The Role of Temperament

5

5.1 Historical Perspective

While early versions of the concept of temperament might had existed in ancient Egypt and Mesopotamia, essentially this approach was developed by the school of Cos and specifically by Polybus who was a pupil and son-in-law to Hippocrates (fourth century BC) and author of the book 'Peri physeos anthropou' ('On the Nature of Man'). This theory is in fact a microcosmic form of the macrocosmic theory of the four elements (earth, water, air, fire) and the four qualities (dry, wet, cold, hot) as first proposed by Empedocles (fifth century BC). According to this ancient approach, temperament (in Greek *crasis* or *idiosyncrasia*), health and disease are the products of the balance four body humours (in Greek *choli*). According to the predominance of a given humour, four temperamental types were described: the choleric (yellow bile from the liver; cyclothymic), the sanguine (blood from the heart; hyperthymic), the melancholic (black bile from the kidneys; depressive) and the phlegmatic (phlegm from the lungs; self-content). The theory was further elaborated by Erasistratos, Asclepiades (first century BC) and eventually by Galen (second century AD) with his treatise 'Peri crasaion' ('De temperamentis'). This approach was the standard until the sixteenth century and in the India and the Muslim world constituted the basis of Yunani or Unani medicine (after Yunan that is Iones-Greeks in Eastern languages). In 'The Canon of Medicine', Avicenna (980–1037 AD) extended the theory of temperaments to include 'emotion, mental ability, moral attitudes, self-awareness, movement and dreams'. In English texts, temperament is mentioned in Wycliff's sermons (1380), in the writings of Shakespeare and in Robert Burton's Anatomy of Melancholy (Table 5.1).

The word 'temperament' itself comes from the Latin word 'temperare', which means 'to mix', while the Greek original word is 'crasis' or 'idiosyncrasia', standing for 'mixture' and 'unique admixture', respectively.

Temperament theory influenced philosophical thinking and played a predominant role in the shaping of the anthropological and humanitarian sciences. Prominent scholars like Ernst Platner (1744–1818), Immanuel Kant (1724–1804),

K.N. Fountoulakis, *Bipolar Disorder: An Evidence-Based Guide to Manic Depression*, DOI 10.1007/978-3-642-37216-2_5

Table 5.1 Chronological chart of theoretical elaboration on temperament

Theorist	Time period	Contribution
Polybus (school of Cos)	Fourth century BC	'Peri physeos anthropou' ('On the Nature of Man'). Theory of the four humours
Eristratos, Asclepiades	First century BC	Further elaboration on Polybus' theory
Galen	Second century AD	'Peri crasaion' ('De temperamentis')
Avicenna	980–1037 AD	Canon of medicine (includes emotion, mental ability, moral attitudes, self-awareness, movement and dreams)
Nicholas Culpeper	1616–1654	The first to disregard the idea of fluids as defining human behaviour
Georg Ernst Stahl	1660–1734	Animism/vitalism
Friedrich Hoffmann	1660–1742	Iatromechanism (hydraulic based theory)
Immanuel Kant	1724–1804	Anthropologie
Ernst Platner	1744–1818	Philosophische Aphorismen
Friedrich Schiller	1759–1805	Human types: idealist and realist
Franz Joseph Gall	1758–1828	Phrenologistic teachings; considered the study of temperaments as the first step in phrenology
Johann Spurzheim	1776–1832	
Friedrich Schelling	1775–1854	'Naturphilosophie'
Jacob Henle	1809–1885	The first to base a theory of temperaments on the tone of the nervous system
William James	1842–1910	Tough-minded and tender-minded temperaments
Friedrich Wilhelm Nietzsche	1844–1900	The Apollonian, or rational, and the Dionysian, or passionate, element of human nature (the birth of tragedy)
Carl Spitteler	1845–1924	Prometheus (forethinker, introvert) and Epimetheus (after-thinker, extrovert)
Rudolf Steiner	1861–1925	Suggested that temperament is under the persons' partial control, changes and matures; persons are a mixture of different temperaments which are characterized by different levels of maturity
Erich Adickes	1866–1928	'Four world views' in 1907: 'dogmatic', 'agnostic', 'traditional' and 'innovative'
Carl Gustav Jung	1875–1961	Interplay between an outer public self and a secret inner self as determining the direction of the libido (extroversion vs. introversion)
Alfred Adler	1879–1937	Four mistaken goals: 'recognition', 'power', 'service' and 'revenge'
Eduard Spränger	1882–1963	Four human values: 'religious', 'theoretic', 'economic' and 'artistic'

