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Advances in the Neurobiology of Anxiety Disorders

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Contents

Contributors vii

Series Preface xi

Part I INTRODUCTION

- 1 Concepts of Anxiety: A Historical Reflection on Anxiety and Related Disorders 3
G. Glas
- 2 Phenomenology of Anxiety Disorders: Clinical Heterogeneity and Comorbidity 21
S. M. Stahl
- 3 The Genetics of Anxiety Disorders 39
A. Mackinnon and D. Foley
- 4 New Developments in Animal Tests of Anxiety 61
S. E. File, N. Andrews and S. Hogg

Part II PANIC DISORDER

- 5 Potential Animal Models for the Study of Antipanic and Antiphobic Treatments 83
B. Olivier, E. Molewijk, L. Groenink, R. Joordens, T. Zethof and J. Mos
- 6 A Critical Review of the Role of Norepinephrine in Panic Disorder: Focus on its Interaction with Serotonin 107
A. W. Goddard, S. W. Woods and D. S. Charney
- 7 Involvement of Serotonin Receptor Subtypes in Panic Disorder: A Critical Appraisal of the Evidence 139
J. A. Den Boer and H. G. M. Westenberg
- 8 Pharmacological Probes in Panic Disorder 173
J. D. Coplan and D. F. Klein
- 9 Cholecystokinin in Panic Disorder 197
H. J. G. M. Van Megen, H. G. M. Westenberg, J. A. Den Boer and R. S. Kahn
- 10 An Update on the Pharmacological Treatment of Panic Disorder 229
J. C. Ballenger

Part III OBSESSIVE-COMPULSIVE DISORDER

- 11 Animal Models of Obsessive-compulsive Disorder 249
M. Altemus and D. L. Murphy

- 12 The Neuropharmacology and Neurobiology of Obsessive-compulsive Disorder: An Update on the Serotonin Hypothesis 279
D. L. Murphy, B. Greenberg, M. Altemus, J. Benjamin, T. Grady and T. Pigott
- 13 New Compounds for the Treatment of Obsessive-compulsive Disorder 299
O. T. Dolberg, Y. Sasson, D. Marazziti, M. Kotler, S. Kindler and J. Zohar
- 14 Neuroimaging in Obsessive-compulsive Disorder: Advances in Understanding the Mediating Neuroanatomy 313
A. L. Brody and L. R. Baxter Jr

Part IV GENERALIZED ANXIETY DISORDER

- 15 Serotonin-selective Drugs in Generalized Anxiety Disorder: Achievements and Prospects 335
D. A. Glitz and R. Balon

Part V POST-TRAUMATIC STRESS DISORDER

- 16 The Body Keeps the Score: The Evolving Psychobiology of Post-traumatic Stress 361
B. A. Van der Kolk
- 17 Peptidergic Alterations in Stress: Focus on Corticotropin-releasing Factor 383
J. W. Kasckow and C. B. Nemeroff

Part VI SOCIAL PHOBIA

- 18 Advances in the Psychopharmacology of Social Phobia 401
J. A. Den Boer, I. M. Van Vliet and H. G. M. Westenberg

Part VII INTEGRATIVE VIEW

- 19 Serotonin-related, Anxiety/Aggression-driven, Stressor-precipitated Depression: A Psychobiological Hypothesis 421
H. M. Van Praag

Index 435

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1 Concepts of Anxiety: A Historical Reflection on Anxiety and Related Disorders

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INTRODUCTION

There is perhaps no better way to illustrate the changes in twentieth-century psychiatric thinking, than by delineating the history of the concept of anxiety. One aim of this introductory chapter is to briefly summarize these changes and to sensitize to the social, conceptual and philosophical issues which are involved here.

At the same time, elucidating the historical and conceptual background of our contemporary view of anxiety may also be fruitful for the understanding of anxiety itself, as a conglomerate of concrete phenomena. It may remind us, among others, of the elusive nature of the experience of anxiety, the immense diversity of its (sometimes idiosyncratic) behavioral and physiological manifestations, its mingling with other forms of psychopathology, and, not to mention more, the existential dimension of the experience of anxiety.

In summary, the focus of our historical review will be both on theory and on the phenomenon of anxiety itself. The history of the concept of anxiety can be seen as a reflection of changes in the self-conception of psychiatry. At the same time, these changes show the phenomenon of anxiety from different angles.

ETYMOLOGY

The word anxiety probably derives from the Indo-Germanic root *Angh*, which means to constrict, to narrow, or to strangulate (Lewis, 1967). This root reappears in the Greek word *anchein* which means to strangle, to suffocate, or to press shut. The root *Angh* has survived in Latin, for example in *angor* (suffocation, feeling of entrapment) and *anxietas* (overconcern; shrink back fearfully),

and in some contemporary European languages. In spite of the numerous connotations and subtle shifts of meaning, the perception of tightness and constriction of the throat and of the chest can still be recognized as a central element of meaning in terms derived from the root *Angh* in these modern languages.

