

The development of a short version of TEMPS-A in Hungarian non-clinical samples

ANDRAS LANG¹, BARBARA PAPP², TAMAS INANCSI², PETER DOME^{3,4}, XENIA GONDA^{3,4,5}, ZOLTAN RIHMER^{3,4,5} AND ZSUZSANNA BELTECZKI⁶

¹ Institute of Psychology, University of Pecs, Hungary

² Doctoral School of Psychology, University of Pecs, Hungary

³ Department of Psychiatry and Psychotherapy, Semmelweis University, Budapest, Hungary

⁴ National Institute of Psychiatry and Addictions, Laboratory for Suicide Research and Prevention, Budapest, Hungary

⁵ Department of Pharmacodynamics, Semmelweis University, Budapest, Hungary

⁶ Psychiatric Hospital, Nagykallo, Hungary

Background: The Temperament Evaluation of Memphis, Pisa and San Diego Autoquestionnaire (TEMPS-A) is a widely used measure of affective temperaments. Affective temperaments refer to people's prevailing moods and are important precursors of affective disorders. With the two studies presented in this paper, we aimed to develop a short version of the Hungarian TEMPS-A. **Methods:** A total number of 1857 university students participated in two studies. The original 110-item version and the newly developed short version of TEMPS-A, the anger, depression, and anxiety scales of the PROMIS Emotional Distress item bank, the Altman Self-Rating Mania Scale, the Satisfaction With Life Scale, and the Well-Being Index were administered to participants. **Results:** Out of the original 110 items, 40 items of TEMPS-A loaded on five factors that represented the five affective temperaments. Factors of the short version showed moderate to strong correlations with their original counterparts. All factors had good to excellent internal reliability. Factors of the newly developed short version of TEMPS-A showed meaningful correlations with measures of emotional distress, mania, and indices of psychological well-being. **Conclusions:** The short version of the Hungarian TEMPS-A is a promising instrument both in clinical fields and for academic research. The newly developed short version proved to be a valid and reliable measure of affective temperaments.

(Neuropsychopharmacol Hung 2018; 20(1): 4–13)

Keywords: affective temperaments, TEMPS-A, short version, Hungarian

Kraepelin (1921) described four affective temperaments (depressive, manic/hyperthymic, cyclothymic, and irritable) to refer to individuals' general prevailing moods. In combining the theoretical framework developed by Kraepelin and also by Schneider (Akiskal et al., 2005a; Eöry et al., 2011) with clinical investigations and observations of affective disorder patients and their healthy, non-affected first-degree relatives, Akiskal (1998) added anxious as the fifth temperament. The five affective temperaments are manifested from infancy and remain relatively stable over the life course. They have important implications in both non-clinical and clinical populations. Affective temperaments are considered as subsyndromal forms (and commonly the precursors) of different

types of mood disorders. Furthermore, they have impact on the course/prognosis of affective disorders and are associated with their outcomes as well, including suicidal behaviour (Akiskal et al., 2005a; Karam et al., 2015; Rihmer et al., 2010; Pompili et al., 2012; Vázquez and Gonda, 2013). Moreover, knowing the affective temperament type of an individual may also have treatment implications (Goto et al., 2011). Beyond its relevance in psychiatry, it was demonstrated that affective temperaments are also associated with different kinds of somatic disorders (Eöry et al., 2011, László et al., 2016; Rezvani et al., 2014).

To operationalize affective temperaments, Akiskal et al. (1998) developed a semi-structured interview (TEMPS-I) that successfully distinguished depres-

sive, cyclothymic, hyperthymic, and irritable temperaments from each other. Almost a decade later, Akiskal et al. (2005a) developed the Temperament Evaluation of the Memphis, Pisa, Paris, and San Diego Autoquestionnaire (TEMPS-A), a 110-item self-report format of the previously mentioned interview. This measure included anxious as the fifth affective temperament as well. Since the seminal work of Akiskal et al. (2005a), TEMPS-A has been validated in many languages (Blöink et al., 2005; Borkowska et al., 2010; Figueira et al., 2008; Karam et al., 2005; Matsumoto et al., 2005; Sánchez-Moreno et al., 2005; Vázquez et al., 2007). The Hungarian adaptation (Rózsa et al., 2006, 2008) was among the first.

Because of the time consuming nature and the excessive demands of the 110-item version – especially for hospitalized respondents with affective disorders –, the instrument needed to be abbreviated. In the same issue of *Journal of Affective Disorders* which was dedicated to affective temperaments and in which the conception of TEMPS-A was published, Akiskal et al. (2005b) presented a 39-item short version of TEMPS-A in English. Later, abbreviated versions in German (Erfurth et al., 2005), French (Krebs et al., 2006), Italian (Preti et al., 2010), Serbian (Ristić-Ignjatović et al., 2014), Japanese (Nakato et al., 2016) and Brazilian Portuguese (Woodruff et al., 2011) followed among others. The different language versions of short TEMPS-A may differ in number of items and even some items might load on affective temperament scales that differ from those in the original version (Nakato et al., 2016). However, these measures share the same conceptual background – discussed briefly above – and can be considered to be structurally equivalent. A short version of the Hungarian TEMPS-A has not been developed yet. In this paper, we present two studies that were aimed at developing and validating a short TEMPS-A in Hungarian.

METHODS

Participants and procedure

Data for Study 1 came from an earlier study on affective temperament and adult attachment (Lang et al., 2016). The sample was recruited from various Hungarian universities. After receiving permission from the heads of the universities, surveys were disseminated through electronic student registers and filled out online (SurveyMonkey). Potential participants were invited to take part in a study that investigated the interconnectedness of interpersonal relation-

ships and affects. A total number of 2979 individuals opened the link of the survey. We excluded 1328 of them because they failed to answer all questions. Thus, results of a sample of 1651 participants (827 females) are reported here. Participants' average age was 24.86 years (SD=7.40 years) ranging from 18 to 62.

