Preface

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The world is a dangerous place. Unfortunately, recent events have served to render it even less safe and there are many arenas of conflict and even combat across the world. Such situations are the quintessential expression of stress. You stand in imminent danger and live with the knowledge that you may be attacked, injured or even killed at any moment. How do people react, and continue to perform effectively under these conditions? How do they keep a heightened level of vigilance when nothing may happen in their immediate location for weeks or even months on end? What happens when the bullets actually do start flying? How do soldiers distinguish friend from foe, and either of these from innocent bystanders when their lives are in immediate peril? Can we design technology to help people make good decisions in these hazardous situations? To what degree does membership in a team act to dissipate these effects? Can we generate sufficiently stressful field exercises to simulate these conditions and can we train and/or select those most able to withstand such adverse conditions? How will the next generation of servicemen deal with these inherent problems? How does the knowledge and understanding garnered from these life-threatening situations transfer to other realms of human behavior where people are forced to operate in non-optimal conditions? These are among the questions examined here.

The text is derived largely from a multiple-year, Multiple University Research Initiative (MURI) project on stress and soldier performance on the modern, electronic battlefield. It involved leading researchers from several Institutions who have each brought their own individual expertise to bear on these crucial, contemporary concerns. United by a common research framework, these respective groups attacked the issue from different methodological and conceptual approaches ranging from traditional laboratory modeling and experimentation to realistic simulations, from involved field exercises to personal experiences of actual combat conditions. The insights that they have generated have here been distilled and presented in order to benchmark the present state of understanding and to provide future directions for research in this arena. Although this work focuses on soldier stress and soldier performance, the principles that are derived extended well beyond this single application realm. For example, one of the major forms of stress facing the modern soldier is information overload. However, this is a ubiquitous form of stress and is one that is faced by people in the business world, in research, in academe, in commercial enterprises and in most sectors of modern technological economies. Understanding distilled from the performance of soldiers, who stand in the greatest level of extremis can certainly be applied to those who face similar, if less life-threatening demand. One obvious question is how you design human-machine interfaces for people faced with these mounting cognitive demands? Can the supporting computer system perform in an adaptive manner? Can it now be considered a team member? These are not questions just for the present and future soldier; these are questions that impact everyone who works with technology. Consequently, this text is not just an account for those who wish to learn something more of the problems facing armed forces. This text is for everyone who faces stress at work as well as for those who study these processes. If that does not include you, you hold an enviable position. However, we suspect that in your under-stressed existence you are one of a small and dwindling group of individuals. Life in the modern technological world throws up many challenges. Some, we have evolved to cope with to some degree. Others are more modern in origin and emergent in nature. We now have to find effective ways to cope with these emerging demands

if we are to improve the human condition and, perhaps, ensure the survival of our species. The present text is designed to help with that search.

Acknowledgments

Much of the work presented in this text was supported by the Department of Defense Multidisciplinary University Research Initiative (MURI) program administered by the Army Research Office under Grant DAAD19-01-1-0621. P.A. Hancock, *Principal Investigator*. The views expressed in these works are those of the respective chapter authors and do not necessarily reflect official Army policy. The editors wish to thank Dr Elmar Schmeisser, Dr Sherry Tove, Dr Mike Drillings, and Dr Paul Gade for providing administrative and technical direction for the Grant.

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Orlando, FL, April 2007