Fear derives from the German stem *freisa* or *frasa*. Phobia and panic on the other hand have a Greek background. Panic refers to *Pan* or *Panikos*, the Greek god of the forests and of shepherds, who was thought to have caused panic among the Persians at Marathon.

FROM ANTIQUITY TO THE MIDDLE OF THE NINETEENTH CENTURY

First of all, it should be realized that from Antiquity to the middle of the nineteenth-century medicine did not recognize the need for a systematic distinction between anxiety and depression. This does not mean that the numerous manifestations of anxiety and depression have not been observed and described. On the contrary, the *Corpus Hippocraticum* and other medical texts, like those of Galen, Burton and nineteenth-century alienists, contain many lively descriptions of people suffering from conditions which now would be identified as anxiety or depressive disorder. For centuries, however, these conditions were encompassed by the broad concept of melancholia.

This concept, of course, refers to the so-called humoral theory, according to which disease results from a disturbance in the balance of four bodily fluids: blood, yellow bile, black bile and phlegm. The earliest formulation of this theory can be discovered in the *Corpus Hippocraticum*, a series of 70 medical texts dating from the fifth century BC, which are attributed to Hippocrates and his pupils. Melancholia, or black bile disease, is only briefly mentioned here, with fear and despondency as its dominant characteristics. The full description of its effects can be found in the work of Galen (AD 131–201), more than five centuries later. Galen ascribed the anxiety seen in melancholics to a dark-colored vapor emanating from black bile, as a result of local heating in the hypochondrium. This smoky vapor, he thought, rose up into the brain, producing fear and mental obscuratio.

As external darkness renders almost all persons fearful, with the exception of a few naturally audacious ones or those who were specially trained, thus the color of the black bile induces fear when its darkness throws a shadow over the area of thought [in the brain] (Galenus, p. 93).

According to later writers of the Galenic school, the heating process also explains the motor restlessness and other behavioral phenomena of this (hypochondriacal) form of melancholia.

During the Middle Ages humoral pathology was systematized. One of the effects was a sharper distinction between melancholia as a result of an excess

(or heating) of natural black bile and melancholia being caused by an excess of unnatural black bile. This unnatural black bile was thought to be produced by combustion, or degeneration, of one of the four bodily fluids. Preoccupation of death, for instance, was associated with combustion or degeneration of black bile, mania with degeneration of yellow bile, apathy with degeneration of phlegm.

Medical literature on melancholia culminates in Robert Burton's *The Anatomy of Melancholy*, published in 1621. Greatly indebted to ancient medicine and philosophy, this peculiar and sometimes rather bizarre work compiles all knowledge of that time on the subject of melancholia. Sorrow and fear are considered to be the major causes of melancholia, sorrow being related to disaster in the present and fear to disaster in the future. In discussing the symptoms of melancholia, Burton shows to be acquainted with many of the forms of anxiety known today: fear of death; fear of losing those who are most important to us; anxiety based on paranoid delusions and delusions of reference; fear associated with depersonalization; delusional depersonalization; hypochondria; anticipatory anxiety; hyperventilation; agoraphobia; and many specific phobias, such as fear of public speaking, fear of heights, and claustrophobia (Burton, 1621, pp. 442-449).

It was ultimately at the end of the eighteenth century that humoral pathology lost its grip on medical thinking. Pathological anatomy had expanded greatly. More emphasis was put on clinical observation and description. It was a time of sensualism and of a fascination with sensibility and sensory perception. Popular notions in medical literature of that time, like irritability and tone, betray a preoccupation with the hypersensitivity of the nervous system and of the senses. The central nervous system gradually replaced the blood, the liver and the spleen, from which, until then, melancholia was thought to originate.

Today, the idea of temperament is all that remains of humoralism, as a metaphorical expression for the experiences of despondent people.

THE TURNING POINT: AGORAPHOBIA AND ANXIETY UNDER CIRCUMSTANCES OF WAR

Flemming's *Über Praecordialangst (On Precordial Pain)*, which dates from 1848, is probably the first medical text devoted to a non-phobic form of anxiety as a more or less specific entity (Schmidt-Degenhard, 1986). It was, however, not this publication which became a turning point in the conceptual history of anxiety and anxiety disorders. For that, we have to wait until 1870, when in a short span of time three articles appeared which would become particularly authoritative. First of these is a short article by Benedikt (1870) entitled *Über Platzschwindel (On Dizziness on Squares)*. It described a patient who, as soon as he entered a street or a square, was overcome by dizziness. Terrified of col-

lapsing mentally and gripped by a tremendous fear he never dared to pass through that place again. Benedikt, thus, believed the anxiety to be secondary to the dizziness of this patient. Two years later, that view was challenged by Westphal (1872), who was the first to use the term agoraphobia in a technical sense. Westphal stated that it was the anxiety that caused the dizziness. He based his hypothesis on clinical observation. Interestingly enough, he was very much aware that the three patients he described were not afraid of streets or squares as such. He stressed the unfounded nature of their anxiety. Theirs was rather a fear of anxiety itself, an anxiety that only much later was linked to particular situations. Westphal's critique on Benedikt anticipates a debate that would reach its climax more than a century later in the controversy about the provocative role of bodily sensations (and their interpretation) in the origin of panic attacks.

