

# Creativity and Mental Illness: Prevalence Rates in Writers and Their First-Degree Relatives

Nancy C. Andreasen, M.D., Ph.D.

---

*Rates of mental illness were examined in 30 creative writers, 30 matched control subjects, and the first-degree relatives of both groups. The writers had a substantially higher rate of mental illness, predominantly affective disorder, with a tendency toward the bipolar subtype. There was also a higher prevalence of affective disorder and creativity in the writers' first-degree relatives, suggesting that these traits run together in families and could be genetically mediated. Both writers and control subjects had IQs in the superior range; the writers excelled only on the WAIS vocabulary subtest, confirming previous observations that intelligence and creativity are independent mental abilities.*

(Am J Psychiatry 1987; 144:1288-1292)

---

People have wondered whether there is a relationship between creativity and mental illness, or "genius and insanity" in popular parlance, at least since classical times (1). In the nineteenth century the influence of Lombroso led to speculations that genius was a "hereditary taint" transmitted in families along with mental illness (2-5). In the twentieth century this association has been supported by several techniques commonly used to examine familial transmission of various illnesses, including evaluation of first-degree relatives of creative individuals and examination of biological and nonbiological adoptive relatives of creative individuals adopted at birth (6-11). The striking number of suicides by contemporary writers has also led to renewed interest in this association. The following are only some of the writers who have died by suicide during the twentieth century: Ernest Hemingway, Sylvia Plath, John Berryman, Anne Sexton, and Virginia Woolf.

In spite of the considerable interest in this topic, quantitative studies have been sparse, and none of the published studies (apart from my own early work) has used modern diagnostic techniques developed to im-

prove the reliability of psychiatric assessment, such as structured interviews and diagnostic criteria. Many studies have relied primarily on anecdotes; only a few have used direct personal interview of a systematically defined sample of recognized creative individuals.

Crucial questions include the following: Do creative individuals have a higher rate of mental illness? Do their first-degree relatives (parents, siblings, and offspring) have a higher rate of mental illness? Do these relatives have a higher rate of creativity? If there is a relationship between creativity and mental illness, is it a specific type of mental illness, such as schizophrenia, affective disorder, or alcoholism?

The present investigation attempted to answer some of these questions by systematically evaluating a sample of creative writers at the University of Iowa Writers' Workshop. The workshop is the oldest and most widely recognized creative writing program in the United States. Students and faculty have included such well-known writers as Philip Roth, Kurt Vonnegut, John Irving, Robert Lowell, Flannery O'Connor, and John Cheever. Since well-known writers are brought in for a semester or two each year as visiting faculty members, they represent a reasonably valid cross-section of contemporary American writers.

## METHOD

During the past 15 years, 30 faculty members at the workshop were evaluated with a structured interview designed by me in order to determine their patterns of creativity, their history of mental illness, and the prevalence of these traits in first-degree relatives. (This interview was developed before more recent standard interviews such as the Schedule for Affective Disorders and Schizophrenia [SADS]. It is available from me on request.) Confidentiality about the subjects' identity was a condition for participation in this study.

Twenty-seven men and three women were studied. Their mean  $\pm$  SD age was  $37.47 \pm 11.49$  years. The writers were matched for age, sex, and educational status to an occupationally varied sample of control subjects (hospital administrators, lawyers, social workers, etc.). The control subjects were not personally known to me and were selected because they provided a good sociodemographic match. Their mean age was  $37.90 \pm 12.20$  years. Psychiatric diagnoses of

---

Received Oct. 6, 1986; accepted April 13, 1987. From the Department of Psychiatry, University of Iowa College of Medicine. Address reprint requests to Dr. Andreasen, Department of Psychiatry, University of Iowa College of Medicine, 500 Newton Rd., Iowa City, IA 52242.

Copyright © 1987 American Psychiatric Association.

**TABLE 1. Lifetime Prevalence of Mental Illness in Writers and Control Subjects**

RDC Diagnosis	Writers (N=30)		Control Subjects (N=30)		$\chi^2$ (df=1) <sup>a</sup>	p
	N	%	N	%		
Any affective disorder	24	80	9	30	13.20	.001
Any bipolar disorder	13	43	3	10	6.90	.01
Bipolar I disorder	4	13	0	0		n.s.
Bipolar II disorder	9	30	3	10	2.60	n.s.
Major depressive disorder	11	37	5	17	2.13	n.s.
Schizophrenia	0	0	0	0		n.s.
Alcoholism	9	30	2	7	4.01	.05
Drug abuse	2	7	2	7		n.s.
Suicide	2	7	0	0		n.s.

