

# Psychological Well-Being Among US Soldiers Deployed From Germany to the Gulf War

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*This paper highlights preliminary findings from an analysis of data collected as part of a Walter Reed Army Institute of Research (WRAIR) study of the human dimensions of the Gulf War. Data come from 748 combat arms soldiers deployed from Germany for Operations Desert Shield and Desert Storm. These soldiers were surveyed in Saudi Arabia a few weeks before the start of the ground war and again in Germany four months after combat. While most soldiers were exposed to one or more combat events, only a minority were exposed to severe combat stressors. About 10% of the sample reported having frequent symptoms associated with post-combat psychological stress. Those exposed to death or injury of an American soldier and those exposed to multiple threats reported the most distress.*

Between August 1990 and January 1991, the United States deployed 500,000 military personnel to Southwest Asia as part of a multi-national response to Iraq's invasion of Kuwait (Aug 2, 1990). Of these, 79,000 were American soldiers stationed in Germany. These soldiers formed the heart of the United States Army VII Corps, a force of more than 100,000 active duty soldiers, 21,000 National Guard and Reserve personnel, and 24,000 British soldiers. During the ground combat phase of Operation Desert Storm (Feb 24-28, 1991), this force traveled 150 miles into Iraq destroying 11 Iraqi divisions and almost 4000 enemy tanks and armored vehicles. While the number of enemy soldiers killed is unknown, this force captured more than 26,000 enemy prisoners. A total of 148 American service members were killed in action and 467 were wounded. Of these, 35 were killed and 72 were wounded by friendly fire. VII Corps alone had 48 combat deaths and 19 of these were from friendly fire.

Germany-based American soldiers sent to the Gulf War were part of

an already forward deployed force (over 50% with their families living in Germany). As a result of changes in Germany, Eastern Europe, and the Soviet Union, these soldiers were actively involved with plans for unit inactivation and Army drawdown when the Gulf War rapidly changed their focus. In fact, VII Corps in Europe was not publicly alerted for deployment until late October, nearly three months after the start of Operation Desert Shield. There was very little time for leaders and their soldiers to prepare for a deployment that was not part of their unit's normal contingency plan.

Once deployed, these soldiers had less time to adjust to desert conditions than soldiers originally deployed from the United States. In addition, "filler" personnel from non-deploying Germany-based units were used to augment VII Corps units. In some cases, this involved as many as a third of the junior and mid-level enlisted soldiers in these deploying units. These soldiers had very little time to integrate into their new units and to psychologically bond with their fellow soldiers and leaders. In most cases, these soldiers also left their families living in communities far removed from their new unit's rear detachment and family support group.

The data for this paper come from a large, on-going study of the human dimensions of the Gulf War being con-

ducted by the Department of Military Psychiatry of the Walter Reed Army Institute of Research. This paper highlights some of the pre-combat concerns of a sample of VII Corps soldiers and then reports on the same soldiers' combat experiences, as well as aspects of their subsequent psychological adaptation as measured four months post-combat.

## Method

### Sample

Data come from two self-administered surveys of soldiers from a Germany-based division deployed to Saudi Arabia in January 1991. The first survey was administered over a four-day period a few weeks before the start of the ground war to 1,400 junior to mid-level enlisted soldiers camped in remote desert staging areas near the Iraqi border. The division's three maneuver brigades (two armor and one mechanized infantry) were purposefully targeted for inclusion in this study in order to maximize the potential for obtaining subjects likely to be exposed to a variety of combat stressors. Questionnaires were passed out and collected by administrative or medical personnel in the designated companies. Because of the opportunistic nature of the data collection, unit response rates are unknown.

While the realities of administering a survey to soldiers deployed in tactical positions in the desert just before

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the start of the ground war required a number of methodological compromises, there are no obvious indications of demographic bias in terms of rank, race, or marital status caused by the lack of controlled conditions. In addition, completed surveys had relatively low rates of missing data (less than 5% by item).

The second survey was an attempt to follow up with the same 1,400 soldiers four months after the war and a few weeks after these soldiers returned to Germany. At this point, soldiers originally cross-leveled from other units had returned to their original unit and some soldiers were still in Saudi Arabia (rear party turning in equipment for shipment). These units were renewing plans and actions for unit inactivation. In some cases, soldiers had already departed to new units in the United States or Germany. The surveys were administered (by the authors and their research assistants) in a classroom environment in the soldier's unit area. In most cases, two survey administrations were scheduled for each unit within a three-week period. This allowed a make-up day for soldiers on leave during the first survey administration. A total of 970 soldiers completed the second survey (69% of original sample).