In the same period, the American cardiologist Da Costa (1871) wrote another classic on a quite different form of anxiety. Auscultating the cardiac murmurs of more than 300 exhausted soldiers returning from the front, he heard some abnormalities, for which he coined the term "irritable heart". The patients complained of palpitations, pain in the chest and extreme fatigue. Heightened nervous irritability, he believed, was the cause of the condition. The ensuing debate, which became particularly intense during and after the two World Wars, centered around the nature of the intolerance to physical exertion. Thomas Lewis, who studied many such cases among British soldiers in World War I and to whom we owe the term effort syndrome, rejected the one-sided emphasis on the heart and the presumed cardiac origin of the complaints. Although many agreed with this, there still was no unanimity about what actually lay behind the syndrome. Some emphasized the role of psychogenic factors (Culpin, 1920; Wood, 1941), others argued for a multifactorial origin of the condition, pointing to constitution, previous infections, heavy exercise and neurotic mechanisms as precipitating factors (MacKenzie, 1916, 1920; Jones and Lewis, 1941; Jones, 1948).

The debate was settled provisionally by two studies: one by the cardiologist Paul Wood (1941), the other by (Maxwell) Jones (1948), better known as the protagonist of the therapeutic community. According to Wood the symptoms of the "irritable heart" were also prevalent in peacetime and closely resembled those of anxiety neurosis. Especially susceptible were patients who, in childhood, "clung too long to their mothers' skirts" (Wood, 1941, p. 846). Owing to parental overconcern or comments by their physician, these patients would have learned to interpret various normal physiological symptoms as signs of physical danger or heart disease. One should be reminded that this was said long before the formulation of attribution theory (MacKenzie, 1920). Jones concurred with this in his award-winning study. Although he emphasized the reality of the intolerance to physical exertion, he interpreted it as the result of (subconscious) avoidance. His physiological investigations demonstrated namely a slightly smaller increase of the level of lactate in patients compared to normal

controls at the subjective maximum of exertion. From this he concluded that the patients stopped exerting themselves before they reached their physiological maximum. The effort syndrome, in fact, was an effort phobia. Jones developed a form of group psychoeducation, using groups of about 100 patients. Experiences with these groups would become important for his later ideas on the therapeutic community.

Wars have contributed greatly to our knowledge of anxiety disorders, in particular the so-called traumatic neuroses. In addition, they direct our attention to the social influences affecting psychiatric diagnosis. The term *effort syndrome*, for instance, can be seen as a reflection at the diagnostic level of the military importance of the capacity to deliver physical effort.

NEURASTHENIA AND ANXIETY NEUROSIS

In the last decades of the nineteenth century, a new concept, neurasthenia, gained ground. George M. Beard, the American advocate of this idea, considered neurasthenia to be a functional disorder characterized by a deficiency of "nervous energy". This deficiency could express itself in a multitude of symptoms, mainly at the level of the central nervous system, the digestive tract and the reproductive tract (Beard, 1884, 1890). Although not highly prominent among these symptoms, morbid fear and phobias were nevertheless ranked among the most difficult symptoms to cure. The concept of neurasthenia is closely linked to Beard's view of American society, which supposedly generated much more excitation of the nervous system than did European society. "American nervousness", one of Beard's favorite synonyms for neurasthenia, was a typical product of an industrial society in which the upper classes were doomed to a hectic lifestyle.

Beard's contribution to psychopathology has to be sought in his meticulous description of even the most idiosyncratic symptoms and in his attempt to focus psychiatry's attention to patients that could not be found in the hospitals and mental institutions of that time. Neurasthenia was a disease of the street, according to Beard. The idea of nervous energy, with its clearly Romantic and vitalistic background, was abandoned after several decades, as well as the reflex (or irradiation) theory which said that local functional disorders could be transmitted to other organs by the sympathetic nerve.

The history of the classification of anxiety disorders since the time of Beard can be seen as a peeling-away of layers of the concept of neurasthenia. Anxiety neurosis was the first stratum to be laid bare under its surface. Next came all sorts of classificatory subdivisions within anxiety neurosis (Tyrer, 1984).

