

A Prehistory of the Diathesis-Stress Model: Predisposing and Exciting Causes of Insanity in the 19th Century

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Histories of the diathesis-stress model trace its origins to the 1950s. However, of 26 psychiatric texts published between 1800 and 1910, 17 noted that causes of insanity could be usefully divided into those that *predispose* to illness and those that *excite* onset. In this “predisposition-excitation framework” (PEF) for the etiology of insanity, hereditary or constitutional factors were critical predisposing causes, but education, occupation, sex, and marital status were typically included as well. Psychological traumas were key exciting causes, but so were somatic diseases, pregnancy, and substance abuse. The PEF was often used to explain the diversity of individual responses to adversity. While single dramatic events often excited onset, daily repetition of lesser shocks could also bring on insanity. Matching could occur between predisposing and exciting causes in individuals who had “special susceptibilities.” Predispositions could lead to “affects, passions, and perverse manner

of life,” which became exciting causes. Authors emphasized that it was easier to prevent exposures to exciting causes than to reverse predispositions. A thought experiment of an individual “transplanted early into new and different social conditions” anticipated models of primary prevention. Ratings of predisposing and exciting causes were mandated in the United Kingdom from 1878 to 1887 and at several U.S. psychiatric hospitals in the early 20th century. The PEF was far more stable over place and time in the 19th century than any psychiatric nosologic system. Contrary to the doctrinaire schools of psychoanalytic and biological psychiatry that dominated much of 20th-century psychiatry, the PEF proposed a flexible, developmental, and pluralistic view of etiologic pathways to psychiatric illness.

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On October 18, 1866, a 31-year-old Henry Maudsley (1835–1918), a dominant figure in late 19th-century British psychiatry (1, chapter 8), began his address to the Harveian Society of London, “On Some of the Causes of Insanity” (2), as follows:

It is not an easy matter ... when brought face to face with an actual case of insanity, and asked to state the cause of it, to do so definitely and satisfactorily. The uncertainty springs from the fact that, in the great majority of cases, there has been a concurrence of co-operating conditions, not one single effective cause. Two persons are exposed to a similar heavy mental shock: one of them is driven mad by it, but the other is not. Can we say then that the madness has been produced by a moral [psychological] cause? Not accurately so; for in the former case there has been some innate vice of nervous constitution, some predisposition of it to disease, whereby insanity has been produced by a cause which has had no such ill effect in the latter case.... It will be most expedient to adopt the time-honoured division of *predisposing* or remote and of *exciting* or proximate causes (2, pp. 488–489; italics in original).

The diathesis-stress model, an influential conceptualization of psychiatric illness over recent generations (3–5), postulates that etiologic factors underlying psychiatric illness can be divided into those that are present from an early age and are

temporally stable in their effect (diathesis) and those that are temporally discrete, occurring close in time to disorder onset (stress).

Reviews of this model trace its origins to Paul Meehl, Manfred Bleuler, and David Rosenthal in the 1960s (6–8), although earlier conceptual antecedents are sometimes noted (4, 5). I could find no review of the prehistory of this theory, to which Maudsley’s lecture is our entry point, articulating as it does what I call the “predisposition-excitation framework” (PEF) for the etiology of insanity. In the 19th century, the theory that disease could be understood as arising from predisposing and exciting causes was widespread and was applied, for example, to hereditary disorders (9), public health (10), infectious diseases (11), cancer (12), gout (13), and epilepsy (14).

I reviewed 25 representative psychiatric textbooks and one dictionary, all published in or translated into English between 1800 and 1910 (Table 1). Of those, seven (27%) had no section that systematically reviewed the causes of insanity. Of the remaining 19, 17 (89%) described the PEF. I review 10 of them here in an effort to illustrate the range of views on the PEF. Additional quotations from these authors are provided in Table 2. Among the 10 reviewed texts, seven provided lists

TABLE 1. Reviewed textbooks of psychiatry

Author, Year ^a , Country (Reference)	Section on Causes/ Etiology of Insanity	Outlined PEF ^b	Discussed in This Article
Arnold, 1806, UK (57)	No		
Rush, 1812, USA (58)	Yes	Yes	No
Prichard, 1837, UK (19)	Yes	Yes	Yes
Esquirol, 1838, France (42)	Yes	Yes	Yes
Bucknill and Tuke, 1858, UK (22)	Yes	Yes	Yes
Griesinger, 1861, Germany (25)	Yes	Yes	Yes
Van der Kolk, 1869, Netherlands (59)	No		
Spitzka, 1883, USA (60)	Yes	Yes	No
Hammond, 1883, USA (27)	Yes	Yes	Yes
Savage, 1884, UK (61)	Yes	Yes	No
Blandford, 1886, UK (62)	Yes	Yes	No
Lewis, 1889, UK (63)	No		
Clouston, 1892, UK (64)	No		
Tuke, 1892, UK (28) ^c	Yes	Yes	Yes
Stearns, 1893, USA (65)	No		
Kirchhoff, 1893, German (66)	Yes	Yes	No
Régis, 1894, France (67)	Yes	Yes	No
Clark, 1895, Canada (68)	No		
Maudsley, 1895, UK (36)	Yes	Yes	Yes
Kellogg, 1897, USA (29)	Yes	Yes	Yes
Kraepelin (6th edition), 1899, Germany (43)	Yes	No ^d	
Berkley, 1900, USA (69)	No		
Brower and Bannister, 1902, USA (70)	Yes	Yes	No
Krafft-Ebing, 1901/1904, Austria (31)	Yes	Yes	Yes
Tanzi, 1905/1909, Italy (71)	Yes	No ^d	
De Fursac, 1903, France (33)	Yes	Yes	Yes

^a Year of first publication is listed; when two dates are provided, the second is that of the English translation.