The present analysis is based on 748 soldiers for whom it was possible to match pre- and post-combat surveys (53% of original sample). Missing or incomplete social security numbers were the primary cause of unsuccessful matching. However, demographic analyses show that the matched sample is an unbiased subgroup representative of both original samples. All members of the sample are male with 65% reporting they are white, 22% black, and 9% Hispanic. Their average age at the time of the first survey was 23 years (with a range from 18 to 48 years). Forty-six percent (46%) were married. The pre-combat rank variable shows that 33% were privates, 35% specialists or corporals, 21% sergeants, and 11% staff sergeants. Twenty-four percent (24%)

were assigned to their company for only three months or less at the time of the first survey. The majority of these new soldiers were most likely "filler" personnel assigned from other USAREUR units.

### Survey Instruments

The two questionnaires used were paper and pencil instruments consisting of closed-ended items. Each asked a variety of questions about background and personal characteristics.

In the pre-combat survey, soldiers were asked about their level of worry or stress concerning possible combat events. Their scores were measured on a five-point scale from 0 (none at all) to 4 (extreme). Events included being attacked by enemy tanks or artillery, as well as the possibility of death or injury to self or buddies. In the post-combat survey, questions were asked about the soldier's actual exposure to these and other combat events.

The Impact of Event Scale (IES) was used in the post-combat survey to assess the presence of psychological stress symptoms associated with this deployment and subsequent combat exposure.<sup>1</sup> This scale can be tailored to specific events and is a widely used instrument in studies of traumatic or stressful life events. It contains 15 symptoms with four categories for reporting the frequency of each symptom experienced over the last seven days: Often, Sometimes, Rarely, and Not at All. Following the weighting procedure of Zilberg, Weiss, and Horowitz (1982), these categories are scored 5, 3, 1, and 0 respectively.<sup>2</sup> The scale contains two logically and empirically consistent subscales, reported here as "avoidance" and "intrusion."<sup>1</sup> The eight avoidance items are represented by statements like "I tried not to talk about it (Operation Desert Storm)." Intrusion is represented by seven items like "Pictures of Operation Desert Storm popped into my mind." These two subscales are believed to provide reliable and valid measures of current subjective distress associated with combat trauma.<sup>3</sup>

## RESULTS

### Pre-Combat

Almost half of the sample (45%) reported "quite a bit" or "extreme" worry about the possibility that they or a buddy might be killed or wounded in combat. Only 21% expressed the same concern about having a leader killed or wounded and 7% expressed concern about having to kill or wound the enemy. Sixty-three percent (63%) of these soldiers expressed "quite a bit" or "extreme" worry about enemy use of chemical or biological agents. Approximately one third of the soldiers had the same degree of concern about a variety of enemy threats (37% for artillery, 30% for aircraft, and 30% for tank attack). There were no differences in their concerns based on time assigned to the unit.

Time in unit was not a factor for confidence in the company commander's combat leadership, confidence in NCO combat leadership, or appraisal of the training of the soldier's squad for combat. Seventy-five percent (75%) of all soldiers expressed confidence in their own abilities, 67% were confident in their squad, 51% expressed confidence in their company commander, and 48% were confident in the combat leadership of their NCOs.

Confidence in company commander's ability to lead in combat and confidence in unit NCOs' combat leadership was not related to pre-combat fears. A belief that one's squad is well trained to go into combat had a slight but significant positive relationship to reduced fears about attacks by enemy tanks and enemy artillery (correlations of 0.10 and 0.12,  $p < 0.01$ ). Confidence in one's own combat training was positively correlated with lower fears for attack by tanks, artillery, and chemical and biological weapons (correlations of 0.18, 0.12, and 0.15;  $p < 0.001$ , 0.01, and 0.001).

