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Michelle M. Lilly
University of Michigan, Ann Arbor

Nnamdi Pole
University of Michigan, Ann Arbor, npole@smith.edu

Suzanne R. Best
University of California, San Francisco

Thomas Metzler
University of California, San Francisco

Charles R. Marmar
University of California, San Francisco

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Gender and PTSD: What Can We Learn From Female Police Officers?

Michelle M. Lilly, MA¹, Nnamdi Pole, Ph.D.¹, Suzanne R. Best, Ph.D.², Thomas Metzler, M.A.², and Charles R. Marmar, M.D.²

¹Department of Psychology, University of Michigan, Ann Arbor, MI

²Department of Psychiatry, University of California, San Francisco, CA

Abstract

Studies of civilians typically find that female gender is a risk factor for posttraumatic stress disorder (PTSD). Police and military studies often find no gender differences in PTSD. We compared 157 female police officers and 124 female civilians on several variables including trauma exposure, peritraumatic emotional distress, current somatization, and cumulative PTSD symptoms. We found that despite greater exposure to assaultive violence in the officer group, female civilians reported significantly more severe PTSD symptoms. Elevated PTSD symptoms in female civilians were explained by significantly more intense peritraumatic emotional distress among female civilians. We also found that female officers showed a stronger direct relationship between peritraumatic emotional distress and current somatization. Our findings suggest that apparent gender differences in PTSD may result from differences in peritraumatic emotionality, which influence subsequent PTSD and somatization symptoms. Emotionality may be more important than biological sex in understanding gender differences in PTSD.

Keywords

gender; PTSD; peritraumatic distress; police; somatization

Gender and PTSD: What Can We Learn From Female Police Officers?

Women appear to suffer from posttraumatic stress disorder (PTSD) more frequently and more intensely than men (see Tolin & Foa, 2006 for a review). Gender differences in PTSD are found consistently among ordinary citizens whether one considers lifetime prevalence rates (11.3% vs. 6%; Norris, Perilla, Ibanez, & Murphy, 2001), current prevalence rates (3% vs. 1%; Stein, Walker, Hazen, & Forde, 1997), conditional lifetime prevalence rates (13% vs. 6%; Breslau et al., 1998), conditional current prevalence rates (12%, vs. 6%; Norris, 1992), chronic PTSD

Please send correspondence to: Nnamdi Pole, Ph.D., Department of Psychology, Bass Hall, Smith College, Northampton, MA 01060. Ph: 413 585 3805. Fax: 413-585-3786 E-mail: E-mail: npole@email.smith.edu.

Author Note: Michelle M. Lilly, Department of Psychology, University of Michigan; Nnamdi Pole, Department of Psychology, University of Michigan; Suzanne R. Best, Department of Psychiatry, University of California, San Francisco and San Francisco Veterans Affairs Medical Center; Thomas Metzler, Department of Psychiatry, University of California, San Francisco and San Francisco Veterans Affairs Medical Center; and Charles Marmar, Department of Psychiatry, University of California, San Francisco and San Francisco Veterans Affairs Medical Center.

Nnamdi Pole is now at Department of Psychology, Smith College, Northampton, MA.

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rates (21.8% vs. 5.9%; Breslau & Davis, 1992), or PTSD symptom severity (Brewin, Andrews, & Valentine, 2000). Interestingly, gender differences typically have not been found in military and police studies (Pole et al., 2001; Sutker, Davis, Uddo, & Ditta, 1995). In fact, a comprehensive meta-analysis found no correlation between gender and PTSD symptom severity in military samples ($r = .00$) as compared to civilian samples ($r = .13$), a statistically significant difference (Brewin et al., 2000). This discrepancy between populations of women suggests that risk for PTSD is not tethered to biological sex but rather may be carried by other factors such as those that distinguish police and military personnel from ordinary civilians.

Most previous efforts to understand gender differences in PTSD have focused on factors that distinguish male and female trauma survivors (Pole & Gross, in press; Tolin & Foa, 2006). These studies have found that men either equal or exceed women in frequency of exposure to most types of trauma (Breslau, Chilcoat, Kessler, & Davis, 1999; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Stein et al., 1997). After controlling for categories of trauma to which women are more highly exposed (e.g., sexual assault and domestic violence), women still show higher rates of PTSD (Breslau et al., 1999; Fullerton et al., 2001; Stein, Walker, & Forde, 2000). Thus, neither frequency of prior trauma exposure nor type of index trauma appears to fully account for elevated female rates of PTSD. Moreover, the gender disparity in PTSD has not been explained by pre-trauma differences in psychopathology, peritraumatic appraisals of life threat, or whether the trauma survivor sustained serious injury (Fullerton et al., 2001; Stein et al., 2000).

