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ADDRESSING THE PRODUCTIVITY PARADOX: THE NEED FOR A PSYCHOPHYSIOLOGICAL PERSPECTIVE

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ABSTRACT

In this paper, we argue that the "Psychophysiological Perspective" has a valuable contribution to make to our understanding of the impact of new technology on individual and organizational performance. In essence, the psychophysiological perspective views the human agent as a "multi-component, multi-modal system" made up of interacting physiological, behavioral and experiential subsystems (Gale and Christie 1987). By triangulating these three dimensions, psychophysiology has the potential to yield a much richer account of the dynamics of user interaction with complex technologies than conventional approaches. Although psycho-physiological investigations are something of a rarity, there are encouraging studies in the literature where psychophysiology has provided critical diagnostic insights; for example, in situations where paradoxical decrements in performance have ensued following the introduction of new systems (e.g., Brown, Wastell and Copeman 1982; Wastell 1990).

In the present paper, we describe a longitudinal psychophysiological field study of the introduction of a computerized command and control system in the Greater Manchester Ambulance Service.The study involves the collection of a battery of behavioral, physiological and subjective metrics before, during and after implementation. The baseline phase is now complete and some preliminary analyses have been performed. Although an audit of job satisfaction and occupational stress has indicated some areas of concern, job performance itself is high when judged against prescribed criteria. From a psychophysiological point of view, some striking relationships between performance indices, physiological state and external work demands have been demonstrated: blood pressure and heart rate, for instance, were found to be significantly elevated under conditions of high workload. Having this broad base of psychophysiological measures in place will enable a comprehensive assessment of the impact of the new system and will be of particular forensic value if adverse reactions occur.

The psychophysiological approach provides a broad, multi-level perspective on the process of information systems development (ISD). Psychophysiology views the human subject as a complex whole; psychological factors such as well-being and motivation are central concerns. In this sense, there are clear relationships between the psychophysiological approach and IS design philosophies such as sociotechnical systems design (Mumford and Weir 1979). We believe that psychophysiology has considerable potential in IS research. We are particularly interested, for instance, in the issue of stress in ISD as we have argued that the "stress perspective" can shed revealing light on the behavioral dynamics of ISD (Wastell and Newman 1993). Psychophysiology provides a conceptual framework and a set of techniques which allow the issue of stress to be addressed in a rigorous and objective way.

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