In Study 2, 206 participants (165 females) were recruited from the Faculty of Humanities at University of Pécs (Pécs, Hungary) through the electronic student register system. Their age was 25.82 years (SD=8.18 years) on the average ranging from 18 to 59. In both studies, participation was voluntary and anonymous. Participants did not receive any reward for participation. Neither other demographical data nor any information about the presence of mental disorders in our participants was collected in any of the two studies. Participants gave their informed consent in both studies.

Measures

In Study 1, participants completed the original 110-item version of Temperament Evaluation of Memphis, Pisa and San Diego Autoquestionnaire (TEMPS-A; Akiskal et al., 2005a; Rózsa et al., 2006; 2008 for Hungarian version). In Study 2, participants completed the Hungarian short version of Temperament Evaluation of Memphis, Pisa and San Diego Autoquestionnaire developed in Study 1. This measure with five scales was made to assess the relative excess of five affective temperaments (i.e., depressive, cyclothymic, hyperthymic, irritable and anxious) with 40 true/false questions. Internal reliability indices for the scales are shown in Table 3.

To measure depression, anxiety, and anger in Study 2, participants completed the short form of PROMIS Emotional Distress item bank (Cella et al., 2010) in Hungarian. Depression and anger were measured by eight items each, anxiety was measured by seven items. Participants rated items on a 5-point Likert scale regarding the past two weeks. Internal reliability indices for the scales are shown in Table 3.

To measure mania in Study 2, we used the Hungarian translation of Altman Self-Rating Mania Scale (ASRM) (Altman et al., 1997). ASRM is a five-item questionnaire that measures symptoms of mania for the past week. For each item, five response options are provided with increasingly severe descriptions. Cronbach's α for the scale proved to be excellent (Table 3).

To measure general psychological well-being in Study 2, we used two scales. (1) The Satisfaction With Life Scale is a five item measure of life satisfaction

(Diener et al., 1985; Martos et al., 2014 for Hungarian version). Participants responded to the items on a 7-point Likert-scale. (2) The 5-item Well Being Index (Bech, 1996; Susánszky et al., 2006 for Hungarian version) is a concise measure of psychological well-being. Participants responded to the items on a 4-point Likert-scale. Internal reliability indices for both scales are presented in Table 3.

Statistical analyses

We used IBM SPSS for Windows 22.0 for statistical analysis. We computed descriptive statistics and internal reliability indices in both studies. In Study 1, we used Principal Components Analysis with Varimax rotation forcing the items into 5 factors. Pearson's correlation coefficients were computed between scales of the original and the short versions of TEMPS-A. In Study 2, we computed Pearson's correlation coefficients between scales of the short version of the Hungarian TEMPS-A and variables of emotional distress, mania, and general psychological well-being.

RESULTS

Study 1. To obtain a clear factor structure, we run five consecutive principal component analyses (PCAs) with Varimax rotation vying for a five-factor solution. Starting with the 110 items of TEMPS-A's Hungarian version, at each step items with factor loadings lower than .40 on all factors and items with significant cross-loadings (i.e., loadings higher than .40 on more than one factors) were removed. At the fifth step, forcing the remaining 40 items into a five-factor structure yielded a clear factor structure (Table 1). Based on the content of the highest loading items in each factor, Factors 1 to 5 were labelled Depressive, Cyclothymic, Hyperthymic, Irritable, and Anxious, respectively. The five factors explained 41.496 per cent of the total variance. Each scale had excellent internal reliability (Cronbach's alpha values are presented in Table 1).

To test the relationships between scales of the short version and the 110-item version of the Hungarian TEMPS-A, we used Pearson's correlations. Results of these analyses and descriptive statistics for the temperament scales are shown in Table 2. According to these results, the corresponding scales of the short version and the 110-item version showed moderate to strong correlations [Pearson's r values for the five affective temperaments were between 0.577 (for hyperthymic temperament) and 0.904 (for cyclothymic temperament)]. Correlations between the five fac-

tors of the short version were weak to moderate, and correlations were even weaker between Irritable and the other four scales and between Hyperthymic and Anxious scales (Pearson's r values were below .20 in these cases). The average strength of correlations was .244 [ranging from .002 (between Hyperthymic and Irritable) to .515 (between Depressive and Cyclothymic)] for the short version and .422 [ranging from .066 (between Hyperthymic and Irritable) to .636 (between Depressive and Anxious)] for the 110-item version.

Study 2. Descriptive statistics and Cronbach's α values for the measured variables in Study 2 are presented in Table 3. According to Cronbach's α values, each scale had good internal reliability. According to the results of Pearson's correlations (Table 4), depressive, cyclothymic, and hyperthymic temperaments were significantly correlated with anger, depression, anxiety, mania, life satisfaction, and well-being. The strength of these correlations were weak to moderate. The direction of the correlations was according to expectations (i.e., depressive and cyclothymic temperaments were positively correlated with anger, anxiety, and depression and negatively with mania, life satisfaction, and well-being, while hyperthymic temperament showed correlations in the opposite direction). Irritable temperament showed weak but significantly positive correlations with anger and mania. Anxious temperament was significantly correlated with all variables, except for mania. These correlations were weak and of the same direction as for depressive and cyclothymic temperaments.