Table 5.1 (continued)

Theorist	Time period	Contribution
Ernst Kretschmer	1888–1964	Three body types (asthenic/leptosomic, athletic and pyknic/extrovert) and two temperaments ('schizothymic' with the hyperaesthetic–sensitive and anaesthetic–cold characters and the 'cyclothymic' with depressive–melancholic and the hypomanic characters)
William Sheldon	1898–1977	Three body types (endomorphic, mesomorphic and ectomorphic) and three related groups of temperament traits: 'viscerotonia' (relaxation, comfort, sociability, gluttony for food, for people and for affection), 'somatotonia' (muscular activity and of bodily assertiveness) and 'cerebrotonia' (restraint, inhibition, concealment)
Erich Fromm	1900–1980	Eight basic needs (relatedness, transcendence, creativity, rootedness, sense of identity, frame of orientation, excitation and stimulation, unity, effectiveness) and two factors (acquiring and assimilating things (assimilation) and reacting to people (socialization)) forming five types of malignant character (receptive, exploitative, hoarding, necrophilous and marketing) and one positive character (productive)
Hans Eysenck	1916–1997	The first psychologist to analyse personality differences using an empirical/statistical method
		He suggested that temperament is biologically based. Three dimensions of personality: neuroticism (tendency to experience negative emotions), extraversion (tendency to enjoy positive events) and psychoticism (cognitive style)
		His theory and the theories that derived from it, all concern approach/reward, inhibition/punishment and aggression/flight
Solomon Diamond	1957	In order to distinguish between 'the essential foundations of individuality and its cultural elaboration', one has to look at the animal world
		Four temperament traits in primates: fearfulness, aggressiveness, affiliativeness and impulsiveness
David Keirsey	1921–	Four temperament patterns (sensing perceiver, sensing judger, intuitive thinker and intuitive feeler) and 16 characters
Jeffrey Gray	1934–2004	Neural theory of the Behavioural Inhibition System (BIS) and Behavioural Approach System (BAS)

(continued)

Table 5.1 (continued)

Theorist	Time period	Contribution
Alexander Thomas, Stella Chess, Herbert G. Birch	1956	The 'New York Longitudinal Study' began in 1956
		Nine dimensions of temperament (activity level, rhythmicity of biological functions, approach/withdrawal, adaptability, threshold of responsiveness, intensity of responses, quality of mood, distractibility and persistence) and three distinct temperaments: the 'easy children' (40 % of sample, characterized by regularity, ease of approach, adaptability, mild to moderate mood intensity and a generally positive mood), the 'difficult children' (10 % of the sample with opposite qualities to the 'easy' type) and the 'slow-to-adapt children' (50 %)
		They put the emphasis on 'goodness of fit'
Buss and Plomin	1973	Temperament traits show early appearance in ontogenesis (infancy), are heritable and are predictive of later development
		Four temperament traits (emotionality, activity, sociability and impulsivity)
Robert Cloninger	1944–	He developed a theory of hierarchical temperament and character traits and dimensions; he attempted to intimately connect temperamental characteristics and neurotransmitter systems
		His theory suggests a link between novelty seeking and dopamine, harm avoidance and serotonin and reward dependence and noradrenaline
H. Hill Goldsmith and Joseph Campos	1990	Temperaments are individual differences in the primary emotions. Emphasis on the basic/primary emotions (anger, fear and pleasure) and also the way of regulating them. Central to this notion are three characteristics of response: threshold, latency and intensity
Hagop Akiskal	1945–	He focused on the affective components of temperament and their relationship to mood disorders and creativity
Mary Rothbart	1940–	She emphasized reactivity (meaning biological arousability), self-regulation (increase, decrease, maintain and restructure the patterning of reactivity) and cognitive processes (focus of attention)
		She identified three broad dimensions of temperament: surgency–extraversion (positive anticipation, activity level and sensation seeking), negative affectivity (fear, anger/frustration and social discomfort) and effortful control (inhibitory control, attentional focusing and perceptual sensitivity)
Jerome Kagan	1929–	Described two types of children: the 'inhibited' (cling to their mothers, cry and hesitate with unfamiliar persons or events, are timid and shy and represent about 20 %) and the 'uninhibited' (or exuberant)
		Inhibition can be better understood as intolerance of uncertainty and not as a proneness to fear

