

BIOSOCIAL SOCIETY

Sex, Gender and Health

The tenth Annual Workshop of the Biosocial Society will be held on Friday 2 May 1997 at University College Stockton, University Boulevard, Thornaby-on-Tees.

Abstracts of papers

Sexual selection, language and the origins of dyslexia and psychosis. TIM CROW. *Department of Psychiatry, University of Oxford.*

The central problem of the aetiology of psychosis is to explain its apparently universal incidence (as shown by the WHO Ten-Country Study of Incidence) in the face of a fecundity disadvantage. The disease must be intrinsic, i.e. genetic in origin, but why do the predisposing genes persist in the population? It can be argued on the basis of universal incidence that the genetic variation (or its source in a mutation hot-spot) cannot have arisen later than the origin of modern *Homo sapiens*, no later than 137,000 years ago, but may not have arisen much earlier than this. Schizophrenia, according to this argument, is inextricably linked with the evolution of the species; it is a disorder of *Homo sapiens*. The function with which it is associated, language, is that by which speciation occurred.

It seems that, in order to function effectively, language must have a focus in one (commonly the left) or the other hemisphere, and this occurs under the influence of a gene (the 'right-shift factor') that, together with a random component, biases the left hemisphere to be dominant and the individual to be right-handed. This genetic variation is associated with a sex difference (females are more right-handed) and with significant variation in cognitive ability, with particular deficits, including psychosis, associated with a failure to develop unequivocal dominance in one hemisphere. The theory is proposed that the single gene that determines cerebral dominance is linked to the X and Y chromosomes. Language may have evolved by a process of sexual selection acting upon this gene; predisposition to psychosis, which is associated with a sex difference in onset and outcome, represents a part of the variation generated by this process, as also may the separate but related problem of dyslexia.

Sex, gender and well-being: the impact of working life. LESLEY DOYAL. *School of Policy Studies, University of Bristol.*

It is known that work of all kinds has a major influence on individual experiences of health and illness. However there have been few attempts to explore its differential impact on the well-being of men and women. This paper offers a preliminary analysis

of these issues. It examines differences in the types of labour undertaken by men and women around the world and explores both the biological and social impact of these labours on their health.

The most obvious gender differences in the division of work can be found in the domestic sphere. In most parts of the world women retain the major responsibility for this labour, whatever their circumstances. In recent years the health impact of this work has received increasing scrutiny in the developed countries and now in the third world. Evidence on both its physical and psychological effects is explored, and compared with the (limited) evidence relating to the health of men taking on major domestic roles.

On waged work, the paper describes the position of men and women in the labour market and the gendered nature of work in both the formal and informal employment sectors; the evidence on the impact of this work on well-being is then reviewed. The analysis investigates the differences between 'men's work' and 'women's work' and also the different biological constitutions and psychosocial circumstances of male and female workers. Particular attention is paid to men and women stepping outside traditionally gendered occupational roles.

Finally, the different strands of waged and unwaged work are brought together to draw general conclusions about sex and gender issues in the relationship between work and health.

Parental manipulation of postnatal survival and well-being: are parental sex preferences adaptive? CATHERINE M. HILL AND HELEN L. BALL. *Department of Anthropology, University of Durham.*

There is growing evidence to suggest that human parents enhance their long term reproductive success by manipulating the postnatal survival and well-being of their offspring via differential investment. The proximate cues that influence parental investment strategies regarding a particular offspring involve both 'intrinsic factors' (traits with which an infant is born which may affect its survival chances or reproductive potential) and 'extrinsic factors' (traits external to the infant—characteristics of the circumstances into which an infant is born that may affect its survival chances or reproductive potential).

