ELSEVIER

Journal of Affective Disorders 85 (2005) 45–52

JOURNAL OF AFFECTIVE DISORDERS

www.elsevier.com/locate/jad

Research report

TEMPS-A: validation of a short version of a self-rated instrument designed to measure variations in temperament

Hagop S. Akiskal[a,b,*], Mauro V. Mendlowicz[c,d], Girardin Jean-Louis[e,f], Mark H. Rapaport[g,h], John R. Kelsoe[a,b], J. Christian Gillin[a,b,1], Tom L. Smith[b]

[a] *Department of Psychiatry, International Mood Center, University of California, San Diego, VA Psychiatry (116A), 3350 La Jolla Village Drive, San Diego, CA 92161, USA*

[b] *Psychiatric Service, San Diego Veterans Affairs Health System, San Diego, CA, USA*

[c] *Institute of Psychiatry, Federal University of Rio de Janeiro (IPUB-UFRJ), Rio de Janeiro, Brazil*

[d] *Department of Psychiatry and Mental Health, Fluminense Federal University (UFF), Rio de Janeiro, Brazil*

[e] *Department of Ophthalmology, SUNY, New York, NY, USA*

[f] *Department of Psychiatry, SUNY Downstate Medical Center and Kingsbrook Jewish Medical Center, New York, NY, USA*

[g] *Department of Psychiatry, Cedars-Sinai Medical Center, Los Angeles, CA, USA*

[h] *University of California at Los Angeles, Los Angeles, CA, USA*

Received 23 April 2003; accepted 31 October 2003

Abstract

Objective: To validate a short English-language version of the Temperament Evaluation of Memphis, Pisa, Paris and San Diego-autoquestionnaire version (TEMPS-A), a self-report questionnaire designed to measure temperamental variations in psychiatric patients and healthy volunteers. Its constituent subscales and items were formulated on the basis of the diagnostic criteria for affective temperaments (cyclothymic, dysthymic, irritable, hyperthymic, and anxious), originally developed by the first author and his former collaborators. Further item wording and selection were achieved at a later stage through an iterative process that incorporated feedback from clinicians, researchers, and research volunteers. *Method:* A total of 510 volunteers (284 patients with mood disorders, 131 relatives of bipolar probands, and 95 normal controls) were recruited by advertisement in the newspapers, announcements on radio and television, flyers and newsletters, and word of mouth. All participants were interviewed using the Structured Clinical Interview for DSM-III-R, and completed the 110-item TEMPS-A and the Temperament and Character Inventory (TCI-125). The factorial structure, the α coefficients, and the item–total correlations coefficients of the TEMPS-A and the correlation coefficients between the dimensions of the TCI and the TEMPS-A subscales were then determined. *Results:* A principal components analysis with a Varimax rotation found that 39 out of the 110 original items of the TEMPS-A loaded on five factors that were interpreted as representing the cyclothymic, depressive, irritable, hyperthymic, and anxious factors. Coefficients α for internal consistency were 0.91 (cyclothymic), 0.81 (depressive), 0.77 (irritable), 0.76 (hyperthymic), and 0.67 (anxious) subscales. We found statistically significant positive correlations between all—but the hyperthymic—subscales and harm avoidance. Positive correlations with the hyperthymic and cyclothymic, and novelty seeking and negative correlations with the remaining subscales were also recorded. Other major findings included

* Corresponding author. Department of Psychiatry, International Mood Center, University of California, San Diego, VA Psychiatry (116A), 3350 La Jolla Village Drive, San Diego, CA 92161, USA. Tel.: +1-858-552-8585x226; fax: +1-858-434-8598.

E-mail address: hakiskal@ucsd.edu (H.S. Akiskal).

[1] Deceased.

