Introduction

The recent death of John C. Nemiah at age 90 and the death of his close colleague Peter E. Sifneos 6 months earlier at age 88 bring sadness, but also memories and gratitude for the invaluable and long-lasting contributions both men made to the fields of psychosomatic medicine and psychodynamic psychiatry. As teachers and scholars they inspired many of their younger colleagues and students, including stimulating an interest in me to begin a program of research on the alexithymia construct [1].
Giovanni Fava [2] has previously written a tribute to Peter Sifneos, who was editor-in-chief of Psychotherapy and Psychosomatics for more than 2 decades. John Nemiah served on the Editorial Board of this journal for more than 3 decades and was also editor-in-chief of The American Journal of Psychiatry for 15 years. In this article, I pay tribute to Nemiah by reviewing some of his conceptual ideas and theoretical and clinical contributions and showing how these have been supported, modified, or extended by the emergence of several new theories and concepts and by findings from empirical research.

Nemiah [3–6] was particularly interested in the impact of emotionally traumatic events on mental and bodily processes and in conceptualizing the psychological defenses and deficits that contribute to the development of psychological and somatic symptoms. He gave special importance to the ego defense mechanism of dissociation and also to deficits in emotional awareness and the imaginal capacity, for which Sifneos [7] coined the term alexithymia. I begin the article with a description of a basic conceptual model and clinical approach that Nemiah advocated for psychiatry. I then review some current ideas about the cognitive processing of emotion, and follow this with discussions of some factors that influence people’s affect-regulating capacities and susceptibility to illness, including alexithymia and mentalization, attachment styles, and childhood trauma. Next I discuss the role of dissociation in symptom formation, and go on to review some research findings that support Nemiah’s conceptualization of the psychological mechanisms contributing to panic attacks. In the final part of the paper, I discuss associations between childhood emotional trauma and somatic disease in adulthood.

A Basic Conceptual Model

On reading Nemiah’s publications one quickly appreciates his aptitude for clinical observation and conceptual thinking, his love and knowledge of literature, and his sensitivity to inner experience. His attributes as an outstanding psychiatrist, scholar, and teacher are evident in his Adolf Meyer Lecture – ‘The varieties of human experience’ – which he presented at the 1988 Annual Meeting of the American Psychiatric Association [8]. Critical of the swing of the pendulum in psychiatry from an interest in psychological and dynamic processes to an emphasis on neurobiology and phenomenology, and echoing Meyer’s central notion that ‘the basic unit of study for psychiatric investigation is the individual human being in interaction with the environment’, Nemiah emphasized the importance of biography and psychodynamic observation [8, p. 459]. By listening to our patients telling us about their illnesses, he declared, we come to realize that the illness has occurred in association with a significant event in their lives that usually involves changes in important human relationships. He indicated that ‘patients undergo a reaction to [the] event with an internally experienced response that sets in motion psychological processes that are intimately related to the emergence and nature of the symptoms of their illness’ [8, p. 460].

Although not stated explicitly by Nemiah, the ‘internally experienced response’ refers to affects evoked by the event, which in turn activate psychological mechanisms that may either modulate the response or contribute to the formation of psychological or bodily symptoms. In conceptualizing this sequence, he did not imply an interactional dualistic theory. Indeed, in his scholarly textbook Foundations of Psychopathology, Nemiah declared that ‘the basic unit which reacts to stimuli is neither the mind nor the body, but the organism. The organism responds to the external forces impinging on it both physiologically and (if the organism has consciousness) psychologically; each of these is only a mode of the whole response of the organism. Neither takes precedence over the other’ [9, p. 9].

Before discussing some factors that influence how individuals might respond to emotionally stressful events, let me briefly review some current ideas about the cognitive processing of emotion, or what Nemiah [4] referred to as the ‘psychic elaboration’ of the somatic components of affect.

The Cognitive Processing of Emotions

Unlike many psychiatrists and psychologists who use the terms affects, emotions, and feelings in inconsistent ways and often interchangeably, Nemiah and Sifneos defined their use of these terms. Recognizing that affects have both biologic and psychologic components, they defined emotion as the neurophysiological and motor-expressive component, and feelings as the subjective, cognitive-experiential aspect. They considered affect a more general term that includes both components, and indicated that emotions have to be represented mentally to be experienced consciously as feelings [4, 10, 11]. In their view, an awareness of feelings, together with the thoughts, fantasies, and memories they elicit, facilitates modulation of the emotional arousal induced by stressful events.

