

Creativity and Manic Depressive Illness

We were pleased to see the generally well-done Research News article "Manic depression and creativity," by Constance Holden (15 Aug., p. 725), but we would like to clarify several points about our own and others' research.

1) Creativity of our research subjects was not based solely on "participation in the arts and crafts," but rather on a wide range of vocational and avocational activities assessed over each subject's adult lifetime. We developed a new tool, *The Lifetime Creativity Scales*, for just this purpose, so that we and other researchers could study real-life creativity in general populations, rather than being limited only to activities that are socially recognized as creative or are in particular fields that have traditionally been regarded as creative.

2) Our results suggest that, on the average, it may be the *better-functioning* relatives of manic depressives, and not manic depressives themselves, who carry a particular advantage for creativity. This is an important distinction for at least two reasons. First, it suggests that, in our research sample at least, certain traits associated with liability for bipolar disorder, rather than psychopathology or suffering per se, are conducive to heightened creativity. Second, it suggests that our findings may be of practical relevance, not only to the 1% or so of the population who may develop frank bipolar disorder, but also to the much larger proportion who may carry a genetic liability for the disorder.

3) We *do* have definite hypotheses—genetic and environmental—as to why there may be a link between creativity and liability for bipolar disorder. We have hypothesized that enhanced creativity may reflect a "compensatory advantage" within the families of manic depressives, roughly analogous to the increased resistance to malaria in individuals heterozygous for the gene for sickle cell anemia. We also hypothesize that environmental influences interact with genetic liability for bipolar disorder, such that environmental intervention may not only help to prevent the development of psychopathology but also enable individuals to realize unusually great creative potential.

4) It is misleading to state that "modern science has taken next to no interest in exploring the connection" between creativity and psychopathology. Rather, although there has been a good deal of interest in this possibility, it has until recently usually taken the form of theoretical speculation rather than rigorous empirical research. An important reason for the relative paucity of such research has been the scarcity of funds to

support it. We hope that Holden's article will encourage other agencies to join the small number of sources, such as the Spencer and Boston Mental Health foundations, now supporting this pathbreaking research.

DENNIS K. KINNEY

RUTH L. RICHARDS

*Mailman Research Center, McLean Hospital,
and Department of Psychiatry,
Harvard Medical School,
Belmont, MA 02178*

American Education

Mark Crawford's briefing "Education statistics found to be inadequate" (News & Comment, 10 Oct., p. 147) is, for the most part, a commendable report on the recent National Academy of Sciences study of the Center for Statistics. Crawford has brought to the attention of *Science* readers the results of too many years of neglect of the Center that officials of the Department of Education have been pointing out now for some time and that were compellingly documented by the Academy.

The briefing incorrectly states as my own view that "more money is not needed at present." In fact, and on this point I differ with the members of the Academy's panel, I believe that improvements in quality and timeliness are not likely to find support alone but must accompany an expansion of the statistical program itself and that does require more money.

The Executive Branch, Congress, states, educational institutions, and decision-makers in them need a more complete reporting of the condition and progress of American education, one that fills long-standing data gaps about teachers, finance, student achievement, and other policy issues. They should expect, and demand, that such data meet the qualitative standards set out by the Academy.

EMERSON J. ELLIOTT

*Center for Statistics,
Department of Education,
Washington, DC 20208*

AIDS and the Physician

David Jenness points out in his editorial "Scientists' roles in AIDS control" (22 Aug., p. 825) that the principal tools available to stop the spread of AIDS over the next few years will be information, education, and prevention campaigns. To be effective, these campaigns will require the dedicated efforts of social scientists, public health workers,

*β -Cyanoethyl & Methyl
Phosphoramidites for
DNA Synthesis*

**Beckman
Covers
All Bases**



Beckman now offers both β -cyanoethyl and methyl phosphoramidites for DNA synthesis. And news for methyl users: a phosphate demethylation reagent is now available as an odor-free replacement for thiophenol.

Like all Beckman DNA synthesis chemicals, our phosphoramidites are strictly tested to ensure lot-to-lot high quality and reproducible performance. And quick delivery is guaranteed!

Beckman covers all your phosphoramidite needs—for less. Ask about our special volume discount programs.

Score high repetitive yields and long syntheses! Call 800/854-4068. (Inside California call 714/773-6775.) Outside the U.S. contact your local sales office.

BECKMAN

Circle No. 11 on Readers' Service Card