

Creativity and Psychopathology A Study of 291 World-Famous Men

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Background. This investigation sought to determine the prevalences of various psychopathologies in outstandingly creative individuals, and to test a hypothesis that the high prevalence of mental abnormalities reported in prominent living creative persons would not be found in those who had achieved and retained world status.

Method. The family background, physical health, personality, psychosexuality and mental health of 291 famous men in science, thought, politics, and art were investigated. The membership of the six series of scientists and inventors, thinkers and scholars, statesmen and national leaders, painters and sculptors, composers, and of novelists and playwrights was determined by the availability of sufficiently adequate biographies. Extracted data were transformed into diagnoses in accordance with DSM-III-R criteria, when appropriate.

Results. All excelled not only by virtue of their abilities and originality, but also of their drive, perseverance, industry, and meticulousness. With a few exceptions, these men were emotionally warm, with a gift for friendship and sociability. Most had unusual personality characteristics and, in addition, minor 'neurotic' abnormalities were probably more common than in the general population. Severe personality deviations were unduly frequent only in the case of visual artists and writers. Functional psychoses were probably less frequent than psychiatric epidemiology would suggest, and they were entirely restricted to the affective varieties. Among other functional disorders, only depressive conditions, alcoholism, and, less reliably, psychosexual problems were more prevalent than expected in some professional categories, but strikingly so in writers.

Conclusions. Similar findings have been reported for living artists and writers, and this suggests that certain pathological personality characteristics, as well as tendencies towards depression and alcoholism, are causally linked to some kinds of valuable creativity.

How people famous for their outstanding ability, originality and single-mindedness came to be called geniuses has been fully expounded by Becker (1978). Basing himself on the literature up to the 1940s, he also described in detail the perennial controversy between those who regarded genius as the highest expression of humanity, and those who looked upon it as a form of mental abnormality. The more recent literature has been critically evaluated by Kessel (1989). By then the belief that the highest forms of human achievement were invariably associated with 'madness', attributed to Aristotle (Blakemore, 1988), had been abandoned, but a slightly higher than expected prevalence of psychoses and psychoneuroses had been reported by Adele Juda (1949, 1953) in a series of German-speaking men 'of the highest mental capacity' and in members of their families. The so far unexplored importance of minor psychiatric disorders was stressed by Slater & Meyer (1959), but the literature has remained replete with books and papers dealing exclusively with the most severe mental illnesses suffered by a tiny minority of 'geniuses'. Also, the 'Mad Genius Controversy' (Becker's 1978 title) has continued unabated: Slater (1970, 1979) held

that psychopathology, when present, only gave a slant to creative work, led to the choice of material and its elaboration, and had perhaps been cathartic. The creative work itself, however, had proceeded from strength and not weakness. While Kessel (1989) assembled evidence supporting this opinion, others working mostly with living artists and other markedly creative people found such a high incidence and prevalence of psychiatric abnormalities as to suggest a causal nexus between creativity and psychopathology (Eysenck, 1983; Andreasen, 1987; Jamison, 1989). A link between creativity and a tendency to affective disorders has become widely accepted (Hare, 1987), and there have been numerous publications, most recently by Jamison (1993), advocating a specific relationship between creativity and manic-depressive (bipolar) disorders.

The excellence of many modern biographies led me to undertake the present investigation, which has had two aims: (1) to determine the lifetime prevalences of various kinds of psychopathology in a variety of outstandingly creative and world-famous individuals; (2) to test a hypothesis according to which the high prevalence of psychic abnormalities reported in

prominent living artists and other creative persons would not be found in those who had achieved and retained world status. Putting the matter colloquially, only 'pseudogeniuses', but not genuine 'geniuses' were, more often than ordinary people, mentally unstable.

Method

Sampling

Only biographies were used which had been published some time after the subjects' deaths, and which were sufficiently detailed to yield data on family background, personality, sexuality, and health. Most importantly, biographies were chosen only when they did not leave gaps, possibly glossing over periods of impaired mental health. In earlier times, biographies with this degree of completeness were rarely written, and for this reason the study was limited to those persons alive and active during the last one-and-a-half centuries. Subjects chosen were those judged to have achieved lasting international fame for their innovations in a variety of fields.

It was anticipated that the frequency of psychic abnormalities would differ between professional groups. To make comparisons possible their memberships would have to be of similar size and homogeneity. It seemed unrealistic to undertake the necessarily very intensive study of more than 300 biographies; this allowed for 50 in each of six professional categories. Complete homogeneity could be achieved only in the case of two professional groups, of composers and of visual artists (sculptors and painters). Architects, being both artists and engineers, were excluded from the study. In the case of creative writers, many playwrights and novelists were also notable poets. To give a few examples, many of Henrik Ibsen's works were verse dramas; Boris Pasternak and Thomas Hardy were outstanding poets. So were a number of subjects in other categories, e.g. Rossetti and Macaulay. However, the main reason for excluding from the study persons whose fame rested solely on their poetry was that my lack of expertise would have resulted in an unacceptably strong bias towards English and German subjects. Among the scientists were included inventors and some mathematicians, but the most heterogeneous group was assembled under the category of scholars and thinkers (intellectuals of various kinds), which, to give some examples, included archaeologists as historians rather than scientists, and doctors (i.e. scientists) like Freud and Jung because they had become intellectuals. The omission of many names will, no doubt, occur to readers. They were partly due to my ignorance, but

largely due to my inability to obtain suitable biographies in English, French, or German. Thus, the six series of subjects comprised 48 visual artists (out of 70 originally projected), 50 scholars and thinkers (84); 45 scientists (75); 46 statesmen and national leaders (out of 57 originally listed). The biographies available in the music department of the University of London Library yielded a series of 52 composers. The number of novelists and dramatists was arbitrarily restricted to 50 from a much larger number easily available. Early into the investigation, female subjects were regrettably excluded. Only five adequate biographies of writers and one for a female scientist were discovered. On account of the different prevalences of psychic abnormalities in women their inclusion among male subjects was unacceptable, and all of them (Charlotte Brontë, Colette, George Eliot, George Sand, Virginia Woolf and Marie Curie) had serious psychiatric and/or psychosexual problems.