0165-0327/$ - see front matter. Published by Elsevier B.V.
doi:10.1016/j.jad.2003.10.012

positive correlations between the hyperthymic and reward dependence, persistence and self-directedness; positive correlation between the self-transcendence and the cyclothymic, hyperthymic and the anxious; and negative correlations between the depressive, cyclothymic, irritable, anxious and cooperativeness. *Limitation:* As the full-scale anxious temperament was added after the four scales of the TEMPS-A were developed, it has only been evaluated in 345 subjects. *Conclusions:* These data indicate that the TEMPS-A in its shortened version is a psychometrically valid scale with good internal consistency. The proposed five subscale structure is upheld. Concurrent validity against the TCI is shown. Most importantly, for each of the temperaments, we were able to show positive attributes which are meaningful in an evolutionary context, along with traits which make a person vulnerable to mood shifts. This hypothesized dual nature of temperament, which is upheld by our data, is a desirable characteristic for a putative behavioral endophenotype in an oligogenic model of inheritance for bipolar disorder. Published by Elsevier B.V.

Keywords: TEMPS-A; TCI; Temperament; Factor analysis; Mood disorder

1. Introduction

The Temperament Evaluation of Memphis, Pisa, Paris and San Diego-autoquestionnaire version (TEMPS-A) is based on interview versions of the depressive, cyclothymic, irritable and hyperthymic temperaments (Akiskal, 1992; Akiskal and Akiskal, 1992; Akiskal and Mallya, 1987; Akiskal et al., 1977, 1979) which have been validated in an Italian population of 1010 students from ages 14 to 25 (Placidi et al., 1998; Akiskal et al., 1998). The Italian study upheld the four-factor structure of TEMP-I (Interview or Italian version). The present self-rated (autoquestionnaire) version of TEMPS-A (see Akiskal et al., 2005, this issue) has been enriched with the addition of an anxious temperament (Akiskal, 1998), originally interview based (Akiskal, 1985; Hantouche and Akiskal, 2005, this issue), and subsequently developed into a full anxious self-rated subscale.

As described in our companion article (Akiskal et al., 2005, this issue), the original version of TEMPS-A included for each subscale, sections on *emotional reactivity* (e.g., depressive, labile, irritable or joyous), *cognitive* (e.g., pessimistic vs. optimistic), *psychomotor* (e.g., low vs. high energy), and *circadian* (mostly sleep related) and *social* (e.g., such behavioral traits as being a follower, a boss, frequently falling in and out of love). The generalized anxious temperament (GAT; Akiskal, 1998), in particular, was defined by traits which could be useful in a socio-ethologic context (e.g., worrying about family members).

In sum, the subscales of the TEMPS-A attempt to capture not only emotional, cognitive, psychomotor and circadian traits which might predispose one to major mood disorders, but could also serve an adaptive role in an evolutionary context (Akiskal, 1998, 2000, 2003; Akiskal et al., 1979).

2. Methods

2.1. Subjects

Our sample consisted of 510 research volunteers recruited by two independent research programs between June 1996 and August 1999. The Mental Health Clinical Research Center of the Department of Psychiatry of the University of California at San Diego (UCSD) recruited individuals with major depressive disorder ($n=160$) and healthy volunteers without family history of mood disorders ($n=95$) for clinical studies. The UCSD Department of Psychiatry Genetic Research Program recruited individuals with bipolar I ($n=74$) or II ($n=50$) disorders and their first- or second-degree relatives ($n=131$) for genetic linkage studies. All volunteers were recruited by advertisement in the newspapers, announcements on radio and television, flyers and newsletters, and word of mouth and screened through phone interview. Those who were selected to participate in face-to-face interviews received complete medical and psychiatric examinations. General background and demographic information was also collected.

Participants were interviewed using the Structured Clinical Interview for DSM-III-R (SCID) by research fellows, psychologists, and research assistants. High inter-rater reliability has been achieved (Kappa scores ranged from 0.82 to 0.86). Severity of de-

Table 1
Diagnoses vs. mood states of the volunteers

	No mood disorder	Full remission	Depressive episode	Other states[a]	Total
Bipolar I	NA[b]	14	30	30	74
Bipolar II	NA	7	26	17	50
MDD	NA	19	133	8	160
"Unipolar" relatives of bipolar	NA	32	18	17	67
Non-mood disordered[c] relatives of bipolar probands	15	NA	NA	NA	15
"Supernormal"[d] relatives of bipolar probands	49	NA	NA	NA	49
Normal controls	95	NA	NA	NA	95
Total	158	72	207	72	510