In fact, one of the few potential explanations to emerge from this literature is that women report more peritraumatic dissociation (i.e., depersonalization, derealization, and/or disorientation during or immediately after the trauma) than men (Fullerton et al., 2001). This finding is significant not only because peritraumatic dissociation is one of the strongest correlates of PTSD (Ozer, Best, Lipsey, & Weiss, 2003) but also because peritraumatic dissociation is thought to result from overwhelming peritraumatic *emotions* such as intense fear, helplessness, and/or horror (Marmar et al., 2006). Though some reasonably question the validity of retrospectively reported peritraumatic experiences, several studies have found that measures of peritraumatic emotional distress and dissociation obtained within hours or weeks of the index trauma have been prospectively predictive of a subsequent PTSD diagnosis (Kangas, Henry, & Bryant, 2005; Shalev et al., 1998). Thus, retrospective and prospective data converge to emphasize the predictive significance of peritraumatic experiences. Finally, because intense peritraumatic emotions are required for a PTSD diagnosis (PTSD Criterion A2; American Psychiatric Association, 2000), it is virtually impossible to diagnose PTSD (even by “gold standard” clinical interviews) without accepting retrospectively reported peritraumatic emotional distress as valid (Weathers, Ruscio, & Keane, 1999).

Emotions provide a potentially powerful explanation for differential risk for PTSD because of their theorized role in coordinating many of the psychobiological systems that are disrupted in PTSD (e.g., appraisals, psychophysiology, facial behavior) (Levenson, 1999; Levenson, Soto, & Pole, 2007; Pole, 2007). Emotional distress is believed to contribute to PTSD symptoms by consolidating trauma memories and facilitating the conditioning of trauma cues (Brunet et al., 2001; Ozer et al., 2003; Pitman, Shalev, & Orr, 2000). Furthermore, women (as a group) consistently have been found to report experiencing many emotions more intensely than men (see Brody, 1997; Fischer, 1993 for reviews) including anxiety, fear, and helplessness (e.g., Kirkpatrick, 1984). Women also are more likely to meet PTSD criterion A2 (i.e., intense distress during trauma) than men (Creamer, McFarlane, & Burgess, 2005). Thus, peritraumatic emotions may be more important to gender differences in PTSD than peritraumatic dissociation.

Though some feminist scholars regard emotionality to be a key feature distinguishing the sexes (e.g., Tannen, 1990), others note that gender differences in emotion may have more to do with gender role, gender socialization, and social context than biological sex (Brody, 1985; Fischer, 1993). For instance, females who occupy more traditionally masculine gender roles (e.g., female executives) express less emotion than those who occupy more traditionally feminine gender roles (e.g., homemakers) (Clifton, McGrath, & Wick, 1976). Conversely, men involved in primary caretaking of their children and other traditionally feminine tasks express more nervousness than men who are not involved in these tasks (Radin, 1994). Police culture and training encourage its participants to adopt a traditionally masculine gender role (Burke, Richardsen, & Martinussen, 2006; Metcalfe & Dick, 2002) including minimization of emotional reactions such as fear during life-threatening duty-related experiences (Reiser & Geiger, 1984). Therefore, one would expect that female officers who conform to these occupational expectations would show reduced peritraumatic emotional distress and consequently reduced PTSD risk.

If so, then female officers' relative resilience to PTSD may come with a price. They may develop characteristically male ways of suppressing, inhibiting, or otherwise controlling their emotional distress. Alcohol use is one example. Whereas civilian women are less likely than civilian men to use alcohol to cope with trauma (Green & Lindy, 1994), female officers have been found to report drinking as much alcohol as their male counterparts (Ballenger, Best, Metzler, Wasserman, & Mohr, in press). Somatization may be another example. Individuals who fail to disclose their emotional responses to aversive events may show elevated psychophysiological reactivity (Gross & Levenson, 1993), diminished immune system functioning (Pennebaker, Kiecolt-Glaser, & Glaser, 1988), and ultimately develop more physical health problems. Given that civilian males have been found to be more likely than civilian females to substitute emotional symptoms with somatic symptoms following a traumatic event (Green & Lindy, 1994), one might expect trauma-exposed female officers to prefer somatic expression of distress over emotional expression. Congruent with this supposition, one study found elevated somatization symptoms among female officers as compared to their male officer counterparts (Burke et al., 2006).

The Present Study

In our previous work, we found that a sample of female police officers was statistically indistinguishable from their male co-workers in social desirability reporting, duty-related trauma exposure, peritraumatic dissociation, and PTSD symptom severity (Pole et al., 2001). In the present study, we compared these female officers with a group of female civilians in terms of peritraumatic distress, PTSD symptom severity, somatic symptoms, and other potentially confounding variables in order to better understand why female officers failed to show the typical gender difference in PTSD. We hypothesized that: (1) in comparison to female civilians, female officers would report less peritraumatic emotional distress, less severe cumulative PTSD symptoms, and more current somatization symptoms and (2) the differences between female officers and female civilians in PTSD and somatization symptoms would be mediated by differences in peritraumatic emotional distress after accounting for differences in other variables that have been implicated in the prediction of PTSD such as reporting style, trauma exposure, peritraumatic dissociation, coping style, and social support (Brewin et al., 2000; Marmar et al., 2006; Ozer et al., 2003; Pole, Gone, & Kulkarni, 2008).