Friedrich Schiller (1759–1805) and Friedrich Wilhelm Nietzsche (1844–1900) included concepts similar to temperament in their writings. Gradually physiology and medicine returned to the field and eventually, on the borderline and interface between philosophy, sociology, psychology, anthropology and medicine, Rudolf Steiner (1861–1925), Ernst Kretschmer (1888–1964) and Erich Fromm (1900–1980) described human types and temperaments. Ernst Kretschmer (1888–1964) described the asthenic/leptosomic, athletic and pyknic body types with the pyknic body type being extrovert and related to manic depression. He also divided personality into two temperaments: The 'schizothymic' (with the hyperaesthetic–sensitive and anaesthetic–cold characters) and the 'cyclothymic' (with depressive-melancholic and the hypomanic characters). Hans Eysenck (1916–1997) was the first to analyse personality differences using an empirical/statistical method. He proposed that the basic factors were neuroticism (tendency to experience negative emotions), extraversion (tendency to enjoy positive events) and psychoticism (cognitive style). Eysenck's theory and all the theories that derived from it concern approach/reward, inhibition/punishment and aggression/flight (Eysenck and Eysenck 1962, 1964, 1967, 1968, 1969, 1972, 1977; Eysenck et al. 1974, 1976, 1977).

McCrae and Costa proposed the five-factor model (Big Five) (McCrae and Costa 1987) which includes neuroticism, extroversion agreeableness, openness and conscientiousness and constitutes a further development of Eysenck's theory. The older concept of 'psychoticism' was substituted by agreeableness and conscientiousness, while openness has some degree of overlap with extroversion (Markon et al. 2005).

The work of Robert Cloninger is characterized by an attempt to intimately connect temperamental characteristics with individual differences in genetics, neurotransmitter systems and behavioural conditioning. He described novelty seeking (anger), harm avoidance (fear), reward dependence (attachment) and persistence (ambition) (Cloninger 1987; Cloninger et al. 1993). His research suggests that temperament components can be assessed as early as preschool age (Constantino et al. 2002) and remain moderately stable throughout a person's lifespan except for changes from behavioural conditioning (Josefsson et al. 2012).

Hagop Akiskal has conceived temperament as the affective predisposition or reactivity, based on the original descriptions by Kraepelin (1921) of fundamental states (manic or hyperthymic, irritable, cyclothymic, anxious and depressive). Empirical research has confirmed the hypothesized four-dimensional factor structure and is in agreement with those previously proposed on clinical populations. In an additional exploratory analysis, a depressive type constituted the antipode of hyperthymia and was distinguished from cyclothymia; the irritable temperament appeared somewhat independent. These are close to the classic descriptions of Kraepelin, Kretschmer and Schneider (Akiskal et al. 1998b) (Table 5.2).