DISCUSSION

After omitting items that loaded on more than one factors or did not load on any of the five factors, exploratory factor analysis of the remaining 40 items of TEMPS-A resulted in a clear factor structure. Although each factor – except for Factor 5 (Anxious) – contained at least one item from a different temperament scale of the Hungarian 110-item version of TEMPS-A, interpretation of the factors was obvious. Items in Factor 1 referred to a depressive affective temperament. Altogether 12 items belonged to Factor 1 (Depressive) in the short version of TEMPS-A. Three of them came from the hyperthymic items of the original 110-item version of TEMPS-A and – as it is expectable – each had negative factor loadings (not appearing in Table 1 because of reverse scoring). Items from the irritable scale of the original TEMPS-A ($n=3$) referred to complaints, lack of satisfaction with life, and feeling tense. All of these character-

Table 1 Factor structure and internal reliability of the short version of the Hungarian TEMPS-A

| Original item no. | Item | Original scale of item | Factor | | | | |
|-------------------|--|------------------------|-------------|-------------|-------------|-------------|-------|
| | | | 1 (D) | 2 (C) | 3 (H) | 4 (I) | 5 (A) |
| 43r | I'm usually in an upbeat or cheerful mood. | H | .722 | .038 | -.235 | .044 | -.014 |
| 2 | People tell me I am unable to see the lighter side of things. | D | .696 | .098 | -.087 | .078 | .073 |
| 1 | I am a sad, unhappy person. | D | .650 | .168 | -.077 | -.014 | -.039 |
| 33 | I am told that I often get pessimistic about things and forget previous happy times. | C | .642 | .250 | -.087 | .107 | .160 |
| 44r | Life is a feast which I enjoy to the fullest. | H | .606 | .010 | -.230 | -.101 | .014 |
| 65 | I am by nature a dissatisfied person. | I | .574 | .112 | -.187 | .089 | .057 |
| 6 | For as long as I can remember, I've felt like a failure. | D | .555 | .232 | -.102 | -.063 | -.040 |
| 46r | I'm the kind of person who believes everything will eventually turn out all right. | H | .541 | -.095 | -.230 | .096 | -.065 |
| 4 | I think things often turn out for the worst. | D | .530 | .372 | .006 | .012 | .095 |
| 91 | I am unable to relax. | A | .492 | .164 | .113 | -.002 | .163 |
| 69 | I often feel wound up. | I | .442 | .337 | -.075 | .172 | .135 |
| 66 | I complain a lot. | I | .423 | .198 | -.212 | .160 | .149 |
| 34 | I go back and forth between feeling overconfident and feeling unsure of myself. | C | .084 | .617 | -.043 | .056 | .059 |
| 30 | I constantly switch between being lively and sluggish. | C | .198 | .610 | -.130 | .081 | .047 |
| 23 | I get sudden shifts in mood and energy. | C | .239 | .608 | -.081 | .114 | .081 |
| 25 | My ability to think varies greatly from sharp to dull for no apparent reason. | C | .064 | .603 | -.128 | -.008 | .052 |
| 35 | I go back and forth between being outgoing and being withdrawn from others. | C | .096 | .586 | -.059 | -.089 | .031 |
| 29 | My mood often changes for no reason. | C | .323 | .579 | -.047 | .079 | .113 |
| 38 | The way I see things is sometimes vivid, but at other times lifeless. | C | .317 | .563 | -.074 | .014 | .060 |
| 90 | My mind often goes blank. | A | .046 | .445 | -.269 | .006 | .158 |
| 26 | I can really like someone a lot, and then completely lose interest in them. | C | -.017 | .428 | -.161 | .156 | -.018 |
| 53 | Once I decide to accomplish something, nothing can stop me. | H | -.074 | -.072 | .694 | .072 | .035 |
| 16 | I am a hard working person. | D | -.070 | .007 | .620 | -.109 | .137 |
| 50 | I can accomplish many tasks without even getting tired. | H | -.174 | -.077 | .584 | .022 | -.050 |
| 28r | I often start things and then lose interest before finishing them. | C | -.046 | -.310 | .583 | -.091 | -.050 |
| 5r | I give up easily. | D | -.193 | -.187 | .580 | .061 | -.041 |
| 49 | I am always on the go. | H | -.262 | -.120 | .486 | .069 | -.086 |
| 8r | I don't seem to have as much energy as other people. | D | -.287 | -.238 | .476 | .097 | -.142 |
| 60 | I am the kind of person who likes to be the boss. | H | -.115 | -.007 | .059 | .689 | -.013 |
| 17r | I would rather work for someone else than be the boss. | D | -.121 | -.113 | .104 | .618 | -.086 |
| 61 | When I disagree with someone, I can get into a heated argument. | H | .049 | .032 | -.035 | .599 | .053 |
| 67 | I am highly critical of others. | I | .131 | .072 | -.115 | .508 | .053 |
| 82 | I could be a revolutionary. | I | .060 | .050 | .103 | .497 | -.006 |
| 11r | I often give in to others. | D | -.082 | -.292 | .160 | .487 | -.082 |
| 73 | People tell me I blow up out of nowhere. | I | .120 | .265 | -.010 | .477 | .101 |
| 77 | I can get so furious I could hurt someone. | I | .100 | .112 | -.174 | .456 | -.004 |

| Original item no. | Item | Original scale of item | Factor | | | | |
|-------------------------------|--|------------------------|--------|-------|-------|-------------|-------------|
| | | | 1 (D) | 2 (C) | 3 (H) | 4 (I) | 5 (A) |
| 72 | When crossed, I could get into a fight. | I | .166 | .300 | .012 | .453 | .112 |
| 99 | I am often fearful of someone in my family coming down with a serious disease. | A | .090 | .145 | -.001 | .023 | .847 |
| 100 | I'm always thinking someone might break bad news to me about a family member. | A | .105 | .184 | -.027 | .053 | .825 |
| 98 | When someone is late coming home, I fear they may have had an accident. | A | .076 | .051 | -.043 | .007 | .769 |
| % of Total Variance Explained | | | 19.536 | 7.151 | 5.754 | 4.983 | 4.071 |
| Cronbach's alpha | | | .848 | .787 | .741 | .700 | .794 |

Note: Item numbers refer to the original 110-item Hungarian version of TEMPS-A. r: reverse scored items. D: Depressive; C: Cyclothymic; H: Hyperthymic; I: Irritable; A: Anxious. Factor loadings above .40 are bolded.