<sup>a</sup>Entries with no chi-square value had expected frequencies less than 5; Fisher's exact test was used in these cases.

the probands were made according to the Research Diagnostic Criteria (RDC) (12), and diagnoses of first-degree relatives were made according to the Family History Research Diagnostic Criteria (13). Cognitive function and style were evaluated in a subset of 15 writers and control subjects with the Raven Progressive Matrices (advanced set) (14) and the WAIS.

## FINDINGS

Table 1 summarizes the principal findings concerning the rate of psychiatric illness in the writers and the control subjects. The rates are lifetime prevalences and therefore indicate whether the subjects had *ever* had a period of mental illness. The reliability of such lifetime estimates has been evaluated and found to be very good when structured interviews and diagnostic criteria are used (15).

Contrary to some previous speculations about a relationship between schizophrenia and creativity (16, 17), these results suggest a strong association between creativity and affective illness instead. Schizophrenia was conspicuous by its absence, while the rate of affective disorder (i.e., manic-depressive illness) was strikingly high. Eighty percent of the writers had had an episode of affective illness at some time in their lives, compared with 30% of the control subjects. A surprising percentage of the affective disorder was bipolar in nature; 43% of the writers had had some type of bipolar illness, in comparison with 10% of the control subjects. Both of these differences were statistically significant. In addition, the writers had significantly higher rates of alcoholism (30%, compared with 7% in the control subjects).

No statistically significant differences were noted in specific subtypes of affective disorder when the writers were compared with the control subjects, perhaps because the sample size was relatively small and nonparametric statistics have limited power. The differences that were not statistically significant were nevertheless clinically important. Bipolar I disorder is a

severe, although intermittent, illness characterized by episodes of depression alternating with excessive euphoria, increased energy, and poor judgment (and sometimes delusions and/or hallucinations as well); it almost invariably requires hospitalization and long-term treatment with somatic therapy. Bipolar II disorder, characterized by milder periods of euphoria that alternate with periods of despondency and depression, also produces an instability of mood that many find painful and that usually requires somatic treatment. Major depression, the mildest of the affective disorders, is also a potentially severe illness. Two-thirds of the ill writers had received psychiatric treatment for their disorders. Further supporting the clinical importance of these affective disorders in writers is the fact that two of the 30 committed suicide during the 15 years of the study. Issues of statistical significance pale before the clinical implications of this fact.

The rates of illness for the writers were substantially higher than one might expect. The rates for the control subjects were somewhat higher than those found in epidemiologic population studies (18). Rates for the control subjects were not, however, strictly comparable with those in such epidemiologic studies, since the controls, having been sociodemographically matched to the writers, represented an educationally and occupationally advantaged sample. An association has been reported between bipolar disorder and occupational achievement (19), which might have led to a relatively higher rate of bipolar disorder in the control sample (and in the writers as well). The RDC definition of bipolar II disorder is also quite broad, which partially accounts for the high rate of bipolar II disorder.

Lombroso, Ellis, and many others (2-6) have argued that creativity and mental illness run in families and that both tendencies are hereditary. Table 2 examines the rates of mental illness in the first-degree relatives of the writers and the control subjects according to the family history technique. This technique, which involves collecting information about the family directly from the proband, rather than by interviewing all relatives personally, has respectable sensitivity and specificity (20). Nevertheless, some "cases" will not be identified through this method because of lower sensitivity, thereby leading to lower prevalence estimates. These lower prevalence estimates are presumably equally lower in relatives of writers and in relatives of control subjects, however, thereby permitting valid comparisons between the two groups of relatives. As table 2 indicates, the first-degree relatives of the writers had a disproportionately higher frequency of mental illness, particularly affective disorder. The rate of major depression was significantly higher for siblings, parents, and all relatives pooled. In addition, a higher frequency of bipolar disorder approached statistical significance when all relatives were pooled.

Since rates of affective disorder were higher for the writers, one would also expect them to be higher for their first-degree relatives, since affective disorders have a well-established familial pattern of transmis-

