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TRAUMA SYMPTOMATOLOGY AMONG FEMALE U.S. NAVY RECRUITS

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Human subjects participated in this study after giving their free and informed consent. This research has been conducted in compliance with all applicable Federal Regulations governing the Protection of Human Subjects in Research.

ABSTRACT

A sample of female U.S. Navy recruits ($N = 1,051$) was surveyed for histories of childhood abuse and current trauma symptomatology. Victims of only childhood sexual abuse (CSA) and victims of both CSA and childhood physical abuse (CPA) had significantly higher scores on all 10 Trauma Symptom Inventory (TSI) clinical scales than did participants who did not report a history of childhood abuse. Victims of only CPA had significantly higher scores on all TSI clinical scales, except the Sexual Concerns scale, than participants who did not report a childhood history of CPA or CSA. Additionally, more victims of childhood abuse positively endorsed TSI items related to suicidal behavior and ideation than did nonvictims. Overall, the women who experienced CPA and/or CSA reported substantially higher levels of trauma symptomatology.

INTRODUCTION

A considerable percentage of women enter military service with histories of being victims of abusive behavior during childhood.¹⁻⁵ Extensive evidence indicates that many adults have recurrent, identifiable, negative psychological symptoms that appear to have their etiology in childhood traumatic physical and/or sexual experiences.⁶⁻²⁰

Although the definition of childhood abuse varies between studies, studies of female active-duty personnel suggest that a high percentage of women have been victims of childhood abusive behavior. A survey of 1,887 female U.S. Navy

recruits during their first week of basic training found that 57% had experienced some type of childhood abuse. In this study, 40% were victims of childhood physical abuse (CPA) and 39% were victims of childhood sexual abuse (CSA).^{1,2} A study of 305 female U.S. Army soldiers of various ranks indicated that 50% had experienced either CPA or CSA and 34% experienced both CPA and CSA. The investigators concluded that the soldiers who had been victims of childhood abuse had more negative psychological symptomatology than did soldiers who had not been abused.^{3,4} In a study of 6,337 female U.S. Air Force recruits, 15.1% reported CSA. Air Force recruits who

reported CSA attrited at a significantly higher rate than did nonabused female recruits.⁵

Victims of childhood abuse are at a higher risk of developing posttraumatic stress disorder (PTSD).^{6,8,10-13,16,20-24} For example, a well-controlled study of 150 foster children, who were either physically, sexually, or nonabused, found that the sexually abused children had a significantly higher percentage of cases of PTSD than did the physically abused children and nonabused children. The physically abused children had a higher percentage of cases of PTSD than did the nonabused children. Sexually abused girls had the highest percentage of PTSD.²¹

A survey of a nationally representative sample of participants was conducted to determine the prevalence of PTSD in the general population. This study reported a PTSD lifetime prevalence of 7.9% for women from 15 to 24 years of age who had never married, and 16.4% for married women in the same age range. Women who listed CSA or CPA as their “most upsetting trauma” had a probability of developing PTSD of 26.5% and 48.5%, respectively.²²

Taken together, it appears that women who experience childhood abuse have more symptoms of trauma than do nonabused women. The primary objective of this study was to provide data that may assist in the identification and treatment of trauma victims among female military recruits. The specific goals of the study were to determine the effect of CPA and CSA on trauma symptomatology and to assess the overall level of symptomatology among a large sample of female recruits.

METHOD

Subjects

Subjects were 1,051 female U.S. Navy recruits with a mean age of 20.5 years. Ethnically, the sample was 62.4% White, 21.9% Black, and 15.8% other. Family incomes of \$7,500 or less were reported by 11.8%, \$7,501 to \$15,000 by 16.0%, \$15,001 to \$25,000 by 18.7%, \$25,001 to \$35,000 by 20.0%, \$35,001 to \$50,000 by 20.9%, and over \$50,000 by 12.6% of the sample. Educationally, the sample

consisted of 4.4% who did not complete high school, 56.7% who had a high school diploma or GED, and 38.9% who had some college. The majority of the sample was single (83.6%), with a smaller percentage married (9.9%), divorced/widowed/separated (4.8%), or cohabiting (1.7%).

Materials

Demographic and Family History (DFH) questionnaire. The DFH questionnaire was developed at the Naval Health Research Center and included items related to the respondent's age, race, marital status, educational level, and family (parent's) income during the past year.

*Conflict Tactics Scale (CTS), Parent-Child (PC) version.*²⁵ A modified CTS Form R was used to measure female recruits' recall of the techniques their parents used to resolve parent-child conflicts. Five items of the very severe violence subscale of the CTS-PC were scored. Participants who indicated they had experienced one or more of the conflict tactics were defined as having experienced CPA as children. An internal consistency reliability of .85 was found for the five items.

