

Research report

## Studies on a German (Münster) version of the temperament auto-questionnaire TEMPS-A: construction and validation of the briefTEMPS-M

Andreas Erfurth<sup>a,\*</sup>, Alexander L. Gerlach<sup>b,1</sup>, Inga Hellweg<sup>a</sup>, Ines Boenigk<sup>a</sup>, Nikolaus Michael<sup>a</sup>, Hagop S. Akiskal<sup>c</sup>

<sup>a</sup> Department of Psychiatry, Münster University Hospital, Albert-Schweitzer-Str. 11, 48129 Münster, Germany

<sup>b</sup> Department of Psychology, University of Münster, Münster, Germany

<sup>c</sup> VA Hospital and International Mood Centre, University of California at San Diego, La Jolla, CA, USA

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### Abstract

**Background:** Based on classic German concepts of a continuum between depressive, hyperthymic, cyclothymic, and irritable temperaments and affective disorder (and adding an anxious type to the four), Akiskal and co-workers developed the Temperament Evaluation of Memphis, Pisa, Paris and San Diego both in interview (TEMPS-I) and auto-questionnaire (TEMPS-A) versions. It is the aim of the present analyses to validate a brief German version of TEMPS-A. **Methods:** A total of 1056 students of the Westfälische-Wilhelms-Universität in Münster, Germany, filled out the long 110-item version of the TEMPS-A (Münster translation by Erfurth: TEMPS-M) modified into a five gradation Likert format and with the items randomized. Based on this data we constructed a brief version of the TEMPS-M. In a second study, a sample of 151 students were recruited who filled out the briefTEMPS-M twice, approximately 1 month apart. **Results:** Our psychometric procedures resulted in the retention of 35 items from the original 110. The proposed five-factor structure of the original TEMPS-A was upheld, with relatively few item reclassification (mainly due to some overlap between depressive and anxious traits). Internal consistency (Cronbach  $\alpha$  values ranging from 0.69 to 0.84) and test-retest reliability were shown. Most importantly, all temperaments in the briefTEMPS-M correlated quite well (Pearson  $r$  values ranging from 0.49 to 0.72) with their respective original versions in the longer TEMPS-M. As for construct validity, significant correlation was shown with the Beck Depression Inventory for all but the hyperthymic temperament; the hyperthymic, cyclothymic and irritable correlated highest with the self-report Manic Inventory. **Limitations:** The study sample of university students was selective. **Conclusions:** We were able to construct a brief German version of the TEMPS-A auto-questionnaire. We submit this shorter version will be suitable for both clinical (psychiatric and general medical) and neurobiological research, as well as in studies on temperament features in selected populations, e.g., allowing comparisons between regions or different (German-speaking) countries.

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\* Corresponding author. Bezirkskrankenhaus Augsburg, Dr. -Mack-Str. 1, 86156 Augsburg, Germany. Tel.: +49-821-4803-112; fax: +49-821-4803-266.

E-mail address: andreas.erfurth@bkh-augsburg.de (A. Erfurth).

<sup>1</sup> Equally contributing first authors in alphabetical order.

## 1. Introduction

Although the constructs of temperament, character and personality overlap (von Zerssen and Akiskal, 1998), temperament best captures those relatively stable aspects of one's individuality which refer to emotional reactivity: "Temperament conventionally refers to stable behavioral and emotional reactions that appear early and are influenced in part by genetic constitution" (Kagan, 1994).

Since at least the time of Hippocrates, concepts have been developed to describe enduring behavioral and emotional reactivity patterns of personality. Temperament research in psychiatry owes a great deal to Kraepelin's 'Grundzustände' (fundamental states): depressive, 'manic,' irritable, and cyclothymic dispositions (Kraepelin, 1909). Kretschmer (1936) further developed Kraepelin's concepts and believed that "endogenous psychoses are nothing but marked accentuations of normal types of temperament". Although Kurt Schneider (1958) did not endorse this perspective, he provided superb descriptions of the Kraepelinian and other types, and changed the 'manic' type to 'hyperthymic'.

Based on these ideas of a continuum between temperament and affective disorder, Akiskal and co-workers, working both in the United States and Europe (Akiskal et al., 1979a,b; Akiskal and Mallya, 1987; Akiskal and Akiskal, 1992; Akiskal, 1995; Hantouche and Akiskal, 1997; Placidi et al., 1998a), have further refined these classical German concepts into an operational format (adding an anxious temperament (Akiskal, 1998)) to the four 'Grundzustände' of Kraepelin, thereby developing the Temperament Evaluation of Memphis, Pisa, Paris and San Diego (TEMPS). Until recently the interview format (TEMPS-I) was the main version, and investigated with respect to both clinical relevance and psychometric properties. Although the four-temperament version of both interview and auto-questionnaire formats of TEMPS has already been studied in Italy and France (Akiskal et al., 1998a,b; Placidi et al., 1998a,b; Hantouche et al., 2001a,b), the first 'foreign' translation of the full 110-item (five-temperament) version of TEMPS-A was accomplished by Peter Brieger and colleagues who described the possible clinical relevance (Brieger et al., 2003) of this questionnaire in the

German language (Akiskal et al., 2002; Blöink et al., 2005, this issue).

It is the aim of the present study to examine the factor structure and reliability of the TEMPS questionnaire in a large sample and to develop a brief form of the TEMPS-A in yet another German version translated by the first author working in Munster (TEMPS-M).

## 2. Methods

### 2.1. Participants

All participants were recruited directly in their respective classrooms. Their teachers were asked to make 15 min of their course time available for completion of the questionnaires. Verbal informed consent was obtained, and students willing to participate filled out the questionnaires. Since students replied anonymously, it was clear that they had not to fear any repercussions if they decided not to participate. Due to this recruitment methodology, response rate was not determined.

#### 2.1.1. Sample 1

A total of 1056 students of the Westfälische-Wilhelms-Universität in Münster, Germany, filled out the long version of the TEMPS-M auto-questionnaire (after the back-translation into English was checked and approved by the senior author). Of these participants, 651 (61.6%) were female. Mean age of the participating women was 25.4 years (S.D.=13.2) and the mean age of the male participants was 24.5 years (S.D.=9.2). Not surprisingly, given the student population, 377 (93.1%) of the men and 581 (89.2%) of the women were single. The majority of participants (92.0%) reported German to be their native language. Students reported a broad range of different majors: 240 (22.8%) studied medicine, 171 (16.2%) biology, 32 (3.0%) pharmacy, 177 (16.8%) sociology, 23 (2.2%) political science, 86 (8.2%) sports, four (0.4%) physics, 250 (23.7%) cultural sciences, while 73 (6.9%) had failed to report their major. All participants were in their first or second year of studies. As later described in this paper, the construction of the brief TEMPS-M was based on this sample.