**TABLE 2. Mental Illness in First-Degree Relatives of 30 Writers and 30 Control Subjects**

Family History RDC Diagnosis	All Relatives					Parents					Siblings							
	Of Writers (N=116)		Of Control Subjects (N=121)		$\chi^2$ (df=1) <sup>a</sup>	p	Of Writers (N=60)		Of Control Subjects (N=60)		$\chi^2$ (df=1) <sup>a</sup>	p	Of Writers (N=56)		Of Control Subjects (N=121)		$\chi^2$ (df=1) <sup>a</sup>	p
	N	%	N	%			N	%	N	%			N	%	N	%		
Any affective disorder	21	18	3	2	14.21	.001	10	7	1	2	6.41	.001	11	20	2	3	6.35	.01
Bipolar disorder	4	3	0	0		.056	1	2	0	0		n.s.	3	5	0	0		n.s.
Major depression	17	15	3	2	9.84	.01	9	5	1	2	5.35	.05	8	14	2	3		.05
Alcoholism	8	7	7	6	0.01	n.s.	5	8	4	7		n.s.	3	5	3	5		n.s.
Suicide	3	3	0	0		n.s.	2	3	0	0		n.s.	1	2	0	0		n.s.
Any illness	49	42	10	8	34.77	.0001	25	42	5	8		.00003	24	43	5	8	17.00	.001

<sup>a</sup>Entries with no chi-square value had expected frequencies less than 5; Fisher's exact test was used in these cases.

**TABLE 3. Prevalence of Creativity in First-Degree Relatives of 30 Writers and 30 Control Subjects**

Relatives' Creativity <sup>a</sup>	Relatives of Writers		Relatives of Control Subjects		$\chi^2$ (df=1) <sup>b</sup>	p
	N	%	N	%		
All relatives	116	100	121	100		
+Creative	20	33	11	18		n.s.
++Creative	12	20	5	8	4.85	.05
Total creative	32	53	16	27	9.10	.01
Parents	60	100	60	100		
+Creative	5	8	3	5		n.s.
++Creative	7	12	2	3		n.s.
Total creative	12	20	5	8	2.47	n.s.
Siblings	56	100	61	100		
+Creative	15	27	8	13	2.64	n.s.
++Creative	8	14	3	5	2.01	n.s.
Total creative	23	41	11	18	6.44	.01

<sup>a</sup>+Creative=somewhat creative; ++creative=well-recognized level of creative achievement.

<sup>b</sup>Entries with no chi-square value had expected frequencies less than 5; Fisher's exact test was used in these cases.

sion. In order to address the issue of whether affective disorder and creativity are intertwined, we must look at patterns of creativity in family members as well. This issue is addressed in table 3. Information was collected concerning occupations, hobbies, and creative professional success among all first-degree relatives. Relatives were classified as “+creative” if they pursued occupations that would be considered somewhat creative, such as journalism or teaching music or dance. Relatives were classified as “++creative” if they had a well-recognized level of creative achievement, such as writing novels, dancing in a major company, performing as a concert artist or in a major symphony, or making a major scientific contribution such as an invention.

The total number of creative relatives was significantly higher for the writers, and it is particularly noteworthy that, when all relatives were pooled together, the difference was contributed primarily by the number of relatives who were in the ++creative category. Most of the difference between the writers and

the control subjects was contributed by the siblings; 41% of the siblings of the writers displayed some creativity, compared with 18% of the control siblings. The rate for parents was 20% versus 8%; while the rate among the parents of writers was higher, the difference did not achieve statistical significance. Table 4 portrays the intertwining of creativity and affective illness in the family members, showing the rates of creativity and illness in the families of each of the writers and control subjects. It indicates clearly that the families of the writers were riddled with both creativity and mental illness, while in the families of the control subjects much of the illness and creativity seemed to be randomly scattered.

It is perhaps noteworthy that the types of creativity observed in the relatives of the writers were far broader than literary creativity. Some relatives of creative writers were indeed also in literary fields, but many were creative in other areas, such as art, music, dance, or mathematics. This suggests that whatever is transmitted within families is a general factor that predisposes to creativity, rather than a specific giftedness in verbal areas. Further, whenever traits are transmitted familiarly, it is of interest to determine whether the transmission is due to social learning and modeling or to more purely genetic factors. While family studies cannot disentangle this issue to the same extent that adoption studies can, the variability in creativity in these families does suggest the possibility of some form of genetic transmission. If social learning were the sole factor involved, one would expect a preponderance of literary creativity in the families of writers. The relatively higher rate of creativity among siblings is also very slight evidence against the effect of role modeling based on parental interests and behavior.