^b PEF=predisposition-excitation framework for the causes of insanity.

^c *Dictionary of Psychological Medicine*.

^d Proposed an internal versus external typology of causes.

of predisposing and exciting causes, and these are summarized in Table 3. Below, before the main history covering the 10 reviewed texts is presented, a prequel includes two earlier texts that anticipate the PEF. The remaining seven texts that address the PEF are summarized through quotations in Table 4.

PREQUEL

Burton (1621)

In the first edition of *The Anatomy of Melancholy*, Oxford don Robert Burton (1577–1640), in his section “Melancholy in Disposition,” discusses how individuals react to “melancholy provocations”:

[A]ccording as the humour itself is intended, or remitted in men, as their temperature [i.e., temperament] of body, or rational soul is better able to make resistance, so are they more or less affected. For that which is but a flea-biting to one, causeth insufferable torment to another; and which one by his singular moderation, and well-composed carriage can happily overcome, a second is no whit able to sustain, but upon every small occasion of misconceived abuse, injury, grief, disgrace, loss, cross ... yields so far to passion, that his complexion is altered, his digestion hindered, his sleep gone, his spirits obscured, and his heart heavy ... and he himself overcome with melancholy (15, part 1, section 1, p. 18; 16, p. 145).

In the 1620s, Burton, a depression sufferer, captured key features of the diathesis-stress model. Stressors reflected “melancholy provocations,” and the diathesis was captured by a range of terms: humor, temperature, rational soul, and carriage.

Louis (1749)

Among the precursors to the PEF were attempts to understand human heredity in the 18th century, illustrated by a 1749 essay by Antoine Louis (1723–1792) (17, 18). Louis was critical of the deterministic hereditary theories then popular (see quotation in Table 2), noting both the great variation in “the temperament of children born from the same father and from the same mother” (17, p. 308) and that parents commonly can receive a disease “from their ancestors and transmit it to their posterity without having themselves ever been attacked by the disease” (17, p. 315). As summarized by López-Beltrán, Louis concluded that it is not “the disease itself which is transmitted to children but rather a *disposition* to the disease ... [which] will only take effect with the concurrence of external causes” (17, p. 315). While aware of the tendency for children to inherit the traits and diseases of their parents, before the 18th century, physicians noted several irregularities in this process, including differences between siblings and disorders skipping generations. They concluded that diseases were not themselves hereditary, but

TABLE 2. Selected additional quotations relevant to the predisposition-excitation framework for the causes of insanity in the texts discussed in this article

Author, Year, Country (Reference)	Relevant Text
Louis, 1749, France (18)	This one is mad, we say; his father was too, and his children will also be mad, for it runs in their family, it's an hereditary disease! Are diseases then inherited like property? Yes, no doubt about it. (Translated by López-Beltrán [17].)
Prichard, 1837, England (19)	The fact that it [a constitutional vulnerability] exists and is a necessary condition to the development of mental disease, is to be inferred from the consideration that the causes which induce madness in one person are precisely similar to those which in other individuals are observed to call forth disorders of a different kind. For example, we may observe that, among the physical agents which give rise to madness, there is none more influential than intemperance and the habitual use of ardent spirits.... But it is only in a certain proportion of persons addicted to intemperance that the phenomena of insanity make their appearance. Others, under the influence of the same noxious cause, are affected with apoplexy or paralysis; in many the brain escapes, and the liver becomes disordered, or dropsy takes place, with or without disease of the liver; in some the lungs become the seat of morbid changes. It is evident that there must be an original difference in the habit of body whence arises the diversity of results brought about by the same or very similar external agencies. This original difference is apparently a peculiarity in the congenital constitution of each individual (pp. 121–122).
Griesinger, 1861, Germany (24, 25)	Quotation 1: Very often the germs of the disease are laid in those early periods of life from which the commencement of the formation of character dates. It grows by education and external influences, or in spite of these, and it is but seldom that the abnormal psychical irritability attains either gradually or through scarcely noticeable intermediate stages to an evident disorder of mental function. More frequently there are a greater number of psychical impressions and bodily disorders, by the successive influences or unfavorable combinations of which the disease is developed. It is then not to be ascribed to any one of these circumstances, but to them as a whole (p. 130). Quotation 2: Thus, for example, we see in the concrete cases, long-continued drunkenness and violent emotion, hereditary disposition, domestic unquiet, and heart disease, childbirth and violent anger or shock-disappointed love and commencing tuberculosis; in short, we generally see several injurious influences acting on the organism, or states of disease already present and often more numerous and more complicated than these examples appear as causes of insanity (p. 130).
Krafft-Ebing, 1903, Austria (30, 72)	Experience shows that it is almost exclusively depressive emotions (death, loss of fortune, loss of honor, etc.) that lead to insanity. The causes vary with the sex and individuality. In women they are injury of honor (rape), or the slow, and therefore more injurious, influences of unhappy love, marriage, jealousy, or the sickness or death of children. In men unsuccessful efforts, loss of occupation, injured pride, and financial ruin are effectual (p. 166).
De Fursac, 1903, France (32, 33)	Three individuals are from their birth equally charged with a hereditary predisposition. One of them leads a quiet and regular life, free from overwork and excesses. In him the predisposition remains latent, and his life passes without the occurrence of mental disturbances. The second becomes addicted to alcoholism and in course of time develops the usual signs of the intoxication; but, conscious of his danger, he abandons his intemperate habits and recovers his health. Lastly, the third gives himself up to the same excesses as the second, but, instead of stopping in his fatal descent in time, he remains an inveterate drunkard, and, becoming demented, ends his days in an insane asylum. These three individuals have had very different fates, because the first has escaped the exciting cause, the second was prudent enough to combat it, while the third has entirely abandoned himself to its influence (p. 15).

rather their predisposition, which fully emerged only in the setting of “exciting” causes.