It will have become clear that my method of selection of subjects is somewhat flawed, and soon after the research had begun it was suggested to me (Andreasen, personal communication) that I ought to submit lists of men and women to experts in their fields to obtain selection by consensus. However, even if I had succeeded, as Juda had done in Germany, in obtaining international cooperation, my samples would still have depended on the availability of biographies, and thus would still not have been random for purposes of statistical comparisons (Altman, 1991).

Finally, it must be emphasised that only factual material in the biographies was used: the account of the subject's life performance, what he had written in his letters, and other autobiographical material, these all being indispensable ingredients of any adequate biography, just as much as reports of others concerning the subject's personality and relationships. By contrast, the biographer's interpretations based on the subject's *oeuvre* were not utilised, but the opinions of the subject's medical attendants were.

Ratings

The extracted data were, when appropriate, transformed into diagnoses. For psychiatric conditions, a distinction was made between lifelong psychopathology (deviations of personality) and episodic disorders (illnesses, including persistent ones).

In order to demonstrate that encountered conditions were identical to those met in psychiatric practice, diagnoses were made in accordance with DSM-III-R (American Psychiatric Association,

1987). This instrument was chosen because when the investigation was started it was the most recently revised one. Surprisingly, the biographies offered sufficient information to allow DSM-III-R diagnoses to be made with some confidence. Difficulties only arose in two areas: in the case of major depressive episodes (296.2× or 3×) this diagnosis requires, apart from the presence of either depressed mood or markedly diminished interest or pleasure, the presence of at least three of seven additional symptoms. Information on these was incomplete in most biographies. Provided the affective disorder had been present continuously for at least two weeks, depressive disorder not otherwise specified (311.00) was diagnosed when fewer than three additional criteria had been reported by the biographer. A different problem arose from the absence in the DSM of the concept of cyclothymic or dysthymic personality: cyclothymia (301.13) and dysthymia (300.40) refer to illnesses. To indicate that a subject had been afflicted with an undue tendency to brief mood swings, the controversial concept of borderline personality disorder (Lewis & Harder, 1991; Higgitt & Fonagy, 1992) was employed, subtitled as 'affective' when only three of its eight criteria were present: affective instability, inappropriate anger, and feelings of continuous emptiness and boredom.

None of the subjects scored the number of criteria required for a DSM diagnosis of personality disorder, and so they were classified in terms of absence or presence and severity of criteria, i.e. traits of various personality disorders. Episodic disorders were coded as absent, doubtfully present, as 'functional' and either not seriously or severely disabling, or as psychoses (functional or organic).

Results

The subjects of the investigation are listed in Table 1. Those not familiar with some of the names will find them and their achievements in the current edition of *Chambers Biographical Dictionary*. For a preliminary orientation, the men are ranked in terms of absence or severity of psychopathology, conflating at this stage personality deviations and episodic functional disorders. These global assessments do not include the impact of conditions due to cerebral pathology or abnormal ageing, which will be dealt with separately.

Scientists had the lowest prevalence of psychic abnormalities, but even in their case these were absent or trivial in only one-third. The amounts of psychopathology increase steadily from composers, politicians, artists, and thinkers through to writers.

Severe psychopathology, in the sense of interrupting work, requiring periods of rest and sometimes treatment, exceeded the incidence of less disabling disorders in the case of artists, composers, and writers.

Family background

Half of this selection of 19th and 20th century cultural leaders had come from professional families, if we allow the term 'professional' to include artists, musicians, and public servants of any rank. The fathers of one-fifth had been merchants, and 10% had been big landowners and, in the case of eastern Europe, usually members of the nobility. Another 10% of subjects had come from retailers', and 11% from skilled workers' (artisans or small farmers) families. Only one scientist and one politician were from a labouring class background. Twice as many scientists, artists, and politicians as writers, composers, and intellectuals had come from somewhat humbler circumstances. Overall, 27% of parents had achieved upward social mobility, and only 4% had come down in the world.

Regardless of social class of origin, almost half of our subjects had close relatives with well above average achievements in various fields. Confirming many earlier accounts, 89% of composers were closely related to capable musicians. The influence of specific heredity and of early environment was less evident in artists (in 40%), but still not negligible in politicians (30%) and in scientists (29%). On the other hand, 48% of thinkers and 22% of writers, as well as 20% of scientists, had relatives who had excelled in different disciplines, a very infrequent finding in the case of composers, artists, and politicians.

In spite of their giftedness, some families had failed to create favourable childhood environments for their sons, but it was not possible to determine how often unhappiness in childhood had been due to poor parental care arising from marital discord or psychiatric problems, or had foreshadowed our subjects' adult mental instability. Certainly, 56% of writers, the category with the highest prevalence of psychopathology, had unhappy childhoods, as against 26% of thinkers and, least often, 10% of composers. However, only 7% of all parents had opposed their sons' chosen careers, twice as often and for understandable reasons in the case of artists.

Although information on psychiatric family histories was quite patchy, the extractable data yielded general agreement with Juda's (1949) which were based on a very searching enquiry covering first- and second-degree relatives. This had allowed her