Method

Participants

Participants were drawn from a larger convenience sample of San Francisco Bay Area and New York City police officers and civilians who enrolled in an IRB approved study of risk and

resilience for PTSD. Twelve hundred officers were identified through computerized personnel records and invited to participate via letters from their police commissioner, their police union, and our project team. Seven hundred and forty seven responded (further details of officer recruitment are available in Pole et al., 2001). Approximately half of these officers ($n = 374$) were asked to identify three civilian peers who share their basic demographics but who never had careers in law enforcement or emergency services work. One of the three civilians was invited to participate at random. If the civilian declined, another civilian from the list of three was invited until 374 responded. Participation consisted of completing written consent and self-report questionnaires at home (described below) and returning them by mail. Questionnaires were collected over a two year period and respondents were encouraged to complete their surveys within a few weeks. All participants were reimbursed \$100 for returning the signed consent and completing the survey. After excluding two female officers and 15 female civilians who reported that they had not experienced a traumatic event, data from 157 female officers and 124 female civilians were available for analysis.

Measures

Measures were selected to assess variables of primary interest (peritraumatic emotional distress, cumulative PTSD symptoms, and current somatization) and variables that might provide alternative explanations for observed findings (demographics, social desirability, trauma history, peritraumatic dissociation, coping style, and social support).

Demographics Questionnaire—Participants reported their gender, age, years of education, ethnicity, and income.

Social Desirability Scale (SDS; Reynolds, 1982)—Social desirability reporting bias has been found to be associated with reduced PTSD symptom reporting in trauma survivors (Brunet, Boucher, & Boyer, 1996). To determine whether this might be a factor in our data, we administered the short form of the SDS, a 13-item true/false instrument that measures the tendency to endorse self-report items in ways that elicit the approval of others. The number of items answered in a socially desirable direction was summed to derive the total social desirability score. This short-form SDS has shown internal consistency and test-retest reliability exceeding .70 and comparable psychometric properties to the full SDS in previous research (Zook & Sipps, 1985).

Trauma History Questionnaire (THQ; Green, 1996)—We used a 23-item modification of the THQ to measure total trauma exposure. Respondents indicated the number of times they experienced each of several potentially traumatic events (e.g., accidents, sexual assaults, physical assaults). The instrument was scored by adding the number of types of traumatic events endorsed by each participant. The number of trauma categories has shown two week test-retest reliability of $ICC = .76$. The two-week test-retest reliability of reporting specific events has varied depending on the event: sexual abuse/assault: $\kappa = .63$ (82% agreement), childhood sexual abuse/assault: $\kappa = .64$ (82% agreement), adulthood sexual abuse assault: $\kappa = .82$ (93% agreement), accident: $\kappa = .70$ (86% agreement), and disaster: $\kappa = .89$ (97% agreement) (Mueser, Salyers, Rosenberg, & Ford, 2001).

Worst Traumatic Event—All respondents were asked to identify their worst traumatic event, which served as an index event for the remaining measures. Because previous studies of gender differences in PTSD have emphasized assaultive violence, disasters, or motor vehicle accidents as the index trauma (e.g., Fullerton et al., 2001; Norris et al., 2001; Stein et al., 2000), we coded each participant's index event as either sexual assault, physical assault, disaster, accident, or other. Though the “other” category included a wide variety of trauma types (e.g., sudden death of a loved one), the key point here is that none of the events in this

category involved assaultive violence and none would be expected to occur with greater frequency among women than men based on prior literature (Kessler et al., 1995).

Peritraumatic Distress Inventory (PDI; Brunet et al., 2001)—The PDI is a 13-item self-report measure of emotional distress (e.g., helplessness, sadness, fear, horror) occurring during or immediately after an index traumatic event. Participants indicated the extent to which each item applied to their single worst traumatic event using a scale ranging from 1 (not at all true) to 5 (extremely true) with internal consistency of $\alpha = .75$. Higher mean scores across items indicate greater peritraumatic emotional distress. The PDI has shown test-retest reliability of $r = .74$ in previous studies. It has also shown convergent validity with measures of PTSD symptoms even after controlling for general psychiatric distress.

Peritraumatic Dissociative Experiences Questionnaire (PDEQ; Marmar, Weiss, & Metzler, 1997)—The PDEQ is the most widely used self-report measure of depersonalization, derealization, and/or disorientation occurring during or immediately after a traumatic event. Participants rated each item with respect to their worst trauma using a 5-point scale from 1 (not at all true) to 5 (extremely true). Higher mean scores across items indicate greater peritraumatic dissociation. The PDEQ has demonstrated good internal consistency (estimates ranging from .75 to .88 in previous studies and .83 in the present study) and construct validity (including predictive validity) with a variety of populations (e.g., veterans, accident survivors, emergency services workers).