### 2.1.2. Sample 2

An additional sample of 151 people were asked to fill out the briefTEMPS-M and two additional questionnaires twice, 1 month apart: 78 (51%) were first year medical students, 50 (33%) second year biology majors, 17 (11%) first year pharmaceutical students, and 6 (3%) studied physics in their second year. Of these 151 participants 54 (35.7%) were male and 97 (63.3%) were female. The male participants had a mean age of 21.9 (S.D.=1.8) and all were single. Female participants had a mean age of 21.4 (S.D.=2.2): 93 of the female participants (95.9%) were single. Of the students that had filled out the questionnaires the first time, 128 (84%) completed the questionnaire also during the second time point.

### 2.2. Construction of the briefTEMPS-M

The order of the items was randomized. As compared to the original English version, the questionnaire was altered in one way: instead of yes/no questions, a five-point anchored Likert-type scale ranging from 1 to 5 (1='gar nicht' [not at all]; 2='etwas' [a little]; 3='ziemlich' [moderately]; 4='sehr' [much]; 5='völlig' [very much]) was used.

To be able to examine the data with an exploratory factor analysis, all items that showed insufficient variance were eliminated: any item that more than 60% of our participants had answered equally, were eliminated. For example 70% answered "not at all" to the question: "Ich bin eine traurige, unglückliche Person" (item 1: *I'm a sad, unhappy person*; the skewed distribution of such items renders them unsuitable for an exploratory factor analysis. In addition, we eliminated item 84 which pertains to women only. Applying these criteria, items 1, 6, 12, 20, 32, 71, 83, 84, 100 and 104 of the long version of the TEMPS were excluded from the exploratory factor analysis. Based on the screenplot criteria we decided on a five-factor solution. The factor structure was rotated (varimax, normalized).

### 2.3. Test-retest reliability of the briefTEMPS-M

As described for sample 2, in a subset of the original students (A=151) were asked to fill out

the briefTEMPS-M twice, approximately 1 month apart. Of the original 151 students filling out the briefTEMPS-M at the first time point, 128 completed the questionnaire also during the second time point.

### 2.4. Correlation with the beck depression inventory (BDI) and the Manie-Selbstbeurteilungsskala (MSS), the German version of the Self-Report Manic Inventory (SRMI)

In order to learn about construct validity, a subset of the participants of our first study and all participants in the second wave had additionally filled out the Beck Depression Inventory (BDI; Beck et al., 1961) and the Manie-Selbstbeurteilungsskala (MSS; Krüger et al., 1997), the German version of the Self-Report Manic Inventory (SRMI) of Shugar et al. (1992).

## 3. Results

### 3.1. Construction of the briefTEMPS-M

Factor structure after varimax (normalized) rotation is shown in Table 1.

Marked in bold are the items that we selected for our short scale. For construction of the brief version of the TEMPS-M, items were selected based on the following two criteria:

- (A) After rotation, factor loading of each item had in general to be  $\geq 0.5$  on the factor it belonged to. For three items (72, 105, 110) we accepted a lower factor loading (0.47, 0.46, 0.46, respectively) based on our judgment of their central relevance to their respective target factors.
- (B) We selected only items that had a low factor loadings on the respective other four factors to develop a scale with five factors, in order to optimize the distances in the factor structure of our five scales.

Some of the items changed factors compared to the original version: this is due to the fact that a number of items (85, 89) from the anxious temperament scale (most questions asking about worrying/

Table 1

Factor structure after varimax (normalized) rotation ( $n = 1056$ ; means substitution for missing values)

		Factor				
		1	2	3	4	5
1	Ich bin eine traurige, unglückliche Person. <i>I'm a sad, unhappy person.</i>	–	–	–	–	–
2 D	<b>Man sagt mir, dass ich unfähig sei, die positive Seite von Dingen zu erkennen.</b> <i>People tell me I am unable to see the lighter side of things.</i>	0.09	– 0.13	0.16	0.69	0.01
3	Ich habe viel in meinem Leben gelitten. <i>I have suffered a lot in life.</i>	0.24	0.13	– 0.10	0.35	0.11
4 D	<b>Ich denke, dass sich Dinge oft zum Schlechtesten wenden.</b> <i>I think things often turn out for the worst.</i>	0.18	– 0.12	0.21	0.64	0.12
5	Ich gebe schnell auf. <i>I give up easily.</i>	0.40	– 0.28	0.09	0.29	0.12
6	Solange ich mich erinnern kann, fühle ich mich als Versager. <i>For as long as I can remember, I've felt like a failure.</i>	–	–	–	–	–
7 D	<b>Ich habe mir immer Vorwürfe gemacht wegen Dingen, die Andere für unwesentlich hielten.</b> <i>I have always blamed myself for what others might consider no big deal.</i>	0.30	0.10	– 0.15	0.52	0.27
8	Ich scheine nicht so viel Energie zu haben wie andere Leute. <i>I don't seem to have as much energy as other people.</i>	0.33	– 0.29	0.01	0.35	0.20
9	Ich gehöre zu jenen Menschen, die Veränderungen gegenüber skeptisch sind. <i>I'm the kind of person who doesn't like change very much.</i>	0.06	– 0.09	0.09	0.43	0.19
10	In einer Gruppe höre ich eher den anderen beim Reden zu. <i>In a group, I would rather hear others talk.</i>	0.13	– 0.12	– 0.29	0.28	0.11
11	Ich gebe oft anderen nach. <i>I often give into others.</i>	0.31	– 0.07	– 0.22	0.21	0.21
12	Ich treffe ungern Leute. <i>I feel very uneasy meeting new people.</i>	–	–	–	–	–
13	Meine Gefühle werden leicht durch Kritik oder Ablehnung verletzt. <i>My feelings are easily hurt by criticism or rejection.</i>	0.27	– 0.07	– 0.03	0.35	0.28
14	Ich bin der Typ Mensch, auf den man sich immer verlassen kann. <i>I am the kind of person you can always depend on.</i>	– 0.17	0.36	– 0.16	0.04	0.08
15	Ich setze die Bedürfnisse anderer über meine eigenen. <i>I put the needs of others above my own.</i>	0.21	0.26	– 0.23	0.22	0.23
16	Ich bin ein hart arbeitender Mensch. <i>I am a hard working person.</i>	– 0.27	0.53	– 0.01	0.20	0.15
17	Ich arbeite lieber für jemand anderen, als dass ich der Chef bin. <i>I would rather work for someone else than be the boss.</i>	0.25	– 0.23	– 0.16	0.20	0.16
18	Es ist selbstverständlich für mich, sauber und ordentlich zu sein. <i>It is natural for me to be neat and organized.</i>	– 0.27	0.21	– 0.13	0.13	0.17
19 D	<b>Ich gehöre zu jenen Menschen, die alles in Zweifel ziehen.</b> <i>I'm the kind of person who doubts everything.</i>	0.18	0.00	0.24	0.64	– 0.02
20	Mein sexueller Antrieb ist immer gering gewesen. <i>My sex drive has always been low.</i>	–	–	–	–	–