While personality refers to goals, coping styles, defensive styles, motives, self-views, life stories and identities (McAdams and Pals 2006), basic personality traits (e.g. extraversion or neuroticism) are essentially parts of temperament (Rothbart et al. 2000). The major theories taken together suggest that four-temperament model of Akiskal (Akiskal and Akiskal 2005), the cube model of Cloninger (Cloninger et al. 1999), the five-factor model represented by the NEO-PI (Costa and McCrae 1990), the seven-factor model of Tellegen (Tellegen et al. 1991) and Cattell's 16-factor

Table 5.2 Summary of the results of empirical studies on temperament

Researcher	Time period	Results
Alexander Thomas, Stella Chess, Herbert G. Birch	1956	Nine dimensions of temperament (activity level, rhythmicity of biological functions, approach/withdrawal, adaptability, threshold of responsiveness, intensity of responses, quality of mood, distractibility and persistence) and three distinct temperaments: the easy, the difficult and the slow-to-adapt children. Emphasis on 'goodness of fit'
Solomon Diamond	1957	Fearfulness, aggressiveness, affiliativeness and impulsiveness
Hans Eysenck	1964	Neuroticism (tendency to experience negative emotions), extraversion (tendency to enjoy positive events) and psychoticism (cognitive style)
Buss and Plomin	1973	Emotionality, activity, sociability and impulsivity
Robert Cloninger	1987	Four temperaments (novelty seeking, harm avoidance, reward dependence and persistence), 3 characters (self-directedness, cooperativeness, self-transcendence) and 25 facets
Mary Rothbart	1988	Reactivity, self-regulation and cognitive processes
		Three dimensions of temperament: surgency–extraversion, negative affectivity and effortful control
Jerome Kagan	1989	The inhibited and the uninhibited children
H. Hill Goldsmith and Joseph Campos	1990	Anger, fear and pleasure and the way of regulating them (threshold, latency and intensity)
Jeffrey Gray	1991	Behavioural Inhibition System (BIS) and Behavioural Approach System (BAS)
Hagop Akiskal	1998	Hyperthymic, cyclothymic, depressive, irritable and anxious
Diogo Lara and Hagop Akiskal	2006	The fear and anger model

model (Cattel et al. 1970) may in fact represent different levels of an hierarchical structure of normal and pathological personality with a two-superfactor solution at the top largely reflecting ego control and ego resiliency (Akiskal et al. 2005a; Cohen 1999), a limited number of temperaments in the middle (named under many labels, but significantly overlapping) (Maremmani et al. 2005) and many characters (15 or more) at the bottom. 'Temperament' corresponds to the 'higher' levels, while 'personality' and 'character' to the 'lower' (Cloninger et al. 2011).

The relationship of temperament to health suggests a strong link to general health and mortality (Friedman et al. 1993) to future mental health (Conley 1985) and to anxiety (Rosenbaum et al. 1988, 1991; Biederman et al. 1990, 2001; Kagan and Zentner 1996; Kagan et al. 1999, 2001; Smoller et al. 2005). It is established that premorbid temperamental predispositions are often present in mood patients and their relatives. These temperamental traits have a disorder-specific pattern of distribution (Evans et al. 2005; Kesebir et al. 2005; Akiskal et al. 2005a, b, c).

The anxious temperament seems to constitute a generic vulnerability factor and was shown to be a robust predictor of most mental disorders. On the contrary, the hyperthymic temperament has shown a uniquely protective effect on most mental disorders (with few exceptions including bipolar disorder) (Karam et al. 2010; Pompili et al. 2008). The dysthymic, cyclothymic and anxious temperaments are related to hopelessness and the irritable temperament to suicidality (Pompili et al. 2008).

