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Contributors to Hypervigilance in a Military and Civilian Sample

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Abstract

Hypervigilance toward ambiguous or threatening stimuli is a prominent feature in many trauma survivors including active and returning soldiers. This study set out to investigate the factors that contribute to hypervigilance in a mixed sample. One hundred and forty-five individuals, 50 of whom were war zone veterans, filled out a series of questionnaires including the Hypervigilance Questionnaire (HVQ; Kimble, Fleming, & Bennion, 2009). Other participants included military cadets, college undergraduates, and a traumatized community sample. In this sample, a history of military deployment and posttraumatic stress disorder symptoms independently predicted hypervigilance. The findings suggest that deployment to a war zone, in and of itself, can lead to hypervigilant behavior. Therefore, characterizing hypervigilance as pathological in a veteran sample must be done so with caution.

Keywords

hypervigilance; attention; PTSD; soldiers; deployment

From the first days of training, soldiers are encouraged to be vigilant for signs of danger—a behavior that is highly adaptive in war zones. However, many veterans returning from deployment seem to engage in a dysfunctional variant of vigilance and are constantly on guard even in circumstances where the risk is low. The *DSM-IV-TR* calls this type of behavior “hypervigilance” although there is no further specification or elaboration as to what this term means (APA, 2000). Hypervigilance is often thought to be synonymous with attentional bias although its full clinical manifestation is likely to be somewhat broader (Conoscenti, Vine, Papa, & Litz, 2009) and have cognitive, physiological and behavioral components. For example, hypervigilance may be associated with cognitive tendencies toward suspicion, mistrust, and negative expectancies for the future (Ehlers & Clark, 2000; Ehrling, Ehlers, & Glucksman, 2008; Engelhard, de Jong, van den Hout, & van Overveld, 2009). Behaviorally, hypervigilance may also include safety-seeking such as planning escape routes, maintaining weapons, and avoiding situations where one could be trapped.

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Hypervigilant states may also be associated with physiological arousal (Conoscenti et al., 2009). Thus, hypervigilance appears to be a cognitive, physiological, and behavioral pattern in which an individual either responds to neutral or ambiguous stimuli as if they were threatening or is enhanced in his or her detection and reaction to threatening or threat-related stimuli.

Hypervigilance is present in a range of anxiety disorders (De Cort, Hermans, Spruyt, Griez, & Schuurs, 2008; Freeman, Garety, & Phillips, 2000; Hollins et al., 2009; Sposari & Rapee, 2007), but is clearly prevalent in veterans and particularly those with PTSD. There is considerable evidence to support this claim from behavioral and electrophysiological studies that have demonstrated increased attentional bias toward ambiguous, potentially threatening, or trauma-relevant stimuli in combat veterans with PTSD (Buckley, Blanchard, & Neill, 2000; Kaspi, McNally, & Amir, 1995; Kimble, Fleming, Bandy, Kim, & Zambetti, 2010; Pineles, Shipherd, Mostoufi, Abramovitz, & Yovel, 2009; Stanford, Vasterling, Mathias, Constans, & Houston, 2001). However, there has been other evidence to suggest that these behavioral effects may partly be due to the effect of the trauma and may not be as reliable as previously thought (Cisler et al., 2011; Kimble, Frueh, & Marks, 2009).

Hypervigilance continues to be an area of relevance because the symptom is theoretically and empirically linked to significant functional impairment. While *vigilance* may be appropriate and adaptive in many contexts, it is assumed that *hypervigilance* in civilian life is largely dysfunctional. A number of theories have argued that increased attention to threat may initiate and exacerbate reexperiencing, numbing, avoidance, and other arousal symptoms (Brewin, Dalgeish, & Joseph, 1996; Chemtob, Roitblat, Hamada, Carlson, & Twentyman, 1988; Ehlers & Clark, 2000; Litz & Keane, 1989). Behavioral paradigms have suggested that hypervigilance is associated with distractibility for trauma-relevant information and an inability to disengage, which may present challenges for occupational functioning (Buckley, Blanchard, & Neill, 2000; Pineles et al., 2009; Thrasher & Dalgeish, 1999). In support of this notion, Norman, Stein, and Davidson (2007) found that hypervigilance was one of seven symptoms of the PTSD diagnosis that could accurately predict posttraumatic functional impairment. Additionally, Schell, Marshall, and Jaycox (2004) in a three-wave longitudinal study found that the early presentation of hyperarousal symptoms, like hypervigilance, predicted poorer recovery in the future.

