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Nature, Nurture, and Behavior

The recent reports of the chromosomal localization of genes related to Alzheimer's disease and manic depression are major discoveries that bring promise of help to those suffering from these dread mental illnesses. These advances also contribute important information to the continuing argument about the roles of nature and nurture in behavior.

Many of the news stories that accompanied the description of the manic-depressive gene mentioned this new discovery as a watershed in this traditional debate. Although the recent finding in manic depression is a major advance, it was not a surprise to those who have followed developments in neurobiology. Seymour Kety's classical study following parents and their adopted and biological children in Scandinavian countries provided evidence that schizophrenia has a hereditary component; he also provided a methodology that has been used to study other behavioral disorders. These studies, however, met with major resistance, not only from a large segment of the public but also from many scientists and doctors who maintained that such behavioral disorders must be due to stress.

In retrospect it is easy to ask how anyone could have doubted the mounting evidence. The brain is, after all, an organ, like the kidney, the heart, or the liver, and organs are known to fail because of hereditary factors as well as environmental ones. The answer is probably that to many people the brain is much more than an organ: it is the center of the poetry, the sophistication, the special qualities that make human beings an order of magnitude more complex than the closest related species. To believe that the brain is merely a series of chemical reactions is to denigrate free will, to remove humans from the responsibility for their actions, to eliminate the relation between sin and guilt. Moreover, the recent findings are just the beginning; many other behavioral characteristics have been analyzed by studies of adopted children and identical twins and by biochemical approaches. Those who dread complexity will try to reduce the new evidence to the old confrontation of extremes: chemistry versus free will, heredity versus environment, fate versus responsibility. In fact, the neurobiological evidence indicates that part of the brain is "hard-wired" in advance of birth and part is designed to be plastic and learn from experience.

The relation of nature and nurture in manic depression is probably typical of what we can expect to discover about other behavioral disorders. Some individuals who have normal genes become overwhelmed by adversity in their environment, sink into depression, and attempt suicide. At the other extreme, some who have loving parents, ideal schooling, and a stress-free life are overwhelmed by their internal chemistry and also succumb to depression and suicidal intentions. Still others are pushed into depression by stresses that are easily surmounted by individuals with different genetic components. Some of these people will be helped by drug therapy (in the manic-depressive case, lithium is a highly effective drug with minimal side effects). Some will be helped by counseling, and some by a combination of the two.

This picture may seem obvious to a scientist, but our judges, journalists, legislators, and philosophers have been slow to learn this lesson. When children do not behave, parents or schools must be at fault. If prisoners are not rehabilitated, prison programs must be inadequate. If suicides are not prevented, stress must be excessive. Equally simplistic is the contention that there is no crime, only disease; no guilt, only a bad combination of genes. The truth is that we are dealing with a very complex problem in which the structure of society and chemical therapy will play roles. Better schools, a better environment, better counseling, and better rehabilitation will help some individuals, but not all. Better drugs and genetic engineering will help others, but not all. It is not going to be easy for those without scientific training to cope with these complicated relationships even when all the factors are well understood. It will be even harder while the scientific research is still unfolding. However, the debate on nature and nurture in regard to behavior is basically over. Both are involved, and we are going to have to live with that complexity to make our society more humane for the individual and more civilized for the body politic.

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