MAIN HISTORY

Prichard (1837)

In the first of two texts, published a year apart in England and France, James Cowles Prichard (1786–1848) began his section “Of the Causes of Insanity” as follows:

The causes of insanity have been differently distributed. Some divide them into remote or predisposing, and immediate or exciting causes ... [F]or the sake of clear and distinct arrangement, [I will] consider the facts which refer to

predisposition, or the susceptibility of mental disorders, and the circumstances which modify it and tend to augment its influence (19, p. 121).

He describes six “predisposing causes of insanity” and then the “moral” (or psychological) and physical “productive” (i.e., exciting) causes of insanity.

Prichard’s predisposing causes include stable traits (constitutional predisposition, temperament), demographic characteristics (age, sex), prior disorders, and education (Table 3). His moral productive causes are largely emotional in nature (care, anxiety, apprehensions), and the physical productive causes include substances of abuse, head injury, sexual excesses, and biomedical problems.

TABLE 3. Specific forms of predisposing and exciting causes listed by selected authors

Author, Year, Country (Reference)			
Prichard, 1837, UK (19)	Predisposing	Productive–Moral	Productive–Physical
	Constitutional predisposition; sex; age; temperament; previous attacks of insanity and other diseases of the brain; education	Care and anxiety; passions and emotions; apprehensions (often religious) relating to a future state	Head injuries; heat exposure; intoxicating liquors; sensuality; intestinal irritation; states of the uterine system
Bucknill and Tuke, 1858, UK (22)	Predisposing	Exciting–Moral	Exciting–Physical
	Heredity; sex; age; seasons; town and country life; occupation; marriage	Domestic troubles; domestic grief; disappointed affections; wounded feelings; religious anxiety; fright; over-study	Intemperance; epilepsy; uterine and childbearing; vice and immorality; disease of brain; old age; injury to head and spine
Griesinger, 1861, Germany (25)	Predisposing	Exciting–Psychical	Exciting–Mixed/Physical
	Hereditary predisposition; education; constitution; nationality; sex; age; social position; vocation; season	Passionate and emotional states	Drunkenness; sexual excesses; other nervous diseases; head injuries; spinal neuroses; acute febrile diseases; chronic constitutional diseases, especially syphilis and tuberculosis; pellagra; diseases of the abdomen, kidneys, genital organs, uterus, ovaries; menstruation; pregnancy; puerperal state; lactation
Hammond, 1883, USA (27)	Predisposing	Exciting–Emotional	Exciting–Physical
	Habit; temperament; idiosyncrasy; constitution; sex; race; age; heredity; marital status; urban dwelling	Anxiety; domestic chagrins; grief; fright and terror; love; excessive mental exertion	Alcohol; morphia, chloral, bromides, belladonna; sunstroke; cerebral hemorrhage and other diseases of the brain; epilepsy; chorea; phthisis, gout, rheumatism, various fevers, diseases of the heart, intestinal worms, abdominal disorders; uterine and ovarian disorders, and syphilis; masturbation and sexual excesses; mercury exposure; emanations from sewers, slaughterhouses
Kellogg, 1897, USA (29)	Predisposing	Exciting–Psychical	Exciting–Bodily
	Heredity; civilization; age; sex; marital status; occupation; nationality; climate; education; previous attacks of insanity	“Direct dethronement of reason by the immediate action of an emotional idea”; “the cumulative action of psychical causes”; “constant daily repetition of lesser moral shocks”; love, jealousy; fear; imprisonment	Disease of the reproductive organs, renal diseases, gastrointestinal disorders; liver, cardiac, pulmonary, vascular diseases; maternity; menopause; neuroses (chorea, hypochondriasis, hysteria, neurasthenia, and epilepsy); toxins, especially alcohol, lead, arsenic, atropine, morphine, cocaine, hashish; infectious diseases; trauma

continued

TABLE 3, *continued*

Author, Year, Country (Reference)			
Krafft-Ebing, 1903, Austria (31)		Accessory/Exciting Causes—Psychic	Accessory/Exciting Causes—Physical
Predisposing			
Heredity; neuropathic constitution; education; civilization; nationality; climate; sex; creeds; marital status; age; occupation		Violent affects, especially fright; chronic emotional stressors	Cerebral diseases; head injury; operative procedures; “neurosis” (e.g., chorea, paralysis agitans); acute constitutional diseases (e.g., fevers, rheumatism); chronic constitutional diseases (e.g., tuberculosis, syphilis); gastrointestinal, heart, renal disease; diseases of the female and male sexual organs; sexual excesses, want of sexual satisfaction; pregnancy, puerperal state, lactation; intoxications (alcohol, opium, metallic poisons)
De Fursac, 1903, France (33)		Exciting	Exciting—Physical
Predisposing			
Degeneration; heredity; race; climate; seasons; level of civilization; illegitimacy; degeneration; heredity		Violent emotions; alcoholic excesses, stress, and privations; prolonged anxiety, constant perplexity; exaggerated religious practices with extreme sensibility; isolation	Infectious diseases; rheumatism; syphilis; tuberculosis; intoxications, especially alcohol, morphine, lead, mercury, cocaine; disorders of nutrition; diabetes; overwork, inanition, cachectic diseases; heat disease; puberty; menstrual periods; puerperal state; all the organic nervous diseases

Prichard describes how predisposing and exciting causes interrelate:

A certain peculiarity of natural temperament or habit of body is a necessary condition for the development of insanity: without the previous existence of this condition the causes which give rise to the disease will either act upon the individual without any noxious effect, or they will call forth some other train of morbid phenomena. A natural predisposition may be inferred to have existed in every instance in which the disease has appeared (19, p. 121).