[a] Manic, hypomanic and mixed states; depressed, partial remission; manic, partial remission; unknown.
[b] Not applicable.
[c] Includes subjects with anxiety disorders, eating disorders, and drug/alcohol dependence/abuse; cases of schizophrenia, schizoaffective disorder and dysthymia were excluded.
[d] Individuals without any Axis I or II disorders.

pressive symptoms was evaluated using the 17-item Hamilton Rating Scale for Depression (HDRS-17; Hamilton, 1960); the Kappa scores for raters after the semi-annual HDRS reliability sessions were consistently between 0.82 and 0.88. Family history was assessed by asking the proband about all first- and second-degree relatives. If the proband indicated that a relative had any type of psychiatric or substance use disorder, a more extensive history was taken using modified family history techniques (Andreasen et al., 1977). Final diagnoses were made by consensus teams led by three of the authors (JCG, MHR, and JRK). Diagnoses were derived from the combination of the SCID interview, the clinical impression of the interviewer who performed it, and a review of available medical records. The classification of volunteers according to clinical diagnoses and current mood state is presented in Table 1. Table 2 shows the socio-demographic characteristics of the sample.

After giving informed consent, research volunteers were asked to complete the TEMPS-A and the Temperament and Character Inventory (TCI-125; Cloninger et al., 1994).

2.2. Scale development

The TEMPS-A (TS), a self-report, yes-or-no type questionnaire, was designed to quantify temperament in psychiatric patients and healthy subjects. Items were developed from the diagnostic criteria formulated by the first author (HSA) and his former collaborators (Akiskal and Akiskal, 1992; Akiskal and Mallya, 1987; Akiskal et al., 1977, 1979, 2005; Hantouche and Akiskal, 1997). Further item wording and selection were achieved through an iterative process that incorporated feedback on wording from researchers, clinicians (see Acknowledgement) and research volunteers.

The first version contained 84 items, assessing dysthymic (items 1–22), cyclothymic (items 23–42), hyperthymic (items 43–63) and irritable (items 64–84) temperaments. Later, clinical and theoretical considerations led to the addition of 26 new items describing the anxious temperament, resulting in the 110-item full long version of the TEMPS-A.

Table 2
Volunteers' age and gender

	Age (S.D.) [years]	Female (%)
Bipolar disorder (BD)	42.7 (14)	50
Major depressive disorder	46.2 (10.5)	43.8
Major depressive disorder with family history of BD	44.4 (16.3)	75
Normal controls	34.8 (11)	37.9
"Supernormal relatives of bipolar probands"	51 (19.5)	49
Non-mood disordered relatives of bipolar probands	37.2 (16)	46.7
Total	43.2 (14.3)	50

Table 3
Principal components analysis with varimax rotation of the TEMPS-A items—factor loading