Despite theoretical and empirical evidence indicating that hypervigilance can be problematic, little attention has been paid to the factors associated with hypervigilance in a veteran sample. The veteran experience is unique relative to other traumas and includes a number of phenomena that may play a causal role or summate to generate a particularly virulent form of hypervigilance in this group. First, soldiers are trained to be vigilant, which may prime soldiers for hypervigilance posttrauma. Second, soldiers are typically exposed to chronic, life-threatening stress over a long period of time. This type of experience may transform vigilance into something more problematic. Third, vigilance is highly reinforced in all aspects of military life, particularly during deployment. Soldiers are positively reinforced for engaging in this behavior (and negatively reinforced by the reduction in anxiety that vigilance may temporarily cause). Furthermore, vigilant behavior, occurring in a context of extremely high stress, may become overconsolidated (i.e., the behavior is easily

activated and difficult to extinguish). How factors such as training, deployment, and PTSD contribute to the hypervigilance seen later has largely gone unstudied.

Training Effects

The ethos of vigilance within the military culture should be given careful consideration as a possible contributor. A soldier's experience both ends and begins with reminders for vigilance. The Sentinel's Creed on the Tomb of the Unknown Soldiers concludes with "... this soldier will in honored glory rest under my eternal vigilance." This same creed is also highlighted from the outset of soldier training in the *Army Field Manual—The Soldier's Guide* (Department of the Army: AFM 7-21.13). Hypervigilance in active or returning soldiers could be "primed" by the fact that they are trained to be ready, prepared, and vigilant from the moment they enter into the military. Both training manuals and training emphasize the need for constant sensory scanning and searching. In combat environments and while on guard duty, soldiers are encouraged to look for the presence of rising dust or exhaust, outlines, shadows, shine, glare, and to listen for footsteps, limbs breaking, and vehicle and weapon sounds (Army Field Manual, AFM 21-75). Anything out of the ordinary is considered a potential threat.

Trauma Effects

Trauma, in and of itself, may impact vigilance and hypervigilance. Any deployed soldier is at very high risk for being traumatized, at least as currently defined by the *DSM-IV-TR* (APA, 2000). Such an experience, even a single event, could potentially lead to hypervigilance for signs that indicate that such an event might happen again. This possibility is generally recognized by researchers who study attentional bias in those with PTSD. Control groups in these studies invariably include a trauma control group to ensure that any hypervigilance that is present is due to PTSD and not the trauma itself. Because most investigators have historically been interested in PTSD, there typically are not many studies that compare a traumatized group without PTSD to a nontraumatized group (thus isolating the effects of trauma itself). However, those that do so indicate that trauma alone can have considerable effects on the brain and attentional processes (Karl, Malta, & Maerker, 2006; Kimble, Fleming, & Bandy, 2010; McEwen & Lasley, 2007; Vythilingam et al., 2002, 2005; Cisler et al., 2011). Vythilingam et al. (2002) reported smaller hippocampal volumes in those with depression and a history of child abuse compared to those with just depression. Cisler et al.'s (2011) comprehensive review of the emotional Stroop effect in PTSD indicated that trauma control groups showed trauma-specific attentional biases relative to nontrauma controls similar in effect size to those with PTSD. Kimble et al. (2010) found that trauma alone impacts event-related potentials sensitive to attention. All this work suggests that, when studying a phenomenon such as hypervigilance, there needs to be a recognition that the behavior may result, at least partly, from the trauma itself and that later pathology only exacerbates it.

Deployment Effects

Adding to these general trauma effects is the specific nature of military deployment and exposure to a combat zone. Unless injured and evacuated, almost all soldiers are exposed to