Table 2 Pearson's correlations between the scales of the 110-item version and of the short version of the Hungarian TEMPS-A

| | | M (SD) | Short version | | | | 110-item version | | | | |
|------------------|---|-------------|---------------|-------|------|-------|------------------|-------------|-------------|-------------|-------------|
| | | | C | H | I | A | D | C | H | I | A |
| Short version | D | .287 (.265) | .515 | -.463 | .151 | .241 | .683 | .562 | -.499 | .498 | .626 |
| | C | .438 (.292) | | -.424 | .157 | .290 | .539 | .904 | -.238 | .487 | .597 |
| | H | .618 (.297) | | | .002 | -.123 | -.417 | -.451 | .577 | -.265 | -.366 |
| | I | .500 (.258) | | | | .071 | -.138 | .242 | .388 | .675 | .087 |
| | A | .314 (.390) | | | | | .319 | .309 | -.104 | .238 | .595 |
| 110-item version | D | .398 (.168) | | | | | | .546 | -.481 | .306 | .636 |
| | C | .403 (.221) | | | | | | | -.172 | .581 | .613 |
| | H | .568 (.192) | | | | | | | | .066 | -.343 |
| | I | .337 (.191) | | | | | | | | | .474 |
| | A | .311 (.215) | | | | | | | | | |

Note: D: Depressive; C: Cyclothymic; H: Hyperthymic; I: Irritable; A: Anxious. All $r_s > |.065|$ are significant at the level of .01. Correlational coefficients for corresponding scales in the short and the 110-item version are highlighted in bold.

Table 3 Descriptive statistics for and internal reliability indices of Study 2 variables

| | | M | SD | Cronbach's α |
|---------------------------------|-------------|--------|-------|---------------------|
| TEMPS-A Hungarian short version | Depressive | .295 | .212 | .705 |
| | Cyclothymic | .437 | .284 | .774 |
| | Hyperthymic | .560 | .303 | .754 |
| | Irritable | .494 | .285 | .768 |
| | Anxious | .359 | .387 | .737 |
| Anger ¹ | | 12.602 | 4.130 | .849 |
| Depression ¹ | | 18.180 | 7.483 | .915 |
| Anxiety ¹ | | 18.757 | 6.921 | .927 |
| Mania ² | | 15.607 | 4.123 | .748 |
| Life satisfaction ³ | | 21.403 | 6.750 | .858 |
| Well-being ⁴ | | 8.005 | 3.25 | .825 |

Note: ¹ PROMIS Emotional Distress item bank (Cella et al., 2010); ² Altman Self-Rating Mania Scale (Altman et al., 1997); ³ Satisfaction With Life Scale (Diener et al., 1985); ⁴ Well Being Index (Bech, 1996).

Table 4 Pearson's correlation between the scales of the short version of the Hungarian TEMPS-A and measures of emotional distress, mania, and general psychological well-being

| | | TEMPS-A short version | | | | | Anger ¹ | Depression ¹ | Anxiety ¹ | Mania ² | LS ³ | WB ⁴ |
|-----------------------|---|-----------------------|---------|----------|---------|---------|--------------------|-------------------------|----------------------|--------------------|-----------------|-----------------|
| | | D | C | H | I | A | | | | | | |
| TEMPS-A short version | D | – | .453*** | –.426*** | .078 | .358*** | .424*** | .584*** | .520*** | –.437*** | –.517*** | –.494*** |
| | C | | – | –.545*** | .266*** | .325*** | .503*** | .436*** | .455*** | –.231** | –.301*** | –.353*** |
| | H | | | – | .022 | –.193* | –.341*** | –.464*** | –.314*** | .416*** | .393*** | .491*** |
| | I | | | | – | .044 | .189 [†] | .034 | .016 | .208** | .013 | .064 |
| | A | | | | | – | .305*** | .357*** | .380*** | –.125 | –.197* | –.178* |
| Anger | | | | | | – | .589*** | .612*** | –.261*** | –.337*** | –.381*** | |
| Depression | | | | | | | – | .655*** | –.544*** | –.517*** | –.576*** | |
| Anxiety | | | | | | | | – | –.361*** | –.338*** | –.364*** | |
| Mania | | | | | | | | | – | .431*** | .572*** | |
| LS | | | | | | | | | | – | .428*** | |

Note: D: Depressive; C: Cyclothymic; H: Hyperthymic; I: Irritable; A: Anxious; LS: Life Satisfaction; WB: Well-being; * $p < .01$; ** $p < .005$; *** $p < .001$; ¹ PROMIS Emotional Distress item bank (Cella et al., 2010); ² Altman Self-Rating Mania Scale (Altman et al., 1997); ³ Satisfaction With Life Scale (Diener et al., 1985); ⁴ Well Being Index (Bech, 1996).

istics are true for individuals with depressive affective temperament (Akiskal, 1998). One item from the anxious scale of the original 110-item version of TEMPS-A referred to feeling tense as well, while one originally cyclothymic item (“I am told that I often get pessimistic about things and forget previous happy times”) described the typical selective memory for negative events in depression (Beck & Clark, 1988). The remaining 4 depressive items of the short version were also depressive items in the original 110-item version of TEMPS-A.

Nine items belonged to Factor 2 (Cyclothymic) in the short version of TEMPS-A. All but one derived from the cyclothymic scale of the 110-item (original) version of TEMPS-A (Table 1). The second lowest loading item was the only exception that derived from the anxious scale of the 110-item TEMPS-A, and referred to stress-induced cognitive disorientation.

The total number of Hyperthymic (Factor 3) items was seven. They included items from the hyperthymic, cyclothymic, and depressive scales of the 110-item version of TEMPS-A. All but one item from the cyclothymic or depressive scales were reverse scored which is in line with the conceptual relations between depressive, cyclothymic, and hyperthymic temperaments (Akiskal, 1998). Surprisingly, one item originally in the depressive scale loaded positively on the Hyperthymic factor of the short version. However, this item (“I am a hard working person”) fits completely with the concept of hyperthymic temperament if we consider the item to refer to endurance

and perseverance (Oniszczenko et al., 2016) rather than to perfectionism and excessive conscientiousness. Moreover, it is also in line with the DSM concept of hypomania, since an “increase in goal-directed activity” (for example at work) is the B/6 criterion of hypomanic (and manic) episode in the DSM-5 (American Psychiatric Association, 2013).