What is the relationship between intelligence and creativity? Several studies have suggested that intelligence may be a necessary, but not sufficient, cause of creativity but that very high intelligence and high creativity are not necessarily the same (21–22). Data concerning the intelligence of the writers and the control subjects are summarized in table 5. The WAIS IQ is based on an extrapolated estimate from four

**TABLE 4. Patterning of Mental Illness and Creativity in 30 Writers, 30 Control Subjects, and Their Families**

Subject Number	Writer			Writer's Family		Control Subject		Control Subject's Family	
	Affective Disorder	Bipolarity	Alcoholism	Mental Illness	Creativity	Affective Disorder	Alcoholism	Mental Illness	Creativity
1	Yes	Yes		Yes	Yes				
2	Yes		Yes		Yes				
3				Yes					
4	Yes	Yes	Yes	Yes	Yes				Yes
5	Yes	Yes				Yes			
6	Yes			Yes					
7		Yes		Yes	Yes	Yes			
8	Yes	Yes	Yes	Yes	Yes			Yes	
9	Yes	Yes	Yes	Yes	Yes			Yes	
10	Yes	Yes	Yes	Yes	Yes				
11	Yes	Yes					Yes		Yes
12	Yes	Yes		Yes	Yes				Yes
13				Yes	Yes				
14	Yes							Yes	
15	Yes		Yes	Yes		Yes			Yes
16	Yes	Yes		Yes	Yes				
17	Yes	Yes	Yes	Yes					
18	Yes					Yes			
19	Yes								
20	Yes				Yes				
21	Yes	Yes	Yes	Yes	Yes	Yes			
22	Yes					Yes	Yes	Yes	
23	Yes			Yes	Yes				
24	Yes								
25						Yes		Yes	Yes
26	Yes	Yes						Yes	
27				Yes					
28						Yes			Yes
29	Yes		Yes	Yes	Yes				
30	Yes					Yes		Yes	

**TABLE 5. Scores on Intelligence Tests of 15 Writers and 15 Control Subjects**

Test	Score				$\chi^2$ (df=1)	p
	Writers		Control Subjects			
	Mean	SD	Mean	SD		
WAIS	123.7	9.3	121.2	7.1	0.82	n.s.
Verbal IQ	126.4	10.6	122.8	3.5	1.25	n.s.
Performance IQ	116.9	13.5	116.1	13.7	0.16	n.s.
Verbal minus performance	9.5	16.6	6.7	13.4	0.51	n.s.
Similarities scale	13.8	2.4	14.3	1.7	-0.61	n.s.
Vocabulary scale	15.3	1.8	13.1	1.2	3.89	.0006
Picture completion scale	12.4	2.7	12.0	1.6	0.49	n.s.
Raven Progressive Matrices (advanced set)	25.3	7.1	25.6	7.3	-0.11	n.s.

subtests: similarities, vocabulary, picture completion, and block design. These were selected because two of these tests, similarities and vocabulary, are considered to be strong tests of verbal intelligence, while the other two, picture completion and block design, are strong tests of nonverbal visual intelligence. The Raven Progressive Matrices (advanced set) is a nonverbal IQ test designed to be culture free; it involves pattern perception of visual shapes.

As table 5 indicates, there was no difference between the writers and the control subjects on most of these measures of intelligence. The writers scored significantly higher on the vocabulary subtest of the WAIS, but this would be expected given the fact that

their life work involves a preoccupation with words. The most interesting data in table 5 are the many nonsignificant differences. Both the writers and the control subjects were intellectually talented, with full-scale IQs usually over 120. Except for their differential excellence in vocabulary, the writers performed equally well on all the WAIS subtests. They did not seem to have a preferential giftedness in verbal intelligence, although they did have a nonsignificant decrement in verbal minus performance IQ. In general, they performed equally well in all aspects of intelligence assessment.

The data from the Raven Progressive Matrices (advanced set) are particularly interesting, since this is a

purely nonverbal test consisting of 36 different patterns that must be "solved." This test is considered by neuropsychologists to be extremely difficult, and perfect scores are thought to be very infrequent. In this relatively gifted sample of individuals, however, several achieved perfect scores, including both writers and control subjects. IQ equivalents for the Raven test are not available, since the test is not adequately normed, but scores of 25 are probably more or less comparable with IQs in the 120–130 range.

These results indicate that the relatively higher rate of affective illness in the writers and their first-degree relatives was probably not an effect of intelligence, nor was the higher creativity in the relatives of writers due to higher intelligence in the writers. Apart from the factor of creativity, the writers and control subjects were closely matched on cognitive measures.

## DISCUSSION

This study has some recognized limitations. The investigator was not blind to the status of the sample with respect to creativity, thereby raising the possibility of biased estimates for the relatives of the writers. When the study was initially undertaken, however, it was designed to test the hypothesis of an association between schizophrenia and creativity, since an association between creativity and affective disorder was not even suspected at that time. The observed findings were contrary to those hypothesized at the outset, a fact that enhances their credibility even though it does not eliminate the possibility of a "halo effect." The failure to directly interview all first-degree relatives is also a limitation, since direct interview usually is considered to be more valid than the family history method. This limitation is likely to produce random noise across both the writer and control samples, however. Nevertheless, the possibility must be considered that the writers were more sensitive reporters of affective illness and creativity in their first-degree relatives, since they possessed these traits themselves. A third limitation is that the study was limited to writers; the findings are not necessarily generalizable to other types of creativity.