Hecker initiated the above-mentioned process in a classic article on anxiety states in neurasthenia (Hecker, 1893). He had noticed that the anxiety attacks experienced by many neurasthenia sufferers were not accompanied by any subjective feeling of anxiety. Hecker used the term "larvirt" (larval; larva-like) to

denote this absence of a feeling of anxiety. The term "abortiv", on the other hand, indicated the interrupted, incomplete nature of the attacks. These patients did not show the full range of physical symptoms. The picture described by Hecker bears some resemblance to the so-called "limited symptom attacks" in present-day literature on panic disorder.

In 1895, Sigmund Freud, with reference to Hecker, joined the critics of Beard's broad concept of neurasthenia. However, in being more explicit about pathogenesis, Freud went a step further than Hecker (Freud, 1895a, 1895c). He regarded the distinction between neurasthenia and anxiety neurosis to be essential, since anxiety neurosis had a different pathogenesis and required a different treatment. Neurasthenia was a disorder of the way in which the so-called somatic-sexual excitation was released, whereas anxiety neurosis was primarily a disorder in the psychic processing of such excitation.

In the case of anxiety neurosis, Freud imagined that there was a build-up of pressure on the walls of the male seminal vesicles. When this pressure exceeded a given threshold, it was transformed into somatic energy and transmitted, via neural pathways, to the cerebral cortex. Under normal conditions, sexual "fantasy groups" became charged with this energy, leading to sexual excitement (libido) and the pursuit of release. Anxiety neurosis involved a blockage in the psychic processing of this somatic sexual tension. Such a blockage might arise through abstinence, for example, or due to the use of coitus interruptus, or because sexual fantasies had simply failed to take shape. Somatic sexual tension was thus deflected away from the psyche (the cortex) and directed to subcortical paths, finally expressing itself as "inadequate actions". These inadequate actions most characteristically occurred during an anxiety attack.

The pioneering article in which Freud detached anxiety neurosis from neurasthenia includes a description of the symptomatology of the various forms of anxiety which is still valid today (Freud, 1895a). Freud cited anxious expectation as the core symptom of anxiety neurosis. He also distinguished between specific phobias, agoraphobia, free floating anxiety and anxiety attacks. The latter were spontaneous in nature and were described as purely somatic phenomena (Freud, 1895c, pp. 368-369). The aforementioned distinctions anticipated the now generally accepted classification of specific phobias, agoraphobia, generalized anxiety and panic disorder. Freud was not alone in anticipating DSM-III-R. As the authors of DSM-III-R have acknowledged, striking similarities are also to be found in the sixth edition of Emil Kraepelin's handbook of psychiatry (Kraepelin, 1899; Spitzer and Williams, 1985).

Furthermore, it is interesting that Freud considered agoraphobia to be characterized by a fear of panic attacks, and not by fear of streets or squares per se:

ce que redoute ce malade c'est l'événement d'une telle attaque [what the patient fears is the occurrence of such an attack] (Freud, 1895b, p. 352)

Ultimately however, it was not these interpretations of anxiety neurosis which would survive. Freud's second theory of anxiety, in which anxiety was interpreted

as a signal of inner threat, would have much greater influence (Freud, 1926). This second theory had already announced its arrival by around 1895, albeit in a somatic guise. Freud asked why non-processed sexual excitation should express itself specifically in the form of anxiety. In answering this question, a glimpse is afforded of something which much later would become more explicit. Unlike real anxiety, which is based on the perception of external danger, neurotic anxiety is a reaction to inner threat. The core of this inner threat is an inability to process "endogenously" created (sexual) excitation (Freud, 1895a, p. 338). On another occasion Freud put it as follows:

Anxiety is the sensation of the accumulation of another endogenous stimulus, the stimulus to breathing (Freud, 1894, p. 194)

It is sometimes forgotten that elements of the above hypothesis also appeared in Freud's signal theory. There also the basis of all anxiety is biological helplessness, i.e. the helplessness of the child with respect to its own drive impulses (cf. Freud, 1926, p. 68).

Although the signal theory also concerns the satisfying of needs, it does not relate primarily to sexual needs but rather to those associated with the instinct for self-preservation (cf. Freud, 1933, pp. 100-101). Object loss, the most clear-cut threat recognized by this instinct, becomes the psychological prerequisite for inducing the ego to release a small quantum of anxiety in order to restore a favorable balance of pleasure and pain. The threat of object loss remains linked to the biological state of being at the mercy of one's drive impulses. This linkage is mediated by remembrance symbols which, via separation and birth, ultimately refer to an archaic inheritance of hereditary anxiety responses. In anxious patients, the symptom of gasping for air is no longer seen as a mitigated orgasm but rather as the rudiment of the cry of a newborn child (Freud, 1926, p. 168).