### Post-Combat

Exposure to death and wounding are among the most traumatic types of combat exposure. The experience of personal threat is also considered traumatic. Together, along with dura-

tion of exposure in a combat zone, these are the primary factors thought to lead to combat stress reaction.<sup>4</sup>

Seventy percent (70%) of this sample reported seeing killed or wounded enemy soldiers and 12% reported seeing civilians who were killed or wounded. Only 3% said that they saw an American soldier killed by the enemy and 9% reported seeing an American soldier wounded by the enemy. Two percent (2%) reported seeing an American soldier killed by friendly fire and 9% saw an American soldier wounded by friendly fire. Thirteen percent (13%) had a buddy who was wounded by the enemy and 5% had a buddy who was killed by the enemy. Only 3% reported having a company leader killed or wounded. Overall, more than 60% of these soldiers were not exposed to the death or wounding of an American soldier, and 26% claimed no exposure to death or wounding at all.

Sixty-two percent (62%) of the sample reported being exposed to a threat from enemy mines, 51% received artillery fire, 37% were exposed to attacks from enemy tanks, and 22% said that they thought that they were about to be killed, for example, by getting pinned down or experiencing a "near miss." Overall, 85% said that they experienced one or more of these combat-related threats.

At four months post-combat, the majority of these soldiers reported some avoidance behaviors and/or intrusive thoughts associated with Operation Desert Storm. This was true even for soldiers reporting no exposure to death, wounding, or attack by the enemy (a combat threat). The most common examples of avoidance were "I avoided letting myself

get upset when I thought about it or was reminded of it" (53%) and "I felt as if it hadn't happened or wasn't real" (46%). The most common examples of intrusion were "I thought about Operation Desert Storm when I didn't mean to" (70%) and "Pictures of it popped into my mind" (68%).

About 10% of the sample reported "often" experiencing signs of avoidance or intrusive thoughts. Most soldiers who described signs of avoidance or intrusion said that these signs only occurred "sometimes" or "rarely" over the last week. Figures 1 and 2 show the distributions by frequency

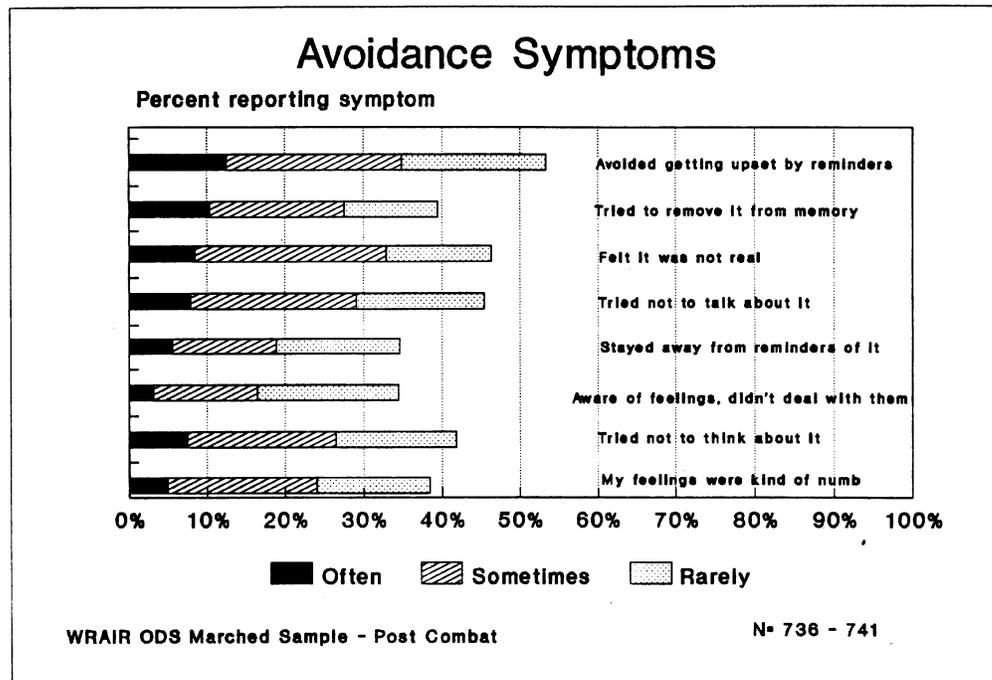


Figure 1. Impact to combat events.