Table 1 (continued)

		Factor				
		1	2	3	4	5
21	Ich brauche normalerweise mehr als 9 Stunden Schlaf. <i>I normally need more than 9 hours of sleep.</i>	0.15	– 0.07	0.18	0.03	0.18
22	Ich fühle mich oft grundlos müde. <i>I often feel tired for no reason.</i>	0.42	– 0.14	0.11	0.20	0.29
23 C	<b>Ich habe plötzliche Wechsel in Stimmung und Antrieb.</b> <i>I get sudden shifts in mood and energy.</i>	0.58	– 0.04	0.18	0.24	0.20
24	Meine Stimmungen und Energien sind entweder hoch oder niedrig, selten in der Mitte. <i>My moods and energy are either high or low, rarely in between.</i>	0.52	0.08	0.17	0.23	0.09
25	Meine Fähigkeit zu Denken wechselt stark und ohne erkennbaren Grund zwischen scharf und träge. <i>My ability to think varies greatly from sharp to dull for no apparent reason.</i>	0.50	– 0.17	0.06	0.11	0.21
26	Ich kann jemanden wirklich sehr gerne haben und dann völlig das Interesse an ihm verlieren. <i>I can really like someone a lot, and then completely lose interest in them.</i>	0.37	0.08	0.16	0.09	– 0.01
27	Ich schnauze oft Leute an und dann tut es mir leid. <i>I often blow up at people and then feel guilty about it.</i>	0.20	– 0.04	0.53	0.06	0.27
28 C	<b>Ich beginne oft Sachen und verliere dann das Interesse daran, bevor ich fertig bin.</b> <i>I often start things and then lose interest before finishing them.</i>	0.58	– 0.12	0.21	0.07	0.06
29 C	<b>Meine Stimmung wechselt häufig ohne jeden Grund.</b> <i>My mood often changes for no reason.</i>	0.52	– 0.09	0.14	0.30	0.15
30 C	<b>Ich schalte ständig um zwischen lebhaft und träge.</b> <i>I constantly switch between being lively and sluggish.</i>	0.60	– 0.12	0.16	0.17	0.18
31	Ich gehe manchmal ins Bett und fühle mich richtig herab-gestimmt, wache aber morgens auf und fühle mich großartig. <i>I sometimes go to bed feeling down, but wake up in the morning feeling terrific.</i>	0.29	0.18	0.04	– 0.03	0.14
32	Ich gehe manchmal ins Bett und fühle mich richtig gut, wache aber morgens auf und halte das Leben nicht für lebenswert. <i>I sometimes go to bed feeling great, and wake up in the morning feeling life is not worth living.</i>	–	–	–	–	–
33 D	<b>Man sagt mir, dass ich oft die Dinge pessimistisch sehe und damit frühere glückliche Zeiten vergesse.</b> <i>I am told that I often get pessimistic about things, and forget previous happy times.</i>	0.16	– 0.09	0.14	0.69	0.06
34 C	<b>Ich schwanke dazwischen hin und her, allzu selbstvertrauend und dann wieder selbstunsicher zu sein.</b> <i>I go back and forth between feeling overconfident and feeling unsure of myself.</i>	0.53	0.01	0.03	0.27	0.25
35	Ich schwanke dazwischen hin und her, nach außen gewandt zu sein und mich von anderen zurückzuziehen. <i>I go back and forth between being outgoing and being withdrawn from others.</i>	0.51	– 0.06	0.02	0.37	0.12
36	Ich spüre alle meine Gefühle intensiv. <i>I feel all emotions intensely.</i>	0.30	0.35	– 0.04	0.08	0.10
37	Mein Schlafbedürfnis schwankt sehr zwischen ein paar wenigen Stunden und mehr als 9 Stunden. <i>My need for sleep varies a lot from just a few hours to more than 9 hours.</i>	0.33	0.07	0.11	– 0.03	0.07

(continued on next page)

Table 1 (continued)