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These ideas are consistent with the contributions of several contemporary neuroscientists and cognitive scientists, who make a similar distinction between emotions as bodily events and feelings as mental events, and regard symbolization as an important element in the cognitive processing of emotions [12–15]. LeDoux [13], for example, attributes feelings to the symbolic representation in working memory of the activity of unconsciously operating subymbolic systems that generate the brain states and bodily responses comprising emotions; these representations become integrated with representations of past experiences and representations of the self. In conceptualizing how emotional experience is organized in the mind, Lane and Schwartz [16] propose a cognitive-developmental model, which is based on an integration of Piaget’s theory of cognitive development with ideas about symbolization and language development. In their view, the nature of conscious emotional experience and the ability to appreciate its complexity are influenced by the degree to which emotions are represented symbolically. Although Panksepp [17] attributes the feeling of specific basic emotions to ‘viscerosomatic self-representations’ in lower levels of the brain, he attributes reflective awareness and the capacity for experiencing higher-order feelings to linguistic symbolizations and an ability to think in perceptual images, which he considers important for the parsing and regulation of emotional states.

The linking of emotions with symbols is also important in Bucci’s [15] multiple code theory of emotional information processing. According to this theory, emotion schemas (which are a particular type of memory schema) are comprised of subymbolic and symbolic representations, all of which can be processed within and outside of awareness. Subymbolic representations, which constitute the ‘affective core’ of the emotion schema and presumably encompass Panksepp’s [17] concept of ‘viscerosomatic self-representations’, are patterns of sensory, visceral, and kinesthetic sensations and motor activity experienced during states of emotional arousal. The symbolic representations include images (such as the object or person associated with the emotion) and words. Bucci [15] indicates that the nonverbal representations must be connected to one another and to the discrete symbols of language; this interconnection permits an ‘integration of functions, organization of goal-directed behavior, and establishment of a unified sense of self’ [15, p. 178], and is necessary for self-reflection and for the verbal communication of subjective experience.

Bucci [15] introduced the concept of a referential process to account for the activity that links the disparate modality-specific representations and processes of the nonverbal system to one another and to words. She gives images a pivotal role in this process. Extending Kosslyn’s [18] formulation of visual information processing to emotional experience, she describes referential activity as a process in which analogically processed subymbolic representations are chunked into functionally equivalent classes of representation that lead to the construction of discrete prototypic images, thereby connecting subymbolic information with nonverbal symbolic representations; once language is acquired, images can be connected to verbal symbols. This is not a transformation from one modality to another, but a translation of dominant representations from the nonverbal mode into logically organized speech, thereby allowing for a transformation of the meanings represented in the nonverbal modes [19].

Alexithymia and Mentalization

A reduced ability to link emotions with words and images is related to the construct of alexithymia, which Ne-miah and Sifneos [10, 20] derived from clinical observations that were made initially on patients with so-called classic psychosomatic diseases. Sifneos [21, p. 194] regarded alexithymia as a ‘deficit in the cognitive processing of emotions’ that is manifest as an ‘affect deficit in the area of feelings’. Alexithymic individuals have difficulty identifying and describing subjective feelings, difficulty distinguishing among different feelings, a paucity of fantasy referable to drives and feelings, and a cognitive style that is literal, utilitarian, and externally oriented [10]. Krystal [22] observed that alexithymic individuals also have difficulty tolerating and regulating emotional states, and show a limited capacity to be self-reflective and introspective.

There is a partial overlap between alexithymia and the concept of mentalization (and its operational term reflective function), which was adopted by Fonagy and Target [23, 24] just over a decade ago and defined by them as the capacity to be aware of and to think about feelings and other mental states (e.g. beliefs, intentions, and desires) in oneself and others. Whereas alexithymia is restricted to deficits in the cognitive processing of emotions, mentalization encompasses the full range of mental states. Insofar as it concerns affects, however, the reflective function goes beyond identifying one’s feelings; it includes a ‘capacity to connect with the meaning of one’s emotions’ [24, p. 15]. Fonagy et al. [24] refer to this aspect of mentalization as mentalized affectivity. The linking of feelings

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with memories, imagination, and reasoning gives personal meanings to current feelings and can be used to guide thinking and behavior and to thereby regulate states of emotional arousal.