Table 1
The distribution of totalled psychopathology

Scientists				Composers			
None	Mild	Marked	Severe	None	Mild	Marked	Severe
Charcot	Bernard	Babbage	Bell	Bartok	Bizet	Chopin	Berg
Eddington	Boole	Darwin	Bohr	Brahms	Britten	Grieg	Berlioz
Fermi	Brunel	Hamilton (WR)	Boltzmann	Busoni	Debussy	Mahler	Bruckner
Heisenberg	Dalton	Helmholtz	Galton	Chabrier	Donizetti	Mendelssohn	Elgar
Henry	Edison	Liebig	Mayer (R)	Hindemith	Dvorák	Rimsky-Korsakov	Falla
Herschel	Ehrlich	Lister	Mendel	Janaček	Fauré	Rossini	Gounod
Humboldt (A)	Einstein	Mach	Metchnikoff	Offenbach	Franck	Schoenberg	Martinů
Kelvin	Faraday	Pasteur	Michelson	Smetana	Gershwin	Sibelius	Moussorgsky
Koch	Gauss	Röntgen		Shostakovich	Láhar	Stravinsky	Puccini
Marconi	Lyell	Rutherford			Liszt	Wolf	Rachmaninoff
Maxwell	Pavlov	Schrödinger			Meyerbeer		Reger
Osler		Tyndall			Prokofiev		Satie
Planck					Ravel		Schumann
Virchow					Strauss (J)		Scriabin
					Strauss (R)		Tchaikovsky
					Sullivan		Wagner
					Verdi		
31.1%	24.4%	26.7%	17.8%	17.3%	32.7%	19.2%	30.8%
Politicians				Artists			
Briand	Asquith	Adenauer	Bismarck	Braque	Cornelius	Böcklin	Cézanne
Franco	Ben Gurion	Cavour	Bülow	Corot	Degas	Corinth	Courbet
Gandhi	Bethmann-Hollweg	Chiang Kai-Shek	Disraeli	Daumier	Delacroix	Giacometti	Ensor
Metternich	Garibaldi	Churchill	Hitler	Derain	Hodler	Ingres	Epstein
Smuts	Lenin	Clemenceau	Kemal Ataturk	Liebermann	Kaulbach	Matisse	Friedrich
Stresemann	Mao-Zedong	Gambetta	Lincoln	Pissarro	Klee	Monet	Gauguin
Thiers	Masaryk	Gladstone	O'Connell	Sargent	Manet	Rodin	John
	Mazzini	De Gaulle	Woodrow Wilson		Menzel	Whistler	Kandinsky
	Nkrumah	Lloyd George			Mondrian		Kokoschka
	Poincaré	Mussolini			Renoir		Modigliani
	Roosevelt (FD)	Nasser			Rousseau		Munch
	Sun-Yat-Sen	Nehru			('Le Douanier')		Picasso
		Palmerston			Schiele		Rivera
		Parnell			Seurat		Rossetti
		Peel			Spitweg		Sickert
		Perón					Turner
		Pilsudsky					Utrillo
		Stalin					van Gogh
		Venizelos					
15.2%	26.1%	41.3%	17.4%	14.6%	29.1%	18.8%	37.5%
Thinkers				Writers			
Aron	Acton	Buber	Bakunin	Maupassant	Chekov	Balzac	Conrad
Burckhardt	Adams	Carlyle	Comte		France	Bannett	Dostoevsky
Keynes	Feuerbach	Ellis (H)	James (W)		Hauptmann	Brecht	Faulkner
Renan	Foucault	Emerson	Kierkegaard		Melville	Camus	Gide
Schweitzer	Frazer	Flinders Petrie	Newman (Card.)		Orwell	Dickens	Gogol
	Herzen	Freud	Nietzsche			Dumas (père)	Hemingway
	Herzl	Heidegger	Marx			Flaubert	Hesse
	Michelet	Jung	Proudhon			Galsworthy	Ibsen
	Mommsen	Macaulay	Ruskin			Gorky	Joyce
	Moore (GE)	Mill (JS)	Russell			Hardy	Kafka
	Pekhanov	Sainte-Beuve	Tocqueville			Hugo	Kipling
	Santayana	Schliemann	Toynbee (A)			Huxley (A)	Lawrence (DH)
	Strauss (DF)	Schopenhauer	Watson (JB)			James (H)	Mann (T)
	Sapir	Spengler				Maugham (S)	Manzoni
		Treitschke				Pasternak	Proust
		Weber (M)				Pirandello	Sartre
		Whitehead				Shaw	Scott Fitzgerald
		Wittgenstein				Thackeray	Stendhal
						Trollope	Strindberg
						Turgenev	Tolstoy
						Zola	Waugh (E)
							Wells
							Wilde
10.0%	28.0%	36.0%	26.0%	2.0%	10.0%	42.0%	46.0%

to conclude that the families of her 294 German geniuses had a much higher incidence of psychoses and psychoneuroses than the average population. Family histories of schizophrenia, depression, suicide, alcoholism, and various other conditions, which could only be labelled as instability, were registered in 55.5% of our 291 internationally famous subjects. The prevalences of psychopathology (Table 1) in members of the different professional categories ranked in parallel with the incidence of psychiatric disorders in their families. There was only one exception: thinkers had positive family histories slightly more often than writers, although these ranked above thinkers in terms of frequency and severity of global psychopathology.

Physical health

From the numerous data regarding physical health extracted and recorded from the biographies (and available for specific enquiries) only some matters relevant to mentality will be presented in this paper.

In addition to having survived the hazards of late 18th century and 19th century childhoods, these

outstanding men would seem to have been much healthier than most of their contemporaries: 41% enjoyed robust health, and only 8% had been plagued by debilitating illnesses. The average duration of life of scientists and of intellectuals was about 72 years, that of politicians and artists about 70 years. By contrast, creative writers lived on an average only for 65, and composers only for 61 years.

Next to cardiac and cerebral atherosclerosis, infections were the commonest causes of death, but there were no striking differences in their distribution among the professional categories to explain adequately the differences in death rates, and especially the frequency of early deaths of composers.

Only 28 men (10%) had suffered at some time of their lives from tuberculosis, of which 13 had died. One single statesman and two scientists were probably tuberculous. There was an only slightly higher prevalence (6–10%) in thinkers, artists, and composers, but a very substantial one of 26% in creative writers, with their highest rates of psychic problems. However, looking at the six categories overall, there was no obvious evidence that frequency of tuberculosis was correlated with mental ill-health

Table 2
The distribution of lifelong psychopathology, psychiatric disorders and illnesses, and diagnostic categories of functional conditions