In a negative sense, Freud's second theory of anxiety was of great significance within the classification debate. His view of anxiety as the invariable outcome of all kinds of unresolved neurotic conflict illustrates the nosologically non-specific character he attributed to anxiety. The influence of this view partly explains why the classification of anxiety and anxiety disorders became such a neglected theme in the period between 1930 and 1960.

This is not meant to detract from Freud's merits. In the field of anxiety theory, these merits lay particularly in the concept of anxiety as a reaction to inner threat. This idea, which was without precedent in Freud's days, permanently changed the face of psychiatry. Freud thereby gave a wholly individual treatment to the fundamental distinction between (object-less) anxiety and (object-linked) fear, a theme which for the rest was to find its way into psychiatry via another route (Kierkegaard, Jaspers and existential phenomenology). Moreover, Freud's approach was not limited to the psychoanalytic school. At least one of the contemporary currents in cognitive psychology has built explicitly upon Freud's pioneering concept of anxiety as an inner threat (Beck, 1976; Beck *et al.*, 1985).

PSYCHASTHENIA

One of the most remarkable studies in the history of the classification of anxiety is Pierre Janet's *Les Obsessions et la Psychasthénie* (*The Obsessions and Psychasthenia*), dating from 1903. This work, written in an elegant and still readable style, not only offers an overview of all possible manifestations of pathological anxiety, it also contains numerous vivid descriptions of conditions which today are known as depersonalization, somatoform disorder, hypochondria, stereotyped movement disorder and chronic fatigue syndrome.

Janet argues against the tendency of many of his colleagues to divide the symptom clusters into separate diagnostic entities. Indeed, he presents a classification of his own, by making a distinction between three types of psychasthenia: obsessive thoughts, irresistible movements (compulsions, tics, outbursts of temper as a result of the inability to complete the compulsions) and visceral anxiety (generalized anxiety, panic, phobias and even pain syndromes). These types in their turn are subdivided into various clinical states. Janet nevertheless emphasizes the close ties between these states. In the course of their illness many patients show symptoms of conditions belonging to different types. Moreover, suppression of the target symptoms of one type often leads to the emergence of symptoms belonging to another type of psychasthenia. Blocking of the obsessions, for instance, heightens the anxiety and may induce compulsive behavior. Resisting one's compulsions, on the other hand, often leads to cardiac palpitations and the sensation of suffocation.

The real innovative element of Janet's study, however, is his attempt to fit his numerous observations in a general theory of psychological functioning. Already in the Introduction Janet declares his sympathy with the French psychologist Ribot, who was one of his intellectual fathers and who had made a plea for the close collaboration between medicine and psychology. Common to all patients, says Janet, is a disturbance in psychological functioning, the so-called psychasthenic state or psychasthenia. This state is characterized by three distinctive features, namely:

1. a "sense of incompleteness" ("sentiment d'incomplétude");
2. a diminishing or loss of "the sense (or function) of reality" ("la fonction du réel"); and
3. exhaustion (Janet, 1903, p. 439).

It is not easy to perceive what Janet exactly meant with the first two of these features. Roughly speaking, the sense of incompleteness refers to the subjective feeling that something is missing in one's actions, feelings or intellectual functioning. It is a sense of incapacity and of being unsuccessful. Whatever one does, it seems useless and not to come to an end. Doubt, hesitance, and endless rumination dominate one's activities. Depersonalization, feelings of doubleness and unreality, restlessness, apathy and disgust complete this list of manifestations.

With regard to the second feature, the diminishing of "the sense (or function) of reality", it is at first sight even harder to imagine what Janet had in mind. Citing Spencer, he defines it as "the coefficient of reality of a psychological fact" (Janet, 1903, p. 487). Rephrasing this statement, one could say that certain classes of psychic functioning can be assessed with respect to their degree of reality, i.e. to a certain quality of psychic functioning in relation to actual tasks and circumstances. In sum, the "function of reality" refers to the capacity to be present, spontaneous and effective, particularly in the domain of voluntary action, attention and perception.

Janet, after all, discerns five hierarchical levels of psychological functioning: the function of reality at the upper level; then indifferent activities (routine acts and vague perceptions), the imaging function (memory, imagination, abstract reasoning, and daydreaming) and visceral emotional reactions; and finally, at the lowest level, involuntary muscular movements. The quality of psychological functioning is determined by the so-called psychological tension, the psychic correlate of the nervous energy, which Beard and Freud had alluded to. Lowering of this tension initially leads to a lack of attention, concentration and other synthetic mental functions, in other words, to a loss of "*la fonction du réel*" and—subsequently—to a disruption of routine activities at the second level. The psychasthenic state is the result of precisely this lowering of psychic tension ("*abaissement de la tension psychologique*"; Janet, 1903, p. 497).