He illustrates this process in the reaction of different individuals to excess alcohol consumption (quotation in Table 2).

Esquirol (1838/1845)

In his section “Causes of Insanity,” Jean-Étienne Esquirol (1772–1840), a dominant figure in early 19th-century French psychiatry (20), writes: “The causes of mental alienation are as numerous, as its forms are varied.” He lists several possible typologies, including “physical or moral” and “predisposing or exciting” (21, p. 30). He then enumerates a range of causes that are predisposing, including sex, temperament, and character, but then adds that insanity is “also produced by

causes, whose influence is more immediate, and easily appreciated,” that is, exciting causes (21, p. 30).

Bucknill and Tuke (1858)

The 1858 textbook of John Charles Bucknill (1817–1897) and Daniel Hack Tuke (1827–1895) (1, chapter 7) was among the most influential in mid-19th-century Britain. Their section “Of the Causes of Insanity” begins: “The Causes of Insanity may be either predisposing or exciting” (22, p. 240). They then list specific predisposing causes and both moral and physical exciting causes (Table 3):

Among the most important predisposing influences are hereditary predisposition, the seasons, marriage, age, sex, &c. Among the exciting are, inflammation of the brain, intemperance, disappointed affections, &c. (22, p. 240).

Addressing a question of interest to modern diathesis-stress researchers, they were aware of how these causes might interact:

[A] man may be in an exceedingly feeble condition of health, in which the death of a friend, or other domestic trial, may induce an attack of insanity, from which he would not have

TABLE 4. Summary of views on the predisposition-excitation framework for the causes of insanity from textbooks not included in this article

Author, Year, Country (Reference)	Relevant Text
Rush, 1812, USA (58)	Of the remote and exciting causes of intellectual derangement, I have combined both these classes of causes, inasmuch as they most commonly act in concert, or in a natural succession to each other.... I shall now mention all those circumstances ... which predispose the body and mind to be acted upon by the remote and exciting causes that have been mentioned, so as to favor the production of madness (pp. 30 and 47–48).
Spitzka, 1883, USA (60)	Nearly all the known exciting causes of insanity are in the nature of somatic, emotional, or intellectual accidents, to which the sane population is almost as much liable as the insane. The reason why insanity results in one case and not in another, must therefore with certain exceptions be sought for in some vice of the constitution—in other words, in a predisposition to insanity. That this predisposition may be acquired through traumatism, syphilis, alcoholism, and other narcotic abuses we have already learned; but the most important predisposing cause of insanity is undoubtedly that hereditary transmission of structural and physiological defects of the central nervous apparatus discussed in the first part of this work (p. 369).
Savage, 1884, UK (61)	In any classification [of causes of insanity] we must refer to the time-honored division into “predisposing” and “exciting” causes.... Here we may often be able to place two distinct events or conditions which have precipitated the catastrophe (p. 17). Exciting causes may, like predisposing ones, be either moral or physical. Mental disorder may be equally produced by a mental shock or a blow on the head (p. 44).
Blandford, 1886, UK (62)	[F]irst I must set before you certain states which are often called predisposing causes of insanity, such as sex, age, degree of civilization, inherited taint, and the like. It is clear that these can only be called causes in the sense of their being concurrent conditions of the individual who for the time is insane. A man in one or other of these states has greater tendency to become insane, if other circumstances also tend to produce insanity in him. The latter may be the result of a number of tendencies which may exist separately in others without producing anything of the kind, but which, concurring in him, are the cause of it; or these tendencies may remain for years unproductive of evil, till some external circumstance completes the series, and overthrows the stability of the mind. Speaking generally, we may examine the causes of insanity under the heads of tendencies, or, to use a commoner term, predisposing causes and events, more or less accidental to the individual, such as are generally called moral and physical causes (p. 93).... I have thus glanced at some of what are called the predisposing causes of insanity.... But there are others, special to the individual, which are called exciting causes, and, whether preventable or not, frequently bring about the particular attack of insanity (p. 103)
Kirchoff, 1893, Germany (66)	The causes of insanity are either direct and immediate, or indirect and predisposing. The latter favor the development of mental disturbances and produce a predisposition to them.... We will now consider the predisposing causes according as they affect the community or the individual (pp. 20–21).... The views concerning the extent of efficiency of the psychical causes of insanity vary greatly, but I am inclined to believe that they are among its most frequent and fruitful sources, both in preparing the soil and particularly in acting as the immediate causes of the disease (p. 42).... [One example in discussion of “childbed and insanity”]: Hereditary predisposition to mental disorders cannot always be excluded, and then the lactation is merely an exciting cause of the outbreak of insanity (p. 39).
Régis, 1894, France (67)	One of the most important parts of the study of mental alienation is that of its etiology.... The same as with most diseases, there are, for mental alienation, predisposing and occasional causes (p. 32).... The action of occasional causes, moral and physical, on the development of insanity is undeniable, but it ought not to be overestimated, and it is well to know that without an already existing predisposition, without the conjunction of the seed and the soil ... this action would be inefficacious (p. 44).
Brower and Bannister, 1902, USA (70)	In considering the etiology of insanity one fact is predominant, that in the vast majority of cases, whatever be its immediate exciting cause, it is more remotely the result of a predisposition or favoring weakness, without which the direct and obvious cause would have been ineffective.... [T]he sane are equally liable to the exciting causes of insanity, which are ineffective in them; it is only those that are especially vulnerable that suffer from such influences (p. 18).... From what has been said it will be understood that with an existing predisposition admitted, almost anything that could sufficiently disturb the normal healthy action of the brain may give rise to more or less lasting mental derangement. The exciting causes of insanity are, therefore, infinitely numerous (p. 29).... In every case the remote as well as the apparent immediate causes should be taken into consideration, and questions of hereditary taint, neurotic personal antecedents, previous habits, etc., be thoroughly investigated. It must be remembered, also, that in most cases the causal factors are multiple; it is not the rule for any one to be the sole agency in producing the insanity. This is true of the exciting causes by themselves, and still back of these we have to reckon with the great predisposing influences which are in action in nearly every case (p. 38).