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Factor # 1—cyclothymic					
25—My ability to think varies greatly from sharp to dull for no apparent reason	0.76	0.25	0.09	− 0.05	0.10
30—I constantly switch between being lively and sluggish	0.75	0.13	0.18	0.06	0.01
23—I get sudden shifts in mood and energy	0.75	0.16	0.24	0.01	0.01
38—The way I see things is sometimes vivid, but at other times lifeless	0.73	0.24	0.14	0.004	0.04
29—My mood often changes for no reason	0.73	0.25	0.28	− 0.05	0.11
35—I go back and forth between being outgoing and being withdrawn from others	0.69	0.18	0.12	− 0.10	0.09
24—My moods and energy are either high or low, rarely in between	0.66	0.07	0.28	0.02	0.06
34—I go back and forth between feeling overconfident and feeling unsure of myself	0.63	0.20	0.16	− 0.07	0.14
37—My need for sleep varies a lot from just a few hours to more than 9 hours	0.63	0.08	0.11	− 0.06	0.01
32—I sometimes go to bed feeling great, and wake up in the morning feeling life is not worth living	0.59	0.26	0.13	− 0.07	0.08
26—I can really like someone a lot, and then completely lose interest in them	0.55	0.22	0.19	− 0.06	− 0.08
39—I am the kind of person who can be sad and happy at the same time	0.51	0.03	0.04	0.05	0.13
Factor # 2—depressive					
2—People tell me I am unable to see the lighter side of things	0.16	0.69	0.10	− 0.04	0.11
19—I'm the kind of person who doubts everything	0.26	0.66	0.06	0.01	− 0.05
81—I am a very skeptical person	0.08	0.63	0.16	0.02	− 0.03
65—I am by nature a dissatisfied person	0.23	0.63	0.25	− 0.05	− 0.02
1—I'm a sad, unhappy person	0.32	0.62	0.15	− 0.08	0.12
4—I think things often turn out for the worst	0.20	0.61	0.14	− 0.11	0.14
5—I give up easily	0.23	0.56	0.01	− 0.10	0.14
66—I complain a lot	0.16	0.53	0.31	0.01	0.10
Factor # 3—Irritable					
73—People tell me I blow up out of nowhere	0.25	0.18	0.66	− 0.01	0.05
77—I can get so furious I could hurt someone	0.22	0.10	0.64	− 0.05	0.04
71—I often get so mad that I will just trash everything	0.21	0.17	0.62	− 0.03	0.07
72—When crossed, I could get into a fight	0.18	0.09	0.61	0.12	− 0.02
61—When I disagree with someone, I can get into a heated argument	0.06	0.06	0.59	0.09	− 0.02
74—When angry, I snap at people	0.26	0.20	0.55	0.01	0.01
79—I am known to swear a lot	0.09	0.08	0.53	0.02	0.06
80—I have been told that I become violent with just a few drinks	0.11	0.11	0.36	− 0.01	0.17
Factor # 4—hyperthymi					
51—I have a gift for speech, convincing and inspiring to others	0.09	− 0.13	0.015	0.68	0.01
48—I often get many great ideas	0.12	0.08	0.03	0.66	− 0.01
52—I love to tackle new projects, even if risky	0.02	− 0.20	0.09	0.63	− 0.16
45—I like telling jokes, people tell me I'm humorous	− 0.09	− 0.03	0.02	0.58	0.08
58—I have abilities and expertise in many fields	− 0.10	0.003	0.12	0.57	− 0.11
54—I am totally comfortable even with people I hardly know	− 0.18	− 0.07	− 0.15	0.55	− 0.05
55—I love to be with a lot of people	− 0.18	− 0.002	− 0.17	0.53	− 0.007
60—I am the kind of person who likes to be the boss	0.07	0.04	0.27	0.48	− 0.10
Factor # 5—anxious					
99—I am often fearful of someone in my family coming down with a serious disease	0.07	0.15	0.14	0.04	0.80
100—I'm always thinking someone might break bad news to me about a family member	0.19	0.09	0.17	0.006	0.72
98—When someone is late coming home, I fear they may have had an accident	0.17	− 0.04	0.12	− 0.14	0.66

A principal-components analysis (PCA) with a Varimax rotation was conducted to evaluate the conceptual validity of the TEMPS-A. Thirty-nine items loading on five factors were then selected (see below). These 39 items constitute the subject of this report.

2.3. Statistical analysis

Subscales for the TEMPS-A were derived empirically with the use of the PCA and Varimax (orthogonal) rotation. The scree test was employed to determine the number of factors to be extracted. Items were assigned to subscales if they loaded greater than 0.35 on that factor and only on that one factor.

Internal consistency for each subscale was assessed with the use of coefficient α (Cronbach, 1951). Concurrent validity was assessed by correlating the subscales' scores with those of the TCI-125 completed by the research subjects on the same occasion using the Pearson's *r*.

3. Results

3.1. Subscale construction

Because 145 out of 510 questionnaires were of an older 84-item version—where the 26 items covering anxious temperament were absent—principal components analysis was conducted in two separate steps. At first, we factor-analyzed the 84 items covering the depressive, cyclothymic, hyperthymic, and irritable temperaments. PCA followed by Varimax rotation identified four factors. Thirty-six items of the 84 original items loaded on one of the factors with a value equal to or greater than 0.35, with no items loading on more than one factor. The 26 items of the anxious temperament subscale were then added to these 36 items and subjected to another principal components analysis followed by Varimax rotation in an identical fashion. Five factors were identified. Thirty-nine items loaded on only one of these factors with a value equal to or greater than 0.35 (Table 3).