Ways of Coping Questionnaire (WOCQ; Folkman & Lazarus, 1985)—The 44-item WOCQ measured strategies used by each respondent to cope with her index trauma. Each item was rated on a scale from 0 (not used) to 3 (used a great deal). In the present study, the overall measure was reduced to the subscales indexing active coping (e.g., problem-focused, seeking social support) with internal consistency $\alpha = .68$ and passive coping (e.g., wishful thinking, escape-avoidance) with internal consistency $\alpha = .71$. Previous evidence suggests that the WOCQ has good internal consistency (typically in the .70 range); convergent validity with other coping measures (ranging from .68 to .97); discriminant validities with non-coping measures (ranging in absolute value from .01 to .44); and predictive validity with measures of life satisfaction (.51), increased positive affect (.52), and decreased negative affect (-.57) (Clark, Bormann, Cropanzano, & James, 1995).

Sources of Support (SOS; Kulka et al., 1990)—The SOS is a 10-item measure of current social support, an important buffer of PTSD symptoms (Brewin et al., 2000), that has previously been used with police and military samples. Items were rated on a 5-point scale (1=not at all true to 5=extremely true) with internal consistency of $\alpha = .63$. Higher mean scores across items indicate more current social support.

Symptom Checklist-90-Revised Somatization Scale (SCL-90-R-SOM; Derogatis, 1994)—The SCL-90-R is a widely used self-report measure of 90 psychiatric symptoms each of which is rated on a 5-point scale from 0 (not at all) to 4 (extremely) with respect to the past seven days (i.e., current distress). The SCL-90-R yields nine symptom subscales based on the mean rating of item subsets. For the present study, we focused on the somatization (SOM) subscale, which summarizes ratings given to symptoms such as headaches; faintness/dizziness; pain in the heart, chest, or lower back; nausea; and muscle soreness ($\alpha = .83$). The SOM subscale has shown test-retest reliability exceeding .85 and convergent validity coefficients ranging from .48 to .66.

Mississippi Scale (MS; Keane, Caddell, & Taylor, 1988)—The MS was adapted from the original *Mississippi Scale for Combat-Related Posttraumatic Stress Disorder*. Respondents

endorsed each of 35-items depicting PTSD-relevant symptoms resulting from their worst trauma with a Likert-type rating from 1 (not at all true) to 5 (extremely true). Several item ratings were reverse coded and summed to index overall cumulative PTSD symptom severity with internal consistency of $\alpha = .84$. In previous studies, the MS has shown strong test-retest reliability (.97), sensitivity (.93), and specificity (.89). The MS also has shown convergent validity with psychometric (Lauterbach, Vrana, King, & King, 1997) and psychophysiological (Pole, Neylan, Best, Orr, & Marmar, 2003) measures of PTSD in civilian and police samples.

Data Analysis

Our initial analytic steps were directed towards determining whether the female police officer and civilian groups differed on any demographic (e.g., age, education) or psychometric variables (e.g., prior and worst trauma exposure, coping style) that would confound the interpretation of differences in our target variables. We then tested our first hypothesis regarding differences in PTSD symptom severity, peritraumatic emotional distress, and somatization using t-tests. We tested our second hypothesis regarding the mediating role of peritraumatic emotion distress using an adaptation of the regression approach outlined by Baron and Kenny (1986). Follow-up post-hoc tests were conducted as necessary to clarify unexpected results. Statistical significance was set at $p = .05$ (two tailed). All statistical tests were conducted with SPSS 14.0.

Results

Comparisons of female officers with female civilians

Table 1 compares female officers and civilians on the measured variables. With regard to demographics, the two groups did not differ significantly in age, or education but the officer group had a significantly higher average income, $t(279) = 6.20, p < .001, r = .35$, and a greater proportion of ethnic minorities, $X^2(1, N = 281) = 12.29, p < .001, \Phi = .21$. The two groups also did not differ in social desirability reporting, coping style, or social support. However, there were significant differences in trauma exposure. Female officers reported significantly more exposure to potentially traumatic events, $t(279) = 6.76, p < .001, r = .38$. Moreover, officers were significantly more likely to select a physical assault as their worst (index) trauma, $X^2(1, N = 281) = 25.28, p < .001, \Phi = .30$. Civilians, on the other hand, were more likely to select a trauma “other” than accident, assault, or disaster as their worst trauma, $X^2(1, N = 281) = 17.13, p < .001, \Phi = .25$. The two groups did not differ in their likelihood of selecting accidents, sexual assaults, or disasters as their worst trauma. Despite the fact that female officers were generally exposed to more assaultive violence and more likely to select physical assaults as their worst trauma, they reported significantly less peritraumatic dissociation, $t(279) = 8.65, p < .001, r = -.46$, and peritraumatic emotional distress, $t(279) = 5.91, p < .001, r = -.34$, as well as less severe PTSD symptoms, $t(279) = 2.93, p < .01, r = -.17$ than their civilian counterparts. However, contrary to our prediction, the two groups did not differ in current somatization symptoms.