There were nine items belonging to Factor 4 (Irritable). Although four irritable items in the short version of TEMPS-A were from scales other than irritable in the original version of TEMPS-A, all of these three items (“I am the kind of person who likes to be the boss”; “When I disagree with someone, I can get into a heated argument”; “I often give into others”; “I would rather work for someone else than be the boss” – *the two latter reverse scored*) referred to some degree of disagreeableness or uncooperativeness. Using either the Five Factor Model (McCrae & Costa, 1987) or the psychobiological model of personality (Cloninger, Svrakic, & Przybeck, 1993) these characteristics are repeatedly found to be related to irritable temperament (Akiskal et al., 2005b; Rózsa et al., 2008).

Each Factor 5 (Anxious) item (n=3) were from the anxious scale of the 110-item version of the TEMPS-A. However, it is worth noting that none of the items on bodily symptoms from the anxious scale loaded on any of the factors of the short version. The three items in the anxious factor of the newly developed short version referred to anticipatory anxiety and to fearful interpretation of ambiguous environmental

events and stimuli. Given the cultural diversity in the clinical presentation of anxious symptoms (Kirmayer, 2001), it can be a cultural specificity of Hungarian people that they perceive anxious temperament rather in fearfulness than in either bodily symptoms or general stress-related expressions of anxiety.

The average strength of correlations from each possible comparison between the five factors decreased from .422 to .244 from the 110-item version to the short version. This means that with the short version, dimensions of affective temperament are measured in a more unique way. This is in line with the original postulation of Akiskal (1998) about the distinct nature of affective temperaments.

The correlations between the corresponding scales of the short version and the 110-item version were strong enough to regard these two versions as equivalent. The weakest correlations were found between the hyperthymic scales and the anxious scales. This is unsurprising, given the fact that the hyperthymic scale in the short version included an item from the depressive scale of the 110-item version and items in the anxious scale were restricted to anticipatory anxiety, excluding bodily or stress-related symptoms.

According to the results of Study 2, all five affective temperaments showed theoretically meaningful but nonselective associations with measures of anger, depression, anxiety, mania, and psychological well-being. These general associations between depression and anxiety on the one hand, and depressive, cyclothymic, anxious (with positive correlations), and hyperthymic (with negative correlations) affective temperaments replicate the previous findings of Morvan et al. (2011) and Rózsa et al. (2006). In our study, irritable temperament correlated only with anger and mania, and proved to be uncorrelated with indices of depression, anxiety, and psychological well-being.

The aforementioned exceptional pattern of correlations for the irritable temperament is in line with previous research (e.g., Akiskal et al., 1998) and with the conceptualization of Lara, Pinto, Akiskal, and Akiskal (2006). In a bidimensional space of fear and anger traits, they position irritable temperament to the same place where they position all cluster B personality disorders, namely on the high extreme of the anger dimension. This phenotypic similarity between irritable temperament and cluster B personality disorders might be supported by studies that found negative and distinctive correlations between irritable temperament and agreeableness and cooperativeness (Akiskal et al., 2005b; Rózsa et al., 2008).

LIMITATIONS AND CONCLUSIONS

Before presenting our concluding remarks, some limitations of our studies have to be mentioned. The samples in both of our studies are homogeneous samples with regard to education. All participants were enrolled in a gradual or postgradual program. Moreover, participants were not screened for psychiatric disorders. Therefore, we must remain cautious with regard to the clinical utility of our newly developed short version of the Hungarian TEMPS-A.

Results make us believe that the short version of the Hungarian TEMPS-A is a reliable and valid measure of affective temperaments. Reliability indices were good to excellent in both studies. Regarding the structure of the questionnaire, scales of the short version of the Hungarian TEMPS-A showed moderate to strong correlations with the corresponding scales of the original 110-item version. Thus, the two measures can be considered to be equivalent. At the same time, average correlation between the scales decreased by almost 50 percent which means that the presented short version of the Hungarian TEMPS-A measures the five different affective temperaments more distinctively than the original, longer version.

Results of Study 2 showed meaningful associations between the scales of affective temperaments and measures of emotional distress, mania, and general well-being. The patterns of correlations were very similar for depressive, cyclothymic, and anxious temperaments, and for hyperthymic temperament with the opposite direction. Irritable temperament showed the least correlations with measures of psychological well-being or indices of psychiatric symptoms. With its positive correlations with anger and mania, irritable affective temperament showed a mixture of the hyperthymic and the other three temperaments. This exceptional nature of irritable temperament has been presented in studies, where irritable temperament was rather related to personality disorders or dysfunctional personality than affective disorders (Akiskal, 1992; Akiskal et al., 2003; Cloninger, 2000).

With its brevity, we believe that the short version of the Hungarian TEMPS-A is a promising instrument both in clinical fields and for academic research. The 40 items take no more than 15 minutes to complete for the average participant and leaves more space for other instruments or tasks. It is also less demanding for hospitalized patients than the original 110-item version. However, further research should prove its clinical utility more directly.

Appendix 1 The short version of the Hungarian TEMPS-A with instructions and scoring

Temperamentum kérdőív. Kérjük, jelölje be azokat az állításokat, amelyek élete legnagyobb részére igazak!