	Scientists		Politicians		Composers		Thinkers		Artists		Writers		Totals	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
<i>Lifelong psychopathology</i>														
No or trivial deviations from 'normal'	8	17.8	1	2.2	6	11.5	1	2.0	2	4.2	1	2.0	19	6.5
Unusual, but not DSM-III-R diagnosable, character features	18	40.0	16	34.8	14	27.0	12	24.0	10	20.8	4	8.0	74	25.4
Potentially handicapping traits of DSM personality disorders	18	40.0	24	52.1	26	50.0	30	60.0	24	50.0	35	70.0	157	54.0
DSM traits adversely affecting relationships and/or careers	1	2.2	5	10.9	6	11.5	7	14.0	12	25.0	10	20.0	41	14.1
<i>Episodic psychiatric ill-health</i>														
Certainly none	13	28.9	4	8.8	9	17.3	8	16.0	13	27.1	3	6.0	50	17.2
Probably none	7	15.6	10	21.7	5	9.6	10	20.0	5	10.4	2	4.0	39	13.4
'Functional' not seriously disabling	11	24.4	22	47.8	19	36.6	17	34.0	16	33.3	18	36.0	103	35.4
'Functional' severely disabling	13	28.9	10	21.7	12	23.1	12	24.0	11	22.9	21	42.0	79	27.1
'Functional' psychoses	1	2.2	-	-	1	1.9	2	4.0	-	-	1	2.0	5	1.7
'Organic' psychoses	-	-	-	-	6	11.5	1	2.0	3	6.3	5	10.0	15	5.2
<i>Functional conditions</i>														
Anxiety and related disorders		4.4		4.3		17.3		10.0		8.3		14.0		10.0
Adjustment disorders (anxious)		8.8		17.4		-		4.0		-		-		4.8
Total anxiety disorders		13.3		21.7		17.3		14.0		8.3		14.0		14.8
Somatoform-type disorders		24.4		32.6		33.3		36.0		14.6		28.0		27.8
Severe depressions		17.8		13.0		15.4		16.0		8.3		36.0		17.9
Mild depressions		11.1		17.4		15.4		10.0		22.9		36.0		18.9
Adjustment disorder (depressive)		4.4		10.9		3.8		10.0		10.4		-		6.5
Total depressions		33.3		41.3		34.6		36.0		41.7		72.0		43.3

or economic stress in this population. Venereal infections probably caused the deaths of only nine of 291 men, all except one case of HIV infection due to CNS syphilis. That four of these nine cases were composers is very likely a chance effect.

Persistent psychopathology

Facts relating to personality were extracted from the biographies, and any characteristics which could be identified with any of the criteria for the diagnosis of a personality disorder listed in the DSM manual were coded accordingly. These criteria will be referred to as DSM traits.

Table 2 shows that only 6.5% of subjects had no remarkable personality characteristics. Some unusual traits (which, however, were not found among those classified as criteria of any DSM personality disorder) were registered in 25.4%. DSM traits which did not seriously affect the subject's life-adjustment occurred in 54.0%. By contrast, 14.1% of these outstanding men had been carriers of traits which had persistently led to disruptions of their relationships and/or had greatly harmed their careers. However, none of them registered the number of criteria which in a clinical situation would have led to a diagnosis of DSM personality disorder, although Hitler and Kierkegaard came fairly close to this.

Far above the average, 90% of the creative writers exhibited some traits of DSM personality disorders, and in 20% these had been seriously disruptive. While some DSM traits were registered in nearly half the scientists, only in the case of one, Babbage, were they rated as having adversely affected the fate of his computing machine and his academic prospects. Politicians and composers occupied intermediate positions, but DSM traits were almost as frequent in intellectuals and artists as in writers, who were exceeded by artists (25%) as bearers of severely detrimental character traits.

Comparing the present material with the prevalence of personality deviations in the general population was fraught with difficulties. DSM personality disorders causing dysfunctioning were

reported in 8.5% of an urban male population by Reich *et al* (1988), and in 13% by Tyrer *et al* (a summary article, 1991) in a survey of an adult mixed-sex population. Thus, only in visual artists and writers, and perhaps intellectuals, were traits adversely affecting relationships and/or careers found strikingly more often than in the average population (see Table 2). In spite of very helpful personal communications from Professors Reich and Patricia Casey (one of Tyrer's 1991 fellow authors) it has been possible to extract only with dubious validity the figure of 16% for the prevalence of not seriously disruptive personality deviations in their populations – far lower even than in my scientists.

Translating the personality characteristics from their descriptions in the biographies into specific DSM traits could obviously not achieve high levels of validity and reliability in the hands of a single investigator, and employing a coarser frame of reference, the criteria were distributed over the three clusters suggested in the DSM manual (Table 3). Cluster A comprises paranoid, schizoid, and schizotypal disorders, and traits of these were found in only 6.8% of all subjects. They were, however, registered for 20% of intellectuals, in keeping with many scholars and philosophers having been reported by their colleagues and administrators, as well as by their few friends, as cantankerous, difficult, and abstruse. Cluster B traits of antisocial, borderline, histrionic, and narcissistic personalities predominated in 22.3% of the sample, and not surprisingly were registered most often (among the non-artistic professions) in the politicians. According to Tyrer *et al* (1991), Cluster B personality disorders are most frequently encountered in the general population, but in our sample, traits of Cluster C disorders were predominant (38.9%). This cluster comprises avoidant, obsessive-compulsive, and dependent personalities, to which have been added (see Method above) affective traits when the sole criteria or borderline disorder. Membership of Cluster C was lowest in scientists and composers, and highest in writers. Traits of more than a single cluster of personality disorders were found in only 56

Table 3
The distribution of criteria for three clusters of DSM-III-R personality disorders (%)

	Scientists	Politicians	Composers	Thinkers	Artists	Writers	Averages
No DSM traits	57.8	37.0	38.4	26.0	25.0	10.0	32.0
Cluster A traits predominating	2.2	-	5.8	20.0	8.3	4.0	6.8
Cluster B traits predominating	8.9	28.2	15.4	14.0	27.1	40.0	22.3
Cluster C traits predominating	31.1	34.8	40.4	40.0	39.6	46.0	38.9

For details of clusters see text.

subjects; in 34% of intellectuals, but only in 9% of scientists.

Regarding individual traits, the antisocial variety was registered in only 23 subjects, not all of whom had been allocated to a predominant Cluster B. The recorded antisocial behaviour had amounted in most subjects only to irresponsible or slightly dishonest handling of money matters, and in a few to having been unduly aggressive or ruthless in their relationships. The behaviour of politicians was codified as antisocial only when immoral and nefarious conduct in affairs of state had also been a feature of their private life. Probably only one subject, the primitive painter Rousseau ('Le Douanier'), was convicted in youth and old age of taking part in embezzlement. Schopenhauer, in spite of his lofty philosophy, was vitriolic about his fellow savants, led an egocentric and somewhat luxurious life, and during a domestic altercation pushed a seamstress down a flight of stairs, for which exploit he was sentenced to pay her a small lifelong pension in compensation for her injuries.

