

Among the adoptive families, 13 % of the parents had divorced before their children turned 12. These children also had more behavioral problems and earlier drug use than did the adopted children whose parents stayed married. Interestingly, the researchers found no difference in academic achievement or social competence in the adopted children from either the divorced or intact families. The results strongly suggest that parental divorce and measures of children's self-esteem, social competence, and academic achievement may be partly genetically influenced, enforced by the fact that adopted children from broken homes and intact homes showed no difference in these attributes.⁴ Future studies should examine the possible genetic influence of long-term life-course outcomes associated with divorce, including premature termination of education and the likelihood of divorce in adulthood to resolve this enigma.

Research Issues

Human society, also, has to be alert so that discoveries in behavioral genetics are not viewed unconditionally as unquestionable until there has been substantial scientific corroboration. Behavior is, after all, the product of the human's most complicated organ, the brain, and is hardly ever capable of being accounted for by straightforward causal interpretations.

Scientists have suggested that research questions should be asked not as "either/or," but in the context of a "developmental system" in which nature embodies the product, and nurture encompasses the process and matters of essence and incidence. In other words, the question which should be asked most often, then, is not whether or not to accept the role of genes in explaining human behavior, but rather how genes, existing in a complex environment, influence human behavior and development.

In summary, current advances in genetic research suggest that the old dichotomy between "genes" and "environment" is done with. "Genes" and "environment" do not act as independent influences on human development. Many environmental influences initiate changes in genes. For example, in rats, effective maternal care changes the expression of genes in the brain that respond to stress hormones. Likewise, many genes require changes in the social environment in order to exert their influence. Human and animal studies have implied that effective parental care may thwart the ex-

pression of adverse genes for aggressive behavior through a complicated process in young children.⁵

Methodology Issues

Change, particularly developmental change, is difficult to study empirically. Traditionally, methods used to explore developmental change are predicated on theoretical specifications of the nature of development and on the assumptions one derives from theory related to: (1) the unit of analysis (e.g., individual's psychological variables or relations between variables from different levels of analysis); (2) levels of organization involved in developmental change (e.g., genes, organism, social relationships, culture, etc.), and (3) the role of time and temporality (history) in indexing such change.⁶ In other words, traditional research methods vary in regard to the units of analysis and the levels of organization used to study subjects across time. These variations are linked to differences in the approach to research taken by scientists following different philosophies of methodology. Thus, it is necessary to illustrate the linkage between research questions and research methods.

There is a speedily growing volume of evidence which refers to a significant portion of genetics in the determination of human pathology and psychopathology. Many instances of serious psychopathology have been determined to run within families. The hazard of manic-depressive psychosis for those with a manic-depressive parent is about 10 times as high as that for those without such a parent.⁷ Alternatively, compared with pathology and psychopathology, it is argued that complex human behavior should appear much more environmentally determined; interestingly, in recent years, behavioral geneticists have reported genetic effects on such seemingly environmentally determined behavior as parenting style, television viewing habits, peer selection, marital disruption, and even educational achievement. However, for several decades, doing research on the effects of genetics upon human development was further hampered by the scarcity of highly integrated statistical methods which can organize multi-level variables into mixed models for behavioral genetic analysis. As discussed earlier, research on the genetic influences on human behavior and development requires complicated statistical models to single out the effects of genetics from those of environmental factors. Unfortunately, traditional statistical analysis, for exam-