



A Summary of the Psychological Effects of Tactical Nuclear Warfare

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AD-P003 256

Abstract

The psychological component of the response of combat troops to tactical nuclear warfare is a troublesome variable which plagues military planners and commanders responsible for the preparation of the armed forces for the eventuality that nuclear weapons might one day be used in armed conflict. The devastating physical effects of nuclear weapons have been extensively documented and the biological response of animals and humans to radiation has also been well studied, but very little is known concerning the probable effects of experiencing a nuclear attack upon the emotional stability, morale, and motivation of soldiers to perform their assigned duties. The literature addressing this topic has been reviewed and evaluated as part of the Defense Nuclear Agency's Intermediate Dose Program. A summary of the report resulting from this effort is presented herein. The full literature review and accompanying bibliography are available from the author upon request.

Introduction

Any attempt at predicting the response of combat personnel to the threats associated with tactical nuclear warfare must deal with two separate but interrelated problems. One concerns the assessment of the physical and mental performance capabilities of individuals who have experienced a nuclear weapons attack; that is, the capacity of individuals to function and carry out their normal duties following exposure to the range of doses of ionizing radiation expected in the tactical nuclear environment. The second problem concerns the assessment of the emotional stability and willingness of individuals to perform their duties following an attack given that they possess the capability. Even under the best of circumstances, given good leadership and training, the combat effectiveness of soldiers is highly correlated with their emotional preparedness for battle, individual and unit moral, and unit cohesiveness. Given that exposure to the effects of tactical nuclear weapons, or even the threat of exposure, can be expected to produce levels of psychological stress which could result in degradation of these factors, the psychological effects of tactical nuclear warfare must be considered an important variable

affecting the response of soldiers to intermediate doses of ionizing radiation.

The primary efforts associated with the intermediate dose program have focused on the capacity of individuals and crews to function following exposure to radiation, primarily because the nature of this problem is more clearly understood and more directly addressable through empirical investigation. Although the psychological factors will almost certainly affect the performance of soldiers on the nuclear battlefield, the extent of this effect cannot be accurately estimated on the basis of current knowledge. In fact, this problem cannot be addressed quantitatively because there are no hard data which would permit an objective estimate of the manner in which performance would be affected. Despite this difficulty, discussion of the psychological issues is important in order to (a) place the estimates of performance capabilities in the context of the broader perspectives of the realities of combat, and (b) provide a framework within which future research efforts in this area may be developed.

The available information directly relevant to this problem is very limited. The only two instances of the use of nuclear weapons in warfare at Hiroshima and Nagasaki involved primarily civilian populations and provide little information directly relevant to the response of soldiers and their residual combat capability. Therefore, indirect sources of information were considered in attempting to estimate the psychological consequences of tactical nuclear combat and their effects on combat performance. Some of the sources providing information pertinent to this problem included those that address conventional combat psychiatry, World War I gas warfare experiences, human stress, medical psychology, civilian disasters, the Three Mile Island experience, and human shock or grief responses.

Summary

The psychological component of the stress impinging upon the soldier facing the threat of the modern integrated battlefield has often been addressed with the most attention being given to the general deleterious effects of combat stress, fear, fatigue, and most recently, exposure to chemical weapons. The integrated battlefield concept emphasizes the combination threat of weapon systems available in the modern military arsenal, including conventional small arms, high explosive artillery, tactical air support ordinance, as well as chemical, biological, and nuclear weaponry. The tactical nuclear combat environment is a subset of the total combat environment of the modern integrated battlefield. The psychological effects of the consequences of tactical nuclear warfare has received less attention than conventional or chemical warfare, perhaps because of a) the lack of historical experience with nuclear weaponry, or b) the inability to realistically conceive the threat, or, the human tendency to deny or repress

concepts so threatening and overpowering, or c) perhaps due to the general lack of attention to nuclear weaponry during the recent political climate of detente and antinuclear sentiment.