		Factor				
		1	2	3	4	5
38 C	<b>Die Art und Weise, wie ich Dinge sehe, ist manchmal voller Begeisterung und zu anderen Zeiten ohne innere Anteilnahme.</b> <i>The way I see things is sometimes vivid, but at other times lifeless.</i>	0.53	0.01	0.15	0.20	0.08
39 C	<b>Ich bin der Typ Mensch, der zur gleichen Zeit traurig und glücklich sein kann.</b> <i>I am the kind of person who can be sad and happy at the same time.</i>	0.52	0.17	–0.02	0.14	0.06
40	Ich habe oft Tagträume von Dingen, die andere Leute für unerreichbar halten. <i>I daydream a great deal about things that other people consider impossible to achieve.</i>	0.42	0.24	0.07	0.08	0.04
41	Ich habe oft einen starken Drang, Zügelloses zu tun. <i>I often have a strong urge to do outrageous things.</i>	0.42	0.21	0.38	–0.05	–0.06
42	Ich bin der Typ Mensch, der sich schnell verliebt, was auch rasch wieder vorbei ist. <i>I am the kind of person who falls in and out of love easily.</i>	0.38	0.08	0.23	–0.01	0.00
43	Ich bin gewöhnlich in einer gehobenen oder heiteren Stimmung. <i>I'm usually in an upbeat or cheerful mood.</i>	0.01	0.42	0.02	–0.49	0.03
44	Das Leben ist ein Fest, das ich in den vollsten Zügen genieße. <i>Life is a feast which I enjoy to the fullest.</i>	0.11	0.39	0.13	–0.50	–0.05
45	Ich erzähle gerne Witze; man sagt mir, dass ich humorvoll sei. <i>I like telling jokes, people tell me I'm humorous.</i>	0.15	0.38	0.21	–0.17	–0.05
46	Ich bin der Typ Mensch, der glaubt, dass sich alles im Laufe der Zeit zum Guten wendet. <i>I'm the kind of person who believes everything will eventually turn out all right.</i>	0.19	0.36	–0.10	–0.39	0.07
47 H	<b>Ich habe großes Selbstvertrauen.</b> <i>I have great confidence in myself.</i>	–0.13	0.53	0.24	–0.35	–0.19
48 H	<b>Ich bekomme oft viele gute Ideen.</b> <i>I often get many great ideas.</i>	0.11	0.60	0.11	–0.03	–0.05
49	Ich bin immer unter Dampf. <i>I am always on the go.</i>	0.22	0.37	0.07	0.23	0.04
50 H	<b>Ich kann viele Aufgaben erledigen und werde nicht mal müde dabei.</b> <i>I can accomplish many tasks without even getting tired.</i>	–0.12	0.55	0.01	0.00	–0.04
51 H	<b>Ich habe ein Talent zum Reden und bin dabei überzeugend und begeisternd.</b> <i>I have a gift for speech, convincing and inspiring to others.</i>	0.00	0.58	0.28	–0.12	–0.09
52 H	<b>Ich liebe es, neue Projekte in Angriff zu nehmen, auch wenn sie riskant sind.</b> <i>I love to tackle new projects, even if risky.</i>	0.11	0.64	0.15	–0.14	–0.06
53 H	<b>Wenn ich mich einmal entschieden habe, etwas auszuführen, kann mich nichts aufhalten.</b> <i>Once I decide to accomplish something, nothing can stop me.</i>	–0.19	0.51	0.05	–0.01	0.06
54	Ich fühle mich richtig wohl, auch mit Leuten, die ich kaum kenne. <i>I am totally comfortable even with people I hardly know.</i>	0.15	0.45	0.01	–0.35	0.03
55	Ich liebe es, mit vielen Leuten zusammen zu sein. <i>I love to be with a lot of people.</i>	0.13	0.36	0.06	–0.36	0.09
56	Man sagt mir, dass ich oft meine Nase in anderer Leute Angelegenheiten stecke. <i>People tell me that I often get my nose into others business.</i>	0.09	0.07	0.42	0.00	0.09
57	Ich bin dafür bekannt, großzügig zu sein und gebe viel Geld für andere Leute aus. <i>I am generous, and spend a lot of money on other people.</i>	0.21	0.35	0.05	–0.03	0.19

Table 1 (continued)

		Factor				
		1	2	3	4	5
<b>58 H</b>	<b>Ich habe Fähigkeiten und Sachverstand auf vielen Gebieten.</b> <i>I have abilities and expertise in many areas.</i>	– 0.08	0.56	0.14	0.00	– 0.09
59	Ich glaube, dass ich das Recht habe, zu tun, was mir gefällt. <i>I feel I have the right and privilege to do as I please.</i>	0.12	0.24	0.18	– 0.23	0.03
60	Ich bin der Typ Mensch, dem es gefällt, Chef zu sein. <i>I am the kind of person who likes to be the boss.</i>	– 0.12	0.45	0.40	– 0.05	– 0.11
<b>61 I</b>	<b>Wenn ich mit jemandem nicht einverstanden bin, kann ich in ein hitziges Streitgespräch geraten.</b> <i>When I disagree with someone, I can get into a heated argument.</i>	0.05	0.27	0.51	– 0.04	0.02
62	Mein sexueller Antrieb ist immer stark. <i>My sex drive is always high.</i>	0.18	0.23	0.23	– 0.09	– 0.11
63	Normalerweise komme ich mit weniger als 6 Stunden Schlaf aus. <i>Normally I can get by with less than 6 hours of sleep.</i>	0.04	0.24	0.02	0.07	– 0.09
<b>64 I</b>	<b>Ich bin eine reizbare Person.</b> <i>I am a grouchy (irritable) person.</i>	0.21	– 0.04	0.56	0.28	0.20
65	Ich bin von Natur aus eine unzufriedene Person. <i>I am by nature a dissatisfied person.</i>	0.23	– 0.07	0.22	0.62	0.06
66	Ich beschwere mich viel. <i>I complain a lot.</i>	0.16	– 0.03	0.43	0.35	0.04
67	Ich bin anderen gegenüber sehr kritisch. <i>I am highly critical of others.</i>	– 0.03	0.10	0.38	0.37	– 0.04
68	Ich bin oft nervös. <i>I often feel on edge.</i>	0.26	– 0.02	0.06	0.44	0.33
69	Ich fühle mich oft wie aufgezogen. <i>I often feel wound up.</i>	0.42	0.06	0.11	0.19	0.15
70	Ich werde von einer unangenehmen Rastlosigkeit getrieben, die ich nicht verstehe. <i>I am driven by an unpleasant restlessness that I don't understand.</i>	0.51	0.15	0.05	0.27	0.10
71	Ich werde oft so wütend, dass ich alles kaputt werfen könnte. <i>I often get so mad that I will just trash everything.</i>	–	–	–	–	–
<b>72 I</b>	<b>Wenn man mir in die Quere kommt, könnte ich in Kampflust geraten.</b> <i>When crossed, I could get into a fight.</i>	0.11	0.18	0.47	0.03	0.05
73	Man sagt mir, dass ich ohne Grund vor Wut hochgehe. <i>People tell me I blow up out of nowhere.</i>	–	–	–	–	–
<b>74 I</b>	<b>Wenn ich zornig bin, schnauze ich Leute an.</b> <i>When angry, I snap at people.</i>	0.05	0.00	0.62	0.03	0.21
75	Ich liebe es, Menschen zu necken, auch solche, die ich kaum kenne. <i>I like to tease people, even those I hardly know.</i>	0.18	0.25	0.43	– 0.13	– 0.03
<b>76 I</b>	<b>Mein beißender Humor hat mir schon Unannehmlichkeiten bereitet.</b> <i>My biting humor has gotten me into trouble.</i>	0.19	0.18	0.55	0.02	– 0.08
<b>77 I</b>	<b>Ich kann so wütend werden, dass ich jemanden verletzen könnte.</b> <i>I can get so furious I could hurt someone.</i>	0.15	0.02	0.50	0.12	0.09
78	Ich bin so eifersüchtig auf meinen Partner, dass ich es nicht aushalten kann. <i>I am so jealous of my spouse (or lover), that I cannot stand it.</i>	0.14	0.09	0.16	0.23	0.06
<b>79 I</b>	<b>Ich bin dafür bekannt, viel zu fluchen.</b> <i>I am known to swear a lot.</i>	0.13	0.09	0.56	0.09	0.09