*Sexual Events Questionnaire (SEQ).*²⁶ A modified version of the SEQ was used to assess respondents' experiences with sexual acts before the age of 14. The acts were listed in hierarchical order of severity, from seeing another person's sexual organs to having vaginal intercourse with a member of the opposite sex. Participants who indicated that they had physical-sexual contact with someone, who was 5 or more years older, prior to the age of 14, were defined as having experienced CSA.

*Trauma Symptom Inventory (TSI).*²⁷ The TSI measures posttraumatic symptomatology (including PTSD symptoms) resulting from interpersonal and noninterpersonal events. The TSI contains 100 items describing different behaviors, feelings, or attitudes. The TSI is composed of 10 clinical and 3 validity scales. The 10 clinical scales are Anxious Arousal (AA), Depression (D), Anger/Irritability (AI), Intrusive Experiences (IE), Defensive Avoidance (DA), Dissociation (DIS), Sexual Concerns (SC), Dysfunctional Sexual Behavior

(DSB), Impaired Self-Reference (ISR), and Tension Reduction Behavior (TRB). The 3 validity scales are Atypical Response (ATR), Response Level (RL), and Inconsistent Response (INC).

Subjects who did not respond to 10 or more TSI items or who had invalid protocols were excluded from the analyses. Additionally, subjects with elevated validity scale scores were deleted from the analyses. Specifically, subjects with ATR *T* scores of 90 or higher, RL *T* scores of 73 or higher, or INC *T* scores of 75 or higher were deleted from the analyses. Finally, scales that had 2 or more missing responses were excluded from the analyses.²⁷

Pertinent to the purposes of the present study are the scales that comprise the Trauma Scales: AA, D, IE, DA, and DIS. Although all 10 scales are related to trauma symptoms, factor analysis has revealed two primary sources of variance, Trauma Scales, which are indicative of trauma symptomatology, and Self Scales (DSB, TRB, SC, and AI), which are related to dysfunctional behavior that may be indicative of personality disorders. Elevations on both the Trauma Scales and Self Scales are indicative of a complicated trauma victim.²⁷

TSI clinical scale reliability estimates for a standardization sample ranged from .74 to .91.²⁷ The present study found internal consistency estimates of .78 to .89.

Design and Procedure

The survey was administered to women during their first week of training by a male and a female U.S. Navy psychological technician at the Recruit Training Command, Orlando, Florida, from January through April 1994. A technician read a description of the study, and women who agreed to participate were given a privacy act statement and an informed consent that included a detailed description of the study and the procedures used to ensure anonymity. The privacy act statement and the informed consent were read to the subjects. Subjects were told that they could leave blank any section or questions that they did not want to answer, that they were free to stop at any time before completing the survey, and that counseling

would be provided upon request.

The sample was divided into 4 groups to allow for an examination of the effect of CPA and/or CSA on the adult expression of trauma symptomatology. The 4 groups were composed of women who did not experience CPA or CSA (None; *n* = 523), women who experienced only CPA (CPA; *n* = 113), women who experienced only CSA (CSA; *n* = 248), and women who experienced both CPA and CSA (Both; *n* = 167).

The demographic variables of ethnicity, education, family income, and geographic region were examined with chi-square analyses. Multiple analyses may yield spurious but significant differences; therefore, a conservative significance level of .01 was used. For significant findings, effect sizes were calculated to allow for a determination of their practical value. For analyses of variance (ANOVAs), *f*s of .10, .25, and .40 signify small, medium, and large effect sizes, respectively.²⁸

RESULTS

No significant differences were found between the groups for the demographic variables or for years of age. An omnibus multivariate analysis of variance (MANOVA) was conducted to examine the effect of childhood abuse history on trauma symptomatology. The MANOVA for the main effect of Group was significant, Wilk's lambda = .91962, *p* < .01. Subsequently, as shown in Table I, ANOVAs, Tukey Honestly Significant Difference Tests (Tukey HSDT), and effect sizes were computed to determine specific group differences for each of the 10 TSI clinical scales.

Exploratory post hoc analyses were completed to aid in assessing the extent of trauma symptomatology in the sample. Table II shows the percentage of participants in each group with *T* scores of 65 or higher. All TSI clinical scales with *T* scores \geq 65 should be considered clinically significant.²⁷ Table III was created by computing the percentage of participants who had a *T* score of 65 or more on 3 or more of the Trauma Scales and/or 2 or more of the Self Scales. Additionally, elevated D, TRB, or cases with one or more positive

responses to TSI critical items, suicidal ideation, or suicidal behavior should be clinically evaluated.²⁷ Therefore, the percentage of participants, by Group, with positive responses to the suicidal ideation and/or suicidal behavior items were computed and are shown in Table IV.