Temperament assessment might help in differentiating between unipolar and bipolar depression. This is very important since in many patients the manifestation of a manic or mixed episode comes after several years of suffering and failed or false treatment efforts. The problem is that this 'temperament assessment' might reflect subclinical residual features of bipolar disorder (state) rather than true 'temperament' (i.e. basic long-standing characteristics of the patients or traits). To further complicate the picture, the assessment of temperament changes the definition of bipolarity itself and contributes to the concept of the 'bipolar spectrum'. In this frame it is one of the crucial factors in the increasing prevalence of bipolar cases (especially bipolar II) at the expense of unipolar ones. Although these above-mentioned thoughts constitute significant limitations, the presence of an affective temperament contributes additional affirmation of the early occurrence of mood symptoms in early-onset forms of both unipolar and bipolar depressions (Oedegaard et al. 2009).

The literature suggests that the clinical constellation of 'euphoric–grandiose', 'paranoid–anxious' and 'accelerated–sleepless' symptoms is related to the hyperthymic temperament, while the 'depressive' constellation is related to the depressive temperament and the cluster of 'irritable–agitated' symptoms is related to both temperaments (Perugi et al. 2001). Thus, 'hyperthymic' temperament characterizes manic patients with or without psychotic features (Perugi et al. 1997, 1998b; Dell'Osso et al. 1993) and its assessment reveals that one-third of depressed patients belong to the bipolar spectrum (Cassano et al. 1989).

The subgroup of 'unipolar' patients with hyperthymic temperament (12.4 % of unipolar cases) is similar to BD-II patients in terms of gender and bipolar family history (Cassano et al. 1992b). BD-II patients (40 % of depressed patients after systematic evaluation) manifest high scores on hypomania scales and cyclothymic and irritable temperaments. On the other hand, 88 % of cases, for which a cyclothymic temperament is recognized by clinicians, are diagnosed as BP-II. Cyclothymic temperament is significantly elevated in the bipolar vs. the unipolar depressive group (Mendlowicz et al. 2005a), but it seems that it is a robust clinical marker specifically for BP-II disorder (Hantouche et al. 1998) and is also higher in patients with a family history of bipolarity (Akiskal et al. 2005b).

BD-II patients with cyclothymia differ from those without as having younger age at onset and age at seeking help, higher depressive scores, more atypical features, longer delay between onset of illness and recognition of bipolarity, higher rate of psychiatric comorbidity and different personality disorders profiles (i.e. more histrionic, passive–aggressive and less obsessive–compulsive). Also, cyclothymic BP-II scored significantly much higher on irritable–risk-taking than 'classic' driven–euphoric items of hypomania (Akiskal et al. 2003). In comparison to hyperthymic patients, they might be more frequently females with more depressive

and hypomanic episodes and suicide attempts and more comorbidities (most often panic disorder/agoraphobia and social anxiety disorder); they meet more borderline personality disorder criteria and have higher rates of first-degree family history for both mood and anxiety disorders. On the other hand, hyperthymic patients might have more frequent manic episodes and hospitalizations and more antisocial personality disorder features (Perugi et al. 2010).

Marked irritable–explosive traits (occurring in 2–3 % of young persons and tending to attenuate by middle age) often coexist with the mood-labile cyclothymic type, representing the dark 'borderline' side of this cyclothymic temperament (Akiskal et al. 2003; Merikangas et al. 2007, 2011). The type BP-II ½ manifests early onset, complex temperament structure and high mood instability, rapid switching, irritable ('dark') hypomania and suicidality and seems to be the most prevalent and severe expression of the bipolar spectrum, accounting for 33 % of all depressions (Akiskal et al. 2006a). BP-III which is associated with antidepressant treatment is reported to arise from depressive temperament and bipolar family history (Akiskal et al. 2006b).

More than half of depressed patients with atypical features are reported to have antecedent cyclothymic or hyperthymic temperaments and often family history for bipolar disorder (Perugi et al. 1998a). Most of them (78 %) could meet the criteria for bipolar spectrum (mainly BD-II). Atypical patients with cyclothymic temperament manifest higher reactivity of mood, interpersonal sensitivity, functional impairment, avoidance of relationships, other rejection avoidance and, on the interpersonal sensitivity, phobic anxiety, paranoid ideation and psychoticism (Perugi et al. 2003). Reversely, as mentioned before, cyclothymic BD-II patients are reported to manifest more atypical features (Akiskal et al. 2003).