The concept of mentalized affectivity encompasses Nemiah’s [4] conceptualization of the elements involved in the ‘psychic elaboration’ of the somatic emotional response to an affect-provoking event. The elements include: ‘(1) a refinement and delineation of the raw emotion into a variety of qualitatively different nuances that have the potential for conscious experience as feelings (e.g. anger, fear, joy, sadness); (2) a linking of the feelings with words descriptive of them; (3) the production of fantasies expressive of the feelings, which at the same time determine the imagery of the fantasies, and (4) the arousal of a network of memories and associations related to the feelings’ [4, pp. 199–200]. Alexithymia, Nemiah suggested, could occur as a result of a failure in one or more of these elements, such that the activity of the somatic component of affect or some other physiological system could be increased and lead to somatic symptoms.

To date, empirical investigations of the relation between alexithymia and mentalization have been quite limited. This is likely due to the time and cost involved in measuring mentalization, which currently is assessed with the Reflective Functioning Scale; this scale requires administration of a semi-structured narrative interview, such as the Adult Attachment Interview, and its test-retest reliability and convergent and divergent validity require further evaluation [25]. As Choi-Kain and Gunderson [25] point out, however, mentalization is a broad and multifaceted construct and it may be simpler to measure alexithymia and other related constructs, such as psychological mindedness and empathy (a component of emotional intelligence), which overlap conceptually with emotional aspects of mentalization and have been operationalized into more easily administered measures. ‘Theory of mind’, which is the ability to understand that others have beliefs, desires, and intentions different from the self, overlaps conceptually with cognitive aspects of mentalizing, although the focus is primarily on interpreting the mental states of others more than the self [26].

In a recent study, Moriguchi et al. [27] found that college students with high alexithymia scored significantly lower on a theory of mind task and on measures of empathy than a group of low alexithymia students. Other studies have yielded empirical evidence that alexithymia is related strongly and inversely to the emotional intelligence and psychological mindedness constructs [28–30], which encompass the capacity to be aware of and to think about feelings in oneself and others, to see relationships among thoughts, feelings and actions, and to use this information to guide behavior [25, 26]. But whereas alexithymia, emotional intelligence, and psychological mindedness are traits, mentalizing, as Allen et al. [26] explain, is a psychological activity. We could modify their statement that ‘mentalizing is what psychologically minded people are inclined to do’ [26, p. 58], and say that alexithymic individuals, being low in psychological mindedness and emotional intelligence, tend not to mentalize, at least in regard to emotions. It is important to emphasize that all of these constructs are dimensional [31] and that there are individual differences in degrees of alexithymia and mentalization. Bucci [15, p. 185] similarly points out that the referential process is a cognitive capacity that ‘varies among individuals as a relatively stable trait’, but it also shows considerable state variation in response to interpersonal context and an individual’s emotional state.

Affect Regulation and Attachment

Nemiah [9] stressed the importance of environmental influences on children’s psychological development, especially the ‘emotional climate’ provided by the parents. It is now generally agreed that the related capacities of symbolization, mentalization, and referential processing begin to be acquired during infancy and early childhood, and although innate dispositional factors may be involved, the development of these capacities and their role in affect regulation are profoundly influenced by the parents’ responsiveness and the quality of the child’s attachment relationships. There is evidence that the emergence of symbolic abilities and reflective functioning are enhanced in children with secure attachments to parents [23, 32]. Moreover, security of attachment is itself related to the parents’ own capacity for mentalization. Fonagy et al. [33] found that mothers and fathers who rated high in the capacity for self-reflection were 3 or 4 times more likely to have securely attached children than parents whose reflective function was poor. The mothers of children with a resistant attachment style scored only slightly lower on reflective function, but mothers of avoidant children scored a great deal lower. Attachment experiences in early childhood also influence the acquisition of language and the development of imagination, which has a major impact on the child’s developing capacity to regulate affects [34]. Indeed, in a longitudinal study, insecurely attached and disorganized children showed a delay in developing a mentalizing language to express emotions and other inner states [35].
Research on adolescents and adults has shown that attachment styles are closely related to different styles of affect regulation [36, 37]. Whereas individuals with secure attachment styles have an open, flexible style of affect regulation with access to a wide range of feelings, those with an avoidant-dismissing attachment style have an affect regulation style characterized by a ‘minimization’ of affects and a tendency to keep negative feelings out of conscious awareness [37, 38]. Individuals with an anxious-preoccupied attachment style have a style of affect regulation characterized by a heightening of the display of emotions and hypervigilance to rejection cues and distress [37].