(continued on next page)



Table 1 (continued)

		Factor				
		1	2	3	4	5
80	Man hat mir gesagt, dass ich schon nach wenig Alkohol gewalttätig werde. <i>I have been told that I become violent with just a few drinks.</i>	–	–	–	–	–
81	Ich bin eine eher misstrauische Person. <i>I am a very skeptical person.</i>	0.09	– 0.05	0.31	0.57	0.05
82	Ich könnte Revolutionär sein. <i>I could be a revolutionary.</i>	0.18	0.45	0.25	0.00	– 0.16
83	Mein sexueller Antrieb ist oft so intensiv, dass das wirklich unangenehm ist. <i>My sex drive is often so intense that it is truly unpleasant.</i>	–	–	–	–	–
84	(Nur für Frauen:) Kurz vor meiner Periode habe ich Attacken unkontrollierbarer Wut. <i>(Women only): I have attacks of uncontrollable rage right before my periods.</i>	–	–	–	–	–
85 D	<b>Solange ich mich erinnern kann, bin ich immer jemand gewesen, der sich zu viele Sorgen macht.</b> <i>I have been a worrier for as long as I can remember.</i>	0.18	0.02	– 0.16	0.66	0.32
86	Ich bin immer wegen des einen oder anderen besorgt. <i>I'm always worrying about one thing or another.</i>	0.26	0.06	– 0.09	0.60	0.30
87	Ich bin immer wieder wegen alltäglichen Dingen besorgt, die andere für weniger wichtig halten. <i>I keep on worrying about daily matters that others consider minor.</i>	0.27	0.08	– 0.09	0.59	0.28
88	Ich kann nicht umhin, mir Sorgen zu machen. <i>I cannot help worrying.</i>	0.17	0.06	– 0.04	0.62	0.29
89 D	<b>Viele Leute haben mir gesagt, ich solle mir nicht so viele Sorgen machen.</b> <i>Many people have told me not to worry so much.</i>	0.16	0.08	– 0.13	0.64	0.31
90	Wenn ich gestresst bin, kann ich einfach nicht mehr klar denken. <i>When stressed, my mind often goes blank.</i>	0.32	– 0.16	0.01	0.17	0.32
91	Ich bin unfähig, mich zu entspannen. <i>I am unable to relax.</i>	0.18	0.05	0.02	0.46	0.16
92	Ich fühle mich oft innerlich unruhig. <i>I often feel jittery inside.</i>	0.44	0.04	0.09	0.52	0.20
93	Wenn ich gestresst bin, zittern meine Hände oft. <i>When stressed, my hands often tremble.</i>	0.23	0.02	0.07	0.20	0.27
94 A	<b>Ich habe oft Magenverstimmungen.</b> <i>I often have an upset stomach.</i>	0.11	– 0.02	0.11	0.15	0.51
95 A	<b>Wenn ich nervös bin, kann ich auch mal Durchfall haben.</b> <i>When I'm nervous, I may have diarrhea.</i>	0.03	0.04	0.11	0.09	0.55
96 A	<b>Wenn ich nervös bin, ist mir oft übel.</b> <i>When I'm nervous, I often feel nauseous.</i>	0.11	– 0.06	0.06	0.18	0.64
97 A	<b>Wenn ich nervös bin, muss ich häufiger zur Toilette.</b> <i>When I'm nervous, I have to go to the bathroom more often.</i>	0.07	0.01	0.06	– 0.04	0.59
98 A	<b>Wenn jemand verspätet nach Hause kommt, habe ich Angst, dass er einen Unfall gehabt haben könnte.</b> <i>When someone is late coming home, I fear they may have had an accident.</i>	– 0.01	0.04	– 0.04	0.21	0.51
99	Ich habe oft Angst, dass jemand in meiner Familie eine ernsthafte Krankheit bekommen könnte. <i>I am often fearful of someone in my family coming down with a serious disease.</i>	0.09	0.08	– 0.05	0.27	0.39



Table 1 (continued)

		Factor				
		1	2	3	4	5
100	Ich denke immer, jemand könnte mir gleich schlechte Nachrichten über ein Familienmitglied überbringen. <i>I'm always thinking someone might break bad news to me about a family member.</i>	–	–	–	–	–
101	Mein Schlaf ist nicht ruhig. <i>My sleep is not restful.</i>	0.23	– 0.01	0.02	0.21	0.26
102	Ich habe oft Schwierigkeiten einzuschlafen. <i>I frequently have difficulty falling asleep.</i>	0.18	0.00	0.04	0.30	0.31
103	Ich bin von Natur aus eine vorsichtige Person. <i>I am, by nature, a very cautious person.</i>	– 0.01	– 0.02	– 0.10	0.50	0.18
104	Ich wache oft nachts auf und fürchte, dass Diebe im Haus sind. <i>I often wake up at night afraid that burglars are in the house.</i>	–	–	–	–	–
<b>105 A</b>	<b>Ich bekomme schnell Kopfschmerzen, wenn ich gestresst bin.</b> <i>I easily get headaches when stressed.</i>	0.12	– 0.08	0.04	0.15	0.46
106	Wenn ich gestresst bin, bekomme ich ein unangenehmes Gefühl in meiner Brust. <i>When stressed, I get an uncomfortable feeling in my chest.</i>	0.18	– 0.03	0.08	0.13	0.43
107	Ich bin eine unsichere Person. <i>I'm an insecure person.</i>	0.32	– 0.26	– 0.08	0.57	0.21
108	Auch kleine Veränderungen in der Routine stressen mich gewaltig. <i>Even minor changes in routine stress me highly.</i>	0.20	– 0.10	0.04	0.46	0.31
109	Wenn ich Auto fahre, fürchte ich, dass mich die Polizei anhalten könnte, auch wenn ich nichts Falsches getan habe. <i>While driving, even when I haven't done anything wrong. I fear that police may stop me.</i>	0.19	– 0.02	0.16	0.23	0.28
<b>110 A</b>	<b>Plötzliche Geräusche erschrecken mich leicht.</b> <i>Sudden noises startle me easily.</i>	0.09	– 0.07	0.06	0.08	0.46

Marked in bold are the items that were selected for the briefTEMPS-M.