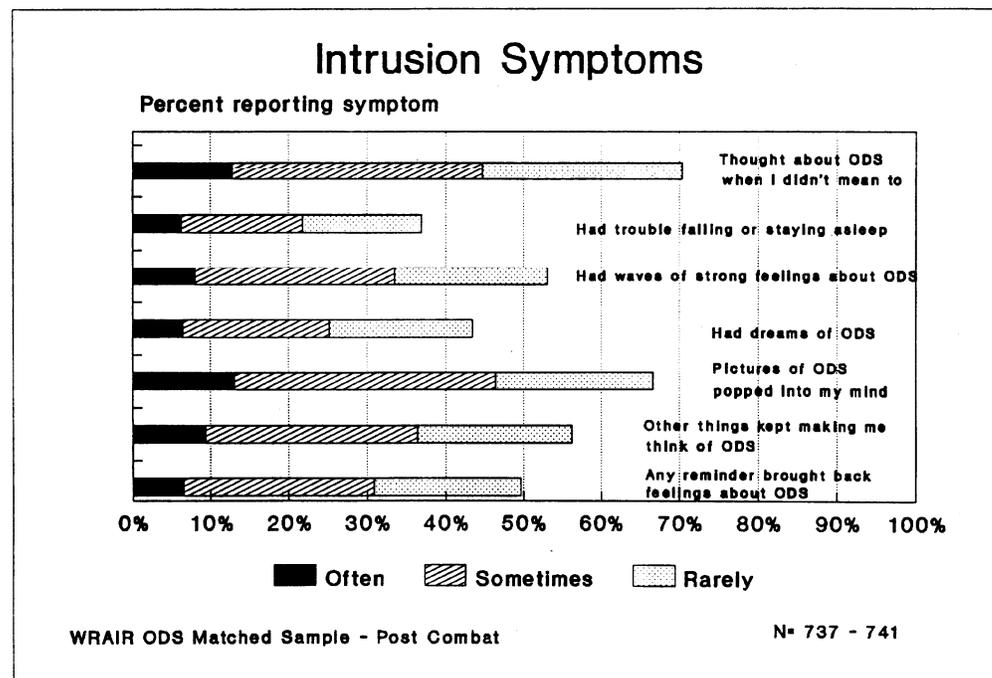


Figure 2. Impact to combat events.

of occurrence for the individual avoidance and intrusion symptoms.

While we have no prior US Army data against which to compare these results, a modified 13-item version of the IES has been used in a study of Israeli soldiers who participated in the 1982 Lebanon War.<sup>4</sup> This Israeli sample is similar to our own in its inclusion of soldiers who served in forward-deployed, armor-heavy units during high intensity combat. Using the Israeli study's scoring method, soldiers in our Desert Storm sample had an avoidance sub-scale mean of 1.07 (standard deviation = 1.35) and a mean intrusion sub-scale score of 1.33 (standard deviation = 1.15). These scores are slightly higher than scores reported for Israeli combat soldiers in general, but substantially lower than scores for Israeli soldiers who were diagnosed as combat stress reaction casualties by Israeli Defense Force clinicians on the battlefield (Fig 3). Importantly, there is no comparable group of US soldiers who were labeled as combat stress reaction casualties.

Returning to the original 15 item IES, having a "buddy killed or wounded" resulted in a significantly greater frequency of reported avoidance signs (mean score of 1.50 vs. 0.98,  $p < 0.001$ ). Having a leader killed or wounded and exposure to the death or wounding of enemy soldiers or civilians did not result in significantly higher avoidance scores (Fig 4). Intrusive thoughts were significantly greater for all exposures to death or wounding (Fig 5).

Thinking that you were about to be killed resulted in significantly higher avoidance scores (mean score 1.67 vs. 0.86,  $p < 0.001$ ). Exposure to artillery or mines did

not (Fig 6). There were no soldiers in the sample exposed to the threat of enemy aircraft. Exposure to all of these three threats (a "near miss," artillery fire, and mines) resulted in significantly higher intrusion scores than non-exposure (Fig 7).