Do peritraumatic emotions account for group differences in PTSD symptom severity?

Potential mediators of the relationship between female occupational status (officer versus civilian) and PTSD symptom severity must also show significant relationships with both occupational status and PTSD symptom severity (Baron & Kenny, 1986). To identify candidate mediators, variables that differed significantly between officers and civilians were correlated with PTSD symptom severity (Table 2). Somatization was included in these analyses to pursue potential post-hoc explanations for our failure to find the predicted group difference for this variable. We found that more severe PTSD symptoms were associated with lower income ($r = -.17, p < .01$), and more total trauma exposure ($r = .22, p < .01$), peritraumatic dissociation ($r = .39, p < .01$), peritraumatic distress ($r = .50, p < .01$), and current somatization symptoms

($r = .35, p < .01$). Thus, all of these variables (except somatization) could have a potential mediating role of the relationship between occupational status and PTSD symptom severity. Table 2 also shows that the intercorrelation among these candidate mediators was generally modest (ranging in absolute value from .01 to .25) thereby reducing concerns about multicollinearity in the subsequent regression analyses. The one exception to this pattern was the relatively high correlation between peritraumatic dissociation and peritraumatic distress ($r = .64, p < .01$). However, even this correlation was below recommended cutoffs for considering multicollinearity (Stevens, 1996).

To determine whether peritraumatic emotional distress served as a credible mediator of the relationship between occupational status and PTSD symptom severity, we entered income and trauma history as control variables in the initial steps of a regression analysis predicting PTSD symptom severity. Group (i.e., female officer versus civilian) was entered in the next step to determine whether it continued to predict PTSD symptom severity. Because we theorized that peritraumatic dissociation resulted from peritraumatic emotional distress, we entered both of these in the following steps to determine which (if any) best accounted for group differences in PTSD symptom severity. Table 3 shows the results of the analysis. Significant and incremental variance in PTSD symptom severity was explained by income (2.3%), trauma history (4.6%), occupational status (4.9%), and peritraumatic emotional distress (15.7%). Peritraumatic dissociation (0.8%) did not add significantly to the prediction of PTSD symptom severity¹. Further examination of the models shows that even after adjusting for income and trauma history in Step 3, female officers still evidenced less severe PTSD symptoms ($\beta = -.25, p < .001$) than female civilians. However, after peritraumatic emotional distress was added to the model in Step 4, the effect of group vanished ($\beta = -.04, p = ns$). These findings are consistent with our hypothesis that greater peritraumatic emotional distress in the female civilian group accounted for the group difference in PTSD symptom severity.

Does occupational group status moderate the relationship between peritraumatic emotions and current somatization?

We wondered whether absence of a group difference between female officers and civilians in current somatization symptoms was due to lower peritraumatic emotional distress in the officer group and perhaps greater tendency among female officers to convert peritraumatic emotional distress into somatic symptoms. To pursue these possibilities, we conducted a post-hoc regression analysis (Table 4). Step 1 reiterates the finding that occupational status group alone did not predict somatization symptoms ($\beta = .03, p = ns$). Step 2 shows that inclusion of peritraumatic emotional distress in the model not only predicted greater current somatization ($\beta = .28, p < .001$) but also revealed the relationship between female officer status and greater somatization that we originally hypothesized ($\beta = .12, p < .05$). We then computed an interaction term between group and peritraumatic distress by first centering the peritraumatic distress scores and multiplying them with occupational status scores coded +1 for police officers and -1 for civilians. Step 3 shows that when this interaction term is included in the model, peritraumatic emotional distress continued to predict current somatization ($\beta = .29, p < .001$). Group alone no longer predicted current somatization ($\beta = .12, p = n.s.$) but group and peritraumatic emotional distress together significantly interacted ($\beta = .12, p < .05$) in such a way that current somatization was more strongly predicted by peritraumatic emotional distress for female officers ($r = .33$) than their civilian counterparts ($r = .18$).²

¹We repeated this analysis with peritraumatic dissociation preceding peritraumatic emotional distress in the model. The results were similar. Though peritraumatic dissociation initially appeared to mediate the relationship between occupational status and PTSD symptom severity, once peritraumatic emotional distress was entered into the model the influence of peritraumatic dissociation was not significant.