The psychotic mixed patients seem to be closer to the BD-I and are characterized by a hyperthymic temperament with a familial background of psychotic mood disorders, while the nonpsychotic mixed patients are closer to the BD-II and more often have a cyclothymic temperament and a family background of nonpsychotic disorders and substance abuse (Dell'Osso et al. 1993). The EPIMAN study in France suggests that the higher prevalence of hyperthymic temperament in males is responsible for the higher frequency of pure mania in men and the higher prevalence of depressive temperament in females is responsible for the more frequent mixed episodes in women (Akiskal et al. 1998a). Mixed episodes in BD-I women are related to both hyperthymic and depressive temperaments and familial depressive (rather than bipolar) disorders (Dell'Osso et al. 1991; Perugi et al. 1997).

Suicide is related to hopelessness and in turn the dysthymic, cyclothymic and anxious temperaments are related to hopelessness with the irritable temperament relating specifically to suicidality (Pompili et al. 2008). Lifetime suicide is related (among others) to depressive or mixed polarity of first episode and cyclothymic temperament (Azorin et al. 2009).

Patients with non-violent suicide attempts in the past have higher depressive, cyclothymic, irritable and anxious temperaments, but they do not differ from the general population in terms of hyperthymic temperament (Rihmer et al. 2009; Azorin et al. 2010).

Patients with high depressive and low hyperthymic temperament seem to be more likely to have higher hopelessness scores, more white matter hyperintensities, higher suicidal risk and more recent suicide attempts than the rest (Serafini et al. 2010). Late-onset mood disorder is characterized by hyperthymic, cyclothymic and irritable temperaments (Ng et al. 2008).

In summary, the hyperthymic temperament is related to euphoria, grandiose and paranoid thinking, antisocial behaviour, psychomotor acceleration and reduced sleep, as well as to higher frequency of manic episodes and hospitalizations. The cyclothymic temperament is related to the BD-II bipolar type, the presence of panic disorder, agoraphobia and social anxiety disorder, nonpsychotic mixed episodes and suicidality. The depressive temperament is related to depressive symptoms and the irritable to suicidality.

A summary of the relationship of various temperaments and the clinical manifestations of bipolar illness is shown in Table 5.3.

The differences between genders concerning the manifestation of mood disorders can be explained at least partially through differences in temperament. Women are much higher in need for approval (reward dependence) and cooperativeness than men (Cloninger et al. 1994). Females manifest less hypomanic, and more depressive, episodes and more anxiety and somatization. Gender differences in temperament (higher prevalence of the depressive temperament in women vs. higher hyperthymic temperament in men) might account for the differences in rates between genders (Perugi et al. 1990). It has also been proposed that sexes are distinguished by the 'ruminative' and the 'active' cognitive response styles. It seems also possible that women are more vulnerable to childhood adversities and to adult stressors especially related to bonding with men and child rearing (Nolen-Hoeksema and Girgus 1994; Nolen-Hoeksema et al. 1999; Nolen-Hoeksema 2011), which is consistent with gender differences in personality being closely related to traits important for attachment.

Mixed episodes in BD-I women are related to lower hyperthymic temperament and familial depressive, rather than bipolar, disorders (Dell'Osso et al. 1991). These temperamental dysregulations seem to constitute the intermediate step between predisposing familial-genetic factors in affective illness and gender-related clinical expressions of mood disorders (Cassano et al. 1992a). Differences in clinical manifestations might also include more anxiety–depressive features in females (which is in line with female overrepresentation in mixed mania) vs. more social disinhibition in males (Hantouche et al. 2001).