Based on these analyses, only the

most severe exposures (whether death, injury, or attack) produced significantly more frequent avoidance symptoms. Intrusion-symptoms were more common for a variety of combat exposures. Avoidance symptoms are thought to be the result of control efforts aimed at prevention of

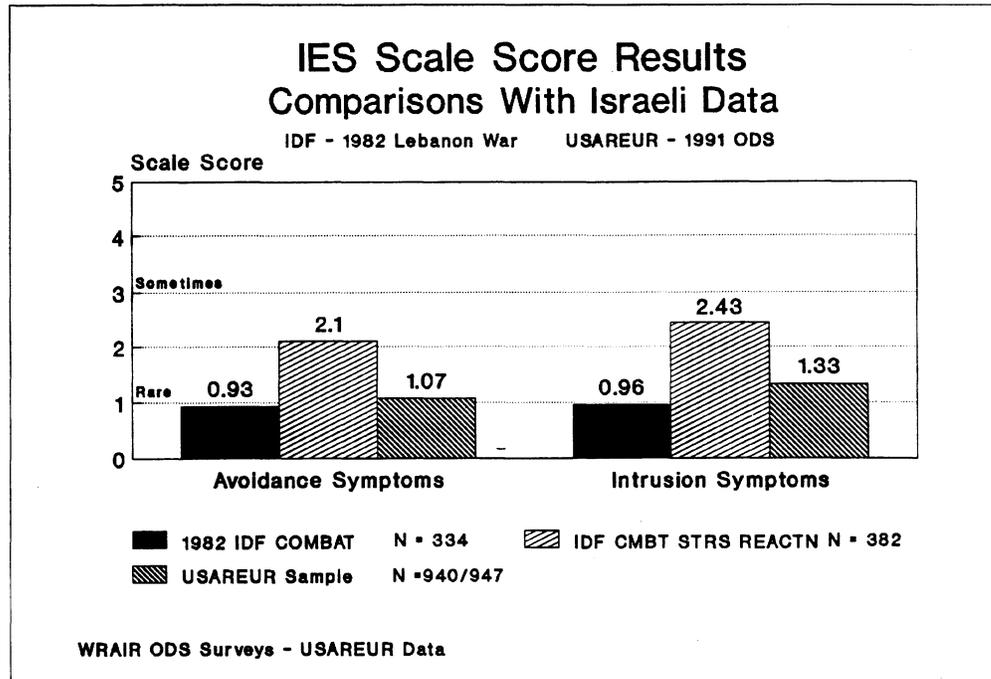


Figure 3. Impact to combat events.

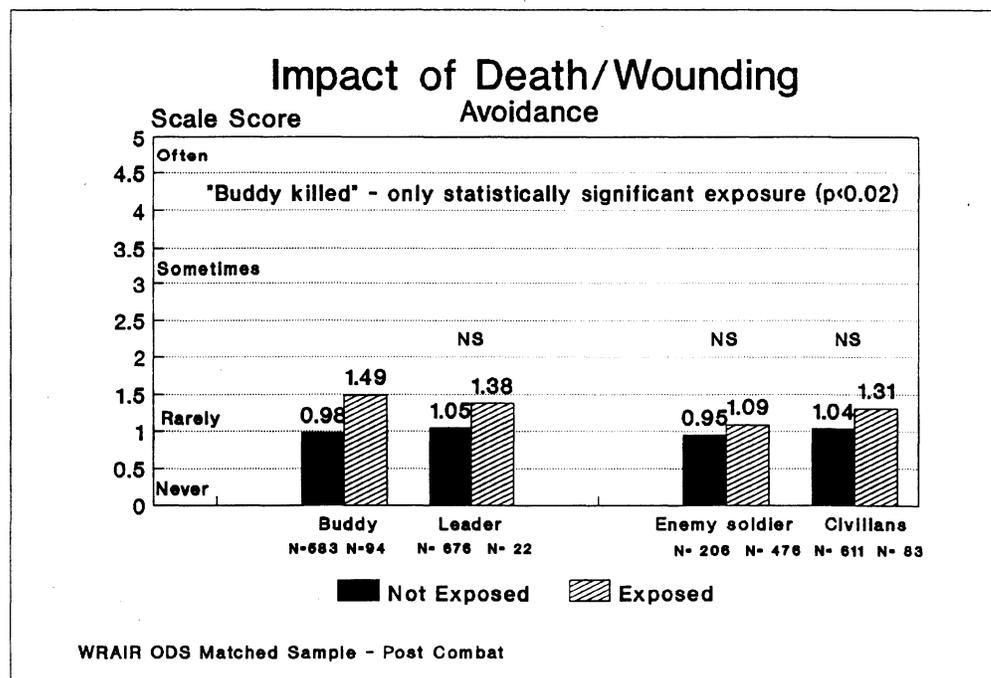


Figure 4. Combat exposure.

intrusive thoughts and when they predominate, avoidance symptoms are considered more pathological than intrusion symptoms.<sup>4</sup> Avoidance symptoms did not predominate in this sample.