suffered, had he been in the enjoyment of sound health at the time of the event. In such a case, the predisposing cause of the patient's insanity was ill health, the exciting cause, domestic grief (22, p. 240).

Griesinger (1861/1867)

Willhelm Griesinger (1817–1868) was the most influential psychiatrist in mid-19th-century Germany, holding the first university chair and aggressively arguing that psychiatric illness should be considered a brain disease (23). In the second edition of his textbook (24, 25), he writes in his chapter “The Causes of Insanity”:

A closer investigation of the etiology of insanity soon shows that, in the great majority of cases, it was not a single specific cause under the influence of which the disease was finally established, but a complication of several, sometimes numerous, causes both predisposing and exciting (25, p. 130).

He outlines how these two kinds of causes interact developmentally (Table 2, quotation 1) and provides a “worked example” of the multiple kinds of causes in alcoholism (Table 2, quotation 2). He illustrates the role of predisposing and exciting causes:

Numbers of children suffer from worms, and few only fall into convulsions; many individuals live under conditions which are acknowledged to exert a powerful influence on the development of mental diseases, and only a few of them really become insane (25, p. 133).

Given his biological orientation, he sees predisposing causes as having a dominant role:

Doubtless, the predisposing circumstances are more important, stronger, and act more frequently in the production of insanity than the occasional causes. He who has a strong individual predisposition, especially if of a certain definite kind, is endangered by the slightest occasional causes; while the man in whom this is entirely absent can be exposed to the most serious conflicts with perfect safety to his mental health (25, p. 134).

But, as evidence of his pluralistic outlook, he gives psychological factors their due:

The psychical causes are, in our opinion, the most frequent and the most fertile sources of insanity, as well in regard to preparation as especially and principally the immediate excitation of the disease.... Under psychical causes, we are before all to understand former passionate and emotional states (25, pp. 164–165).

His list of predisposing and exciting causes (Table 3) resembles that of other authors, with an expanded set of physical exciting causes.

Hammond (1883)

William A. Hammond (1828–1900) was a colorful late 19th-century American alienist who was the Surgeon General of the United States Army during the Civil War and later developed a largely outpatient neuropsychiatric practice in

New York City (26). In his *Treatise on Insanity in Its Medical Relations* (27), his overview chapter “Causes of Insanity,” opens:

Predisposing Causes—The causes of insanity have been to a great extent considered in the earlier chapters of this work, so that it will not be necessary to do more in the present connection than to apply the principles there laid down (27, p. 652).

His specific list of predisposing causes (Table 3) resembles those of earlier writers. He then describes “exciting causes,” writing that they “are those which stand to the disease as its immediate producers. They are very numerous....” (27, p. 654). His list of physical exciting causes is even longer than that of Griesinger, adding drug exposures and environmental toxins (Table 3).

Tuke (1892)

In the *Dictionary of Psychological Medicine* (28), the editor, Daniel Hack Tuke, wrote the article “Statistics of Insanity,” a section of which was entitled “Causation.” He notes that the U.K. “Lunacy Commissioners” adopted an official classification of the causes of insanity and collected data on these causes in 136,478 admissions from a wide range of asylums between 1878 and 1887. The proposed typology divided the causes into moral and psychological types (with six specific moral and 22 physical causes listed), with each listed as predisposing or exciting. So, for a decade in the late 19th century in the United Kingdom, the PEF became official. Here are Tuke's comments, which indicate a considerable sensitivity to the problem of distinguishing between types of causes:

In the annual report of the Commissioners of Lunacy ... separate columns [of the “causation table”] are given, indicating the number of instances in which the cause is supposed to have been predisposing, and the number in which it is supposed to have been exciting. It is no doubt very difficult in many instances to distinguish between these two classes.... At the same time there are many cases in which the distinction is very clear. Thus, the individual who has a strong hereditary taint has, it must be allowed a predisposition to mental disorder. Subject this person and one who comes of a perfectly healthy stock, to a reverse of fortune or other calamity; the former will probably succumb, and the latter escape the overthrow of reason. The exciting cause is altogether distinct from the predisposing one. It must be admitted that the predisposing causes are the more important of the two (28, p. 1206).