| | | |
|--|------|-----|
| 1. Szomorú, boldogtalan ember vagyok. | igen | nem |
| 2. Mások szerint képtelen vagyok a dolgok pozitív oldalát látni. | igen | nem |
| 3. Úgy érzem, sokszor fordulnak rosszra a dolgok. | igen | nem |
| 4. Könnyen feladom. | igen | nem |
| 5. Mióta az eszemet tudom, mindig elhibáztam az életemet. | igen | nem |
| 6. Úgy tűnik, nincs annyi energiám, mint másoknak. | igen | nem |
| 7. Gyakran hajtok fejet mások akarata előtt. | igen | nem |
| 8. Szorgalmas ember vagyok. | igen | nem |
| 9. Inkább beosztottként dolgozom, minthogy főnök legyek. | igen | nem |
| 10. Hangulatom és aktivitásom hirtelen szokott változni. | igen | nem |
| 11. Hol úgy érzem, hogy gyorsan vág az eszem, hol meg azt, hogy teljesen tompa vagyok. | igen | nem |
| 12. Előfordul, hogy valakit nagyon megszeretek, de aztán gyorsan elvesztem az érdeklődésem iránta. | igen | nem |
| 13. Gyakran előfordul, hogy belevágok valamibe, aztán megunom, mielőtt befejezném. | igen | nem |
| 14. Hangulatom minden ok nélkül gyakran változik. | igen | nem |
| 15. Állandóan ingadozom az életség és a meglátszó között. | igen | nem |
| 16. Mások szerint gyakran válok pesszimistává, megfedkezve a korábbi jó időszakokról. | igen | nem |
| 17. Hol túl magabiztos vagyok, hol teljesen elvesztem az önbizalmam. | igen | nem |
| 18. Egyszer felszabadultan viselkedem társaságban, máskor visszahúzódom válok. | igen | nem |
| 19. Egyszer élettelinek, máskor élettelennek látom a dolgokat. | igen | nem |
| 20. Általában bizakodó és vidám vagyok. | igen | nem |
| 21. Az élet élvezetes és én minden jó dologban benne vagyok. | igen | nem |
| 22. Olyan ember vagyok, aki hisz abban, hogy végül minden jóra fordul. | igen | nem |
| 23. Mindig aktív vagyok. | igen | nem |
| 24. Sok feladatot el tudok látni anélkül, hogy elfáradnék. | igen | nem |
| 25. Ha egyszer elhatározom, hogy véghezviszek valamit, semmi nem állíthat meg. | igen | nem |
| 26. Olyan ember vagyok, aki szereti, ha ő a főnök. | igen | nem |
| 27. Heves vitába tudok keveredni azzal akivel valamiben nem értek egyet. | igen | nem |
| 28. Természetemnél fogva elégedetlen ember vagyok. | igen | nem |
| 29. Sokat panaszkodom. | igen | nem |
| 30. Igencsak kritikus vagyok másokkal szemben. | igen | nem |
| 31. Gyakran feszült vagyok. | igen | nem |
| 32. Gyakran az ellen fordulok, aki az utamba áll. | igen | nem |
| 33. Azt mondják, nagyon lobbanékony vagyok. | igen | nem |
| 34. Néha nagyon meg tudok sérteni másokat. | igen | nem |
| 35. Akár forradalmár is lehetnék. | igen | nem |
| 36. Gyakran érzem úgy, hogy mindent elfelejtek. | igen | nem |
| 37. Képtelen vagyok lazítani. | igen | nem |
| 38. Ha valaki később ér haza, attól tartok, hogy balesetet szenvedett. | igen | nem |
| 39. Gyakran szorongok amiatt, hogy esetleg a családtagjaim közül valaki súlyosan megbetegszik. | igen | nem |
| 40. Gyakran gondolok arra, hogy valaki rossz híreket hozhat a családtagjaimról. | igen | nem |

Scoring instructions. For a Depressive temperament score calculate the mean of items 1, 2, 3, 5, 16, 20*, 21*, 22*, 28, 29, 31, and 37. For a Cyclothymic temperament score calculate the mean of items 10, 11, 12, 14, 15, 17, 18, 19, and 36. For a Hyperthymic temperament score calculate the mean of items 4*, 6*, 8, 13, 23, 24, and 25. For an Irritable temperament score calculate the mean of items 7*, 9*, 26, 27, 30, 32, 33, 34, 35. For an Anxious temperament score calculate the mean of items 38, 39, and 40. * reverse scored items (0 for 'yes' and 1 for 'no').

FUNDING: András Láng was supported by the ÚNKP-17-4-III. New National Excellence Program of the Ministry of Human Capacities.

CORRESPONDING AUTHOR: András Láng
Pécsi Tudományegyetem Pszichológia Intézet
7624 Pécs, Ifjúság utca 6.
E-mail: andraslang@hotmail.com