Attachment research has extended Nemiah’s basic conceptual model by showing that the different attachment styles influence the nature of an individual’s ‘internally experienced response’ to stressful external events. Preoccupied individuals will generally activate their attachment system and heighten their emotional response; although avoidant individuals will deactivate their attachment system and distance themselves cognitively or behaviorally from the source of distress, they are likely to manifest physiological signs of distress [39]. Securely attached individuals may experience negative affects in response to a stressful external event, but will not be overwhelmed by the feelings and, while remaining within the affective state, can use their reflective function to process the experience [24, 39].

Impairments in mentalization and affect regulation are usual in patients with borderline personality disorder, who typically have one type or another of insecure attachment – preoccupied, fearful-avoidant, or disorganized [26, 40]. As one would expect, attachment research on adults has also found associations between alexithymia and insecure attachment styles, either an avoidant-dismissing or fearful-avoidant style or a preoccupied style [41]. Although longitudinal studies are needed to establish a causal relationship between attachment styles and alexithymia, there is accumulating evidence that a lack of attachment security in early life affects the development of processes involved in emotion regulation; this includes neurobiological as well as psychological processes [42].

**Developmental Trauma**

Attachment insecurity and associated deficits in affect development and affect regulation are linked not only to the experience of being raised by parents with impaired capacities for mentalization, but sometimes also to more severe developmental traumas such as parental neglect, abandonment, or physical or sexual abuse. Although most studies are limited by retrospective designs, numerous studies have found an association between childhood trauma and borderline personality disorder [26, pp. 272–273], and although earlier studies yielded inconsistent findings for alexithymia, several recent studies with university student and substance-dependent inpatient samples, and with a large sample of primary care patients in Finland, have demonstrated an association between childhood abuse or neglect and the ‘difficulty identifying feelings’ facet of alexithymia [43–45]. In addition, a recent investigation of depressed patients found that those with high alexithymia had higher depression scores and a greater prevalence of sexual abuse than those with moderate alexithymia [46].

The Finnish investigators ask how alexithymia and childhood neglect and/or abuse might be causally linked [45]. A possible answer to this question is suggested by Bucci’s [15, 47] conceptualization that repeated parental unresponsiveness and childhood trauma impair the referential process and thereby affect the organization of emotion schemas and the construction of emotional meanings; referential connections are either disrupted or not formed, and the verbal and nonverbal components within the schema are dissociated. The dissociation, as Bucci [47] comments, is far more complex than being without words for emotions; the alexithymic individual is often without nonverbal as well as verbal symbols for somatic states.

Bucci [48, 49] reminds us that dissociation within emotion schemas is initially an adaptive response to external danger and painful arousal and is especially severe when the child experiences the parent as a threat, for then there is no safe place to be. Indeed, Ferenczi long ago proposed that the lack of support from the parents, in particular the mother, plunges the child into a state of total helplessness in which splitting and fragmentation of the psyche (i.e., dissociation) is the only possible response [50]. Without a secure attachment to a parent who is able to regulate the arousal and provide meaning for the experience, the child fails to develop adequate self-soothing and self-regulatory capacities; traumatic experience, which is often cumulative, remains unsymbolized but encoded in implicit (unconscious) memory schemas that influence the way the person will perceive the world and experience interactions with others. Dissociation and distortion within the emotion schemas result not only from deficiencies in the childhood environment but, as
Bucci comments, can occur at any time in life in response to external traumatic events. In her view, however, the development of general structures of dissociation during childhood renders the individual more vulnerable to stressful events later in life. She regards dissociations within emotion schemas, and compensatory attempts at repair, as the mechanisms that underlie symptom formation [48, 51].

Dissociation, Conversion, and Somatization

Nemiah’s [5, 6, 52] understanding of mechanisms of symptom formation was influenced not only by his study of Freud but also by the writings of Pierre Janet, both of whom learned the importance of dissociated traumatic memories in the production of symptoms from Charcot. In his usual scholarly way, Nemiah drew attention to significant differences between their theoretical formulations. ‘In Janet’s view’, he explained, ‘dissociation resulted from the passive falling away of mental contents from an ego that was too weak to retain them in consciousness, whereas, for Freud, dissociation was the result of the active repression of undesirable and emotionally painful mental contents by an ego that was strong enough to banish them from conscious awareness’ [53, p. 1528]. He noted that Freud, with his concept of repression, introduced the idea of dynamic conflict between parts of the psychic structure, and thereby developed a psychodynamic conflict model of symptom formation. In contrast, Janet’s idea that certain traumatic experiences may be split off from conscious awareness provided an ego-deficit model of psychopathology. Although the models are different, Nemiah believed that ‘there is room for both conceptual models, each providing different but complementary explanations of the mechanisms underlying the clinical phenomena’ [53, p. 1528].