at least a year of chronic, life-threatening circumstances. In addition, they face daily hardships associated with separation, an unfamiliar environment, a difficult climate, and continual adjustment. King, King, Gudanowski, and Vreven (1995) referred to this as the “malevolent environment” and demonstrated it to be a more significant predictor of PTSD than even traditional combat or exposure to atrocities. The effects of this type of deployment experience in and of itself can be profound. For example, Vythilingam et al. (2005) found that all deployed veterans regardless of PTSD status had smaller hippocampal volumes than a nontraumatized control group. Whether deployment in and of itself can impact hypervigilance is not known. One might hypothesize that daily exposure to a combat environment could generate hypervigilance even in the absence of other pathological symptoms. For the soldier, hypervigilance is learned under conditions of high stress and psychophysiological arousal. A number of studies have demonstrated that acquisition occurs more quickly while aroused and the behaviors learned are resistant to extinction (Purkis & Lipp, 2009; Rodrigues, Ledoux, & Sapolsky, 2009; Schiller, Levy, LeDoux, & Phelps, 2008). These data have led to theories that suggest that PTSD is a disorder of fear conditioning—that individuals with PTSD learn fear associates quickly and unlearn them slowly (Amstadter, Nugent, & Koenen, 2009; Fanselow & Ponnusamy, 2008; Milad et al., 2008; Orr et al., 2000; Peri, Ben-Shakhar, Orr, & Shalev, 2000).

However, in this regard, those with PTSD are likely to differ in degree, not kind, from those soldiers without PTSD. In all soldiers, it is likely that vigilance becomes easily activated and highly consolidated (i.e., becoming hypervigilant) upon deployment, and this behavior is reinforced on a return to civilian life (Chemtob et al., 1988; Foa, Riggs, Dancu, & Rothbaum, 1993; Litz & Keane, 1989; Mowrer, 1951). This reinforcement during civilian life occurs through instrumental conditioning in which hypervigilant behavior is reinforced through the reduction in anxiety that occurs after the hypervigilant behavior is engaged in. While the benefits of the hypervigilant behavior are immediately apparent to the returning soldier through the reduction in anxiety, the costs may be less apparent. Soldiers may not be aware that the hypervigilant thoughts could be making them more anxious and possibly playing a role in the alienation and social isolation that sometimes follows deployment (Alford, Mahone, & Fielstein, 1988).

PTSD Effects

The relationship between PTSD and hypervigilance hardly requires reviewing. It has been a core symptom of the hyperarousal cluster of PTSD specifically and traumatic stress disorders in general since their earliest characterizations (Jones & Wessely, 2005). Today, it remains part of both the IDC and APA criteria for the disorder. An important question, however, is what other factors contribute to the hypervigilance seen in a veteran with PTSD. While those veterans with PTSD may report hypervigilance, almost all of those veterans have been trained, deployed, traumatized, and lived in a malevolent environment for at least a year. While hypervigilance may be present in the veteran with PTSD, it may not be present *because* of the PTSD.

In summary, there are numerous factors that might impact on hypervigilance in the returning soldier. The goal of this study was to identify what some of these factors are. The study

aimed to answer some of the following questions using a sample of military cadets, active soldiers, veterans, and civilians:

- Is military training associated with hypervigilance?
- Can trauma alone produce significantly higher levels of hypervigilance?
- Is deployment associated with hypervigilance in soldiers?
- Do disorders like depression, dissociation, and PTSD predict hypervigilance above and beyond trauma and deployment?

Method

Participants

One hundred forty-five individuals completed all the necessary questionnaires as part of a series of studies that were held at either Norwich University or Middlebury College. Norwich University is the country's oldest private military university with 2,300 students. Middlebury College is a highly selective liberal arts college of similar size. To get a varied sample, recruitment strategies focused on a broad community sample, an undergraduate sample, a veteran sample, and a military cadet sample.

The community sample consisted of 52 participants who were recruited using flyers and newspaper advertisements asking for trauma survivors in general, and combat veterans in particular. Twenty-one of these individuals were veterans of either the Iraq, Afghanistan, or Vietnam. The other participants were primarily motor vehicle accident survivors but included some sexual assault survivors, child abuse survivors, and assault victims.

The veteran sample was augmented via 26 U.S. veterans of the Iraq and Afghanistan wars who were recruited through their membership in the Vermont National Guard Units that were based at the Norwich University campus. As is the case with the veterans recruited through the community flyers and advertisement, all veterans had been deployed overseas in a combat zone.

The cadet sample consisted of 36 military cadets recruited from Norwich University. They were enrolled into the study for credit in their Psychology courses. This was a mixed trauma sample including some with trauma and some without trauma.

Thirty-one participants were traditional undergraduate students at Middlebury College who also varied in their trauma histories. They enrolled for credit in their introductory psychology course. None in the undergraduate sample were veterans.

Because the research was conducted as part of a collaborative study between Norwich and Middlebury investigating eye-tracking and event-related potentials, all participants were screened for history of epilepsy or seizures, adult fever more than 104°F, history of substance dependence, history of head trauma with loss of consciousness longer than 5 min, and any current neurological disorder.