**D:** item was selected for the depressive temperament subscale of the briefTEMPS-M.

**C:** item was selected for the cyclothymic temperament subscale of the briefTEMPS-M.

**H:** item was selected for the hyperthymic temperament subscale of the briefTEMPS-M.

**I:** item was selected for the irritable temperament subscale of the briefTEMPS-M.

**A:** item was selected for the anxious temperament subscale of the briefTEMPS-M.

The original English text TEMPS-A is given in italics to facilitate understanding.

rumination) loaded highest on the depressive temperament factor. Additionally, item 33 is now on the scale 'depressive temperament' (formerly on the cyclothymic temperament scale).

The internal consistency of the five new scales for the briefTEMPS-M is shown in Table 2.

The final versions of the new briefTEMPS-M (both in German and English) are given in Appen-

Table 2

Internal consistence for the five temperament scales, original sample

	Valid <i>n</i>	Mean	S.D.	Cronbach $\alpha$ :	Average inter-item correlation
Depressive temperament	1039	14.71	5.81	0.85	0.47
Cyclothymic temperament	1024	15.73	5.23	0.80	0.37
Hyperthymic temperament	1035	20.62	4.64	0.77	0.32
Irritable temperament	1035	15.67	4.92	0.74	0.30
Anxious temperament	1041	14.69	4.96	0.71	0.26

Table 3

Internal consistency for the five short temperament scales, replication ( $n = 151$ )

	Mean	S.D.	Cronbach $\alpha$ :	Average inter-item correlation
Depressive temperament	14.21	5.50	0.84	0.44
Cyclothymic temperament	14.55	4.20	0.69	0.26
Hyperthymic temperament	19.90	4.47	0.75	0.31
Irritable temperament	14.82	4.83	0.76	0.32
Anxious temperament	15.01	4.76	0.69	0.25

dices A and B. In order to estimate how well our brief version represents the original long version of the TEMPS, we calculated the product-moment correlation of our short scales with the original scales. To calculate values for the long original scales we included all items in our analysis. Note that this calculation overestimates true correlations because the items of our short scale are included in the long version of the scales as well. The respective Pearson's  $r$  for the short and long versions were 0.80 for the depressive-temperament scale, 0.92 for the cyclothymic-temperament scales, 0.80 for the hyperthymic-temperament scales, 0.84 for the irritable-temperament scales and 0.78 for the anxious-temperament scales.

### 3.2. Internal consistency and test–retest reliability

Table 3 shows the replication of the Cronbach's  $\alpha$  estimations based on the second sample.

As shown in Table 4, the test–retest reliability of the briefTEMPS-M was then calculated.

### 3.3. Construct validity

The BDI correlated substantially with the depressive temperament subscale ( $r = 0.54$ ), the cyclothymic

Table 4

Test–retest reliability of the briefTEMPS-M

	$r(X,Y)$	$t$ value	$P$	$n$
Depressive temperament	<b>0.72</b>	11.57	<0.001	128
Cyclothymic temperament	<b>0.69</b>	10.76	<0.001	128
Hyperthymic temperament	<b>0.49</b>	6.29	<0.001	128
Irritable temperament	<b>0.70</b>	11.02	<0.001	128
Anxious temperament	<b>0.70</b>	10.89	<0.001	128

Pearson correlations (casewise deletion of missing data).

Table 5

Correlation of the briefTEMPS-M with the Beck Depression Inventory (BDI) and the Manie-Selbstbeurteilungsskala (MSS), the German version of the Self-Report Manic Inventory (SRMI)

	BDI	MSS
Depressive temperament	0.54 ( $P < 0.001$ )	0.10 ( $P < 0.01$ )
Cyclothymic temperament	0.49 ( $P < 0.001$ )	0.25 ( $P < 0.001$ )
Hyperthymic temperament	−0.01 (n. s.)	0.28 ( $P < 0.001$ )
Irritable temperament	0.19 ( $P < 0.01$ )	0.30 ( $P < 0.001$ )
Anxious temperament	0.38 ( $P < 0.001$ )	0.17 ( $P < 0.01$ )

$n = 264$  (casewise deletion of missing data).

temperament scale ( $r = 0.48$ ), the anxious temperament scale ( $r = 0.38$ ), and to some extent with the irritable temperament scale ( $r = 0.19$ ), but not the hyperthymic temperament scale.

The MSS correlated best with the hyperthymic ( $r = 0.30$ ), irritable ( $r = 0.28$ ), and the cyclothymic ( $r = 0.25$ ) scales, and least with the anxious ( $r = 0.17$ ) and depressive ( $r = 0.10$ ) scales.

Details of the correlation are shown in Table 5.

## 4. Discussion

Our data show good internal consistency and retest reliability for the subscales of the briefTEMPS-M. Even though our brief version is much shorter, reliability is comparable to findings of a previously published long version of a German TEMPS-A (Blöink et al., 2005, this issue). We also established satisfactory test–retest reliability for four of the five scales over the time course of 1 month. The comparatively low test–retest reliability of the hyperthymic-temperament scale is somewhat disappointing. However, since the Cronbach  $\alpha$  values for this scale were good in both samples (sample 1: 0.77; sample 2: 0.75), general reliability of the hyperthymic-temperament scale is not seriously challenged by the test–retest reliability. This temperament should be subjected to a future investigation with a longer interval for reliability over time.