From this, it will become clear that anxiety is by no means the central symptom in Janet's account of the psychasthenic state. Anxiety occurs when psychic functioning is disturbed from the upper level down to the fourth level, that of the visceral emotional reactions. Anxiety, consequently, belongs to the most elementary of the mental functions:

Underneath the anger, fear, and love, there is an emotion, that is not specific any more, that is a sum-total of vague respiratory and cardiac complaints, which don't evoke in the mind the idea of any inclination or any particular action. That emotion is called anxiety, the most elementary of the mental functions (Janet, 1903, p. 486; translation by the author)

Clearly, psychasthenia encompasses a broad range of clinical phenomena, including the anxiety disorders of our time. The psychasthenic state, however, is determined by a breakdown of only the highest level of psychic functioning. This implies that even in the case of phobias, obsessive-compulsive disorder and panic attacks, a central role should be assigned to feelings of unreality, incompleteness, ineffectiveness and depersonalization, and not to feelings of fear and anxiety. Emotions and emotion theory play only a secondary role in Janet's description and explanation of these disorders.

Janet doesn't deny the occurrence of panic attacks in some cases of psychasthenia (cf., for example, his interesting description of nocturnal panic attacks; p. 247). But these can only be accounted for by the assumption of a temporary and more severe collapse of the psychological tension, leading to

disturbances at the third and fourth levels. Fear, on the other hand, is a more complex and differentiated emotion, involving psychic activity of the higher levels, such as imagination, perception and goal-directed behavior. Fear as such, however, is the expression of activity at the fourth level of psychic functioning.

From a psychological point of view, Janet was far ahead of his time, by pointing to the importance of disturbances in the domain of attention and perception and their relation to the sense of the self. Psychology and psychiatry had to wait till the 1980s, before "attentional bias" became a topic of some interest in empirical research of the anxiety disorders.

CLINICAL STUDIES

After 1900, relatively few psychiatric monographs were devoted exclusively to anxiety and anxiety disorders. One exception was the profound clinical study by Störing (1934). Several authors occupied themselves with conceptual questions, based on clinical observations, for example Goldstein (1929) and Kronfeld (1935). Other names, which should be mentioned in this context, are those of Hoche (1911), Kornfeld (1902) and Oppenheim (1909).

Next, reference should be made to several studies arising from particular theoretical points of view. These include not only the psychoanalytical studies by Stekel (1932), Bitter (1948) and Riemann (1961), but also the anthropological studies of von Gebattel (1954a, 1954b, 1954c) and Tellenbach (1976).

Finally, one should be reminded of those studies, which were carried out in the periods around both World Wars and which were exclusively devoted to traumatic forms of anxiety, such as the publications on "Schreckneurosen" and "Schreckpsychosen" (from the German *Schreck*: terror) (cf. Bonhoeffer, 1919; Kleist, 1918; Panse, 1952).

Instead of summarizing these studies, I will focus the discussion on two themes: the rejection of the James-Lange theory of emotion and the debate about the distinction between fear and anxiety.

With regard to the first theme, there seemed to be a significant resistance amongst clinicians to the James-Lange theory of emotions. Bodily changes, according to this theory, instead of resulting from subjective feelings, are actually the cause of feeling and emotion. Sensory perceptions transform into emotion by the awareness of bodily changes (cf. James, 1884, pp. 189, 204, 1890, p. 450). It is usually assumed that James postulated a temporal sequence between bodily changes and emotional perceptions. Although this is not entirely correct, interpreters have focused mainly on this side of the Jamesian account. Perhaps this was the result of the association of James' view with the theory of the Dane Lange, who indeed emphasized the temporal priority of bodily changes.

Clinicians criticized the James-Lange theory just on this point, by referring to the immediacy of the experience of anxiety. According to Störing, the experience of anxiety is not mediated by prior bodily perception. Kornfeld (1902)

(not to be confused with Kronfeld) and Hoche (1911) lodged the same objection, on descriptive grounds. Störring, however, was not entirely consistent on this point since he also spoke of anxiety as a reaction to, or a processing of, sensations associated with specific organs, thus suggesting a temporal priority of organic changes (Störring, 1934, pp. 24, 32). Kraepelin and Lange's authoritative handbook rejected the James-Lange theory on theoretical grounds, both because of its psychophysical dualism and its disregard for central regulatory processes. An emotion such as fear of suffocation could be both somatic and psychological in origin. According to Kraepelin and Lange, the origin of this fear (whether lack of oxygen, hypercapnia, acidosis or frightening events) is irrelevant to the quality of the emotion itself. In all cases, the central issue is a threat to the patient's existence as a biological entity rather than any perception of bodily changes (Kraepelin and Lange, 1927, p. 470). It should be noted, however, that James was too much of a Darwinist to be accused of psychophysical dualism.