Table 4
Correlation coefficients (TEMPS-A vs. TCI-125)

	Depressive	Cyclothymic	Hyperthymic	Irritable	Anxious
Novelty seeking	0.095[a]	0.35	0.34	0.26	− 0.14
	477[b]	474	485	477	358
	< 0.04[c]	< 0.001	< 0.001	< 0.001	< 0.02
Harm avoidance	0.58	0.49	− 0.53	0.32	0.48
	481	475	483	479	363
	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Reward dependence	− 0.21	− 0.19	0.14	− 0.20	0.05
	491	488	495	490	368
	< 0.001	< 0.001	0.002	< 0.001	0.38
Persistence	− 0.17	− 0.04	0.31	− 0.05	0.07
	498	495	502	497	374
	< 0.001	0.42	< 0.001	0.23	0.20
Self-directedness	− 0.65	− 0.65	0.25	− 0.48	− 0.37
	477	474	483	475	358
	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cooperativeness	− 0.39	− 0.32	0.07	− 0.40	− 0.14
	472	467	476	472	358
	< 0.001	< 0.001	0.15	< 0.001	0.006
Self-transcendence	0.01	0.29	0.22	0.09	0.20
	486	482	490	485	369
	0.80	< 0.001	< 0.001	0.05	< 0.001

[a] Correlation coefficient.
[b] Number of subjects.
[c] *p*-Value.

The first factor, accounting for 24.2% of the variance and with an *eigenvalue* of 9.69, was defined by 12 items (25, 30, 23, 38, 29, 35, 24, 34, 37, 32, 26, and 39) and interpreted as the cyclothymic factor. The second factor, accounting for 7.8% of the variance and with an *eigenvalue* of 3.13, was defined by 8 items (2, 19, 81, 65, 1, 4, 5, and 66) and interpreted as the depressive factor. The third factor, accounting for 5.3% of the variance and with an *eigenvalue* of 2.1, was defined by 8 items (73, 77, 71, 72, 61, 74, 79, 80) and interpreted as the irritable factor. The fourth factor, accounting for 4.5% of the variance and with an *eigenvalue* of 1.82, was defined by 8 items (51, 48, 52, 45, 58, 54, 55, and 60) and interpreted as the hyperthymic factor. The fifth factor, accounting for 4.2% of the variance and with an *eigenvalue* of 1.68, was defined by 3 items (99, 100, and 98) and interpreted as the anxious factor (see Table 3).

3.2. Reliability

The reliability of the TEMPS-A was assessed with two measures of internal consistency: coefficient α and item–total correlations. Coefficients α for internal consistency were 0.91 (cyclothymic temperament subscale), 0.81 (depressive temperament subscale), 0.77 (irritable temperament subscale), 0.76 (hyperthymic temperament subscale), and 0.67 (anxious temperament subscale). Data on item–total correlations are available at request.

3.3. Concurrent validity

All research subjects completed the TCI-125. The correlation coefficients between the dimensions of the TCI and the TEMPS subscales are shown in Table 4.

4. Discussion

The TEMPS-A in its shortened version of 39 (out of the originally proposed 110) items has shown excellent internal consistency for all but one of its five factors. This is due to the fact that the anxious subscale was added at a later stage and only 345 subjects received it. Overall, the proposed five factor structure of TEMPS-A, consisting of cyclothymic, dysthymic, irritable, hyperthymic, and anxious subscales, is upheld.

Concurrent validity against the Temperament and Character Inventory has revealed interesting results with respect to the proposed underlying adaptive social and evolutionary aspects of TEMPS-A. For instance, we found positive and significant correlations between harm avoidance and all but the hyperthymic temperament; significant positive correlations between novelty-seeking and the hyperthymic and cyclothymic temperaments were also shown, with negative correlations with the remainder of the temperaments; finally, positive significant correlations were shown between the hyperthymic, reward dependence, persistence and self-directedness. These assets of affective temperaments will be further explored elsewhere. Suffice it to say that the co-existence of socially positive attributes, along with traits which are vulnerability markers for mood shifts, represent desirable characteristics for a behavioral endophenotype in an oligogenic model of inheritance (Akiskal, 1995; Kelsoe, 2003).