Kellogg (1897)

Theodore H. Kellogg (1841–1931), superintendent of Willard State Hospital, wrote a section on “The etiology of insanity” in his *Textbook on Mental Diseases* (29) which began:

The chief customary division of the etiology of Insanity into *predisposing* and *exciting causes* is convenient for descriptive purposes, though, as a logical matter, the two classes of causes

are sometimes interchangeable, or blend in the same case inseparably.... As a clinical fact, also, Insanity is usually the result of a series of causes, which may act sequentially or simultaneously, and in contributive degrees not to be ascertained by even the most careful subsequent study of the case (29, p. 69; italics in original).

Kellogg's definition of predisposing causes was straightforward: "those conditions, internal or external, which favor, without actually causing, the development of Insanity" (29, p. 69). He defined exciting causes as "those which form not the favoring tendency, but the immediate occasion of the attack" (29, p. 92). Sometimes, he comments, the same factor can be both predisposing and exciting causes: "[I]ntemperance may cause general ill health or special disease of nervous centers and strongly predispose to Insanity, or it may excite an outbreak of alcoholic mania" (29, p. 92).

His descriptions of specific psychical causes are detailed. He gives this specific example of "the cumulative action of psychical causes":

The patient may react manfully against loss of fortune, and, by an effort of will, may retain his mental equilibrium under a rapidly succeeding loss of position, but the following death of an only child may furnish the cumulative pathological action from which the Insanity results (29, p. 119).

And this of "constant daily repetition of lesser moral shocks":

Domestic trouble among women includes the thousand petty worries of a wife, mother, and housekeeper, which recur daily and hourly, and, like the constant dropping which wears the stone, consume the nervous forces and result in mental disaster (29, p. 120).

Otherwise, his list of predisposing and exciting causes resembles those of other authors (Table 3).

Krafft-Ebing (1903/1904)

Richard von Krafft-Ebing (1840–1902), from Vienna, authored the most widely read psychiatric textbook in the German-speaking world in the 1870s and 1880s (30, 31). In his last edition, translated into English in 1904, he wrote in "Causes of Insanity":

A superficial consideration of the causal elements [of mental disease] divides them into two large groups: predisposing ... and accessory, i.e., exciting and often accidental. A sharp distinction of these two classes ... is not always possible, since a predisposing cause ... may also be at the same time the exciting cause, in that it leads to affects, passions, and perverse manner of life, which cause the ultimate outbreak of insanity (31, p. 137).

Krafft-Ebing suggests that predisposing causes can lead to exciting causes, which can precipitate illness. Being of an organic bent, Krafft-Ebing viewed predisposing causes as most important: "In general, experience teaches that predisposing influences are of much greater importance than accidental causes, and are of themselves sufficient to induce insanity" (31, p. 138). In particular, he emphasized heredity as

the most important predisposing cause: "By far the most important cause of insanity is transmissibility of psychopathic dispositions or cerebral infirmities by way of heredity" (31, p. 157). However, he also suggested that in the setting of strong emotions, particularly if chronic, as in "household trouble,"

the previous existence of a somatic or psychic disposition favors the outbreak, but the influence of the psychic element in undermining the constitution may induce insanity without such aid (31, p. 165).

His specific list of predisposing and accessory/exciting causes is typical, with an extensive set of physical exciting causes. In discussing the psychic causes, he gives emphasis to depressive emotions and comments on the sex differences in the exciting emotional causes of insanity (Table 2).

De Fursac (1903/1905)

In his *Manual of Psychiatry* (32, 33), after introducing the complexity of the causal pathway to insanity, the French psychiatrist Joseph Rogues De Fursac (1872–1942) began his section "Etiology" with predisposing causes:

The mind does not succumb to the pathogenic action of the causes which we shall study later on as exciting causes, unless its power of resistance is below the normal. A predisposition, latent or apparent, congenital or acquired, is necessary for a mental disease to originate and develop (33, p. 2).

He divides predisposing causes into those that are "exerted upon communities and not individuals" and those that affect individuals directly. He emphasizes, as a key individual predisposition to insanity degeneration, a popular concept in late 19th-century France (34, 35). He introduces exciting causes:

[A]ccording to most alienists, all the insane belong to the class of individuals presenting a neurotic predisposition; it does not, by any means, follow from this, however, that all those who are predisposed become insane.... [M]ost of the psychoses ... supervene in individuals previously sound in mind or at least free from evident and grave mental disorders. Thus we are forced to assume that some new factor must cause the cropping out of a previously latent morbid tendency (33, pp. 14–15).

De Fursac then notes that, unlike predisposing causes, exciting causes may be preventable:

The study of the *exciting causes* is therefore of great practical interest. We can do nothing against a predisposition except in an indirect and general way.... The *exciting causes* are, on the contrary, directly accessible; in many cases we can either remove them or combat them (33, pp. 15; italics in original).

He then provides a theoretical example of such effects (Table 2). Aside from his reference to degeneration, his list of predisposing and exciting causes is typical.