The average age of the participants was 26.7 years old. The average amount of education was consistent with “partial college.” Sixty-four percent of the sample was male. Eighty-six percent identified themselves as White, 5% as Asian, 5% as Hispanic, 3% as Black, 1% as Native American, and <1% as “Other.”

Procedures

All procedures were approved by the institutional review boards at Middlebury College and Norwich University. All participants began with an informed consent and then completed the following measures, which were coded with unique identifiers and kept confidential in a locked location:

Measures

Trauma History—In the community and veteran sample, participants were screened for trauma history by phone (using Criteria A1 and A2) and confirmed via an in-person interview. In the cadet and undergraduate sample, trauma history was defined using the Trauma Experiences Questionnaire (Vrana & Lauterbach, 1994). The TEQ assesses the presence or absence of 11 specific traumatic events and includes two nonspecific questions about trauma. Additional probes for each question inquire about life threat and injury. Given the nature of the questionnaire, which asks for the dichotomous endorsement of various traumas, internal consistency is not an appropriate measure of reliability. However, 2-week test-retest reliability is very high (.91; Lauterbach & Vrana, 1996).

Beck Depression Inventory-II—This 21-item scale was given to assesses current levels of depression (Beck, Steer, & Brown, 1996). Participants answer each question on a 4-point scale. This inventory is the most widely used self-report of depression. Numerous studies in college and psychiatric samples have high levels of reliability and validity (Arnau, Meagher, Norris, & Bramson, 2001; Steer & Clark, 1997). In this sample, Cronbach’s alpha was .927.

Dissociative Experiences Scale—The DES is a 28-item questionnaire designed to assess key elements of the dissociative construct, including derealization, depersonalization, absorption, and amnesia (Bernstein & Putnam, 1986). Each item inquires what percentage of the time (from 0% to 100%) the participant is engaging in the behavior questioned. Scores are averaged and range from 1 to 100. The DES shows good construct validity and high test-retest correlations (.93; Carlson, 1997; Carlson & Putnam, 1993; Dubester & Braun, 1995). In the sample, Cronbach’s alpha was .924.

PTSD Symptoms Scale Self-Report (PSS-SR)—This is a 17-item scale covering all three clusters that directly assesses the symptoms of PTSD using a 4-point scale (Foa et al., 1993). Foa and colleagues have provided evidence of both the reliability and validity of the PSS. All three subscales (reexperiencing, avoidance, and hyper-arousal) had adequate internal consistency (.91 for the PSS-SR) and test retest reliability of .74 for the overall score. The PSS adequately classified 86% of the participants using the SCID-PTSD module. (Foa et al., 1993; Norris & Riad, 1997). Cutoffs for PTSD status were scores above 18 for those who only had the PSS-SR and did not undergo clinical interview. (Coffey, Gudmundsdottir, Beck, Palyo, & Miller, 2006; Stieglitz, Frommberger, Foa, & Berger, 2001;

Wohlfarth, van den Brink, Winkel, & ter Smitten, 2003). In this sample, Cronbach's alpha was .933.

The Hypervigilance Questionnaire (HVQ)—The HVQ is an 11-item questionnaire in which all items load onto a single factor (Kimble et al., 2009). Items are scored from 1 to 5 (*not at all true* to *extremely true*) with scores ranging from 11 to 55. Cronbach's alpha in the past has been .92, split-half reliability is .89. The scale showed good convergent and divergent validity, as it correlated highest with the hypervigilance item on the PSS-SR and correlated more strongly with the PSS than either the BDI-II or DES. In a regression, only the PSS-SR predicted unique variance in hypervigilance scores when compared to the DES and BDI-II. In this sample, Cronbach's alpha was .930.

Results

Demographics

There were no sex differences in hypervigilance, $t(143) = 0.88, p = .38$. There were also no differences based on minority status. Since no individual minority group had a cell greater than $n = 10$, individuals within minority groups were collapsed to create an $n = 20$. A t -test that compared nonminorities ($n = 126$) to minorities ($n = 20$) also found no difference in hypervigilance, $t(144) = -1.34, p = .18$. There was a difference based on education level, however. Individuals with a high school degree or less ($n = 10$), were compared to those with partial college ($n = 109$) and those with a college degree ($n = 27$). A one-way ANOVA did demonstrate differences in hypervigilance based on education, $F(2, 145) = 5.39, p = .006$. Tamhane post hoc tests indicated a trend in which those with high school degrees or less reported significantly more hypervigilance than those with partial college degrees ($p = .08$). Age was significantly correlated with hypervigilance, with greater hypervigilance associated with increasing age, $r = .28, p < .001$.