Overall, this investigation indicated that there is a close association between mental illness and creativity, as assessed in a sample of creative writers. Contrary to earlier hypotheses about a relationship between creativity and schizophrenia, the type of mental illness was predominantly affective disorder, with a possible tendency toward the bipolar subtype. Earlier hypotheses about a relationship with schizophrenia were based on the recognition that schizophrenia often leads to unusual perceptions, which could predispose to creativity; in most instances, however, perceptions in schizophrenia tend to be more bizarre than original, and many schizophrenic patients suffer from cognitive impairments that are likely to inhibit creativity (23). Schizophrenia also tends to be a chronic illness, while

affective disorder is usually episodic, leaving most people with long periods of normality. Most writers reported that they tended to write during these normal periods rather than during highs or lows.

Reasons for the relationship between affective disorder and creativity need further exploration. Nevertheless, these results do suggest that affective disorder may produce some cultural advantages for society as a whole, in spite of the individual pain and suffering that it also causes. Affective disorder may be both a "hereditary taint" and a hereditary gift.

## REFERENCES

1. Aristotle: *Problemata*, vol 2. Translated by Hetts WS. Cambridge, Cambridge University Press, 1953
2. Lombroso C: *The Man of Genius*. London, Walter Scott, 1891
3. Galton F: *Hereditary Genius*. London, Macmillan, 1892
4. Hirsch W: *Genius and Degeneration*. New York, Appleton, 1896
5. Lange-Eichman W: *The Problem of Genius*. London, Kegan Paul, Trench, & Trubner, 1931
6. Ellis HA: *A Study of British Genius*. London, Houghton-Mifflin, 1926
7. Juda A: The relationship between highest mental capacity and psychic abnormalities. *Am J Psychiatry* 1949; 106:296–307
8. McNeil TF: Prebirth and postbirth influence on the relationship between creative ability and recorded mental illness. *J Pers* 1971; 39:391–406
9. Andreasen NC, Canter A: The creative writer: psychiatric symptoms and family history. *Compr Psychiatry* 1974; 15:123–131
10. Andreasen NC, Canter A: "Genius and insanity revisited": psychiatric symptoms and family history in creative writers, in *Life History Research in Psychopathology*, vol 4. Edited by Wirt R, Winokur G, Roth M. Minneapolis, University of Minnesota Press, 1975
11. Holden C: Manic depression and creativity. *Science* 233:725, 1986
12. Spitzer RL, Endicott J, Robins E: Research Diagnostic Criteria: rationale and reliability. *Arch Gen Psychiatry* 1978; 35:773–782
13. Andreasen NC, Endicott J, Spitzer RL, et al: The reliability and validity of the family history method using Family History Research Diagnostic Criteria (FH-RDC). *Arch Gen Psychiatry* 1977; 34:1229–1235
14. Raven JC: *Advanced Progressive Matrices*. New York, Psychological Corp, 1977
15. Andreasen NC, Grove WM, Shapiro RW, et al: Reliability of lifetime diagnosis: a multicenter collaborative perspective. *Arch Gen Psychiatry* 1981; 38:400–405
16. Karlsson JL: Genetic association of giftedness and creativity with schizophrenia. *Hereditas* 1970; 66:177–182
17. Heston LL: Psychiatric disorders in foster home reared children of schizophrenic mothers. *Br J Psychiatry* 1966; 112:819–825
18. Robins LN, Helzer JR, Weissman MM, et al: Lifetime prevalence of psychiatric disorders in three sites. *Arch Gen Psychiatry* 1984; 41:949–958
19. Woodruff RA, Robins LN, Winokur G, et al: Manic-depressive illness and social achievement. *Acta Psychiatr Scand* 1971; 47: 237–249
20. Andreasen NC, Rice J, Endicott J, et al: The family history approach to diagnosis: how accurate and useful is it? *Arch Gen Psychiatry* 1986; 43:421–429
21. Terman LM, Oden MH: *Genetic Studies of Genius*, vol 4. Stanford, Stanford University Press, 1947
22. MacKinnon DW: Personality and the realization of creative potential. *Am Psychol* 1965; 20:273–281
23. Andreasen NC, Powers PS: Creativity and psychosis: a comparison of cognitive style. *Arch Gen Psychiatry* 1974; 32:70–73