Unipolar and bipolar depressive patients with hyperthymic temperament are reported to have high rates of bipolar family history (Kendler 1997; Kendler and Karkowski-Shuman 1997). In comparison, patients with depressive temperament are reported to have a higher familial loading for mood disorders in general (Cassano et al. 1992a). Cyclothymic patients have also bipolar family history (Akiskal et al. 2005b; Hantouche and Akiskal 2006). Many monozygotic twins discordant for full-blown mood disorders manifest temperamental features strongly suggesting the presence of a genetic component (Bertelsen 1978; Bertelsen et al. 1977).

Table 5.3 Summary of the relationship of bipolar clinical features with various temperaments

Bipolar clinical feature	Temperament
Classic bipolar disorder	
Euphoric–grandiose	Hyperthymic
Paranoid–anxious	Hyperthymic
Accelerated–sleepless	Hyperthymic
Manic patients with or without psychotic features	Hyperthymic
More frequent manic episodes and hospitalizations and more antisocial personality disorder features	Hyperthymic
Depressive' constellation	Depressive
Mixed episodes	
'Irritable–agitated' symptoms	Hyperthymic, depressive
Psychotic mixed patients	Hyperthymic
Nonpsychotic mixed patients	Cyclothymic
Mixed episodes in females	Hyperthymic, depressive
Comorbidity	
Panic disorder, agoraphobia and social anxiety disorder	Cyclothymic, anxious
Suicidality	
Hopelessness	Dysthymic, cyclothymic and anxious
Suicidality	Irritable
Lifetime suicidality	Cyclothymic
Non-violent lifetime suicidality	Depressive, cyclothymic, irritable, anxious
Bipolar spectrum types	
BD-II	Cyclothymic
BD-II ½	Cyclothymic, irritable
BD-III	Depressive
Atypical depression	Cyclothymic, hyperthymic
Late-onset mood disorder (BD-VI)	Hyperthymic, cyclothymic and irritable

In terms of relatives of patients, the cyclothymic temperament is more frequently present in first-degree relatives of patients with BD-I, followed by persons with family history of mood disorders. This loading was more pronounced in females. In the frame of a spectrum concept of bipolar disorder, cyclothymic temperament is distributed in ascending order in the well-relatives of patients from unipolar depression to bipolar disorders, thus possibly constituting a link between molecular and behavioural genetics (Chiaroni et al. 2005). Although peculiar, it is reported that controls have higher hyperthymic temperament in comparison to relatives of bipolar patients (Evans et al. 2005; Mendlowicz et al. 2005b). This is in accord with the above, but in contrast to the results of another study which suggests that BD-I patients and their relatives had significantly higher frequency of hyperthymic temperament than the controls (Kesebir et al. 2005). Relatives of bipolar probands

showed lower cyclothymic temperament scores than bipolar patients but higher scores than controls. Patients and their relatives showed higher anxious temperament scores than controls (Mendlowicz et al. 2005b). It seems that the composition of the sample in terms of diagnosis might determine the outcome, by giving weight to depressive, anxious, irritable or cyclothymic temperament, but not hyperthymic which might be higher in controls. The presence of these temperaments might impact on the quality of life of relatives of mood patients (Vazquez et al. 2008). Finally it has been shown that personality traits of high harm avoidance and low self-directedness are heritable risk factors for major depression in the never depressed sibs of depressives (Farmer et al. 2003).

It is often very difficult to distinguish between 'personality' from one hand and 'bipolar disorder' on the other, especially if bipolar disorder has a very early onset with complex residual symptoms between episodes.

Many of subthreshold mood conditions that constitute subeffective disorders were previously subsumed under such rubrics as 'neurotic', 'characterological' and 'existential' depressions and more recently personality disorders. It is relevant that measures of Beck's dysfunctional attitudes are strongly correlated with low self-directedness but not with temperament. Any temperament profile as measured by Cloninger may occur in people who are well adjusted and clinically normal – it is individual differences in character that determine whether a person can self-regulate their emotional drives (temperament) and thereby function in a healthy adaptive manner regardless of stress (Cloninger and Zohar 2011; Cloninger et al. 2010).

