexpected. It is possible that this relation would have been more observable in a group of relatively recently traumatized individuals, whose experience of trauma had been within six month to one year. However, it also lends support to studies which have reported long-lasting negative effects of the experience of trauma (Moscarello, 1990; Bownes et al., 1991). In addition, controlling recency of trauma did not significantly affect the level of dissociation in these subjects. Thus, recency of trauma does not appear to have any relation to elevation of dissociative symptoms on the DES. The results of this study may indicate that there is a

residual dissociative effect of PTSD that remains over time.

The DES appears useful as a screening device for dissociative elements of PTSD. In this study, subjects with current PTSD had slightly lower mean scores on the DES ($\bar{M} = 18.4$) than what is considered to be the cut-off score for suspecting the presence of dissociative experiences in non-clinical populations ($\bar{M} > 20$) (Ross et al., 1990). Mean scores of subjects with current PTSD were farther below the cut-off score of 30 chosen by Ross et al. to distinguish clinical subjects with PTSD or dissociative disorders. This difference may be attributable to the non-clinical nature of this population.

A moderate correlation was found between severity of PTSD symptoms and elevations in DES scores. This correlation was similar across the three groups, indicating that no one group accounted for the relation between PTSD symptom severity and elevated DES scores.

Results from this study lend support to the notion that the DES absorption factor (factor 1) is a common element of dissociative experiences, whether or not there is a history of trauma or PTSD. This supports the expectation that factor 1 is unlikely to be a powerful predictor of dissociative disorders (Ross et al., 1991). It is possible that this factor represents a sort of baseline dissociation common to individuals from a Western European cultural background, regardless of specific life experiences. This

baseline level of factor 1 seems to exist whether or not the more disruptive dissociative elements represented by factor 2 (Activities of Dissociated States) and factor 3 (Depersonalization-Derealization) are present.

Neither factor 2 nor factor 3 differentiated between PTSD and non-PTSD subjects, although there was a small linear trend in the predicted direction (see Table 4). Although factor 2 (Activities of Dissociated States) did not account for a very large portion of the DES score, it appears reliably and measurably related to severity of trauma in PTSD subjects.

In summary, the DES appears useful as a measure of dissociative symptoms in a civilian population of traumatized women, whether or not subjects qualified for a full diagnosis of post-traumatic stress disorder. There appeared to be no relation between time elapsed since the traumatic event and presence of dissociative symptoms. Thus it is possible that the experience of traumatic stress engenders dissociative symptoms whose residual effects may remain over long periods of time. The DES appears able to discriminate a moderate relation between dissociative symptoms and PTSD symptom severity.

There were certain limitations to this study. Collecting volunteer participants in this population was difficult and there appears to have been a self-selection process. Since some of the potential subjects were

prescreened and then contacted for further study, some of the most traumatized individuals may have chosen not to participate. The study contained a much larger sample of subjects without PTSD than subjects with current PTSD.

The PTSD-I has certain limitations for use with this population. The PTSD-I was developed using combat-related trauma, a known and discrete type of incident. If the presence of trauma is not known, as with these subjects, it is difficult to corroborate the self-report. Also, if the trauma is ongoing or repetitive, the PTSD-I may not be designed appropriately to tap this. Eliciting traumatic memories by asking about worst memories may not be effective, as there are a variety of reasons why participants may avoid mentioning them (e.g., a person may be in denial or may not feel comfortable in the research situation). Another problem has to do with people who have a history of multiple traumas, as it becomes difficult to be sure which incident is responsible for the reported level of symptoms.

A conceptual issue has to do with the "unusualness" criterion for PTSD in the DSM-III-R. As conceptualized at present, PTSD requires the presence of an event outside the usual range of human experience. However, some experiences reported in this study that elicited PTSD symptoms did not seem to be especially unusual (e.g., automobile accident, death of family member). Under present criteria, a

diagnosis of Adjustment Disorder might be given, even though characteristic PTSD cluster symptoms were present. One problem encountered in this study was whether or not to classify such events as bona fide DSM-III-R traumas.

The DES is face valid and could be subject to malingering or defensiveness. Another possible limitation of the DES may have to do with the ability of people to accurately estimate the percentage of time they engage in certain behaviors.

