PSYCHOLOGICAL FACTORS IN THE BREAKDOWN OF HUMAN ADAPTATION

SOME METHODOLOGICAL ISSUES

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ABSTRACT

This paper is in three parts. The first discusses some of the broader conceptual issues surrounding breakdown in human adaptation and the role of psychological factors. The nature of the scientific questions which are posed by this general area of study are briefly mentioned from the point of view of methodological problems concerned with causality. In the second part some specific issues are addressed including research settings, research designs and choice of dependent and independent variables including research tools used by the author and of relevance to studies of breakdown in human adaptation. In the third part some general conclusions are noted.

INTRODUCTION

The field of interest

These workshops are entitled 'Breakdown in Human Adaptation'. Whilst definitions and semantic considerations are generally uninteresting they may, on occasions, be illuminating. One of several definitions of 'adaptation' provided by the revised Shorter Oxford English Dictionary on Historical Principles (Friedrichsen, 1980), and dating from 1790, is 'the process of modifying so as to suit new conditions'. Clearly something more substantial than adjustment is implied and further properties are also indicated. First, it may be associated with a short-term (biological) cost. Second, it suggests a positive (evolutionary) gain in the long term. Third, it necessitates the achievement of 'fit' or 'fitness'. Although breakdown suggests a comprehensive failure of a mechanical system such an analogy is generally not appropriate. Breakdown in human adaptation suggests a gradual deterioration in functional effectiveness brought about by the chronic accumulation of costs. These in turn result from repeated unsuccessful or partially successful attempts at adapting to new conditions. Such a model suggests

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both positive and negative feedback loops. Self-correcting systems, the re-establishment of control over the environment, and the re-attainment of balance (homeostasis) are all cybernetic principles central to much of the current writing on stress and disease (Lumsden, 1975; Levi, 1974).

What are the scientific questions we wish to answer?

Very generally we are interested in delineating aetiological factors associated with the breakdown of adaptation and with the onset of pathophysiological disease processes, broadly conceived. In particular the role of psychosocial (Levi, 1974) and sociocultural factors (McQueen and Siegrist, 1982) will be of primary importance. Responses to breakdown processes which have a psychological component will also be of interest. In the past these factors have been subsumed under emotional or psychosomatic aspects of illness and illness behaviour. Broadly speaking if our aim is to establish reliable cause and effect relationships between the psychosocial factors of interest and relevant outcome measures (reversible and irreversible structural and functional changes, symptoms of disease and illness) we will wish to know the requirements for inferring cause. An eminent British epidemiologist Sir Austin Bradford-Hill has provided a list of criteria by which to judge the likelihood of a causal effect being present. Included in his list are strength of association, consistency, specificity, existence of relationships in time, presence of dose-response effects, coherence and biological plausability. In only a small number of the studies which ostensibly show cause and effect relationships between psychosocial factors and disease outcome have these criteria of validity been met.

How is failure to adapt manifested? The scope of such manifestations obviously defines the legitimate field of interest and, in particular, has implications for the choice of measurement and assessment techniques. A long term outcome may be disease. One epidemiologist has provided a working definition of disease as 'disability or failure in performance of a task' (Kagan, 1975). Structural impairments at the cellular level obviously have implications for organ dysfunction. Individual effectiveness or performance may also be degraded. Human reliability, human error and safety are therefore legitimate concerns. Indeed, there are empirical links between the experience of stressful life events and accidents (Connolly, 1980; Sheehan et al, 1981 Levenson et al, 1980). Certainly the quantification of human reliability presents measurement problems at least as difficult, if not more so, than those