TABLE 5. Summary of predisposing and exciting causes listed for 15 admissions to Mendocino State Hospital in California from March 14 to April 29, 1909

Date	Admission Number	Age	Sex	Onset and Development	Predisposing Cause	Exciting Cause
March 14	17988	23	Male	Is troubled with delusions, illusions, and hallucinations	General mental weakness	Nervousness and masturbation
March 15	17990	30	Female	Violent; does not sleep	Heredit	Mental worry
March 16	17995	30	Male	Imagines that people are going to kill him		After operation for fistula
March 30	18009	43	Female	Has hallucinations that devils are pursuing her, taunting her	Heredit	
March 31	18010	32	Male	Imagines that people are after him		Drug habit
March 31	18102	52	Male	Irrational acts and declarations		Earthquake ^a
April 2	18013	37	Female	Threatens to kill her children; necessary to restrain her from running aimlessly from her house		Religious excitement
April 2	18014	33	Male	Threatened to cut his throat with a razor		Alcoholism
April 6	18021	23	Female	Tears up and burns articles around house, talks irrationally	Feeble-minded	
April 9	18027	44	Female	Acted in insane manner, tearing of her clothing		Family troubles
April 12	18029	29	Male	Runs away from home and invades the premises of others	Weak mentality	Family troubles
April 14	18034	20	Male	Delusions of grandeur and wealth; violent and destructive	Syphilis	Overwork
April 15	18037	29	Male	Threatened and attempts to jump out of window		Addiction to cannabis
April 15	18040	55	Female	Attempts to wander away from home; cannot sleep at night; talks foolishly	Heredit	
April 29	18044	21	Male	Has insanity of melancholia and suicidal mania	Heredit	Fright

^a Present attack began 10 days after the San Francisco earthquake.

Maudsley (1895)

I now return to the writings of Maudsley, later in his life when he had become a committed materialist preferring physiological to psychological explanations (1, p. 235). Nonetheless, he explored implications of the question posed by Burton more than two centuries earlier:

[W]hen one person, undergoing a moral [psychological] shock or the wear and tear of anxiety, becomes profoundly melancholic, while another person, going through a similar experience, is not seriously hurt in mind, it is not the whole truth, but a misleading half-truth, to describe the moral trouble as the cause. The latter, exempt from some flaw or infirmity of mental constitution which the former had, has not suffered the same kind or degree of mental commotion; possessing a more stable mental structure, he has not afforded to the external cause the internal coefficients essential to its ill effects. Is there one of the usually enumerated causes of insanity which does not act on hundreds of persons without causing it for every case in which it does cause it? And if injuries and other overwhelming damage to the mind-tracts are barred, is

there a single external cause of madness or perhaps any concurrence of such causes which can positively be depended on to produce it? If the answer be that the external stress might be so great as to break down any mind, however well organized, it is not conclusive; one may still suspect that there are persons who, though they might die, could not go mad, from the overstrain (36, p. 44).

He points out the specificity between each individual's psychological constitution and their susceptibility to particular exciting causes:

Persons differ widely in characters; they are enterprising and timid, prudent and rash, liberal and parsimonious, frank and false, proud and humble, ambitious and retiring, gentle and aggressive, pitiful and cold-hearted; and each variety of character or particular humour, having its own adjunct pleasures and pains, presents its special susceptibilities where a moral cause will strike it with most effect. The calamity which would hurt one seriously might not do the least hurt to another: the liberal man might lose a fortune with equanimity, when a similar loss might drive the miser mad; the proud man

be overthrown by a blow to his self-love which would leave the lowly-minded unhurt; the loving husband be sunk in despair by the death of his wife, while the man of little love but self-love was not seriously put out by the event. A general enumeration of the moral causes of insanity, without searching inquiry into the particular coefficients in each case, how barren of real instruction it must necessarily be! (36, p. 45)

He then notes how much predisposition can be affected by rearing and education:

Without doubt many a one has broken down in insanity who might have gone through life successfully had he been transplanted early into new and different social conditions from those in which the insane strain was bred—conditions adapted to the disuse of old and the use of new tracts of mental structure. Not that the circumstances of life can be depended on to change a character; but a character has several facets, so to speak, and circumstances are several also, wherefore they may influence its formation and destiny by their special appeal to and development of a particular aspect of it (36, p. 58).

Other Texts Adopting the PEF

Readers interested in further descriptions of the PEF, including comments from Benjamin Rush, may wish to review selected quotations from each of the seven unreviewed textbooks in Table 4.

DISCUSSION

From this rich selection of texts, 13 conclusions are noteworthy. First, over a long stretch of psychiatric history, which contained disagreements about psychiatric nosology, the appropriate role of physical restraints, purging and bleeding, and the best form of asylum care, a surprising degree of consensus was seen on the value of the PEF.

Second, for modern theorists, diatheses are, by definition, “internal” to the organism and stressors “external” (5). That viewpoint was not adopted by most PEF advocates. Exciting causes were often somatic diseases, or physiological states like pregnancy or substance abuse, making this category broader than the stressful life events emphasized in most recent diathesis-stress models (4). Furthermore, predisposing causes extended beyond classical “internal” factors such as genes or temperament. Climate, education, occupation, and marital status were often listed as important predispositions to insanity.

Third, exciting causes in the PEF often include “symptoms” such as anxiety, which may conflate the causes of “insanity” with its prodromal symptoms. This has been an important methodological issue in modern stress research (37, 38).

Fourth, a conceptual debate in contemporary diathesis-stress models is whether the two causes need to be independent (4). Krafft-Ebing addresses this for the PEF, noting that predispositions can lead to “affects, passions, and perverse manner of life,” which can constitute exciting

causes, a process termed “stress generation” in the modern literature (39).

Fifth, the time scale of stressors is debated in diathesis-stress models (4). While most authors assume acute effects, Kellogg (29) notes longer time intervals where “constant daily repetition of lesser moral shocks” can precipitate insanity. This perspective parallels modern researchers moving beyond acute events to include chronic stressors (38) and “daily hassles” (40).

Sixth, Maudsley anticipates modern diathesis-stress models that emphasize onsets arising from a diathesis-stressor *match* (5) when he notes “special susceptibilities where a moral cause will strike it with most effect.” His observations address another concern in modern theories, namely, whether predisposing and exciting causes add or interact in their risk impact (4).