In summary, it can be said that clinical psychiatrists resisted the James-Lange theory mainly on clinical grounds. Clinical observation simply contradicted the presumed primacy of bodily changes.

In discussing the second theme, that of the distinction between anxiety and fear, consideration should be given to Kurt Goldstein's observations of patients with organic brain damage. The majority of Goldstein's patients were victims of World War I. He observed (1929) that, when faced with overly complex tasks, these patients displayed a catastrophic reaction consisting of a wide range of physiological and psychomotor symptoms. Goldstein believed that, even though it was not subjectively experienced as such, this condition could best be interpreted as an expression of anxiety.

Whilst Goldstein's patients were unaware of the fact of their anxiety, the appearance of their physical symptoms coincided with the failure to accomplish their tasks. Strictly speaking, their anxiety was neither a reaction to failure nor a reaction to an awareness of failure. Anxiety—and this was the essence of Goldstein's interpretation—was quite literally the actual manifestation of failure. Goldstein concludes that generally spoken anxiety is the expression of a frustrated urge for self-realization.

This reference to the urge for self-realization was particularly popular amongst those contemporary authors who drew their inspiration from vitalism. Although similar references can also be found in Freud's later work (Freud, 1933), it was actually the colossal presence of Charles Darwin behind the scenes which inspired this line of thought. However, Goldstein was not thinking of the survival of the species, or that of the individual, in purely Darwinian terms. The urge towards self-realization was more than a purely biological reality. It also found expression, for example, in the productive creativity shown by children and adults in mastering the world. Anxiety was referred to as a disruption of the stability of personality ("Erschütterung (des) Bestandes der Persönlichkeit"; cf. Goldstein, 1929, pp. 415-416). Ultimately, however,

Goldstein failed to fully clarify the conceptual status of this urge towards self-realization.

In conceptually more explicit accounts by other authors we find a scheme in which personality is divided into an impersonal (biological) substructure and a personal superstructure. The substructure is described in vitalistic terms whilst the superstructure is analyzed in terms derived from existential phenomenology. Examples of this can be found in work by Arthur Kronfeld, Felix Krueger, Philipp Lersch, and, to a lesser extent, H. C. Rümke. According to Kronfeld (1935), anxiety is based upon a disintegration of the personal superstructure. In its most extreme form, this disintegration is expressed as psychotic anxiety. However, the type of anxiety which Kronfeld preferred to have in mind was existential rather than psychotic:

Anxiety is the mental expression of the existential annihilation of the integrity ("Einheitsform") of the person. Its archetype is the fear of death, the anxiety related to vital destruction. (Kronfeld, 1935, p. 378; translation by the author)

Such statements only become comprehensible when it is realized that Kronfeld rejected the link between anxiety and threat, or, in other words, the relation between object-less anxiety and object-related fear. Anxiety, in the true sense of the word, is not the counterpart of safety, but of the synthetic activity of the I, the person in its striving for one-ness and meaningfulness. In the same way, anxiety is not an intensified form of fear, nor the result of the perception of a threatening situation. It is a fragmentation of the self, leading to the outbreak of chaotic and formless biological forces.

The work of these anthropologically inspired clinicians is still of considerable interest, as a contrast to mainstream psychiatric thinking, at that time and nowadays, which tends to favor a biological interpretation of objectless anxiety.

ON THE WAY TO DSM-III

The study of anxiety was not a high priority in the period from 1930 to 1960. In addition to the previously mentioned influence of psychoanalysis, which described anxiety as a non-specific phenomenon, the assumption that anxiety occupied a low position in the hierarchy of psychiatric symptoms also had a part in this (Tyrer, 1984). Not only did anxiety occur in practically all psychopathological syndromes, it also marked the lower boundary of psychopathology, where this bordered on normality.

Jablensky (1985) adds to this that classification traditionally has been an area of interest for institutional psychiatry. The relative neglect of the classification of anxiety disorders can be seen as a reflection of the fact that, as a rule, patients with neurotic anxiety were never hospitalized.

This status quo gradually changed during the 1950s. At that time, the psychophysiological investigation of emotions continued along the lines of the

James-Lange theory. Ax (1953), for instance, attempted to draw a distinction between the emotions of anxiety and anger, on the basis of their peripheral physiological symptoms. In the same period, the anxiolytic effect of benzodiazepines was discovered, resulting in a flood of research into the effects of these chemicals on the central nervous system (Sternbach, 1980). Wolpe (1958) introduced systematic desensitization as a form of behavior therapy, thereby giving new impetus to the treatment of people with anxiety and phobic disorders. Roth (1959) described a form of depersonalization associated with severe anxiety and phobic phenomena. This was the so-called "phobic anxiety-depersonalization syndrome". Although it usually developed in the wake of a psychotrauma, this picture could sometimes occur spontaneously. The EEGs of one-sixth of all patients revealed the presence of temporal epileptic symptoms.