REFERENCES

- Akiskal, H.S., 1992. Delineating irritable and hyperthymic variants of the cyclothymic temperament. *J. Pers. Disord.* 6, 326-342.
- Akiskal, H.S., 1998. Toward a definition of generalized anxiety disorder as an anxious temperament type. *Acta Psychiatr. Scand.* 393, S66-S73.
- Akiskal, H.S., Akiskal, K.K., Haykal, R.F., Manning, J.S., Connor, P.D., 2005a. 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.
- Akiskal, H.S., Hantouche, E.G., Allilaire, J.F. (2003). Bipolar II with and without cyclothymic temperament: "dark" and "sunny" expressions of soft bipolarity. *J. Affect. Disord.* 73, 49-57.
- Akiskal, H.S., Mendlowicz, M.V., Jean-Louis, G., Rapaport, M.H., Kelsoe, J.R., Gillin, J.C., Smith, T.L., 2005b. TEMPS-A: validation of a short version of a self-rated instrument designed to measure variations in temperament. *J. Affect. Disord.* 85, 45-52.
- Akiskal, H.S., Placidi, G.F., Maremmani, I., Signoretta, S., Liguori, A., Gervasi, R., Mallya, G., Puzantian, V.R., 1998. TEMPS-I: delineating the most discriminant traits of the cyclothymic, depressive, hyperthymic and irritable temperaments in a nonpatient population. *J. Affect. Disord.* 51, 7-19.
- Altman, E.G., Hedeker, D., Peterson, J.L., Davis, J.M., 1997. The Altman Self-Rating Mania scale. *Biol. Psychiatry* 42, 948-955.
- American Psychiatric Association, 2013. *Diagnostic and Statistical Manual of Mental Disorders*, fifth ed. American Psychiatric Publishing, Washington, DC.
- Bech, P., 1996. *The Bech, Hamilton and Zung Scales for Mood Disorders: Screening and Listening*, second ed. Springer, Berlin.
- Beck, A.T., Clark, D.A., 1988. Anxiety and depression: An information processing perspective. *Anxiety Research*, 1(1), 23-36.
- Blöink, R., Brieger, P., Akiskal, H. S., Marneros, A., 2005. Factorial structure and internal consistency of the German TEMPS-A scale: validation against the NEO-FFI questionnaire. *J. Affect. Disord.* 85, 77-83.
- Borkowska, A., Rybakowski, J.K., Drozd, W., Bielinski, M., Kosmowska, M., Rajewska-Rager, A., Bucinski, A., Akiskal, K.K., Akiskal, H.S., 2010. Polish validation of the TEMPS-A: the profile of affective temperaments in a college student population. *J. Affect. Disord.* 123, 36-41.
- Cella, D., Riley, W., Stone, A., Rothrock, N., Reeve, B., Yount, S. et al., 2010. The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005-2008. *J. Clin. Epidemiol.* 63, 1179-1194.
- Cloninger, C. R., 2000. A practical way to diagnosis personality disorder: a proposal. *J. Pers. Disord.* 14, 99-108.
- Cloninger, C.R., Svrakic, D.M., Przybeck, T.R., 1993. A psychobiological model of temperament and character. *Arch. Gen. Psychiatry* 50, 975-990.
- Diener, E.D., Emmons, R.A., Larsen, R.J., Griffin, S., 1985. The satisfaction with life scale. *J. Pers. Assess.* 49, 71-75.
- Eory, A., Gonda, X., Torzsa, P., Kalabay, L., Rihmer, Z., 2011. [Affective temperaments: from neurobiological roots to clinical application]. *Orv. Hetil.* 152, 1879-86. (In Hungarian).
- Erfurth, A., Gerlach, A.L., Michael, N., Boenigk, I., Hellweg, I., Signoretta, S., Akiskal, K.K., Akiskal, H.S., 2005. Distribution and gender effects of the subscales of a German version of the temperament autoquestionnaire briefTEMPS-M in a university student population. *J. Affect. Disord.* 85, 71-76.
- Figueira, M.L., Caeiro, L., Ferro, A., Severino, L., Duarte, P.M., Abreu, M., Akiskal, H.S., Akiskal, K.K., 2008. Validation of the temperament evaluation of Memphis, Pisa, Paris and San Diego (TEMPS-A): Portuguese-Lisbon version. *J. Affect. Disord.* 111, 193-203.
- Goto, S., Terao, T., Hoaki, N., Wang, Y., 2011. Cyclothymic and hyperthymic temperaments may predict bipolarity in major depressive disorder: a supportive evidence for bipolar II 1/2 and IV. *J. Affect. Disord.* 129, 34-38.
- Karam, E.G., Mneimneh, Z., Salamoun, M., Akiskal, K.K., Akiskal, H.S., 2005. Psychometric properties of the Lebanese-Arabic TEMPS-A: a national epidemiologic study. *J. Affect. Disord.* 87, 169-183.
- Kirmayer, L.J., 2001. Cultural variations in the clinical presentation of depression and anxiety: implications for diagnosis and treatment. *J. Clin. Psychiatry* 62, 22-30.
- Krebs, M.O., Kazes, M., Olié, J.P., Loo, H., Akiskal, K.K., Akiskal, H.S., 2006. The French version of the validated short TEMPS-A: the temperament evaluation of Memphis, Pisa, Paris and San Diego. *J. Affect. Disord.* 96, 271-273.
- Lang, A., Papp, B., Gonda, X., Dome, P., Rihmer, Z., 2016. Dimensions of adult attachment are significantly associated with specific affective temperament constellations in a Hungarian university sample. *J. Affect. Disord.* 191, 78-81.
- László, A., Tabák, Á., Kőrösi, B., Eörsi, D., Torzsa, P., Cseppekál, O., Tislér, A., Reusz, G., Nemcsik-Bencze, Z., Gonda, X., Rihmer, Z., Nemcsik, J., 2016. Association of affective temperaments with blood pressure and arterial stiffness in hypertensive patients: a cross-sectional study. *BMC Cardiovasc. Disord.* 16, 158.
- Lara, D.R., Pinto, O., Akiskal, K.K., Akiskal, H.S., 2006. Toward an integrative model of the spectrum of mood, behavioral and personality disorders based on fear and anger traits: I. Clinical implications. *J. Affect. Disord.* 94, 67-87.
- Martos, T., Sallay, V., Désfalvi, J., Szabó, T., Ittész, A., 2014. [Psychometric characteristics of the Hungarian version of the Satisfaction with Life Scale (SWLS-H)]. *Mentálhig. Pszichoszomat.* 15, 289-303. (In Hungarian).
- Matsumoto, S., Akiyama, T., Tsuda, H., Miyake, Y., Kawamura, Y., Noda, T., Akiskal, K.K., Akiskal, H.S., 2005. Reliability and validity of TEMPS-A in a Japanese non-clinical population: application to unipolar and bipolar depressives. *J. Affect. Disord.* 85, 85-92.
- McCrae, R.R., Costa, P.T., 1987. Validation of the five-factor model of personality across instruments and observers. *J. Pers. Soc. Psychol.* 52, 81-90.
- Morvan, Y., Tibaoui, F., Bourdel, M. C., Lóo, H., Akiskal, K.K., Akiskal, H.S., Krebs, M.O., 2011. Confirmation of the factorial structure of temperamental autoquestionnaire TEMPS-A in non-clinical young adults and relation to current state of anxiety, depression and to schizotypal traits. *J. Affect. Disord.* 131, 37-44.