Sexuality

The six groups of subjects are presented in Table 4 in order of decreasing 'normality'. Nothing remarkable about their sexual behaviour was found in the biographies of 73.4% of scientists, but only 36.0% of writers had not deviated from unremarkable and largely monogamous sexuality. Precise numbers of sexual relationships of our subjects could rarely be determined. Including youthful exploits, having had a succession of up to five or six lovers was not classified as Numerous Partners in Table 4. Johnson *et al* (1992) reported that 36.6% of men had claimed that by the age of 59 they had had more than five sexual partners.

Thus, even the artists in our sample did not, as a group, exceed mid-twentieth century population norms, while the reported conduct of the scientists had been statistically highly 'abnormal'.

With the exception of Hitler's alleged ejaculatio praecox and Gandhi's cessation of marital intercourse on ethical grounds, psychosexual difficulties of politicians, scientists, and composers seem to have been largely related to low or inhibited drive. In addition to this, other factors had more frequently operated in the case of artists, thinkers, and writers. Examples are the delusional jealousy of the painter Friedrich and that of Strindberg; the inability to consummate their marriages of Carlyle, Ruskin, and Tchaikovsky; the ambivalence towards women possibly of Tyndall, certainly of the historian Spengler and of Tolstoy. The undinism of sexologist Havelock Ellis was frankly described by himself, and the exhibitionism of the personality-disordered and alcoholic Utrillo nearly led to his institutional internment.

Only four men in this sample were exclusively homosexual: the composers Britten and Tchaikovsky and the philosophers Foucault and Wittgenstein. Bisexual, but predominantly homosexual, were John Maynard Keynes and the writers Gide, Somerset Maugham, Proust, and Oscar Wilde, to whom with a strong overt preference for women should with some certainty be added D. H. Lawrence. The complete absence of homosexuals and bisexuals in this sample of scientists, politicians, and artists is remarkable when one considers that according to the latest survey (Johnson *et al*, 1992), internationally confirmed, in Britain 6.18% of men (in general) and 11.9% in London are homosexuals or bisexuals, values approached only by the intellectuals and the creative writers. The absence of any sexual contacts ever registered for 15 subjects is credible only in five:

Table 4
Sexuality and marital histories (percentage)

	Scientists <i>n</i> = 45	Composers <i>n</i> = 52	Politicians <i>n</i> = 46	Thinkers <i>n</i> = 50	Artists <i>n</i> = 48	Writers <i>n</i> = 50
<i>Sexuality</i>						
'Normal'	73.4	65.4	63.0	44.0	41.7	36.0
Numerous partners	4.4	15.4	23.9	10.0	33.3	24.0
Psychosexual problems	13.3	13.5	13.1	30.0	18.6	26.0
Bisexual	0	0	0	2.0	0	10.0
Homosexual	0	3.8	0	4.0	0	0
None known	8.9	1.9	0	10.0	6.3	4.0
<i>Marriages</i>						
Outwardly stable	75.6	36.5	54.4	42.0	33.3	36.0
Disturbed by husband	11.1	21.2	30.4	20.0	33.3	34.0
Disturbed by wife	4.4	19.2	4.3	16.0	4.2	12.0
None	8.9	23.1	10.9	22.0	29.2	18.0

Abbot Mendel, Cardinal Newman, the Catholic philosopher Santayana, and the latent homosexuals Gogol and Henry James.

If (Table 4) never-married men are excluded, the proportion of stable marriages in scientists rises to 82.9%, and this goes some way towards refuting the plausible objection that the low rates of promiscuity and of problematic sexuality for scientists were due to suppressions by their biographers, often scientists themselves. Furthermore – and again omitting never-married men – the proportions of stable marriages decrease from 82.9% of scientists to 61.0% of politicians down to 36.0% of creative writers, in step with increases of promiscuity and of sexual pathology. An apparent exception is formed by the composers, who had, however, a low marriage rate and the highest proportion of wives mainly responsible for disturbing their marriages. In the whole sample, compared with the role of husbands' infidelities, wives caused marital problems far more often on account of mental instabilities, even psychoses.

Substance dependence and abuse

Nicotine dependence (305.10) was diagnosed in 32.3% of subjects when contemporaries had reported heavy and continuous smoking; composers had the highest prevalence (50%), but not all biographies contained information about smoking and drinking.

Thus, only 11.7% of subjects were given the diagnosis of alcohol dependence (303.90) because their friends had been concerned about heavier and more continuous drinking than was customary. This had been the case in only two scientists and two intellectuals, but alcohol dependence was above the average in artists (16.7%), politicians and writers, down to 13.5% of composers. Alcohol abuse (305.00) was registered in 6.5% of all subjects because they had been habitually drunk and incapable, had to take alcohol before breakfast or had developed alcohol-related physical or mental illnesses. The condition was diagnosed most frequently in writers (14.0%) and in artists (12.5%). Alcoholism statistics for most of the period and for middle-class men are not available, but for writers and artists the figures are rather higher than recent estimates (Lucas, 1987) of a prevalence of problem drinkers as between 4% and 10%. Excessive alcohol consumption (dependence/abuse) averaged at 18.2% for all our subjects, somewhat lower than the figures for men of all social classes of between 19.1% and 28.9% in various American catchment areas (Regier *et al*, 1984) and of 21.0% in Bavaria (Wittchen & Essau, 1992). Far more relevant, however,

Andreasen (1987) registered alcoholism in only 7% of control subjects who had been carefully matched for socio-educational status with 30 writers of whom 30% had been diagnosed as alcoholic. This compares, in the present study, with 28.0% of writers, 29.2% of artists, 21.2% of composers, 17.3% of politicians, 8.0% of intellectuals, and 4.4% of scientists.

Before the beginning of this century, many drugs like laudanum were freely available 'over the counter', and the information in the biographies presents only the tip of the iceberg. Not including, among others, Gide and Aldous Huxley, who experimented with drugs, only eight became dependent on them, and four became abusers. Five of the 12 were writers; only one scientist, Tyndall (chronic depressive) came to be hypnotic-dependent; one of the two politicians, Adenauer, after a severe head injury; and one of two thinkers, Freud, for a short period after his cocaine experiments.