Infanticide is the extreme form of reduced parental investment. It has been argued that parental decisions to kill an infant which are based on intrinsic proximate cues (e.g. multiple births, breech births, congenital birth defects) are widespread across cultural groups, regardless of environmental, social, and economic circumstances, and are adaptive (i.e. they enhance parents' long term reproductive success). Infanticide for reasons of an infant's sex, another intrinsic biological trait, is also examined. Ethnographic data on differential infant survival from a cross-cultural sample of 186 groups world-wide are examined, and the circumstances under which female or male infants might be more likely to survive at the hands of their parents in the immediate post-natal period are explored. The evidence presented is used to argue that, unlike other intrinsic proximate cues, sex-biased infanticide is only adaptive (can only enhance parental reproductive success) under a limited array of cultural and economic circumstances. It is suggested that while proximate cues based upon intrinsic biological

traits suggestive of lower infant viability have been codified into cultural rules regarding infanticide which have adaptive outcomes, parental sex preferences and sex-biased infanticide is an adaptive behaviour only when certain cultural and economic preconditions exist. Sex, therefore, may be a biological trait with which an infant is born, but it is not intrinsically detrimental to an infant's survival to be born of one sex or the other unless the infant is born into a cultural environment which favours one sex over another for extrinsic reasons. It is concluded that parental sex preferences affecting differential infant well-being, and sex-selective infanticide, can be best understood in terms of the co-evolution of biological and social strategies under varying cultural and economic circumstances.

Thoroughly modern mothers: working-class women and discourses of medicalisation.

SUSAN BRIN HYATT. *Department of Anthropology, Temple University, Philadelphia.*

During the nineteenth and early twentieth centuries, there was a decisive shift in western conceptualisations of the nature of society. No longer seen as the immutable outcome of divine forces, society was now rather more like a laboratory, a domain which could be purposively planned and regulated by means of the strategic application of such knowledges as urban planning, public health, social work and health visiting. These new technologies were aimed at poor families in particular, as a way of trying to alleviate their potential for fomenting social unrest. Within such families, women-as-mothers were deemed most responsible for the physical well-being and appropriate socialisation of their household members, and therefore it was they, rather than their male counterparts, who came under the rigorous scrutiny of the professional gaze. In many cases, it was middle-class women who became newly emergent practitioners and who took on the task of monitoring their working-class and poor 'sisters'. Matters of public health and hygiene became issues of particular concern. In this paper, the gendered character of these new technologies is examined. It is argued that historically it was this larger project of creating a harmonious society that ultimately rendered women, rather than men, medicalised subjects through creating and implementing scientific mechanisms for social regulation.

Women and mental illness: strategy, resistance and institution. ROLAND LITTLEWOOD.

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Women in Western societies have long been recognised to have higher rates of minor psychological illness than men. Similarly, the experience of spirit possession in non-literate societies is more common among women. It is argued here that using a system theory approach—in anthropological terms a functionalist model—both illness and possession can be seen as mechanisms by which a subdominant individual can achieve some redress from insult or misfortune. Both illness and possession are adaptive through everyday understanding of the limits of human agency and accountability. On such individual actions, a social group can be developed that transforms illness into a social role, offering material and psychological benefits to the

women concerned and to others. Such a group may serve as an institution known to anthropology as a 'cult of affliction' in that it may formulate wider explanations of misfortune and sickness.

Whilst social anthropologists have pointed out the limitations of such 'compensating' explanations of institutions (these can be regarded as autonomous aesthetics as much as motivated strategies or resistances), images of illness frequently represent exaggerations of local perceptions of women as dependent and in need of protection. Using recent ethnological analogues of 'care' among other primates, it is proposed that these provide prototypical patterns of sexual power and authority which are represented in contemporary institutions. Healer-patient representations closely recall those of male-female; recent evidence is cited from ethnographic data and medical theory in Western psychiatry.

Sex, gender, stress and cardiovascular disease. TESSA M. POLLARD. *Department of Anthropology, University of Durham.*

More men than women die from cardiovascular disease and since psychosocial stress is now thought to be an important risk factor for cardiovascular disease, the ways in which men and women might be affected differently by stress should be considered. Biological factors that may cause men and women to have different responses to stress are examined (referred to as sex differences), and also differences between men and women in exposure and psychological response to psychosocial stress (gender differences). The focus is on psychosocial stress associated with modernisation, or the change from a traditional to a modern (often Western) lifestyle, and with employment. An exploration of these sex and gender differences should help to clarify why more men than women die from cardiovascular disease, and provide an illustration of how both sex and gender come into play to influence disease profiles.