31. Nakato, Y., Inoue, T., Nakagawa, S., Kitaichi, Y., Kameyama, R., Wakatsuki, Y., Kitagawa, K., Omiya, Y., Kusumi, I., 2016. Confirmation of the factorial structure of the Japanese short version of the TEMPS-A in psychiatric patients and general adults. *Neuropsychiatr. Dis. Treat.* 12, 2173-2179.
32. Oniszczenko, W., Stanisławiak, E., Dembińska-Krajewska, D., Rybakowski, J., 2016. Regulative theory of temperament versus affective temperaments measured by the temperament evaluation of Memphis, Pisa, Paris and San Diego Auto-Questionnaire (TEMPS-A): a study in a non-clinical Polish sample. *Curr. Issues Personal. Psychol.*, 5. doi: <https://doi.org/10.5114/cipp.2017.65847>.
33. Preti, A., Vellante, M., Zucca, G., Tondo, L., Akiskal, K.K., & Akiskal, H.S., 2010. The Italian version of the validated short TEMPS-A: the temperament evaluation of Memphis, Pisa, Paris and San Diego. *J. Affect. Disord.* 120, 207-212.
34. Rezvani, A., Aytüre, L., Arslan, M., Kurt, E., Eroğlu Demir, S., Karacan, İ., 2014. Affective temperaments in patients with rheumatoid arthritis. *Int. J. Rheum. Dis.* 17, 34-38.
35. Rihmer Z, Akiskal K.K, Rihmer A., Akiskal H.S, 2010. Current research on affective temperaments. *Curr. Opin. Psychiat.* 23, 12-18.
36. Ristić-Ignjatović, D., Hinić, D., Bessonov, D., Akiskal, H.S., Akiskal, K.K., Ristić, B., 2014. Towards validation of the short TEMPS-A in non-clinical adult population in Serbia. *J. Affect. Disord.* 164, 43-49.
37. Rózsa, S., Rihmer, Z., Gonda, X., Szili, I., Rihmer, A., Kó, N., Németh, A., Pestaloty, P., Bagdy, G., Alhassoon, O., Akiskal, K.K., Akiskal, H.S., 2008. A study of affective temperaments in Hungary: internal consistency and concurrent validity of the TEMPS-A against the TCI and NEO-PI-R. *J. Affect. Disord.* 106, 45-53.
38. Rózsa, S., Rihmer, A., Ko, N., Gonda, X., Szili, I., Szádóczy, E., Pestaloty, P., Rihmer, Z., 2006. [Affective temperaments: psychometric properties of the Hungarian TEMPS-A]. *Psychiatr. Hung.* 21, 147-160. (In Hungarian)
39. Sanchez-Moreno, J., Barrantes-Vidal, N., Vieta, E., Martinez-Aran, A., Saiz-Ruiz, J., Montes, J. M., Akiskal, K.K., Akiskal, H.S., 2004. Process of adaptation to Spanish of the temperament evaluation of Memphis, Pisa, Paris and San Diego Scale. Self applied version (TEMPS-A). *Actas Esp. Psiquiatr.* 33, 325-330.
40. Susánszky, É., Konkoly Thege, B., Stauder, A., Kopp, M., 2006. [Validation of the short (5-item) version of the WHO Well-being Scale based on a Hungarian representative health survey (Hungarostudy 2002)]. *Mentálhig. Pszichoszomat.* 7, 247-255. (In Hungarian).
41. Vázquez, G.H., Nasetta, S., Mercado, B., Romero, E., Tifner, S., Ramón, M.D.L., Garelli, V., Bonifacio, A., Akiskal, K.K., Akiskal, H.S., 2007. Validation of the TEMPS-A Buenos Aires: Spanish psychometric validation of affective temperaments in a population study of Argentina. *J. Affect. Disord.* 100, 23-29.
42. Woodruff, E., Genaro, L.T., Landeira-Fernandez, J., Cheniaux, E., Laks, J., Jean-Louis, G., Nardi, A.E., Versiani, M.C., Akiskal, H.S., Mendlowicz, M.V., 2011. Validation of the Brazilian brief version of the temperament auto-questionnaire TEMPS-A: the brief TEMPS-Rio de Janeiro. *J. Affect. Disord.* 134, 65-76.

A TEMPS-A kérdőív magyar nyelvű rövid változatának kialakítása nem klinikai mintán

Elméleti háttér: A Temperament Evaluation of Memphis, Pisa and San Diego Autoquestionnaire (TEMPS-A) széles körben használatos eszköz az affektív temperamentumok mérésére. Az affektív temperamentumok az emberek általános hangulatát írja le és fontos prekursorai a hangulatzavaroknak. Jelen közlemény két vizsgálatában arra tettünk kísérletet, hogy a TEMPS-A kérdőív magyar nyelvű rövid változatát kidolgozzuk. **Módszer:** A két vizsgálatban összesen 1857 egyetemi hallgató vet részt. A résztvevők a két vizsgálatban a TEMPS-A eredeti 110 állításos és újonnan kidolgozott rövid változatát, a PROMIS Érzelmi Distressz itembank szorongás, depresszió és harag skáláit, az Altman-féle Önkitöltős Mánia Skálát, az Élettel Való Elégedettség Skálát és a rövid WHO Jólét Skálát töltötték ki. **Eredmények:** Főkomponenselemzések során az eredeti 110 állításból 40 állítás került bele a magyar nyelvű TEMPS-A rövidített változatába. A 40 állítás öt faktorba rendeződött, amelyek a hozzájuk tartozó állítások alapján az öt affektív temperamentumnak voltak megfeleltethetők. A rövid változat faktorai mérsékelttől jelentősen terjedő erősségű kapcsolatot mutattak eredeti párjaikkal. Minden faktor jó vagy kiváló belső megbízhatósággal rendelkezett. Az újonnan kidolgozott rövid változat faktorai az elvárásoknak megfelelő irányú és erősségű kapcsolatot mutattak az érzelmi distressz, a mánia és a pszichológiai jólét mutatóival. **Következtetések:** A TEMPS-A magyar fordításának rövid változata ígéretes mérőeszköz mind a klinikai szakemberek, mind pedig a kutatók számára. Az újonnan kidolgozott rövidített mérőeszközt az affektív temperamentum megbízható és érvényes mérőeszközének tekinthetjük.

Kulcsszavak: affektív temperamentumok, TEMPS-A rövid változat, magyar nyelv