We attempted to optimize the distances in the factor structure of our five scales. To accomplish this we somewhat changed the meaning of the anxious-temperament scale. While in the long version a substantial part of the variance was influenced by items related to worrying and rumination, our short

scale mainly focuses on somatic aspects of anxiety (e.g., item 94: “I often have an upset stomach”; item 105: “I easily get headaches when stressed”). This did not result in a unsatisfactory correlation with the original scale. Indeed, correlations of the short version with the long version were high for all five scales. Our method of calculation overestimates the true correlation between the short and the long version. However, the high values found permits the conclusion, that the short version of the TEMPS is a good representation of the original version. At any rate, several items that pertain to worrying loaded with the depressive temperament; this is not unexpected, and reflects the well-known strong relationship between generalized anxiety and depression (Akiskal, 1998).

We estimated construct validity by asking a subset of our participants to additionally fill out the Beck Depression Inventory and the German version of the self-report Manic Inventory. As expected, the BDI correlated the highest with the depressive temperament and not at all with the hyperthymic. The self-report Manic Inventory correlated the highest with the hyperthymic, cyclothymic and the irritable temperament scales, and least with the anxious and depressive scales. Interestingly, we found substantial correlations of the BDI with the cyclothymic and the anxious temperament scales. In the case of the anxious temperament this is not astonishing, since it is well established that the Beck Depression Inventory is significantly related to self-report anxiety (Beck et al., 1988). There is also good reason to expect a substantial correlation of the cyclothymic temperament scale with the BDI; the scale is constructed based on the assumption that people that score high on this scale show substantial fluctuations in their affect; at any given measuring point in time,

such participants also should endorse items that measure depression and more so than participants with low values on the cyclothymic temperament scale. This should also be true for the correlation of the cyclothymic and irritable scales with the self-report Manic Inventory.

We succeeded in constructing of a brief, 35-item German version of the original 110-item-questionnaire of TEMPS-A, which supported the hypothesized five-factor structure. Very few items were reclassified from one scale to another, which was largely due to relatively minor overlap between depressive and anxious traits (i.e., worrying items are now part of the depressive scale). A separate anxious scale emerged composed of trait somatic anxiety.

The easier use of this much shorter version might facilitate both research in clinical settings and studies on temperament features in selected populations, e.g., allowing comparisons between regions or different countries (Saur, 1997; Inglehart et al., 1998). The briefTEMPS-M might also be used in linking temperamental features to selected aspects of affective disorders (Hantouche et al., 2001a; Perugi and Akiskal, 2002; Brieger et al., 2003), to the comorbidity of other psychiatric disorders (Battaglia et al., 1996; Perugi et al., 1999), and to general medical conditions (Perretta et al., 1998). A fascinating extension of such applications includes the role of temperament in creativity and criminal behavior (Akiskal and Akiskal, 1988). Furthermore, the implications of a temperament-based approach for neurobiological research, including genetic research, are obvious (Akiskal, 1995; Ebstein et al., 2000). These and other aspects of the foregoing questions are explored by other investigations in the present special issue devoted to the TEMPS (Akiskal and Akiskal, 2005, this issue).

## Appendix A

German version of the new briefTEMPS-M

Datum \_\_\_\_\_  
 Alter \_\_\_\_\_ Beruf \_\_\_\_\_  
 Geschlecht männlich / weiblich höchste Ausbildung \_\_\_\_\_  
 Familienstand \_\_\_\_\_ Muttersprache \_\_\_\_\_

**Im Folgenden möchten wir Sie bitten, die nachstehenden Aussagen zu lesen und zu beantworten, welche dieser Aussagen *die meiste Zeit in Ihrem Leben* zutreffend waren.**

**Verwenden Sie dabei bitte folgende Skala:**

1.....2.....3.....4.....5  
 gar nicht etwas ziemlich sehr völlig

- |    |  |                           |
|----|--|---------------------------|
| 01 | Man sagt mir, dass ich unfähig sei, die positive Seite von Dingen zu erkennen  | 1.....2.....3.....4.....5 |
| 02 | Ich denke, dass sich Dinge oft zum Schlechtesten wenden.   | 1.....2.....3.....4.....5 |
| 03 | Ich habe mir immer Vorwürfe gemacht wegen Dingen, die Andere für unwesentlich hielten.                                 | 1.....2.....3.....4.....5 |
| 04 | Ich gehöre zu jenen Menschen, die alles in Zweifel ziehen.   | 1.....2.....3.....4.....5 |
| 05 | Man sagt mir, dass ich oft die Dinge pessimistisch sehe und damit frühere glückliche Zeiten vergesse.                  | 1.....2.....3.....4.....5 |
| 06 | Solange ich mich erinnern kann, bin ich immer jemand gewesen, der sich zu viele Sorgen macht.                          | 1.....2.....3.....4.....5 |
| 07 | Viele Leute haben mir gesagt, ich solle mir nicht so viele Sorgen machen.  | 1.....2.....3.....4.....5 |
| 08 | Ich habe plötzliche Wechsel in Stimmung und Antrieb.   | 1.....2.....3.....4.....5 |
| 09 | Ich beginne oft Sachen und verliere dann das Interesse daran, bevor ich fertig bin.                                    | 1.....2.....3.....4.....5 |
| 10 | Meine Stimmung wechselt häufig ohne jeden Grund.   | 1.....2.....3.....4.....5 |
| 11 | Ich schalte ständig um zwischen lebhaft und träge.   | 1.....2.....3.....4.....5 |
| 12 | Ich schwanke dazwischen hin und her, allzu selbstvertrauend und dann wieder selbstunsicher zu sein.                    | 1.....2.....3.....4.....5 |
| 13 | Die Art und Weise, wie ich Dinge sehe, ist manchmal voller Begeisterung und zu anderen Zeiten ohne innere Anteilnahme. | 1.....2.....3.....4.....5 |