Episodic psychiatric conditions

Table 2 shows that these had occurred in 69.4% of subjects. In just over half (35.4%) they had not caused any serious disabilities, but in 34.0%, psychiatric illnesses had been clearly responsible for the interruption or cessation of creative work and for disruptions of life patterns, and sometimes of relationships. Hallucinations, delusions, and behaviour disorders due to such episodes, or to impaired cognition or awareness, were registered in only 20 of these 99 men (6.9% of all 291). Such psychotic conditions were possibly more frequent in the artistic categories (visual artists, composers, and creative writers), but, if at all, only as far as the 'organic' psychoses were concerned.

Fifteen men suffered from these illnesses. There was no doubt concerning the diagnosis of GPI in the case of Nietzsche, Chabrier, Donizetti, and Wolf, or of Smetana (tertiary cerebral syphilis). Guy de Maupassant's fatal illness was ushered in by a severe and suicidal melancholia with bizarre hypochondriacal delusions, but the traditional diagnosis of syphilis has been accepted. By contrast, in the case of Schumann, a diagnosis of GPI, with hesitation agreed to by Slater & Meyer (1956), has been discarded in the light of a recent biography (Taylor, 1982) in favour of suicidal melancholic depression and death by self-starvation. Next to Schumann's, the psychosis of van Gogh has continued to fascinate many authors. The large literature was summarised by one of his biographers (Cabanne, 1963), and the diagnoses listed by him have recently been augmented by that of acute intermittent porphyria (Loftus &

Arnold, 1991), only to be promptly rebutted in favour of manic-depressive psychosis by Jamison & Wyatt (1992) and Jamison (1993). I have accepted Gastaut's (1956) opinion, together with evidence in Cabanne's biography (p. 217), to the effect that van Gogh's personality disorder, depressions, and suicide were due to psychomotor (temporal lobe) epilepsy aggravated by absinthe and other substance abuses. Martinu, after a skull fracture, suffered from prolonged post-contusional symptoms. Psychoses related to alcohol abuse occurred in the lives of Faulkner, Modigliani, Moussorgsky, and Strindberg. Finally, Conrad, Rossetti, and Waugh had drug-induced deliria.

Late life deteriorations

Not included in Table 2 are 27 men in whom personality and/or cognitive deteriorations had been reported in old age. There were only two almost certain instances of Alzheimer type dementia: Somerset Maugham and Adenauer, both with mild paranoid symptoms. Four additional men had severe memory impairments of uncertain origin; e.g. Faraday had a well-documented transient cerebrovascular ischaemic attack (Hare, 1976), and, perhaps in relation to this, sustained, many years later, severe memory loss and physical decline. So there were at the very most only six cases of senile dementia, an incidence of 2.7% in the 222 men who survived beyond 60, which is much lower than expected. Rather more subjects (9.5%) developed in old age character and cognitive changes attributable to cerebral atherosclerosis. All these late life deteriorations were evenly distributed, and were of potential concern only in the case of the statesmen: Adenauer, Asquith, Ben Gurion, Churchill, Mao-Zedong, and Woodrow Wilson remained in power at least during the earlier phases of their cerebral declines. Their deleterious effect in younger statesmen (e.g. Lenin) was recently highlighted by Freeman (1991), who also gave several examples of the dire consequences of other psychiatric disorders for the performance of younger politicians. The politicians in the present series (Table 2) had the highest frequency of less serious conditions: while not sufficiently disabled to force resignation, these must at times have rendered these leaders unfit to make statesman-like judgement and decisions. Turning to the functional psychoses, major depressive episode with psychotic features (296.24) fits Hemingway's single illness, and the code 296.34 fits Schumann's recurring illnesses. Auguste Comte (positivist philosophy) suffered from a single attack of bipolar psychosis (296.63), diagnosed and treated

by Esquirol, and Robert Mayer, of Conservation of Energy fame, suffered from the recurrent form. The case of Ruskin is less clear; after many years of mild depressions, he suffered between the ages of 60 and 70 recurrent attacks of a few weeks' duration of sleeplessness, anguish and frightening but also wish-fulfilling hallucinations, with at any rate retrospective insight. After the last attack he ceased to be productive and became increasingly 'deteriorated'. No further facts seem likely to become available, and with some reservations the most recent diagnosis of schizoaffective disorder (295.70) has been accepted (Claridge *et al*, 1990).

Schizophrenia

The low lifetime prevalence of functional psychoses (1.7%) is remarkable, as is the absence of schizophrenia. Two subjects did exhibit first-rank symptoms of that psychosis: Strindberg during an alcohol-(absinthe)-induced illness (Anderson, 1971) and Evelyn Waugh during one due to drugs and alcohol, beautifully described in his 'Pinfold' novel. The schizoid and schizotypal James Joyce (Ellmann, 1959), during one of his depressions, suffered briefly from 'auditory hallucinations'. This occurred following increase of his alcohol abuse during a crisis of his daughter's schizophrenic illness. His doctor sent Joyce curtly back to work on *Finnegans Wake*, which has been regarded by Andreasen (1973) as the result of latent schizophrenia breaking surface, just as Jung had opined that *Ulysses* was an example of the schizophrenic mind.

It is noteworthy that only 14 of our 291 subjects, 10 of them artists or writers, had schizophrenic or probably schizophrenic relatives, which would suggest that 'schizophrenic genes' only rarely favoured artistic creativity.

Functional disorders

The distribution of functional disorders and illnesses among the six professional groups is also presented in Table 2. The percentages do not add up to 100 because some subjects had suffered from more than one condition, and slightly under one-third did not suffer from any.

There were no marked differences between the groups in the incidence of various kinds of anxiety disorders, with an average lifetime prevalence of 14.8%. An exception was the politicians, 17.4% of whom suffered from anxious adjustment disorders (309.24), perhaps on account of their stressful careers. Overall, simple phobias (300.29) and panic disorders with agoraphobia (300.21) were most frequent: severe symptoms had much inconvenienced

Camus, Manzoni, and Johann Strauss. Generalised anxiety disorders (300.02) were less common, and apart from obsessional symptoms during depressions (e.g. Zola), there was only one case of doubtful obsessive-compulsive disorder (300.30): Mahler was called an obsessional neurotic by Freud after a whole afternoon's consultation, but in the light of Clark's (1980) biography, what Freud probably meant was an obsessive-compulsive personality.