In several articles, however, Nemiah [5, 52, 54] questioned the concept of conversion, which Freud had defined as the process in hysteria, after the initial repression, by which libidinal energy connected with an unbearable idea is transformed into a somatic expression. Whether the disorder is a hysterical motor symptom or a memory or identity disturbance, Nemiah argued that dissociation is the central psychological mechanism in the formation of the whole spectrum of symptoms. In his view, the variety of symptoms and syndromes, including conversion symptoms, merely reflects different aspects of the basic dissociative mechanism. He was therefore critical of the separation of conversion disorder and the dissociative disorders into separate categories in the DSM-III and its sequels.

Nemiah [52] observed that symptoms of somatization disorder are often associated with dissociative symptoms in patients suffering from dissociative disorders. Several studies have not only yielded empirical support for this association [55], but there is strong evidence that dissociation and somatization symptoms are usual, and often occur together, in traumatized individuals; such individuals are prone to problems with affect regulation [56].

In regarding dissociation as a primary mechanism leading to symptom formation, whether it is by somatization or by the process of conversion (which uses a number of individual independent defenses, such as identification, displacement, and repression), Nemiah was in agreement with 19th century psychiatrists, especially in France, who viewed dissociation as ‘a psychological mechanism central to the production of a whole spectrum of neurotic symptoms, hysterical and otherwise …’ [54, p. 447]. As noted above, Bucci [47, 57] extends this view by linking psychological and somatic symptoms to various degrees of dissociation within and between the elements comprising emotion schemas, and to the individual’s attempts at repair. Somatization and hypochondriacal symptoms, for example, can be attributed to a preoccupation with and attempt to give meaning to the bodily sensations associated with activation of subsymbolic processes that are disconnected from symbolic representations. Dissociative symptoms, which may occur in acute stress disorder and posttraumatic stress disorder (PTSD) as well as in dissociative and somatization disorders, reflect the disintegration of emotion schemas with different and disconnected elements occupying consciousness. In conversion, a particular body part functions as a symbol that organizes the emotion schema; this occurs when the primary object of the schema has been dissociated in the service of defense. Somatic diseases and somatic syndromes, such as functional gastrointestinal disorders, may develop if high levels of unregulated subsymbolic activation dysregulate other biological systems in the body. With some patients, especially those with high alexithymia, ‘the threat embodied in the dreaded schemas is experienced as so extreme that the individual turns against the symbolizing process itself in a more pervasive way’ [15, p. 208]. High levels of alexithymia have been found among patients with PTSD [58] and patients with functional gastrointestinal disorders [59], and some studies have found the ‘difficulty identifying feelings’ facet of alexithymia to be associated with somatization [60] and with a tendency to dissociation [61, 62].
Panic Attacks

Nemiah was very interested in the mechanisms underlying panic attacks, which are a prime example of the mind’s inability to symbolize and regulate states of emotional arousal, such that the individual experiencing them is overwhelmed by a host of bodily sensations and symptoms as well as psychological symptoms such as derealization, depersonalization, fear of losing control or going crazy, and a fear of dying. As De Masi [63] points out, the individual behaves like one who is reliving a traumatic event, with the mind so focused on the somatic sensations that it is unable to understand and process the emotional experience. Since the internal arousal is expressed directly via somatic pathways without any modification by higher-order psychic processes, Nemiah suggested that ‘one may view panic anxiety as a psychosomatic disorder – perhaps, even, as the prototypical psychosomatic disorder representing the transformation of stress-induced arousal into a generalized autonomic discharge’ [64, p. 134]. His notion of emotional arousal escaping ‘psychic elaboration’ anticipated Bucci’s [47] formulation of failures of the referential process, which may become evident when an emotional memory of a traumatic experience is triggered by a traumatic stimulus, thereby releasing a surge of anxiety, but with an absence of, or only a vague or incomplete, conscious memory of the original trauma.