Discussion

Consistent with our hypotheses, we found that female officers reported less severe cumulative PTSD symptoms and less peritraumatic emotional distress than the female civilian comparison group. We also found that group differences in peritraumatic emotional distress explained the group difference in PTSD symptom severity. Though we initially failed to support our hypothesis that female officers would show greater current somatization than female civilians, we subsequently found that after accounting for variation in peritraumatic emotional distress between the two groups, the hypothesized difference emerged. Finally, we found that peritraumatic emotional distress was more strongly related to current somatization symptoms for female officers than for female civilians. We considered many alternative explanations for these results including social desirability reporting, age, education, ethnic composition, income, trauma exposure, peritraumatic dissociation, coping style, and social support but found that none of these accounted for our findings. In fact, the officers reported less peritraumatic distress and less PTSD symptoms despite more total trauma exposure and more exposure to assaultive violence as their worst event.

Others have noted that intense peritraumatic emotions such as overwhelming fear and helplessness are key predictors of subsequent PTSD symptoms (Brunet et al., 2001; Ozer et al., 2003). Indeed, such emotions now are required for a diagnosis of PTSD (American Psychiatric Association, 2000). Our results offer an explanation for why military and police samples typically fail to show gender differences in PTSD (Brewin et al., 2000; Pole et al., 2001; Sutker et al., 1995). Groups that experience less intense peritraumatic distress would be expected to also experience less peritraumatic dissociation, less conditioning of trauma cues, less consolidation of trauma memories, and (as we observed in our data) less severe PTSD symptoms. Conversely, groups that are prone to experience intense peritraumatic emotions would exhibit the pattern observed among the civilian women in this study.

Our somatization findings show the other side of the coin. Female officers were not entirely successful in avoiding posttraumatic sequelae. Peritraumatic emotional distress was more strongly linked to subsequent somatization symptoms for female officers than their civilian counterparts. Such a result is consonant with Burke and colleagues' (2006) finding of heightened somatization symptoms in female officers. It is also in line with the possibility that female officers may have engaged in maladaptive emotion suppression, which has been linked to poorer physiological functioning (Gross & Levenson, 1993). This linkage warrants further research.

It is unclear from our data whether some of the observed differences between the officer and civilian groups existed prior to police work (e.g., leading these women to seek or be selected for careers in law enforcement) or whether these differences emerged as a result of police training or socialization (i.e., participation in police culture) or both. We think that it is likely that policing experiences played some role in muting peritraumatic emotions in the female officers. Women are in the minority in virtually all police departments (National Center for Women and Policing, 2002) and encounter enormous pressure to conform to male norms (He, Zhao, & Archbold, 2002). For female officers, the cost of openly expressing fear and helplessness may be great, including ridicule, ostracism and potential harassment from male

²Though the SCL-90-R somatization scale has been used by many investigators as a measure of somatic complaints, some might object that this measure is not a specific measure of somatization because it tends to be highly correlated with other SCL-90-R subscales (e.g., depression and anxiety). To address this potential concern, we repeated our somatization analysis on a modified version of the SCL-90-R somatization scale, which was constructed by partialling out the mean of the other SCL-90-R item ratings from the ratings of the somatization scale. Our results were unchanged. Female officers did not differ from female civilians on this modified measure, $t(275) = 1.06$, $p = ns$, but occupational status interacted significantly with peritraumatic distress to predict the modified somatization score ($\beta = .29$, $p < .05$) such that the relationship was stronger for female officers ($r = .76$) than for female civilians ($r = .61$).

peers (Morris, 1996). But even if the pressures were not overt, evidence from the broader organizational psychology literature indicates that females in male-dominated professions tend to develop male values, attitudes, and behaviors over time (Marsden & Kalleberg, 1993). Thus, it is likely that female officers would come to resemble their male co-workers in terms of emotion expression even if they began their careers behaving like civilian women.

Our results indirectly imply that differences between men and women in PTSD may result from gender disparities in the intensity of emotions that contribute most to PTSD (Brody, 1997; Fischer, 1993). Note that stating this is not the same as stating that women are more “emotional” than men. Men, for example, have been found in some studies to be more likely than women to express some emotions such as contempt (Stapley & Haviland, 1989). We are also not claiming that observed gender differences in emotion are biologically pre-determined. In fact, our data show quite the opposite (i.e., two groups of females show significantly different patterns of emotion-related responding). Yet, acknowledgment of the reliable emotional differences that commonly occur between groups of men and women offers the possibility of harnessing this knowledge to prevent gender disparities in PTSD. Specifically, as we understand better how and why female officers evidence less peritraumatic distress than their civilian counterparts, we may be able to use these insights to design interventions to reduce peritraumatic emotional responding in civilian women and thereby diminish their risk for PTSD. This might be particularly useful for women at greater risk for trauma exposure by virtue of their living environment (e.g., high crime neighborhoods) or occupation (e.g., domestic violence shelters). However, such an approach should proceed with caution in light of the possibilities that reduced risk in female officers may have been achieved with increased risk for somatization as a side-effect. For now, our results suggest screening for high levels of peritraumatic emotional distress following a traumatic incident and early intervention when such distress is reported. In addition, the findings serve as a reminder that, in some cases, somatic symptoms may be a signal of ongoing distress resulting from trauma.