The prevalence of somatoform disorders averaged at 27.8%, with a markedly lower rate in artists. The conditions were mainly of the undifferentiated type (300.70) with only a few instances of somatoform pain disorder (307.80) or of hypochondriasis (300.70), e.g. the case of Arnold Bennett, who was addicted to patent medicines.

Depressions occurred in the lives of a third of scientists and composers, and only slightly more often in those of intellectuals, politicians and artists, rising in them to 41.7%. As the most surprising finding of the investigation, 72.0% of novelists and playwrights suffered from depressive conditions. Severe, incapacitating depressions were made up of major depressive episodes (296.×4; 296.×3; or 296.63) and of serious depressions not otherwise specified (311.00) when the biographies did not yield the required number of additional symptoms. Depressions which were not seriously incapacitating had for all but one subject (296.×2) been coded 311.00. Severe depressions were least common in artists. All the depressions of the writers were of more than two weeks' duration, while intellectuals, artists, and politicians – more often than scientists and composers – also experienced brief depressive adjustment disorders (309.00).

Suicides

Only five men committed suicide, and in spite of their high depression rate only one was a writer, Hemingway, whose depressive-paranoid psychosis has been well documented (Baker, 1969). The physicist Boltzmann's suicide was preceded by several years of recurrent, but not incapacitating, depressions. Van Gogh's suicide occurred during a brief depressive episode in the setting of temporal lobe epilepsy (in my opinion). Hitler's last-stand suicide was understandable, but it should be noted that he had in earlier life two severe depressions (Payne, 1973). Tchaikovsky has in the past been thought of as having died of cholera, but confirming persistent rumours, David Brown (1991) seems to have demonstrated conclusively that he died after taking a poison which mimicked the symptoms of cholera. Although Tchaikovsky had been prone to

depressions, and may have attempted suicide at the age of 37, there is no evidence for serious depression before his death at 53, but a credible report that he committed suicide as an alternative to permanent exile from Russia, either of which had been decreed by a Court of Honour of his old school fellows after Tchaikovsky's homosexual advances to a young man had been reported by the irate father, a Count, to the Tsar.

A suicide rate of 1.7% is above the lifetime expectance of death by suicide for men in England and Wales, which varied in the years around 1980 between 0.73% and 0.84%, but below the Austrian rate of between 1.88 and 2.17% (World Health Organization, 1983). Suicides in the general population are less reliably ascertained than in well-researched biographies, and the rate of our subjects must be regarded as not unduly high. In addition, 22 men had made suicidal bids: eight writers (16.0%), five composers (9.6%), four artists (8.3%), three scientists (6.7%), and two scholars and thinkers (4.0%), but none of the politicians. A comparison with the general population was not possible.

Discussion

This study has chiefly dealt with pathological matters, and to restore the balance it is imperative to record that the subjects were, over and above their astonishing giftedness, with a few exceptions, admirable human beings. Outside their own field, many had shown considerable abilities like writing novels or poetry, making music, or drawing and painting. Above all, and regardless of the blocks and breakdowns which many had suffered, they were powerfully driven by the urge to create. All had in common exceptional industry, meticulousness, and perseverance. All the same, most restricted their working hours spent usually, but not always, in isolation. However, as has been conceded by Storr (1988), almost all enjoyed playing truant in lively company from 'Solitude, Gibbon's School of Genius'. They were as a rule very sociable, highly clubbable, and, obedient to Dr Johnson's injunction, kept their friendship in good repair. Genius as a lonely and misunderstood giant is one of the many false stereotypes in this field. Thus, quite a number of our subjects had been widely celebrated since their early years. Many, it is true, did have long and hard struggles, were not understood by the public and their eminent contemporaries, but had ultimately won through: Schoenberg, according to the initially supportive Richard Strauss, was in need of a psychiatrist, but some 15 years later was called to the chair of composition at Berlin High School of

Music; Epstein was vilified by the British public and by the great majority of the artistic establishment, but was knighted at the age of 73; standing by van Gogh's easel, Degas exclaimed: "Monsieur, vous peignez comme un fou", somewhat prophetically, but if van Gogh had not killed himself he would have very soon seen his pictures not only selling, but fetching increasingly high prices, much as Monet who had nearly drowned himself as a young man.

Some of the findings of this investigation may be briefly highlighted. In contrast to the scientists, and to a smaller extent the others, novelists and dramatists more often had psychiatric family histories, and had suffered unhappy childhoods and, in adult life, debilitating illnesses like tuberculosis. Very much in contrast to the scientists, writers, artists, and intellectuals frequently had psychosexual and marital difficulties. Alcoholism was a problem largely in visual artists and creative writers.

The biographies of almost all these outstanding men revealed, as might be expected, unusual personality characteristics and eccentricities of a kind which do not figure among the criteria of any personality disorders, and which should not, therefore, be regarded as pathological. The prevalence of seriously disabling and disruptive personality deviations was higher than in general population samples only in the case of artists, writers, and marginally, intellectuals. In just over half the men, criteria of DSM personality disorders were registered which may have caused self-concern, but which did not seriously affect a successful course of life or disrupt relationships (see Table 2). These kinds of traits were encountered in 70% of writers, 60% of intellectuals, but only 40% of scientists. It was not possible to establish, unequivocally, how the prevalence of these abnormal but not seriously handicapping personality traits in people of similar socio-educational status compared with the levels found in our world-famous scientists, but it seems likely that 'neurotic' characteristics are more common in highly creative persons than in the general population.

A closer scrutiny is required in the case of the episodic psychiatric conditions registered in the lives of our subjects. The problems of assessing lifetime prevalences of psychiatric illnesses and disorders have been discussed by Eastwood & Kramer (1981). All published estimates have been based on series of age groups up to only 59 years. By contrast, in the present investigation, true lifetime prevalences, up to the time of death, were retrospectively determined. Psychoses, to which an inordinate amount of attention continues to be paid, were confirmed to be even rarer in 'geniuses' than in members of the general population.