Seventh, De Fursac noted a practical consequence of the PEF: exciting causes are easier to prevent than predispositions. Maudsley’s thought experiment of the individual “transplanted early into new and different social conditions” anticipates ideas of primary prevention.

Eighth, a threshold effect for stressors, postulated in some diathesis-stress models, is invoked by Kellogg. In “the cumulative action of psychical causes,” he reports that some individuals can endure substantial “loss of fortune” but with repeated adversities, their threshold is reached and insanity occurs.

Ninth, while differentiating predisposing and exciting causes is sometimes easily done (i.e., Tuke), the distinction in certain cases can be quite difficult (i.e., Kellogg). Several authors agree with De Fursac in suggesting the utility of the PEF from a “didactic standpoint.”

Tenth, in the United Kingdom, PEF achieved “official status” with the Commissioners of Insanity requiring its coding on cases admitted to asylums under their jurisdiction, as did California State Hospitals and St. Elizabeths Hospital. Table 5 provides predisposing and exciting causes of insanity from commitment forms for 15 patients admitted to Mendocino State Hospital in California between March 14 and April 29, 1909.

Eleventh, did the PEF evolve over the 19th century in response to the dramatic advances in medical knowledge, such as the microbial revolution (41)? Surprisingly, the texts suggested no major changes, although increasing conceptual sophistication was seen, for example, in Kellogg and the later writings of Maudsley.

Twelfth, what explains the PEF’s popularity over place and time? Answers to this question can enlighten us about the course of our own more recent history. The PEF is multicausal, developmental, and pluralistic, with intuitive, commonsense appeal. This contrasts with the two leading monocausal theories of 20th-century American psychiatry: psychoanalysis and biological psychiatry. In the place of the ideological struggle characterizing American psychiatry then, pitting social, psychological, and biological explanations against each other, each suggesting that they had the

only “real” explanation for psychiatric illness, the PEF accepted the complementarity of these diverse perspectives.

Finally, while the PEF was popular during the 19th century, it was not the only etiologic framework available. Esquirol mentioned dividing the causes of insanity into those that are “physical” and “moral” (42, p. 30). Emil Kraepelin, in his section “The Causes of Insanity,” noted that it was “necessary to distinguish between the two great groups of causes, i.e., external and internal ones” (43, p. 9). However, in my review of these texts, the PEF was the most frequently mentioned etiologic framework.

The PEF was a precursor not only to the diathesis-stress model but also to the biopsychosocial model of George Engel proposed in the 1970s (44), as well as the multiperspectival view of psychiatry developed by Paul McHugh in the 1980s (45). While the PEF was not discussed in philosophical terms in the texts reviewed, its perspective aligned with the integrative pluralism of Sandra D. Mitchell (46, 47) and other philosophers of science and psychiatry in recent decades (48–51). Furthermore, the PEF was nondoctrinaire in nature, appealing to psychiatrists of varying theoretical perspectives. In particular, it was advocated for by Griesinger, who, with his strong support for a neuropathological focus for psychiatric research, set the research agenda for academic psychiatry in the German-speaking world for much of the rest of the 19th century (52), and by Krafft-Ebing, well known for his emphasis on the organically oriented degeneration theory (53). Finally, the PEF was not so bland as to be devoid of interesting predictions, and it provided support for both advocates of hereditary-constitutional and environmental etiologic approaches to insanity. An attraction of the PEF noted by many authors is its ability to explain why various individuals exposed to the same objective stressor react in strikingly different ways.

The spirit of the PEF is well reflected in these modest words about the etiology of schizophrenia from Manfred Bleuler, one of the founders of the modern diathesis-stress model (4):

[P]sychological reactions may awaken the psychic derangements of schizophrenic symptomatology partly alone, and partly in connection with a particular disposition to schizophrenia.... Schizophrenic life is not foreign to human nature ... Heredity alone is not a satisfactory answer to the problem of the nature of schizophrenia.... There are many outside influences which alter the picture and the course of schizophrenia.... We therefore revert to the obvious views that hereditary disposition and life history act together in the genesis of schizophrenia (7, pp. 947–949).

CONCLUSIONS

The modern diathesis-stress model of psychiatric illness has a long, rich prehistory. A majority of psychiatric textbooks from 1800 to 1910 in Western Europe and North America propounded versions of the PEF, which bears substantial resemblance to the diathesis-stress theories of today as well as other pluralist etiologic models of psychiatric illness.

Indeed, the consistency of the PEF over place and time was remarkable. No psychiatric diagnosis, not even mania or melancholia, was as stable over this period (54–56).

Many of the conceptual issues in recent debates on the diathesis-stress theory were anticipated by these earlier writings, including the appropriate time scale for exciting stressors, the independence of stress and diathesis, the additive or interactive nature of their relationship, and the importance of “matching” predispositions and stressors.

While its widespread use and durability could result from many factors, including its popularity in general medicine, its content also likely played a role. The PEF proposed a nuanced, developmental, and pluralistic view of the etiologic pathways to psychiatric illness antithetical to the monocausal schools of psychoanalysis and biological psychiatry that dominated U.S. psychiatry for much of the 20th century. While not rigorous by current research standards, the PEF was commonsensical rather than ideological. It presented an intuitively reasonable and clinically validated model that, while sometimes difficult to apply to any specific patient, provided a constructive framework for generations of our predecessors. The PEF helped them conceptualize the various pathways to illness in the diversity of the patients for whom they were trying to care.

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