An ANOVA (Groups x Mean Critical Items) found that the Groups significantly differed, $F(3, 1,048) = 31.62, p < .01, f = .28$. A Scheffé multiple comparison test showed that None ($M = 1.92, SD = 3.01$) was significantly different from CSA ($M = 4.17, SD = 5.05$) and Both ($M = 5.20, SD = 5.76$); CPA ($M = 3.28, SD = 4.08$) was significantly different than Both.

DISCUSSION

These results show that, for a large group of female U.S. Navy recruits, self-reported victims of childhood abuse evidenced significantly more trauma symptomatology than did nonvictims. Victims of only CSA and victims of both CPA and CSA had significantly higher scores on all 10 TSI clinical scales than did participants who did not report a history of childhood abuse. Victims of only CPA had significantly higher scores on all TSI clinical scales, except the SC scale, than participants who did not report a childhood history of CPA. Additionally, more victims of childhood abuse positively endorsed TSI items related to suicidal behavior and ideation than did nonvictims. Taken together, the women who experienced CPA and/or CSA reported substantially higher levels of trauma symptomatology.

The evaluation of clients for suicidality when their D and/or TRB scores are “above average” is recommended.²⁷ About 10.4% of the total sample had T scores of 65 or higher on the D scale, 8.8% had T scores of 65 or higher on the TRB scale, and 4.7% had T scores of 65 or higher for both the D and TRB scales (see Table IV). Three TSI critical items were designed to specifically assess suicidality. About 7.4% of the total sample indicated a history of suicidal behavior and 23.5% a history of suicidal ideation, with higher rates of both suicidal behavior and ideation present in the childhood

abuse group. Specific, and expected, scale differences were found between groups.²⁷ For example, 4.4% of None had SC and DSB T scores of 65 or higher, while 17.4% of Both had T scores of 65 or higher for both the SC and DSB scales (see Table II). Similar elevations can be seen on all clinical scales for CSA and Both.

Using a criterion T score of 65 or more, 6.9% of the total sample had elevated scores on 3 or more of the scales that comprise the Trauma Scale. Although elevations on the Trauma Scale should not be interpreted as a diagnosis of PTSD, the 6.9% is similar to the 7.8% prevalence rate of PTSD found in a nationally representative sample of 15- to 24-year-old-women.²² Using these same criteria, 3.3% of None, 3.5% of PHY, 11.3% of CSA, and 15.0% of Both had elevated Trauma Scale scores (see Table III). Although clinical judgment should be used in the evaluation of TSI profiles,²⁷ the preceding criteria were established to allow for a descriptive presentation of the data.

The elevated TSI scale scores of this sample of female recruits have serious implications for the assessment and assignment of women. If women (or men) with elevated symptomatology are exposed to significant stressors, their symptomatology may worsen and lead to dysfunctional behavior.^{23,24,29}

In general, despite the use of different methodology and instrumentation, the results of the present study are congruent with those of Rosen and Martin who studied a large group of active-duty female and male U.S. Army personnel.^{3,4} Rosen and Martin also found higher rates of negative psychological symptomatology among participants who reported childhood histories of abuse.

This study had several limitations that may restrict the interpretation of the results. First, all of the data were based on retrospective self-reports; therefore, no causal inferences, nor inferences about the temporal ordering of the data, can be drawn. Also, the effect of multiple experiences of abuse, childhood and adult, were not examined. The impact of adult histories of sexual assault on trauma symptomatology may be more severe than childhood histories of abuse. Studies need to be done to determine the

combined effect of CPA and CSA and adult physical and sexual abuse on trauma symptomatology. Additionally, complete trauma histories were not collected; factors other than CPA and CSA may result in elevated TSI scale scores (i.e., witnessing or being the victim of other forms of violence, being involved in serious accidents or natural disasters). Although the TSI has good convergent validity, no other measure of trauma symptomatology was used in the present study. Finally, it may be that the womens' elevated TSI scores were the result of simply being in a highly stressful environment. The womens' TSI scores may have been affected by the stress of adjusting to the military environment; however, this environment should have affected all groups equally. Therefore, multigroup design of this study limits the possibility that elevated scores may be attributed to the recruit training environment.

It is unknown whether the results of this study can be generalized to all female military recruits, to all female Navy recruits, or to male recruits. The present study is the first investigation of trauma symptomatology in a large sample of military recruits. This study contains data that indicates a significant percentage of female recruits report symptomatology associated with premilitary trauma. The affect of abusive histories and trauma symptomatology on future performance and other factors is unknown. Therefore, data related to abusive histories and trauma symptomatology are being collected from a large sample of female and male U.S. Navy recruits. The sample will be reexamined at regular intervals to determine the long-term impact of histories of abusive behavior on various factors, such as performance, health care utilization, and attrition.