There are several directions for future research. This study appears to confirm the usefulness of the DES as a screening device for PTSD (Bernstein & Putnam, 1986) in traumatized individuals in the general population as well as in clinical populations. Because it is able to discriminate levels of dissociation, it may identify people who do not show full criteria for PTSD diagnosis, but for whom treatment of PTSD would be appropriate. It may be able to help detect the presence of dissociative elements present as a result of childhood or adult sexual abuse. Research on the DES should be extended to child and adolescent populations, as well as other traumatized groups in the general population.

Further investigation into the dissociative elements of PTSD is indicated. Present conceptualizations of PTSD have focused more on anxiety symptoms (Classen, Koopman, & Spiegel, 1993) than on dissociative symptoms and exploration

of dissociation in PTSD may help resolve classification issues for PTSD in future DSM revisions. The conceptualization of PTSD as a response to long-term abuse is becoming a focus of research (Herman, 1992) and the DES might be useful in investigating this relation. The DES might also be used to study the relation of dissociation to PTSD in non-Western cultures.

APPENDIX A
CONSENT FORM

Consent Form

I, _____, agree to participate in a study of women who have been sexually assaulted and who have not been sexually assaulted. The purpose of the study is to evaluate the adjustment difficulties experienced by women who have been sexually assaulted. My participation involves risk only to the extent that remembering and talking about my sexual experiences might be uncomfortable. It is hoped that participation in this study might provide information useful to helping women recover from sexual assault. I further understand that participation, or declining to participate, will not in any way affect my eligibility for any services.

As a participant, I understand that my involvement in the study will involve answering several questionnaires. Some of these questions will be about sexual experiences, some questions will be about recent negative experiences. Other questions will be about my family and background. Participation should take approximately 1 1/2 to 2 hours. No follow-up interviews will be carried out without my further consent.

My identity as a participant in this project will be held strictly confidential by the investigators. Although a general report of the study's findings may be published, no report, either written or oral, will contain information by which I might be personally identified.

I will be given a copy of this consent form. The investigator will answer any questions I have during participation. In the event questions arise after my initial participation, I may contact the following individual:

Kenneth W. Sewell, Ph.D.
Department of Psychology
University of North Texas
Denton, Texas 76203
(817) 565-2671

If I experience any stress or need to talk to someone about a troubling experience or sexual assault, I may contact the following centers:

- 1) University of North Texas Psychology Clinic
Terrill Hall
University of North Texas
Denton, Texas 76203
(817) 565-2631
- 2) University of North Texas Counseling and Testing Center
Union Building, Room 321
(817) 565-2735
- 3) Denton County Friends of the Family
Crisis Line (817)-382-7273
Metro (214)-219-2829

I understand that participation is voluntary and that I may decline to participate, or discontinue participation at any time, without penalty or loss of any benefits to which I am otherwise entitled.

(Date)

(Signature/Telephone of Participant)

(Date)

(Signature of Investigator)

APPENDIX B
DEMOGRAPHIC INFORMATION

Demographic Information I.D.#

1. How old are you now?
2. What is your race?
3. What is your current (or most recent) occupation?
4. What was your average (approximate) personal income during the past 5 years?
5. What was your average (approximate) FAMILY income during the past 5 years?
6. What is your current marital status?
7. Have you ever been married?
8. How many dates do you typically have per week?
9. How many men do you typically date per week?
10. Have you ever been a victim of a crime?
11. If so, when and what kind of crime?
12. Have you ever been treated for any emotional illness?
13. If so, what were the reasons for and approximate dates of those treatments?
14. Do you have any physical problems or complaints?
15. Have you ever been raped?

Answer the following questions only if you HAVE experienced a rape. Answer the questions for each incident if there has been more than one.

16. How old were you when the rape occurred?
17. How long ago (approximately) did it occur?
18. Did you tell anyone about the rape?

19. Did you report the rape to the police?

20. What was your relationship to the rapist?

_____stranger

_____acquaintance

_____friend

_____date

_____lover

_____spouse

_____other (specify)_____

21. Did the rapist use a weapon?

22. On the following scale, circle the number that represents the degree to which you literally feared for your life during the rape experience:

0 Not at all

1 A little bit

2 Some

3 Moderately

4 Quite

5 Much

6 Very Much

7 Extremely

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