Yet, cautions arise from the limitations inherent in our study. Aside from its lack of a randomly drawn sample of female officers and civilians, arguably the most important limitation is our reliance on self-report measures with potential retrospective reporting biases. Previous research has found that individuals with long-standing elevated PTSD symptoms may recall more prior trauma (Roemer, Litz, Orsillo, Ehlich, & Friedman, 1998; Southwick, Morgan, Nicholaou, & Charney, 1997) and acute trauma symptoms (Harvey & Bryant, 2000) in the chronic phase of their illness than they reported shortly after their index trauma occurred. These findings generally have been interpreted as indicating that the presence of PTSD symptoms distorts memories of previous trauma and trauma symptoms. However, another interpretation consistent with these findings and also consistent with theories proposing that avoidance maintains PTSD symptoms (Foa & Kozak, 1986) is that people who avoid reporting trauma exposure and acute stress symptoms in the aftermath of trauma go on to develop more severe PTSD symptoms. If the second interpretation is correct then the retrospective reports observed in our study may actually be more valid than measures that would have been obtained at the time of trauma. Furthermore, if elevated PTSD symptom severity was systematically distorting retrospective reporting of trauma in our data then one would expect that the more highly distressed civilian group would have reported more trauma than the police group. Not only were our exposure findings in the opposite direction but it is also important to remember that neither frequency nor type of trauma exposure has been illuminating in understanding gender differences in PTSD in prior literature (Breslau et al., 1999; Fullerton et al., 2001; Stein et al., 2000; Tolin & Foa, 2006). Finally, even if we accept that retrospective reporting biases may have led to greater distress reporting in the civilian group, it is not clear that such biases would alter substantively our conclusions. Brennan, Stewart, Jamhour, Businelle, and Gouvier (2005) found that retrospective reporting biases were not of sufficient magnitude to alter clinical diagnoses.

It is likely that these and related issues will only be resolved through future prospective and laboratory studies. Prospective studies can examine emotional responding shortly after trauma and follow male and female survivors over time. However, such studies will probably never be able to capture emotional responding during the actual trauma. Laboratory studies can examine gender differences in emotional responding to carefully controlled stressors and supplement self-report measures with behavioral and physiological indicators of emotion. However, these methods come with limitations of their own and should not be assumed to have equivalent meaning across male and female participants (Anderson & McNeilly, 1991; Levenson et al., 2007). For example, much of what is known about the psychophysiological assessment of PTSD is based in actuality on studies of men (Pole, 2007).

Despite its limitations, our study also has notable strengths. One of these is our examination of PTSD as dimensional construct rather than a categorical one. Though our findings may not pertain directly to actual PTSD diagnoses, they address the factors that contribute to the intensity of symptomatic distress. Such distress, even at a subclinical level, has been shown to impact the performance and well-being of police officers (Pole, 2008). Another strength is our focus on gender role rather than biological sex. From the point of view of biological sex, the two groups compared in this study were identical. However, police work cast one group into a traditionally male gender role. It is important that PTSD research continue to consider gender as a construct originating from biological sex, but contributing to trauma reactions in more nuanced and complicated ways than anatomy alone would predict. Future studies could maintain this trajectory by incorporating measures of gender role and gender identity into epidemiological studies to determine whether these factors predict PTSD better than biological sex.

Conclusion

Emotions serve the function of recruiting and organizing our biological systems to meet environmental demands (Levenson, 1999). Few environmental events are more demanding than trauma. Thus, few occurrences can engage our emotions like trauma can. Individuals and groups vary in the intensity with which they experience or express particular emotions. Typically, women express fear, anxiety, and helplessness more intensely than men (Brody, 1997; Fischer, 1993). Under normal environmental circumstances, these emotions pose few serious problems and may confer certain advantages. However, under the special circumstance of trauma, having heightened expression of these emotions could mean having heightened susceptibility to a cascade of psychobiological events that raise the probability of PTSD for the typical woman. The good news is that these emotional proclivities probably are not biologically pre-determined but rather open to psychosocial influence. As we better understand the causes and consequences of these influences, we may someday be able to eliminate (or reduce) gender disparities in PTSD.