Training Effects on Hypervigilance

The first goal of the study was to investigate whether hypervigilance could be produced by military training. To investigate this difference, undergraduates in the corp of cadets at Norwich University were compared to undergraduates from Middlebury College. This subgroup of participants ($n = 64$) were chosen because these two specific groups could isolate the effects of military training (without subsequent combat) on hypervigilance and had no differences in age or education levels. A univariate analysis of covariance was used to investigate the possible effects of military training on hypervigilance scores with "Training" as the independent variable and PSS scores as a covariate. There was no significant effect for "Training." Military cadets did not have significantly higher hypervigilance scores ($M = 25.1, SD = 7.8$) than nonmilitary undergraduates ($M = 23.7, SD = 8.7$). The pattern in the findings did not change when the PSS was removed from the analysis.

Trauma Effects on Hypervigilance

To investigate whether trauma, in and of itself, could produce hypervigilance, a univariate analysis of covariance was used on the entire sample. In the entire sample, 107 participants

had a history of trauma and 39 did not. This included participants from all four recruitment strategies. "Trauma" was the independent variable and PSS scores were used as the covariate to account for variance associated with PTSD symptoms that are likely to be higher in the trauma sample. Overall, trauma did not significantly predict hypervigilance scores, $F(1, 144) = 1.2, p = .28$. Individuals with a history of trauma ($M = 31.2, SD = 11.6$) did not have significantly higher scores than did those without a trauma history ($M = 24.1, SD = 8.5$). The PSS covariate was significant, $F(1, 144) = 51.3, p = .001$. When the PSS was removed as a covariate, trauma was then a significant predictor, $F(1, 145) = 12.53, p = .001$, indicating that the trauma only predicts hypervigilance through its shared variance with PSS scores.

Deployment and PTSD Effects on Hypervigilance

To investigate the third and fourth questions, whether deployment and symptom profiles predict hypervigilance, a hierarchical multiple regression was used. Demographic variables (age, education, race, and sex) were entered first, followed by deployment status, and then symptom scores for the PSS, BDI, and DES. Only individuals who had been traumatized were used for this analysis. This left a sample of 107 participants. Deployment was operationally defined as time spent overseas in a combat zone as a member of the U.S. military.

Table 1 shows the results of the multiple regression. The results of the regression indicated that the overall model was significant with $R = .60$ and $R^2 = .36$. In the first step, age was the only demographic variable that predicted hypervigilance ($\beta = .24, t = 2.40, p = .02$). In the second step, deployment predicted additional variance ($\beta = .28, t = 2.40, p = .02$) with age no longer significant ($\beta = .17, t = 1.67, p = .10$). In the final step, with BDI, DES, and PSS scores added, only deployment ($\beta = .25, t = 2.53, p = .01$) and PSS scores ($\beta = .29, t = 2.38, p = .02$) still predicted hypervigilance.

Figure 1 shows the means for deployed veterans with and without PTSD and civilians with and without PTSD. The means indicate that the veterans with PTSD had the hypervigilance scores ($M = 43.5, SD = 9.2$). Veterans without PTSD ($M = 31.1, SD = 11.2$) were close in hypervigilance scores to those community members with PTSD ($M = 34.4, SD = 10.5$). Those civilians without PTSD had the lowest scores ($M = 25.6, SD = 11.6$). Follow-up t -tests indicate that all comparisons were significantly different from each other with the exception of the community sample with PTSD, which did not differ significantly from the deployed soldiers without PTSD, $t(49) = 0.86, p = .39$.

Discussion

This study set out to investigate the factors that contribute to hypervigilance. Theoretically, trauma alone (even in the absence of PTSD), military training, and other syndromes like depression or dissociation could all impact hypervigilance. These data show, however, that just two factors predicted hypervigilance: deployment and PTSD.

