

Development of a Scale of Positive Temperament in Indian Context


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ABSTRACT

Background: Available tests of temperament measure the traits of different categories (like reward dependence, emotionality) with a large number of items. These tests do not deal specifically with traits of positive temperament (emotionality), and most scales measure negative emotionality as a counterpart of positive emotionality. The current study reports the development of a new scale of positive temperament, with fewer items and applicable in the Indian context. **Methods:** Items were developed with help from available scales of positive temperament, which led to the selection of 36 items from six different constructs. The data were collected in two stages for exploratory and confirmatory factor analysis of the scale. Stage one and two consisted of 278 and 338 participants, respectively, in the age group of 18–80 years, from both the genders and different professions. Data was collected online through the Qualtrics survey website. The participants responded on a 5-point Likert scale from 0–4 indicating how often they behave in a particular way as asked by the item. The test was re-conducted on a subsample of 98 participants after 4 weeks to measure test-retest reliability. Convergent validity was also established using strengths and difficulties questionnaire and neuroticism scale, and divergent validity was found with age. **Results:** Exploratory factor analysis revealed four factors: optimism, perseverance, self-contentment, and adaptability. Confirmatory factor analysis later revealed that the 4-factor model fits best with the data, having comparative fit index (CFI) of 0.96 and root mean square error of approximation (RMSEA) of 0.063. The internal consistency estimates of the four factors ranged from 0.72 to 0.91, indicating a stable structure of scales. The final scale is of 28 items, with seven items in each factor. The test-retest reliability coefficients ranged from 0.79–0.96. Two second-order factors were also identified. **Conclusions:** The positive temperament inventory is a four-factor, 28-item validated inventory with a stable set of items, having specific applicability in measuring positive temperament and fewer items for ease of use in different situations. This is the first scale of its kind in the Indian context and holds a promising future in the area of personality and clinical research.

Key words: *Development, emotionality, factor analysis, India, positive temperament, scale*

Key messages: *Positive temperament inventory is a new scale believed to have wide applications in the English-speaking Indian population. It is short and has four important facets of positive temperament, with two second-order factors. Unlike previously available scales in India which are meant only for children, this scale can be used with adults (18–80 years).*

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Temperament is defined as individual differences in reactivity and self-regulation, which are constitutionally based and are influenced by genes, maturation, and experience across development.^[1] “Constitutional” implies a biological basis to temperament. “Reactivity” implies dispositions toward emotional activity and attentional reactions. “Self-regulation” implies motivational tendencies to utilize our attentional mechanisms in order to control our thoughts and emotions by either approaching or withdrawing from a stimulus. The temperament, as the definition indicates, begins to develop from the conception at the prenatal stage, through genetic influences, and continues throughout the lifespan because it is altered by biological maturation and psychosocial experiences.^[2]

The construct of temperament is a part of a broader construct of personality, which is a dynamic organization of the systems determining an individual’s unique adjustment to the environment.^[3] Temperament traits, as a subset of personality traits, refer to emotional (affect), motor (activity), and attentional (three As) reactive tendencies seen early in development. These are predominant in an infant’s reactions to adjustments in the environment. However, during adulthood, these may overlap significantly with a broader variety of traits as measured by personality inventories like Big Five.^[4] Because temperamental traits persist somehow independently of personality traits and are conceptualized as certain persistent reactive tendencies within an individual throughout the lifespan, it becomes important to study these traits as separate structures of behavioral dispositions and how they are related to life’s various outcomes.^[5]

Most theories of child and adult temperament describe these traits as constituting approach or withdrawal tendencies. The early models were based on two methods: top-down (deriving trait factors through behaviors and finding their biological basis) and bottom-up (developing biological-oriented theories from human or animal studies and conceptualizing behaviors as their dispositions). Top-down methods include models like Big Three,^[6] Big Five,^[7] and the Alternative Five.^[8] In the bottom-up category, Gray’s^[9] model of behavioral inhibition and activation systems is the most commonly cited. However, these models describe traits that overlap with each other to a great extent, as revealed by factor analyses.^[2] Tellegen^[10] developed a three-factor model of temperament based on the affectivity component of biological systems. His three trait domains are positive emotionality, negative emotionality, and constraint. These three factors have 11 facets. Cloninger *et al.*^[11] initially devised a three-factor model of temperament (novelty seeking, harm avoidance, and reward dependence). But later, through factor analyses results,

he added four new factors (persistence, self-directiveness, cooperativeness, and self-transcendence—the last three being character traits).

A common trend across the most popular and widely accepted temperament models is the neglect of positive emotionality (PE). The trait of PE has been dealt with as an opposite aspect of negative emotionality (NE), and the absence or lower intensity of negative affect is generally considered a higher side of positive affect. Thomas and Chess^[12] made the first attempts to classify mood as a significant aspect of temperament. However, their three facets of temperament largely referred to tendencies toward adaptability, rather than active displays in behaviors, as markers of positive affect. Buss and Plomin^[13] conceptualized behaviors like crying as part of emotionality dimension, but not experiences of pleasure-displeasure. The focus on positive emotions as distinct traits of the pleasantness of experiences is generally restricted to explorations of NE.