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TABLE I.

F RATIO, EFFECT SIZE, AND TUKEY RESULTS FOR
THE TSI CLINICAL SCALES BY GROUP

TSI Scale	F ^a	Effect Size ^b	Tukey HSDT by Group ^c
AA	14.78	.20	None < CPA, CSA, Both
D	19.93	.23	None < CPA, CSA, Both
AI	20.75	.24	None < CPA, CSA, Both
IE	30.71	.33	None < CPA, CSA, Both; CPA < CSA, Both
DA	34.08	.31	None < CPA, CSA, Both; CPA < Both
DIS	27.36	.27	None < CPA, CSA, Both
SC	30.71	.28	None < CSA, Both; CPA < CSA, Both
DSB	28.10	.27	None < CPA, CSA, Both; CPA < Both
ISR	22.27	.25	None < CPA, CSA, Both
TRB	27.19	.26	None < CPA, CSA, Both; CPA < Both

^a $p < .0001$; ^b Small = .10, Medium = .25, Large = .40; ^c $p < .05$

TABLE II

PERCENTAGE OF T SCORES OF 65 OR HIGHER FOR THE TSI CLINICAL
SCALES BY GROUP

Group	AA	D	AI	IE	DA	DIS	SC	DSB	ISR	TRB
None	6.9 (36)	5.4 (28)	5.8 (30)	4.6 (24)	3.5 (18)	4.2 (21)	4.4 (23)	4.4 (23)	5.8 (30)	3.6 (18)
CPA	9.3 (10)	9.7 (10)	6.5 (7)	7.5 (8)	6.5 (7)	8.4 (9)	5.6 (6)	6.5 (7)	12.1 (13)	8.0 (9)
CSA	16.6 (41)	15.7 (38)	12.1 (30)	15.8 (39)	13.0 (32)	12.6 (31)	15.8 (39)	15.4 (38)	12.1 (30)	13.7 (33)
Both	19.3 (32)	18.0 (30)	14.9 (24)	21.1 (35)	21.7 (36)	14.9 (24)	17.4 (29)	19.3 (32)	18.0 (30)	17.4 (29)
Total Sample	11.4 (119)	10.3 (108)	8.8 (92)	10.2 (107)	8.9 (93)	8.3 (87)	9.3 (97)	9.6 (100)	9.7 (101)	8.6 (90)

Note. $N = 1,051$; $n = 523$ for None, 113 for CPA, 248 for CSA, 167 for Both.

TABLE III

PERCENTAGE OF EACH GROUP AND TOTAL SAMPLE WITH
ELEVATED TRAUMA, SELF, AND TRAUMA AND SELF
SCORES^a

Group	Trauma	Self	Trauma & Self	Total Trauma**
None	1.6 (8)	2.8 (14)	1.7 (8)	3.3 (17)
CPA	1.9 (2)	3.7 (4)	1.8 (2)	3.5 (3)
CSA	3.9 (9)	10.9 (27)	8.1 (20)	11.3 (28)
Both	3.6 (6)	6.3 (10)	11.4 (19)	15.0 (25)
Total Sample	2.4 (25)	5.2 (55)	4.8 (50)	6.9 (73)

Note. *N* = 1,051; *n* = 523 for None, 113 for CPA, 248 for CSA, 167 for Both.

^a Percentages are mutually exclusive for the Trauma, Self, and Trauma & Self categories.

**Total Trauma was computed by adding the Trauma and Trauma & Self categories.

TABLE IV

PERCENTAGE OF EACH GROUP AND TOTAL SAMPLE WITH
T SCORES OF 65 OR HIGHER FOR THE D AND TRB SCALES
AND SUICIDALITY ITEMS

Group	Scale			Suicidality ^a	
	D	TRB	D & TRB	Behavior	Ideation
None	5.4 (28)	3.6 (18)	1.7 (8)	2.3 (12)	15.7 (82)
CPA	9.7 (10)	8.0 (9)	0.9 (1)	9.7 (10)	29.2 (32)
CSA	15.7 (38)	13.7 (33)	8.5 (21)	9.3 (23)	27.9 (69)
Both	18.0 (30)	17.4 (29)	10.8 (18)	19.2 (32)	37.7 (62)
Total sample	10.3 (108)	8.7 (91)	4.7 (49)	7.4 (77)	23.4 (245)

Note. *N* = 1,051; *n* = 523 for None, 113 for CPA, 248 for CSA, 167 for Both.

^a Responded positively to one or more items.

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