PTSD-related Effects

Not surprisingly, individuals with posttraumatic stress reported greater hypervigilance than did those without PTSD. Hypervigilance has been a long recognized component of the disorder and was present in even the earliest conceptualizations of posttraumatic pathology (APA, 1980). These self-report data are consistent with theoretical models, clinical reports, and behavioral and neurological data that have demonstrated evidence for automatic attentional bias toward threat in those with PTSD (Ehlers & Clark, 2000; Karl et al., 2006; Weber, 2008). In this study, PTSD was the only syndrome measured that uniquely contributed to the hypervigilance seen posttrauma. One could argue, for example, that the attention and mood-congruent biases associated with depression might contribute to the hypervigilance seen after a traumatic event. Likewise, it is theoretically plausible that dissociation, with its associated absorption and depersonalization, might negatively predict hypervigilance. Even after accounting for the variance associated with depression and dissociation scores, however, PTSD was the only unique syndromal predictor. While depression and dissociation positively correlated with hypervigilance in zero order correlations, it appears that these disorders predict hypervigilance through their shared variance with PTSD. Therefore, the data suggest that nondeployed personnel with primarily depressive or dissociative syndromes will not present with hypervigilance unless there is comorbid PTSD. This indicates that, in a nondeployed traumatized sample, hypervigilance for threat is likely a sign of the presence of PTSD and not indicative of dissociative or depressive pathology.

Deployment-Related Effects

In contrast, a similar interpretation is not appropriate for soldiers who have been deployed to a war zone. While it is possible that their hypervigilance resulted from PTSD, it is also possible that deployment alone generated hypervigilance. Those who were deployed reported hypervigilance that was statistically indistinguishable from that seen in those with PTSD resulting from other types of traumas. This statement is supported by the fact that veterans without PTSD were not statistically different in their hypervigilance scores from those with PTSD that resulted from other types of trauma. In addition, those veterans without PTSD also reported significantly higher hypervigilance scores than community members and students without PTSD.

Therefore, deployment to a war zone is associated with hypervigilance that is maintained on return. This suggests that war zone deployment, with its continuous exposure to life-threatening situations, may generate fixed cognitions or behaviors that are not easily unlearned upon return duty or civilian life in the United States. It is likely that the hypervigilant behaviors are acquired while deployed and maintained upon return due to negative reinforcement. Hypervigilant behavior has been theorized to reduce anxiety by either confirming the absence of threat (i.e., walking the “perimeter” at night) or helping the veteran feel prepared for a possible threat (i.e., sitting with one’s back to the wall; Conoscenti et al., 2009). In such models, the behavior could be seen as adaptive via its reduction in anxiety.

Hypervigilance and Functional Impairment

However, it is also possible that hypervigilance may cause difficulties for the individual of which they are not aware. The work of Norman and colleagues (2007) certainly suggests that hypervigilance leads to functional impairment. In two separate samples ($n = 1,005$, $n = 681$), they found that hypervigilance was one of only seven symptoms that effectively predicted posttraumatic functional impairment in both samples. Similarly, Schell and colleagues (2004) found that the prominence of hyperarousal symptoms, like hypervigilance, early in the course of the disorder predicted the least overall symptom improvement with time. The authors argue that hyperarousal symptoms may play “a distinctive causal role” (p. 195) in poor outcomes in trauma survivors. While veterans may be aware of the reduction in anxiety associated with hypervigilant-related safety-seeking behaviors (i.e., keeping a gun, checking locks), they may be less aware of the anxiety caused by hypervigilant cognitions and behaviors, such as suspiciousness and scanning for danger. Numerous theorists have discussed how hypervigilance and attentional bias is likely to lead to the interpretation of a wide range of innocuous and ambiguous stimuli as threatening. (Brewin et al 1996; Conescenti et al., 2009; Ehlers & Clark, 2000; Litz & Keane, 1989). This would lead to an increase rather than a reduction in anxiety. This hypervigilant process, however, may be automatic, well practiced and therefore not easily identifiable to the individual as a contributor to his or her anxiety.

The fact that veterans without PTSD reported relatively high levels of hypervigilance has both diagnostic and clinical implications. Many personnel deployed to a war zone are likely to return with hypervigilance that approximates, in severity, the hypervigilance seen in some clinical samples. Many of these individuals may feel a need to be “on guard,” “survey the scene for signs of possible danger,” or “pay attention to the slightest noise or sound” (Kimble et al., 2009). Whether this hypervigilance is functionally impairing in this group is not known. However, theory suggests that such hypervigilance, even in a sample without PTSD, would lead to poorer psychological, occupational, and social functioning. Furthermore, in those with PTSD, the field needs to give consideration to the possibility that hypervigilance may have a basis in the nature of their traumatic experience and not necessarily their pathology.