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Table 1
Comparison of female officers and civilians on primary and potentially confounding variables

Variable	Female Officers (n = 157) M (SD), N (%)	Female Civilians (n = 124) M (SD), N (%)	t, χ^2	r, Φ
Age (years)	36.5 (6.0)	36.1 (7.0)	.58	.03
Education (years)	14.4 (1.7)	14.2 (2.3)	.60	.05
Income (thousands of dollars)	70.4 (18.1)	54.3 (24.1)	6.20***	.35
Ethnicity (%Minority)	89 (56.7%)	44 (35.5%)	12.29***	.21
Social Desirability Reporting	8.2 (2.6)	8.2 (2.9)	.12	.00
Total Trauma Exposure	17.1 (9.5)	10.0 (7.6)	6.76***	.38
Worst (Index) Trauma				
Accident	17 (10.8%)	16 (12.9%)	.29	-.03
Sexual Assault	9 (5.7%)	11 (8.9%)	1.03	-.06
Physical Assault	86 (54.8%)	31 (25.0%)	25.28***	.30
Disaster	3 (1.9%)	3 (2.4%)	.09	-.02
Other	42 (26.8%)	63 (50.8%)	17.13***	-.25
Peritraumatic Dissociation	1.89 (.77)	2.63 (.62)	8.65***	-.46
Peritraumatic Emotional Distress	1.19 (.65)	1.71 (.77)	5.91***	-.34
Active Coping	.90 (.56)	.95 (.54)	.72	-.05
Passive Coping	.80 (.59)	.81 (.62)	.25	-.01
Social Support	3.84 (.47)	3.85 (.46)	.20	-.01
PTSD Symptom Severity	61.69 (13.7)	66.73 (15.0)	2.93**	-.17
Current Somatization	.44 (.44)	.42 (.36)	.43	.02

Note. Social Desirability measured with the *Social Desirability Scale*. Trauma History measured with the *Trauma History Questionnaire*. Coping measured with the *Ways of Coping Questionnaire*. Social Support measured with the *Sources of Support Scale*. Peritraumatic Dissociation measured with the *Peritraumatic Dissociative Experiences Questionnaire*. Peritraumatic Emotional Distress measured with the *Peritraumatic Distress Inventory*. PTSD Symptom Severity measured with the *Mississippi Scale*. Somatization measured with the *Symptom-Checklist-90 Somatization Scale*. Effect sizes are reported in terms of r and Φ for ease of comparison across measures and with subsequent correlation tables. ns = not statistically significant.

* p < .05.

** p < .01.

*** p < .001 (two-tailed).

Table 2
Intercorrelation of variables that differed between officers and civilians (n =281)

	1	2	3	4	5	6	7	8
1. income	---							
2. minority status	.03	---						
3. total trauma exposure	.09	-.22**	---					
4. physical assault	.12*	-.25**	.19**	---				
5. "other" trauma	-.13*	.12*	-.21**	-.70**	---			
6. peritraumatic dissociation	-.16**	.12	-.01	-.15*	.17**	---		
7. peritraumatic emotional distress	-.13*	.14*	.14*	-.02	.04	.64**	---	
8. current somatization	-.05	-.10	.28**	.05	-.01	.12*	.24**	---
9. cumulative PTSD symptoms	-.17**	-.06	.21**	.01	.02	.39**	.50**	.35**

Note. Income measured in thousands of dollars. Minority status coded 0 = Caucasian and 1 = non-Caucasian. Total trauma exposure assessed using the sum of items endorsed on the *Trauma History Questionnaire*. Physical assault and "other" trauma refer to participant's selection of worst traumatic event. "Other trauma" refers to an event other than physical assault, sexual assault, accident, or disaster. Peritraumatic dissociation was assessed using the *Peritraumatic Dissociative Experiences Questionnaire*. Peritraumatic emotional distress was assessed using the *Peritraumatic Distress Inventory*. Current somatization was measured using the *Symptom Checklist-90-R Somatization Scale*. Cumulative PTSD symptoms was measured using the *Mississippi Scale*.

* p < .05.

** p < .01 (two-tailed).

Table 3
Linear regression model predicting PTSD symptoms in female police officers and civilians (n = 281)

Predictor	R ²	Δ R ²	F change	β Step 1	β Step 2	β Step 3	β Step 4	B Step 5
1. Income	.02	.02	6.21*	-.15*	-.17**	-.09	-.11	-.11
2. Trauma History	.07	.05	12.84***		.22***	.30***	.17**	.16**
3. Group	.12	.05	14.15***			-.25***	-.04	-.01
4. Peritraumatic Emotions	.28	.16	55.37***				.44***	.37***
5. Peritraumatic Dissociation	.28	.00	2.97					.13

Note. For the "Group" variable police officers were coded +1 and civilians were coded as -1.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 4
Linear regression model predicting somatic symptoms in female police officers and civilians (n = 281)

Predictor	R ²	Δ R ²	F change	B Step 1	β Step 2	β Step 3
1. Group	.00	.00	.19	.03	.12*	.12
2. Peritraumatic Emotions	.07	.07	20.19***		.28***	.29***
3. Group × Peritraumatic Emotions	.08	.01	4.08*			.12*

Note. For the “Group” variable police officers were coded +1 and civilians were coded as -1. The peritraumatic emotions variable was centered prior to computing the interaction term.

* $p < .05$.

** $p < .01$.

*** $p < .001$.