For research and clinical purposes, this shortened version of the TEMPS-A instrument has been standardized in patients with mood disorders, relatives of bipolar probands and normal controls, and can be used to explore and test various hypotheses about the origin, genetics, and clinical aspects of mood disorders. It is particularly fascinating that we could identify long-term behavioral traits as possible markers for disease, which at the same time seem to exhibit characteristics of a positive nature for the individual in an evolutionary context (Akiskal, 2000, 2003).

Acknowledgements

The construction of the TEMPS-A was initiated when the first author served as Senior Science Advisor to the NIMH Director (1990–1994).This research was supported by grants from NIMH M01 RR00827, MH18399, MH30914-21, MH47612, MH49746, MH57134-04, and MH59567, from the Department of Veterans Affairs, from Novartis (Dr. Kelsoe), and from CAPES/Brazil (Dr. Mendlowicz). In chronological order, as of 1993, Drs. Guilio Perugi (Pisa, Italy), Francois Allilaire (Paris, France), Jean-Michel Azorin (Marseille, France), Marc Bourgeois (Bordeaux, France), Elie Hantouche (Paris, France), Jack Maser (when in Rockville, MD), Radwan Haykal and Sloan Manning (Memphis, TN), Rustin Berlow (Post-doc-

toral fellow, San Diego, CA) Olavo Pinto (originally from Rio de Janeiro and who was in San Diego, CA for his psychiatric training), and Wolfgang Maier (who was visiting from Bonn, Germany) helped in formulating individual items of the TEMPS-A scales. We thank Dr. S. Golshan, from San Diego VA Hospital, for data management.

Appendix: TEMPS-A, a short version

We are interested in the kind of person you are. Please circle the following items only if they apply to you for much of your life.

1. My ability to think varies greatly from sharp to dull for no apparent reason.
2. I constantly switch between being lively and sluggish.
3. I get sudden shifts in mood and energy.
4. The way I see things is sometimes vivid, but at other times lifeless.
5. My mood often changes for no reason.
6. I go back and forth between being outgoing and being withdrawn from others.
7. My moods and energy are either high or low, rarely in between.
8. I go back and forth between feeling overconfident and feeling unsure of myself.
9. My need for sleep varies a lot from just a few hours to more than 9 h.
10. I sometimes go to bed feeling great, and wake up in the morning feeling life is not worth living.
11. I can really like someone a lot, and then completely lose interest in them.
12. I am the kind of person who can be sad and happy at the same time.
13. People tell me I am unable to see the lighter side of things.
14. I'm the kind of person who doubts everything.
15. I am a very skeptical person.
16. I am by nature a dissatisfied person.
17. I'm a sad, unhappy person.
18. I think things often turn out for the worst.
19. I give up easily.
20. I complain a lot.
21. People tell me I blow up out of nowhere.
22. I can get so furious I could hurt someone.
23. I often get so mad that I will just trash everything.
24. When crossed, I could get into a fight.
25. When I disagree with someone, I can get into a heated argument.
26. When angry, I snap at people.
27. I am known to swear a lot.
28. I have been told that I become violent with just a few drinks.
29. I have a gift for speech, convincing and inspiring to others.
30. I often get many great ideas.
31. I love to tackle new projects, even if risky.
32. I like telling jokes, people tell me I'm humorous.
33. I have abilities and expertise in many fields.
34. I am totally comfortable even with people I hardly know.
35. I love to be with a lot of people.
36. I am the kind of person who likes to be the boss.
37. I am often fearful of someone in my family coming down with a serious disease.
38. I'm always thinking someone might break bad news to me about a family member.
39. When someone is late coming home, I fear they may have had an accident.

References

Akiskal, H.S., 1985. Anxiety: definition, relationship to depression, and proposal for an integrative model. In: Tuma, A.H., Maser, J.D. (Eds.), Anxiety and the Anxiety Disorders. Lawrence Erbaulm, Hillsdale, pp. 787–797.