Finally, at the end of the 1950s Klein discovered that panic attacks in agoraphobic patients could be blocked using imipramine (Klein, 1964, 1980). This marked the beginning of an immense stream of experimental, pharmacological, clinical, longitudinal, epidemiological, genetic and familial research into the existence and course of panic disorder.

With this expansion of psychopharmacological research, increasingly stringent criteria for the definition of psychiatric syndromes were drawn up. Thus, psychopharmacological and biological psychiatric research constituted a powerful impetus for the development of the Feighner Criteria (Feighner *et al.*, 1972). These, together with the Research Diagnostic Criteria (Spitzer *et al.* 1975, 1978) formed the basis of the DSM-III-R (American Psychiatric Association Committee on Nomenclature and Statistics, 1980, 1987). The emphasis on descriptive precision led to the demarcation of various forms of anxiety and to an abandonment of the concept of neurosis, which was considered to be too vague. Neurasthenic neurosis was discarded. Anxiety neurosis, phobic neurosis and obsessive-compulsive neurosis were combined under the heading of anxiety disorders. Post-traumatic stress disorder, a newcomer, was added to the anxiety disorders. Anxiety neurosis was subsequently split up into panic disorder and generalized anxiety disorder, whilst phobic neurosis was divided up into agoraphobia, simple phobias and social phobia (cf. Spitzer and Williams, 1985).

In spite of the non-theoretical nature of DSM-III, this change nevertheless heralded in a fundamentally different approach to the psychopathology of anxiety. DSM-III bode farewell, not only to the psychodynamic conflict model, but also to a broader tradition in which anxiety was associated with more or less subtle disruptions of personality structure. It was replaced by a finely grained description and classification of more superficial symptomatology. This resulted in a shift from the predominantly dimensional or dispositional approach which characterized the neurosis model, to a typological or categorical approach to psychopathology. Panic disorder represents the most outstanding example of this development.

SUMMARY AND CONCLUSION

Looking back at our historical review, one may discern three lines in the interpretation of pathological anxiety which are still of topical interest today.

First and foremost, there is the medical tradition, which from Antiquity until now dominates the theoretical literature on anxiety and which, at least in the last 150 years, tends to favor a biological approach.

Secondly, the concept of anxiety as an inner threat can be recognized, a concept which is defended by psychoanalysts and contemporary cognitive psychologists.

Finally, the existential concept of anxiety is worth mentioning, a concept which dates from the seventeenth (Pascal) and nineteenth (Kierkegaard) centuries, and which via existential phenomenology inspires the work of anthropological psychiatrists and existential psychotherapists in our age.

These three traditions are not at all on their way to converge. Contemporary psychiatry gives the appearance that medical tradition is still enlarging its domain, at the expense of the psychoanalytic and existential traditions.

It should be noted, however, that psychiatry as a medical discipline has incorporated elements of the psychoanalytic tradition, besides all sorts of behavioral and cognitive explanations. Behind the surface, consequently, some of the old controversies are still under discussion, for instance those concerning the role of bodily perception in the genesis of panic, those concerning the primacy of biological or psychological explanations, and, not to mention more, those concerning the nature of classification.

The classification debate itself may serve as an example of the shifting boundaries of psychiatry. One of the issues in this debate is where to draw the boundary between normality and pathology. We have noticed to what extent this boundary was influenced by social conditions, such as war circumstances (effort syndrome), and the appreciation of the pressures of daily life (neurasthenia).

Clinicians and researchers are currently fascinated with the biological approach to anxiety. As such, this comes as no surprise, since this approach seems to bring the promise of control and of tangible results. It is the relation between psychiatry as a science and psychiatry as a clinical enterprise which is especially at stake here. As scientific disciplines, neurobiology and pharmacology tackle problems abstractively and objectively. This implies that there is, by definition, a gap between the research findings in these disciplines and clinical reality. Scientific constructs do not relate to this reality in its entirety, but merely to aspects of psychopathological syndromes. Identification of these constructs with reality, i.e. reification, almost inevitably leads to distortions in description and diagnosis. The conceptual history of anxiety illustrates the repeated recurrence of forgotten ideas. These were eliminated in the process of abstraction, only to return via the back door. One may recall, for instance, Westphal's and Freud's view on fear of anxiety as the nucleus of agoraphobia; MacKenzie's and Wood's emphasis on the causative role of cognitive attribu-

tions; Janet's description of disturbances in attention and perception as central phenomena in psychasthenia.

The gap between scientific explanation and clinical reality, rather than being a barrier to our understanding, offers a space for creative insight and heuristic probing. This gap, instead of short-circuiting it, should be kept open.

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