- |    |   |                           |
|----|---|---------------------------|
| 14 | Ich bin der Typ Mensch, der zur gleichen Zeit traurig und glücklich sein kann.                    | 1.....2.....3.....4.....5 |
| 15 | Ich habe großes Selbstvertrauen.  | 1.....2.....3.....4.....5 |
| 16 | Ich bekomme oft viele gute Ideen.   | 1.....2.....3.....4.....5 |
| 17 | Ich kann viele Aufgaben erledigen und werde nicht mal müde dabei.                                 | 1.....2.....3.....4.....5 |
| 18 | Ich habe ein Talent zum Reden und bin dabei überzeugend und begeisternd.                          | 1.....2.....3.....4.....5 |
| 19 | Ich liebe es, neue Projekte in Angriff zu nehmen, auch wenn sie riskant sind.                     | 1.....2.....3.....4.....5 |
| 20 | Wenn ich mich einmal entschieden habe, etwas auszuführen, kann mich nichts aufhalten.             | 1.....2.....3.....4.....5 |
| 21 | Ich habe Fähigkeiten und Sachverstand auf vielen Gebieten.  | 1.....2.....3.....4.....5 |
| 22 | Wenn ich mit jemandem nicht einverstanden bin, kann ich in ein hitziges Streitgespräch geraten.   | 1.....2.....3.....4.....5 |
| 23 | Ich bin eine reizbare Person.   | 1.....2.....3.....4.....5 |
| 24 | Wenn man mir in die Quere kommt, könnte ich in Kampflust geraten.                                 | 1.....2.....3.....4.....5 |
| 25 | Wenn ich zornig bin, schnauze ich Leute an.   | 1.....2.....3.....4.....5 |
| 26 | Mein beißender Humor hat mir schon Unannehmlichkeiten bereitet.                                   | 1.....2.....3.....4.....5 |
| 27 | Ich kann so wütend werden, dass ich jemanden verletzen könnte.                                    | 1.....2.....3.....4.....5 |
| 28 | Ich bin dafür bekannt, viel zu fluchen.   | 1.....2.....3.....4.....5 |
| 29 | Ich habe oft Magenverstimmungen.  | 1.....2.....3.....4.....5 |
| 30 | Wenn ich nervös bin, kann ich auch mal Durchfall haben.   | 1.....2.....3.....4.....5 |
| 31 | Wenn ich nervös bin, ist mir oft übel.  | 1.....2.....3.....4.....5 |
| 32 | Wenn ich nervös bin, muss ich häufiger zur Toilette.  | 1.....2.....3.....4.....5 |
| 33 | Wenn jemand verspätet nach Hause kommt, habe ich Angst, dass er einen Unfall gehabt haben könnte. | 1.....2.....3.....4.....5 |
| 34 | Ich bekomme schnell Kopfschmerzen, wenn ich gestresst bin.  | 1.....2.....3.....4.....5 |
| 35 | Plötzliche Geräusche erschrecken mich leicht.   | 1.....2.....3.....4.....5 |

**Appendix B**

English version of the new briefTEMPS-M

		date _____
age	_____	profession _____
sex	male / female	highest education _____
family status	_____	native language _____

Please read the following statements carefully and indicate, to what degree the following statements apply to you most of your life.

Please use the following scale:

1.....	2.....	3.....	4.....	5
none	little	moderately	much	very much

- |    |   |                           |
|----|---|---------------------------|
| 01 | People tell me I am unable to see the lighter side of things.                         | 1.....2.....3.....4.....5 |
| 02 | I think things often turn out for the worst.  | 1.....2.....3.....4.....5 |
| 03 | I have always blamed myself for what others might consider no big deal.               | 1.....2.....3.....4.....5 |
| 04 | I'm the kind of person who doubts everything.   | 1.....2.....3.....4.....5 |
| 05 | I am told that I often get pessimistic about things, and forget previous happy times. | 1.....2.....3.....4.....5 |
| 06 | I have been a worrier for as long as I can remember.                                  | 1.....2.....3.....4.....5 |
| 07 | Many people have told me not to worry so much.  | 1.....2.....3.....4.....5 |
| 08 | I get sudden shifts in mood and energy.   | 1.....2.....3.....4.....5 |
| 09 | I often start things and then lose interest before finishing them.                    | 1.....2.....3.....4.....5 |
| 10 | My mood often changes for no reason.  | 1.....2.....3.....4.....5 |
| 11 | I constantly switch between being lively and sluggish.                                | 1.....2.....3.....4.....5 |
| 12 | I go back and forth between feeling overconfident and feeling unsure of myself.       | 1.....2.....3.....4.....5 |
| 13 | The way I see things is sometimes vivid, but at other times lifeless.                 | 1.....2.....3.....4.....5 |

- |    |   |                           |
|----|---|---------------------------|
| 14 | I am the kind of person who can be sad and happy at the same time.      | 1.....2.....3.....4.....5 |
| 15 | I have great confidence in myself.                                      | 1.....2.....3.....4.....5 |
| 16 | I often get many great ideas.   | 1.....2.....3.....4.....5 |
| 17 | I can accomplish many tasks without even getting tired.                 | 1.....2.....3.....4.....5 |
| 18 | I have a gift for speech, convincing and inspiring to others.           | 1.....2.....3.....4.....5 |
| 19 | I love to tackle new projects, even if risky.                           | 1.....2.....3.....4.....5 |
| 20 | Once I decide to accomplish something, nothing can stop me.             | 1.....2.....3.....4.....5 |
| 21 | I have abilities and expertise in many areas.                           | 1.....2.....3.....4.....5 |
| 22 | When I disagree with someone, I can get into a heated argument.         | 1.....2.....3.....4.....5 |
| 23 | I am a grouchy (irritable) person.                                      | 1.....2.....3.....4.....5 |
| 24 | When crossed, I could get into a fight.                                 | 1.....2.....3.....4.....5 |
| 25 | When angry, I snap at people.   | 1.....2.....3.....4.....5 |
| 26 | My biting humor has gotten me into trouble.                             | 1.....2.....3.....4.....5 |
| 27 | I can get so furious I could hurt someone.                              | 1.....2.....3.....4.....5 |
| 28 | I am known to swear a lot.  | 1.....2.....3.....4.....5 |
| 29 | I often have an upset stomach.  | 1.....2.....3.....4.....5 |
| 30 | When I'm nervous, I may have diarrhea.                                  | 1.....2.....3.....4.....5 |
| 31 | When I'm nervous, I often feel nauseous.                                | 1.....2.....3.....4.....5 |
| 32 | When I'm nervous, I have to go to the bathroom more often.              | 1.....2.....3.....4.....5 |
| 33 | When someone is late coming home, I fear they may have had an accident. | 1.....2.....3.....4.....5 |
| 34 | I easily get headaches when stressed.                                   | 1.....2.....3.....4.....5 |
| 35 | Sudden noises startle me easily.  | 1.....2.....3.....4.....5 |



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