There were no significant relationships between items measuring confidence in the combat-related abilities

of leaders and fellow squad members, whether in the pre-combat or post-combat survey, and the reported experience of avoidance or intrusion symptoms.

### SUMMARY

Preliminary analysis from a sample

of 748 junior to mid-level enlisted USAREUR soldiers assigned to combat units that fought in the Gulf War highlight a number of findings. Prior to combat, these soldiers were concerned about their own safety as well as the safety of their buddies. They were especially worried about the threat

of chemical and/or biological weapons. Most of these soldiers were confident in their own combat skills and the skills of other squad members. However, only about half expressed similar confidence in the leadership skills of their company commander or their unit NCOs.

When surveyed four months post-combat, most of the sample said that they had been exposed to dead or wounded enemy soldiers during the war. Less than 13% were exposed to any one category of American combat deaths or wounding but more than half the sample claimed exposure to mines and/or artillery fire. About 10% of the sample reported that they "often" experienced one or more signs of psychological stress related to their combat experiences. Intrusion and avoidance scores are slightly higher than similar scores for a sample of combat soldiers from the 1982 Lebanon War, but considerably less than scores for combat stress casualties from that war.

For the current sample of combat soldiers, greater exposure to combat events, especially exposure to death and injury, results in significantly higher psychological stress, particularly with respect to intrusive thoughts. Overall, some avoidance behaviors and intrusive thoughts are common for this sample and reflect what might be con-

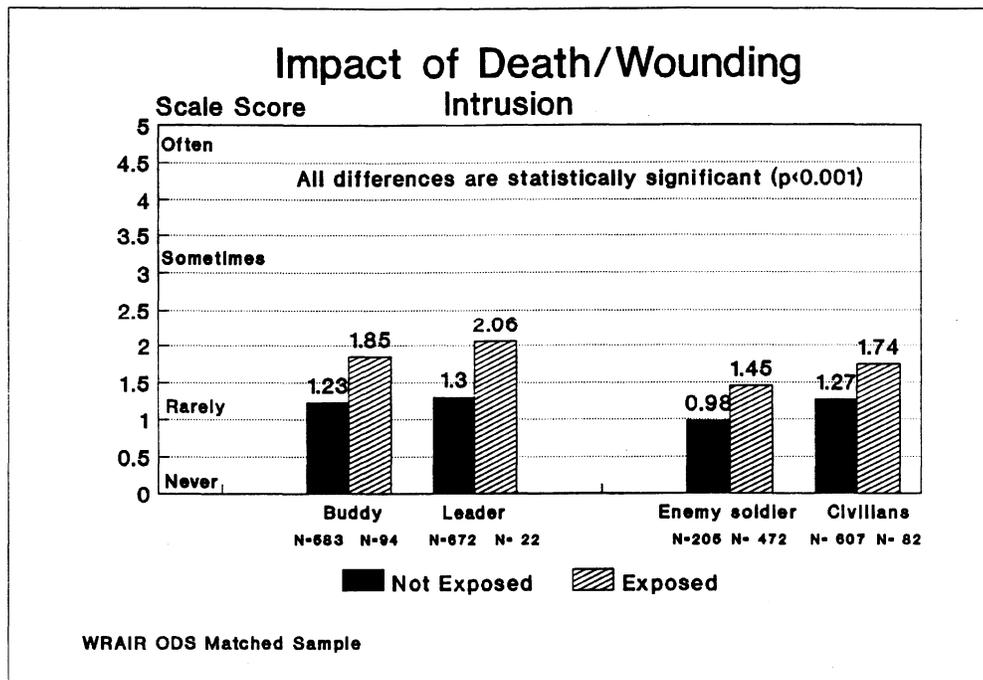


Figure 5. Combat exposure.