The major mechanism postulated to link stress with cardiovascular disease is the secretion of adrenaline. Adrenaline acts to prepare the body for physical action, by stimulating the cardiovascular system and mobilising metabolites which can provide immediate sources of energy, such as free fatty acids. It is obvious why this 'fight or flight' mechanism evolved, but it is generally accepted that if repeated too often, particularly in the absence of physical activity, it can increase risk of cardiovascular disease, partly because free fatty acids contribute to circulating cholesterol levels.

However, the studies through which this mechanism was characterised usually included only men. Recent studies have shown that women of reproductive age tend to show what, in comparison to men, seems to be a blunted adrenaline response to laboratory stressors. One explanation that has been offered for this finding is that oestrogen modifies physiological responses to stress. This oestrogen hypothesis may help to explain sex differences in the incidence of cardiovascular disease. In particular, it may partially explain why modernisation does not seem to increase rates of cardiovascular disease as much in women as it does in men, and why women have shown smaller cardiovascular responses to work than men.

Gender differences in exposure to stressors and in coping methods must also be considered. For example, in modernising societies men are often more exposed to

modern influences than women, who may spend more time in the home, as has been demonstrated for Samoans in California. It is also the case that, even when they both work, women and men often do different jobs. For example, women tend to have jobs which allow them less control than men. In addition, women seem to benefit more from social support at work than men, and men may make more use of harmful coping practices such as drinking alcohol.

Thus there is an important biological difference in sex hormone levels which may explain some of the differences between men and women in cardiovascular disease rates because it buffers the stress response. However, there are also gender distinctions in exposure to stressors, and in methods of coping with stress, which are also likely to contribute to women's mortality and morbidity advantage.

Sex differences in endocrine regulation of life history organisation. CAROL M. WORTHMAN. *Department of Anthropology, Emory University, Atlanta.*

Life history theory has been extended recently to consideration of evolved proximal, species-specific mechanisms that organise life history on the phenotypic level. Hormones are crucial to regulation of ontogeny (maturation rates, timing of puberty and first reproduction) controlled by neuroendocrine pacemakers; to establishing, on the physiological level, priorities for resource allocation among maintenance, growth, and reproduction; and to patterns of senescence and, thus, life expectancy. Although cross-taxon comparative analysis provides the bases for life history theory, many assume its predictions apply to intra-species variation as well, an assumption as yet unconfirmed. Concurrently, comparative studies of human development and reproductive function have begun to uncover extensive population variation in gonadal and adrenal steroid output across the lifespan. The paper will discuss findings from such studies and apply them to consideration of the endocrine architecture of life history variation in humans.

Findings concerning the adrenal androgen DHEAS, a candidate marker for lifespan pacemakers, are presented. By contrast with the high early adult levels and rapid decline with age of DHEAS in Western populations, markedly lower values are found, with little or no age decline, among non-Western populations studied to date. Furthermore, group variation in absolute concentrations and lifespan trajectories of this hormone differs by sex. Similarly, populations vary in concentrations and lifespan trajectories of gonadal steroid hormones. Ellison and colleagues have distinguished group differences in level though not shape of parabolic curves characterising luteal progesterone output across women's reproductive lifespan. Several investigators have reported ecological correlates of suppressed testicular output, and in four non-Western groups lifespan trajectories of testosterone and its central regulatory hormone, luteinising hormone, that diverge notably from those of Western men have been characterised. Possible bases of sex-differentiated patterns of intergroup variability, and consequences for endocrine organisation of life history variation in humans are discussed.

Implications of these findings for models of reproductive health and ageing are considered. Variation in lifetime exposure to gonadal steroids may partially explain

rising rates of reproductive cancers in early-maturing Western populations with upregulated hypothalamo–pituitary–gonadal axes. Comparative lifespan endocrinology also suggests that current models of endocrine causes or correlates of ageing require revision.

Further information about the Workshop can be obtained from Dr Tessa Pollard, University of Durham, Department of Anthropology, 43 Old Elvet, Durham DH1 3HN. Tel: 0191 374 7206/2841; email: t.m.pollard@durham.ac.uk.