Although Nemiah [64, 65] thought that panic anxiety, unlike signal anxiety, is a developmentally primitive form of affect that is more readily understandable in biological than psychological terms, on the basis of clinical observations, he proposed a conflict model as well as a deficit model for understanding panic attacks. He related the conflict and deficit models respectively to Freud’s concepts of psychoneurosis and actual neurosis and suggested that the models might apply to different types of patients. With some patients the symptoms can be related to underlying psychological conflicts or stressful environmental events, or both, that can be identified through psychodynamic investigation. With other patients, especially alexithymic patients who lack the capacity for higher psychic elaboration, it may be impossible to detect underlying conflicts, although their panic may be a response to external stressful events. As with his approach to the different models of symptom formation proposed by Janet and Freud, Nemiah considered the deficit and conflict models of panic complementary, rather than mutually exclusive, and suggested that ‘the task ahead of us is to synthesize biological and psychodynamic observations into a larger correlative framework’ [65, p. 301]. He recommended that the treatment of panic disorder and other anxiety disorders may require a combination of pharmacotherapy and psychotherapy, but be based on a careful clinical assessment of the psychodynamic and somatic functioning of each patient.

Several investigations of patients with panic disorder have provided empirical support for Nemiah’s [64] proposal that panic anxiety may be a consequence of an alexithymic deficit in the capacity to cognitively process primitive emotions. Significantly higher levels of alexithymia have been found in groups of panic disorder patients than in healthy individuals [66, 67] and in comparison groups of patients with obsessive-compulsive disorder or simple phobias [68, 69]. In a longitudinal study, panic disorder patients had higher levels of alexithymia than healthy control subjects both in the acute phase of the illness and after remission of symptoms, although the difference at follow-up testing was found only in the ‘difficulty identifying feelings’ facet of alexithymia and the overall level of alexithymia was much decreased [70].

Consistent with Nemiah’s [8] view that illness often occurs following a life event that involves changes in important human relationships, there is evidence that the onset of panic disorder, rather than appearing to come ‘out of the blue’, is frequently preceded by an interpersonal loss (through death or disruption of a relationship) [71, 72]. Furthermore, over the past 15 years, several psychoanalytic clinicians and researchers have extended Nemiah’s clinical observations, and supplemented biological and cognitive-behavioral approaches to panic disorder, by developing a psychodynamic model in which panic symptoms are related both to ego defects and to unconscious conflicts and fantasies that commonly involve difficulties with separation and independence, recognition and management of anger, and perceived dangers of sexual excitement; these conflicts are often related to actual traumatic experiences during childhood [73, 74]. Milrod and colleagues [75–77] conducted clinical trials on patients with DSM-IV panic disorder and demonstrated a remission or significant reduction in panic and related symptoms in response to manualized panic-focused psychodynamic psychotherapy. In a pilot study of panic disorder patients, no impairment was found in overall reflective functioning assessed with the Reflective Functioning Scale [78]. However, the investigators also developed a panic-specific reflective function scale, which was administered to the panic disorder patients as a semi-structured interview prior to and following either

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neurosis which relates symptoms to unconscious mental processes and personality characteristics that have been shaped by childhood experiences in concert with genetic and constitutional factors. Although Freud [79] included anxiety attacks and agoraphobia among the symptoms of ‘anxiety neurosis’, a psychodynamic approach to panic attacks and other symptoms fell out of favor following the introduction of the DSM-III in which the diagnostic category of neuroses was eliminated and replaced by an ‘atheoretical’ system of classification that was to be supported by objective and empirical observations [80]. As Nemiah [8, p. 460] noted, ‘the focus of attention … shifted from the living person to his illness as a thing in itself; from dynamic process to static phenomenology, and, to a large extent, from psychology to biology’. However, the accumulating evidence that panic disorder is often associated with neurotic conflicts and/or deficits in symbolization emphasizes the importance of investigating the patient’s premorbid personality and developmental experiences. Nemiah’s conceptual models, coupled with the recent empirical research findings, encourage a reassessment of the concept of neurosis in relation to symptom formation, a reassessment that Fava [81] considered overdue 17 years ago.