In the case of anxiety disorders, lifetime prevalences for men varied in the NIMH catchment area survey (Regier *et al*, 1984) between 7.0% and 25.3%, and in a German survey (Wittchen & Essau, 1992; Wittchen, personal communication) it came to 10.8%. The 14.8% in the present material is, therefore, within the general population range. No comparable figures could be discovered for somatoform disorders. For what it is worth, 14% of family doctor and 45% of intrahospital referrals to a psychiatrist (Creed *et al*, 1993) were for somatisation disorders, and this compares with a 28% prevalence, evenly distributed, among the six professional categories of our subjects.

While psychoses, anxiety disorders, and somatoform conditions were not unduly frequent in our selection of world-famous men, the lifetime prevalence of depressions seemed, at first sight, to be considerably higher than reported by epidemiological investigations. The American and German surveys cited above averaged a lifetime prevalence of various depressions in men of only 4.6%. The NIMH findings were re-examined by Eaton *et al* (1989), employing latent class analysis, and Eaton (personal communication) estimated a prevalence of 1% for major depressions and 12% for depressions "not really very close to anything in DSM III". However, clinicians have arrived at a consensus (Paykel & Priest, 1992) to the effect that at least one-third of the population experience an episode of the milder clinical forms of depression during their lives and that 5% seem to be liable to severe depressions. More precise and relevant to the present study, was Andreasen's (1987) investigation of 30 prominent American writers, who over the years had served on the faculty of a writers' workshop. They were compared with carefully matched control subjects, of whom 30% reported past major affective disorders. This compares with 29% of our scientists, 31% of artists, 26% of intellectuals, 30% of politicians, and 31% of composers (Table 2). In striking contrast, depressions had occurred more than twice as often in novelists and dramatists (72%). This high prevalence was discovered before I had learnt that Andreasen had found a similar value (80%) in her American writers, of whom three were women and about a third were mainly poets (Andreasen, personal communication). My attention was drawn to Andreasen's 1987 paper by Kenneth I. Shulman, after I had given a preliminary account of the high depression rate in my writers during a visit to his department in Toronto in 1988.

There was, however, one difference: much to Andreasen's surprise, 13% of her subjects received, as a result of structured interviews, a retrospective diagnosis of type I bipolar psychosis, and 30% were

classified as having suffered in the past from the much less severe bipolar type II disorder (the remaining 37% had had major depressive disorders). More recently, a relationship between hypomanic phases and creative states has been strongly suggested by Jamison (1989, 1993). She reported on the frequency of psychiatric treatments received by a series of prize-winning British poets, playwrights, novelists, biographers, and artists (a total of 47 living subjects). Treated affective illnesses were found in 62.5% of playwrights and in 15.0% of novelists (a difference not found in my material). Unlike the poets, her prose writers had not received treatment for manic conditions, but many reported periods of elation coinciding with high creativity. I had also found that during highly productive spells many subjects had appeared to be even more than habitually driving, overactive, and high-spirited. Others, however, had been described as harassed and depressed, and euphoric only after completion of their task. Unlike Andreasen, I had found no cases of type I bipolar psychosis in my series of writers. William Faulkner suffered both manic and depressive symptoms, but these were assessed as having occurred in the setting of an alcoholic psychosis. Balzac, Tolstoy, and Wells may have had hypomanic swings, and eight other writers were noted for being habitually boisterous, rude, and overbearing in between their depressions, Hemingway being the outstanding example. Among members of the other professional groups, there were only two cases of bipolar psychosis (physicist Robert Mayer and philosopher Auguste Comte) and only a few instances of hypomanic admixtures to non-psychotic depressions (e.g. Lister), or of habitual elated swings (e.g. Whistler, Courbet, Bizet, Mendelssohn, Schumann, and most markedly, the inventor Bell).

Methodological shortcomings

This disagreement on the frequency of hypomania highlights just one of the many methodological shortcomings of this investigation, which derive from its having been in the hands of a single worker. Having a colleague would have made the selection of subjects less arbitrary. Also, diagnoses and ratings of severity of personality deviations and other disorders would have been made by two independent assessors. I must admit that I did not even try to entice another psychiatrist to share with me some ten years' work entailed in the careful reading of more than 350 biographies and the analysis of resulting data in an attempt to produce a definitive statement on the prevalence of psychic abnormalities and their distribution among a variety of men who had gained

universal renown for their originating achievements. All the same, the results of this investigation have internal consistency: the increasing prevalence of psychopathology running through the six professional groups was matched by almost parallel rises in the frequency of abnormal family histories, disturbed sexual relationships, and impaired physical health. The possibility that the biographers of scientists may have played down psychological disturbances, and that biographers of writers, who often were writers themselves, exaggerated them, is made unlikely by the fact that anxiety disorders and somatoform conditions were found to have been equally common and no more frequent than in the general population. Only the following kinds of psychopathology had a higher prevalence than in the ordinary run of people: disabling personality deviations (but only in visual artists, prose writers, and perhaps scholars and thinkers); largely subjective personality problems (probably in all groups, but certainly in writers and intellectuals); alcoholism (strikingly in writers, artists, and composers, less so in politicians and intellectuals, not at all in scientists); finally, depressions (but markedly only in novelists and playwrights). An unduly high prevalence of depressions and alcoholism has been confirmed by investigators of living writers and artists.

It will be recalled that this piece of research had two aims: firstly, current nosological concepts were employed in an attempt to determine in an objective fashion the prevalence of psychic abnormalities, disorders, and illnesses in people who, on account of their outstanding and originating achievements, had gained and retained international posthumous fame. Secondly, it was hypothesised that the high rates of psychiatric conditions increasingly reported in living creative people, most of whom were unlikely to attain Olympic heights, would not be found in the outstanding achievers of the present study. In that case, psychic abnormalities could not have played a role in generating creativity of the highest order. However, this hypothesis was clearly refuted. Thus the case has been strengthened of those who hold that there is a causal nexus between psychopathology and creativity over and above the slant given to their work by merely incidental psychic abnormalities of some creative people.

It is beyond the scope of the present paper to speculate about the reasons for the greater mental stability of scientists or about the differences in kinds and severity of psychopathology as between politicians, composers, artists, intellectuals, and writers. Especially, the roles of 'neurotic' character traits and of the tendencies towards depressions and alcoholism should be researched in living creative members of various professions.

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