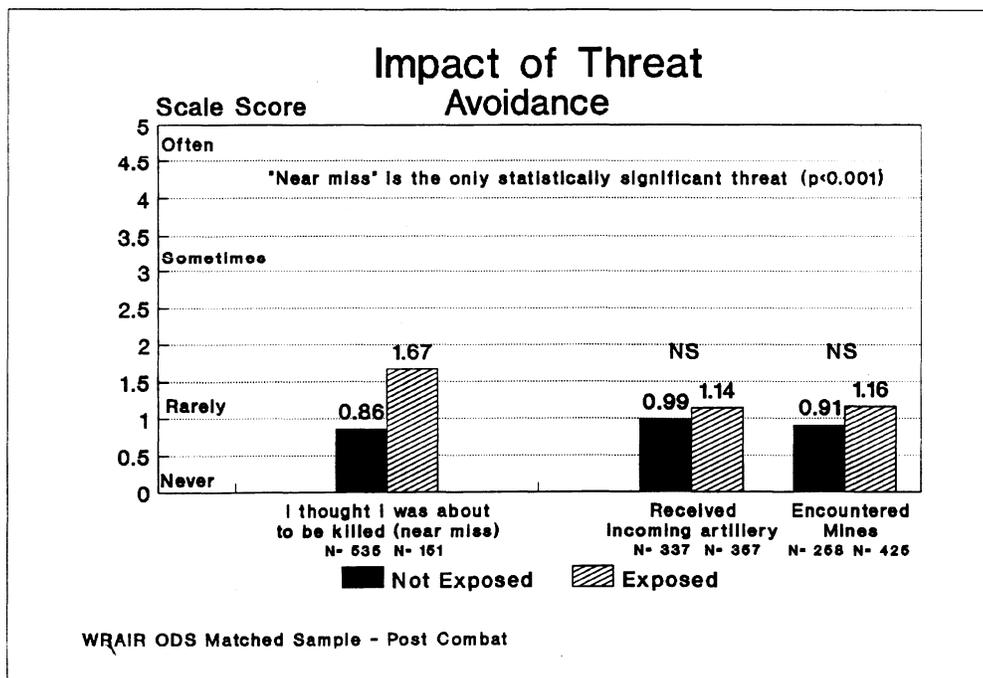


Figure 6. Combat exposure.

sidered a normal initial response to traumatic stress exposure. The concern for the future is the possibility that for a small percentage this distress may lead to dysfunctional behaviors and psychiatric illness.

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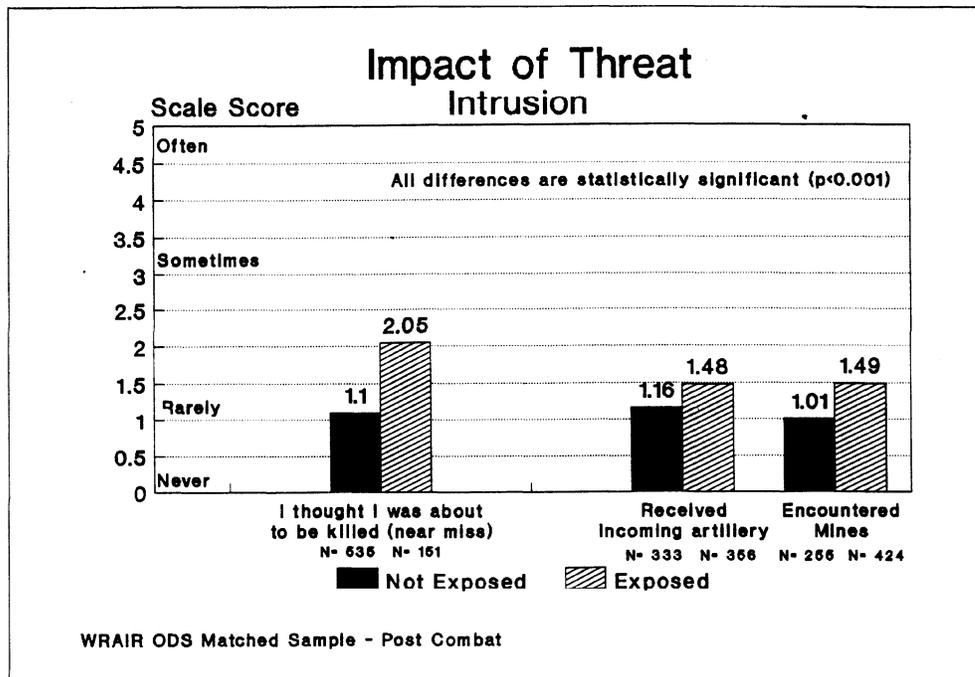


Figure 7. Combat exposure.

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