Cluster B personality disorders are closer to mood disorders in terms of clinical manifestations. Depending on the population studied, anywhere from half to two-thirds of DSM-III borderline disorders seem to represent subaffective expressions, principally on the border of bipolar disorder, characterized by dysthymic, irritable and cyclothymic temperaments or anxious-sensitive temperament in continuum with hysteroid dysphoric and atypical depressive disorders (Akiskal 1994). This is particularly true for cyclothymic BD-II patients, who are often misclassified as borderline personality disorder because of their extreme mood instability (Perugi and Akiskal 2002).

Cyclothymic BP-II patients were more histrionic, passive–aggressive and less obsessive–compulsive in terms of personality disorders (Akiskal et al. 2003).

The concept of temperament has been developed since antiquity to serve the comprehensive understanding of how the human body works and more important what determines human behaviour. The many theories on temperament included biological interpretations, philosophical and ethical approaches as well as psychological and sociocultural elements. Therefore, a large amount of information concerning the patient is gathered under the umbrella of temperament, and thus it is reasonable to assume that by utilizing temperament and related concepts, one can understand mental illness in a more comprehensive way. This has been studied especially for mood disorders with fruitful results, although many areas remain to be further clarified.

Within the area of mood disorders, specific affective temperaments might constitute vulnerability factors, clinical picture and illness course modifiers, residual syndromes or genetically determined variations of mood disorders, or even the

source of creativity. Considering the temperament issue in a wider sense, temperaments could constitute all the above in different proportions, but even in the same patient (Akiskal et al. 1989, 1997; Akiskal 1998, 2000, 2001; von Zerssen and Akiskal 1998; Kendler et al. 1992; Maier et al. 1992; Remick et al. 1996; Akiskal and Akiskal 2007). Affective temperaments seem to relate also to mood disorder family history, thus constituting an endophenotype bridge between genes and mood disorders (Cassano et al. 1992a; Akiskal et al. 2005b; Hantouche and Akiskal 2006; Chiaroni et al. 2005; Mendlowicz et al. 2005b). Viewing mood disorders under this prism gives birth to the concept of the bipolar spectrum with major implications for all aspects of mental health research and providing of care (Akiskal 2007).

Research so far indicates that the hyperthymic and the depressive temperaments are related to the more 'classic' bipolar picture (i.e. euphoria, grandiose and paranoid thinking, antisocial behaviour, psychomotor acceleration and reduced sleep and depressive episodes, respectively). On the contrary, cyclothymic, anxious and irritable temperaments are related to more complex pictures and might predict poor response to treatment, violent or suicidal behaviour and high comorbidity. Coexistence of temperaments or intrusion of a mood episode on a temperament of the opposite polarity also produces complex clinical manifestations and might lead to poor outcome. Often this poor outcome does not reflect inherent properties of the illness, but instead reflects the inability of the therapist to understand the illness and adequately plan treatment (Pompili et al. 2008; Oedegaard et al. 2009; Perugi et al. 1997, 1998b, 2001; Dell'Osso et al. 1993; Cassano et al. 1989, 1992b; Akiskal et al. 2005b, 2006a, b; Azorin et al. 2009, 2010; Rihmer et al. 2009; Ng et al. 2008). Temperament assessment could be especially helpful in understanding gender differences and plan treatment accordingly (Perugi et al. 1990; Dell'Osso et al. 1991; Cassano et al. 1992a; Hantouche et al. 2001).

Finally, the widening of our view concerning the information that could be useful for the diagnosis and treatment of bipolar disorder not only radically changes our understanding of the disease but also leads to better treatment and outcome of patients and probably can also lead to saving and better allocation of resources. Incorporating the concept of temperament and the bipolar spectrum in the standard training of psychiatric residents emerges as a pressing issue, but the way this can be achieved remains a challenge.

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