This possibility calls into question whether hypervigilance should be considered a “symptom” in a veteran sample when it is present in the majority of veterans who return—particularly if the symptom occurs in relative isolation. Certainly in military personnel, the presence of the symptom alone should not be considered the basis for clinical intervention. Clinicians need to consider whether its presence already has a negative impact on the individual’s life or seems to be initiating a downward spiral. This downward spiral would be identified by its forward feedback characteristics in which increased mis-characterization of nonthreatening situations as actually threatening leads to higher levels of anxiety, which further biases future interpretations toward threat (Dagleish, Moradi, Taghavi, Neshat-Doost, & Yule, 2001; Ehlers & Clark, 2000).

In addition, the fact that hypervigilance appears to have two independent contributors suggests that hypervigilance may be a matter of degree and not kind in returning soldiers.

While deployed soldiers in general reported high levels of hypervigilance, those veterans with PTSD reported even higher rates. One can only speculate but it may be an area for future research to assess whether those returning soldiers with PTSD engage in hypervigilant behavior more often and across a wider range of circumstances than those soldiers without PTSD.

Training and Trauma Effects

While deployment was associated with hypervigilance, trauma in general was not. However, in this study, those in the nondeployed sample were predominantly victims of a single traumatic event such as a motor vehicle accident, physical assault, or sexual assault. While single events are clearly capable of generating posttraumatic responses, it does not appear that they generate high levels of hypervigilance in the absence of PTSD. Very few participants in the nondeployed sample reported chronic trauma such as childhood sexual abuse or domestic violence, and therefore this study was not able to answer whether these types of chronic circumstances produce hypervigilance consistent with what is seen in returning soldiers.

Military training, at least not cadet training in a military institution, was also not associated with hypervigilance. This training, which emphasizes readiness and vigilance, appears to do so in a manner that is adaptive. Cadets are likely to be more observant and vigilant in situations that require such behavior and yet can contain such behavior so that it does not affect civilian functioning. In the current study, there was no way to study whether military training primes soldiers to become hypervigilant when exposed to combat; such a study would require a design in which soldiers were sent into combat without any training on vigilance and observation—an obvious impossibility. However, a sample that had been exposed to a war zone as civilians might serve as an interesting comparison group. Such individuals may have been exposed to chronic life threat without having had formal training focusing on vigilance.

Summary

Regardless of these limitations mentioned above, the data indicate that deployment with war zone exposure generates hypervigilance in the soldier that is statistically indistinguishable from hypervigilance found in a civilian PTSD sample. This speaks to the multifactorial nature of this phenomenon. While PTSD can be at the source of hypervigilant behavior, so too can certain types of experiences. This has implications for the evaluation of active and returning soldiers as the hypervigilance present might hearken back to earlier conceptualizations of PTSD in which symptoms were seen as normal reactions to abnormal circumstances.

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Figure 1.

Hypervigilance as a function of PTSD and deployment

Note: ND = not deployed; D = deployed.

* $p < .05$, two-tailed.

Table 1Summary of Hierarchical Regression Analysis for Predictors of Hypervigilance ($N = 78$)

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
Step 1				
Age	0.19	0.08	0.24	0.02*
Race	3.08	3.20	0.10	0.34
Education	-2.41	2.04	-0.12	0.24
Sex	-1.99	2.37	-0.09	0.40
Step 2				
Age	0.14	0.08	0.17	0.10
Race	2.21	3.14	0.07	0.48
Education	-2.21	1.99	-1.11	0.27
Sex	1.00	2.60	0.04	0.70
Deployment	6.34	2.55	0.28	0.02*
Step 3				
Age	0.07	0.07	0.09	0.35
Race	0.18	2.78	0.06	0.95
Education	0.35	1.84	0.18	0.85
Sex	-1.58	2.45	-0.07	0.52
Deployment	5.68	2.25	0.25	0.01*
PSS	0.31	0.13	0.29	0.02*
BDI	0.14	0.15	0.11	0.33
DES	0.19	0.12	0.19	0.11

Note: $R^2 = .36$, R^2 for Step 1 = .079 ($F = 2.05$, $p = .09$); R^2 for Step 2 = .056 ($F = 2.96$, $p = .02$); R^2 for Step 3 = .23 ($F = 6.53$, $p < .001$).

* $p < .05$.