Affects, Trauma, and Somatic Disease

Although Nemiah and colleagues [10, 82] proposed that alexithymia might play a role in the pathogenesis of the classic psychosomatic diseases, apart from reports of a moderately strong relationship with essential hypertension, empirical studies have yielded only weak support for this proposal [83]. Nonetheless, by identifying deficits in emotional processing, and relating them to MacLean’s [84] proposal that ‘psychosomatic disorders’ are a consequence of impaired communication between the limbic system and the neocortex, Nemiah [4] anticipated the important contributions that neuroscientific research on emotion and emotion regulation is now bringing to the field of psychosomatic medicine [85].

In recent years also, research on the effects of emotional trauma has yielded support for Krystal’s [22, 86] hypothesis that traumatic experiences in childhood or adult life may have adverse consequences for physical health [87]. There is not only evidence of a correlational association between childhood trauma and somatization in adulthood [88], but several retrospective studies with very large samples have demonstrated an association between childhood trauma and the development of somatic disease in adult life. The Adverse Childhood Experiences Study in San Diego, Calif. [89, 90], for example, and the National Comorbidity Survey in the United States [91] found that self-reported childhood trauma was associated with an increased risk for a broad range of physical illnesses including cardiovascular, digestive, respiratory, and autoimmune diseases, which could arise many years after the exposure. The types of trauma included sexual, physical, and emotional abuse as well as exposure to household dysfunction such as parental separation or divorce, domestic violence, and parental substance abuse or mental illness. In a recent Canadian study, Fuller-Thomson and Brennenstuhl [92] found that people who had been physically abused as children were 49% more likely to develop cancer as adults. The odds ratio dropped by only 2% after adjusting for adult socioeconomic status, adult health behaviors, and other childhood stressors (parental divorce, addiction, or unemployment). There is also evidence that traumatic experiences in adulthood can have consequences for physical health in later years. Several follow-up studies of Vietnam War veterans with chronic PTSD have reported a higher lifetime prevalence of various somatic diseases as many as 20 years after military service [93–95].

An important but unanswered question is: what are the psychological and biological mechanisms that might render trauma in earlier years a risk factor for the development of disease later in life? Friedman [96] points out that the causal interconnections between personality and health are likely to be complex and involve various coexisting pathways. In terms of traumatic experience stored in implicit memory, the pathways may include a direct and sometimes enduring effect of arousal on the nervous, endocrine, or immune systems [97, 98], as well as insecure attachment styles which, as Maunder and Hunter [99] note, influence the physiological response to stress and are associated with distressing affects that individuals may attempt to regulate through unhealthy behaviors such as smoking, overeating, and alcohol or drug use that are disease risk factors in themselves. Studies such as the Dunedin Longitudinal Study, which has collected health
and psychosocial information from over 1,000 individuals every few years since birth, and will reassess them again in 2010 when they are age 38, are likely to yield findings that will help clarify the mechanisms by which emotional trauma may alter susceptibility to disease at a later age. For example, when the participants in the Dunedin study were assessed at age 32, those with current depression and a history of childhood maltreatment were more likely to have elevated levels of inflammation (measured by level of high-sensitivity C-reactive protein and by a common inflammation factor) than participants with current depression only, which places them at greater risk of future cardiovascular disease; moreover, the elevated inflammation levels were not explained by other risk factors [100].

Epilogue

John Nemiah was very much in touch with his own feelings, a capacity that heightened his empathic attunement to the internal experiences of his patients. ‘To see into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’, he wrote, ‘we must repeatedly immerse ourselves in the flood of his associations and feelings; we must be ourselves the instrument that sounds into the mind of another’. Nemiah’s central message is that by listening empathically to patients telling us about traumatic experiences, and recognizing the profound and lasting impact such experiences may have had on their emotional development, we are better able to understand the psychological mechanisms they employ to defend against reliving painful trauma, but which at the same time adversely affect their mental or physical health. Clinical observations and empirical research are now demonstrating that secure attachments in childhood and adulthood, and well-developed capacities for symbolization, mentalization, and affect regulation, render individuals more resilient to the traumas and stressful events of everyday life.

John Nemiah belongs to a small group of distinguished physicians who have been celebrated by this journal with a tribute, including George Engel [101], Jerome Frank [102], Max Hamilton [103], and Sir Martin Roth [104]. These men are remembered not only for their important theoretical or research contributions, but also for teaching a clinical approach which addresses both psychological and somatic symptoms and explores patients’ illnesses in the context of their personal lives. As de Figueiredo [102] said about Jerome Frank, they deserve a special place in the history of modern psychiatry.

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