Akiskal, H.S., 1992. Delineating irritable–choleric and hyperthymic temperaments as variants of cyclothymia. J. Pers. Disord. 6, 326–342.

Akiskal, H.S., 1995. Toward a temperament-based approach to depression: implications for neurobiologic research. Adv. Biochem. Psychopharmacol. 49, 99–112.

Akiskal, H.S., 1998. Toward a definition of generalized anxiety disorder as an anxious temperament type. Acta Psychiatr. Scand. 98 (Suppl. 393), 66–73.

Akiskal, H.S., 2000. Dysthymia, cyclothymia and related chronic subthreshold mood disorders. In: Gelder, M., Lopez-Ibor, J., Andreasen, N. (Eds.), New Oxford Textbook of Psychiatry. Oxford University, London, pp. 736–749.

Akiskal, H.S., 2003. The Evolutionary Significance of Affective Temperaments http://www.medscape.com/viewprogram/2469_pnt June, 24.

Akiskal, H.S., Akiskal, K., 1992. Cyclothymic, hyperthymic and depressive temperaments as subaffective variants of mood disorders. In: Tasman, A., Riba, M.B. (Eds.), Annual Review, vol. 11. American Psychiatric, Washington, DC, pp. 43–62.

Akiskal, H.S., Mallya, G., 1987. Criteria for the "soft" bipolar spectrum: treatment implications. Psychopharmacol. Bull. 23, 68–73.

Akiskal, H.S., Djenderedjian, A.M., Rosenthal, R.H., Khani, M.K., 1977. Cyclothymic disorder: validating criteria for inclusion in the bipolar affective group. Am. J. Psychiatry 134, 1227–1233.

Akiskal, H.S., Khani, M.K., Scott-Strauss, A., 1979. Cyclothymic temperamental disorders. Psychiatr. Clin. North Am. 2, 527–554.

Akiskal, H.S., Placidi, G.F., Signoretta, S., Liguori, A., Gervasi, R., Maremmani, I., Mallya, G., Puzantian, V.R., 1998. TEMPS-I: delineating the most discriminant traits of cyclothymic, depressive, irritable and hyperthymic temperaments in a nonpatient population. J. Affect Disord. 51, 7–19.

Akiskal, H.S., Akiskal, K.K., Haykal, R.F., Manning, J.S., Connor, P.D., 2005. TEMPS-A: progress towards validation of a self-rated clinical version of the Temperament Evaluation of the Memphis, Pisa, Paris, and San Diego Autoquestionnaire. J. Affect. Disord. 85, 3–16 (this issue).

Andreasen, N.C., Endicott, J., Spitzer, R.L., Winokur, G., 1977. The family history method using diagnostic criteria. Reliability and validity. Arch. Gen. Psychiatry 34, 1229–1235.

Cloninger, R.C., Przybeck, T.R., Svrakic, D.M., et al., 1994. The Temperament and Character Inventory (TCI): A Guide to Its Development and use. Center for Psychobiology of Personality, Washington University, St. Louis, MO.

Cronbach, L.J., 1951. Coefficient alpha and the internal structure of test. Psychometrika 16, 297–334.

Hamilton, M., 1960. A rating scale for depression. J. Neurol. Neurosurg. Psychiatry 23, 56–61.

Hantouche, E.G., Akiskal, H.S., 1997. Outils dévaluation clinique des temperaments affectifs (Clinical assessment of affective temperaments). Encéphale 23 (sp 1), 27–34.

Hantouche, E.G., Akiskal, H.S., 2005. Toward a validation of a tripartite concept of a putative anxious temperament: psychometric data from a French national general medical practice study. J. Affect Disord. 85, 37–43 (this issue).

Kelsoe, J.R., 2003. Arguments for the genetic basis of the bipolar spectrum. J. Affect. Disord. 73, 183–197.

Placidi, G.F., Signoretta, S., Liguori, A., Gervasi, R., Maremmani, I., Akiskal, H.S., 1998. The semi-structured affective temperament interview (TEMPS-I): reliability and psychometric properties in 1010 14–26 year students. J. Affect. Disord. 47, 1–10.