Previous efforts to address this problem have focused upon estimating the occurrence of extreme emotional reactions leading to panic behavior or neuropsychiatric casualties resulting from total emotional breakdown. The former response has been generally ruled out as an expected occurrence (Glass, 1956). The latter response has been examined thoroughly based upon the voluminous data bases from the previous combat experiences in World War II and Korea (Vineberg, 1965).

A straight forward recognition of the fact that intensity of combat directly correlates with NP casualty rates leads to the conclusion that casualties due to emotional breakdown will be higher in combat involving nuclear weapons than any previous conflicts involving conventional weapons alone. Estimates of neuropsychiatric casualty rates based on ratios referenced to killed or wounded in action are likely to be misleading, due to the fact that much higher physical casualty rates will be expected from the employment of tactical nuclear weapons.

The greatest impact on residual combat capability in tactical nuclear combat may be expected to derive not from neuropsychiatric casualty rates, but from emotional disruptions which are debilitating from a performance point of view but not severe enough to produce the classical picture of emotional breakdown represented in the neuropsychiatric casualty.

The following description of the emotional disruptions expected from troops exposed to nuclear attack are based on materials describing or analyzing the behavior of survivors of the nuclear attacks on Hiroshima and Nagasaki in 1945. These materials include eyewitness accounts (Siemes, 1946; Hachiya, 1955), edited reports of eyewitness accounts (Hersey, 1946; Nagai, 1951), and studies involving interviews with survivors of the bombings (Janis, 1951; Kubo, 1952; Lifton, 1967). While the relevance of the behaviors of the civilian populations of these two Japanese cities in 1945 to the expected behavior of modern combat troops must be continually questioned, this body of information represents the only empirical evidence regarding the psychological response of human beings to nuclear attack and therefore should be carefully considered.

The experience of being exposed to nuclear attack can be expected, in the short run, to be an intensely traumatic emotional stimulus, capable of rendering individuals temporarily ineffective in performing routine military duties. While panic behaviors and long term emotional disturbances may not be expected, a state of temporary emotional disturbance is to be expected in a sizeable but unknown proportion of individuals surviving nuclear attack, characterized by a shocked, dulled affect, with little capability

for behavior beyond that required for immediate survival and escape from the perceived source of danger. Attempts at other behaviors may be ineffectual or inappropriate, with the exception of a small percentage of cases in which heroic, goal-oriented, selfless behavior may be expected. Depending upon the combination of many variables affecting the severity of such emotional disturbances, this situation may be expected to persist for a period of hours to days in the majority of cases.

The variables affecting the susceptibility to and severity of emotional disruptions include training and preparedness, combat experience, leadership, unit cohesion, perceived degree of danger, degree of chaos and destruction in the immediate environment, and degree of isolation. Variables affecting the rapidity of recovery include safety and rest, training and preparedness, leadership in the immediate post-trauma period, cohesiveness and group support, and immediacy, expectancy, and proximity of psychiatric first aid treatment.

The behavior of individuals following nuclear attack can best be analyzed within a model that takes into account the dimensions of time and space (Logan and Killian, 1953). Since the emotional responses to disastrous events are characterized as fluid, changeable, and transient (Glass, 1956), the expected behavior of affected individuals must be referenced to a time sequence following the traumatic event. Likewise, because the physical destruction and damage resulting from a nuclear explosion extends in a diminishing fashion over a wide area, the behavior of individuals reacting to the destruction will be impacted inversely proportionately to their distance from the epicenter.

Recommendations

The most important factor affecting the psychological effects of nuclear warfare that is under the control of military command is the training and preparedness of individuals and leaders to cope with the trauma of nuclear combat. Emphasis in training should be on a) realism, in order to reduce the shock impact of the aftermath of nuclear attack, b) accurate information concerning the threat that is faced, and c) information limited to that which is readily comprehended and assimilated by the average individual and which is directed towards the promotion of his or her personal welfare. New research is recommended to determine the type and amount of information best suited for the training of today's combat troops.

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