Tellegen^[10] have strongly influenced the investigations into positive temperamental trait by their structural model of two dimensions: pleasantness-unpleasantness and engagement-disengagement. Through later analyses, they labeled the first dimension as Positive Affect (enthusiasm, excited), which involves traits of positive engagement, and Negative Affect (fearful, distressed). The affective experiences in a situation, pleasant or unpleasant, either motivate toward or away from the activity, resulting in engagement or disengagement. Tellegen^[10] suggested that these mood dimensions underlie the most common structural models of personality traits. Costa and McCrae^[14] asserted that tendencies to experience positive emotions form the core feature of the trait of Extraversion.^[15]

Similarly, positive emotions are sometimes experienced in the absence of any approachable circumstances or goals. Caspi and Roberts^[16] indicated that traits of positive affectivity in childhood predict extraversion and agreeableness in adulthood and also correlate with high persistence and low activity levels. Prosocial behaviors involving the need to get along with others, with strong affiliative and agreeable needs, underlie positive experiences in mood and overall emotionality.

Common temperament scales for adults that exist in western literature are adult temperament questionnaire (ATQ),^[4] emotionality, activity, and sociability temperament survey for adults (EAS^[17]), temperament and character inventory (TCI,^[11]), behavioral inhibition and activation scales (BIS/BAS^[18]), and positive and negative affect schedule (PANAS).^[19] A review of the literature suggests a lack of an Indian version of an adult temperament scale. To the authors’ knowledge, these

scales in English have not been translated or adapted to Hindi or any other regional/official languages of India. Therefore, the need arises for the availability of such a scale in India that can be used for the assessment of temperament traits in adults.

As described above, a scale of temperament is required in the Indian context to accelerate the research in the personality field, as well as for clinical purposes. However, recent trends indicate that excessive focus of the scales on the negative dimensions of temperament would limit their applicability to clinical contexts. A scale of temperament should cover aspects of interpersonal as well as intrapersonal life, whose application would benefit in healthy growth of the individuals. Currently, the existing temperament scales are used to identify those traits in personality which are impacting the individual's growth in negative manners. Counselors and psychologists adopt such tests to counsel against the dangers of negative temperament. However, motivation toward life's goals requires actualization of positive attributes. These positive traits are inherent in personality but if the professionals ignore them, it would only devoid individuals from finding an appropriate direction in their life. The purpose of counseling is to increase the positive well-being of people, which is possible through the discovery of positive traits that would guide them in finding the right solutions. With this aim, we intend to develop a new scale of positive temperament that can serve the needs of counselors and psychologists as well as fill the gap in the literature.

SUBJECTS AND METHODS

Item construction and selection: Based on the available scales of temperament, several traits of positive temperament were identified. The items of these trait-scales were reviewed by a team of two experts from the Indian community, who have extensive experience in the field of test construction. These experts carefully noted those items that reflected the most common behaviors that are relevant in the Indian context. Selection of items revealed that out of 15 factors identified initially, six factors constituted the most prevalent positive traits. These six factors had high correlations with outcomes of positive well-being and predicted happiness. These factors were optimism, assertiveness, internal locus of control, adaptability, self-contentment, and perseverance. These six factors could not be excluded compared to others and retained the maximum number of items. Rest of the other nine factors had either 2 or 3 items left, while these six factors had at least six items, which was considered appropriate.

Alternatives to these items were prepared, which retained the essential meaning [Table 1] of the original items and would be suitable for application in Indian communities. To keep the theoretical basis of the new scale intact and in line with previous conceptions of PE, it was considered convenient that the present scale should be based on items that are existing in the literature. Since we are not aiming at any conceptual revision of PE, and only desire to create an Indian version of the PE scale, existing constructs can provide appropriate directions in the development of this scale. None of the items were copied from the previous scales, all of them were modified or originally generated. Some of the sample items are given in Table 1.

Through selection and construction of new items, six factors as outlined above with six items each were considered to constitute the newly developed scale having 36 items, and the scale was ready for item analysis through data collection. The scale is named positive temperament inventory (PTI). All items were positively worded. The items are responded on a 5-point Likert scale ranging from 0–4 indicating how often one behaves in the particular way as inquired by the item.

Participants

Stage 1: The data on the initial scale were taken from 278 participants for exploratory analysis. These participants were in the age group of 18–80 years, with 160 females (58%) and 118 males (42%). Age mean was 48.72 years ($SD = 16.30$). The participants had a formal English education and could fluently read and understand English. They were from diverse educational and professional backgrounds and were selected irrespective of their religion or ethnicity.

Stage 2: The data were taken from 338 individuals for confirmatory analysis. The participants were in the age group of 18–78 years, with 212 females (63%) and 126 males (37%). Age mean was 47.87 years ($SD = 16.48$). The characteristics of these participants were similar to those of those taken for exploratory analysis. After the initial analyses of factorization, second-order factors were identified on this sample.

Tools for convergent and discriminant validity

Convergent validity was assessed through the use of two questionnaires:

Strengths and difficulties questionnaire—adults (SDQ)^[20]: This scale measures strengths and difficulties in context of mental health problems. It is a 25-item scale and consists of 5 subscales with 5 items in each which are rated on a 3-point Likert scale (from 0 to 2). The subscales are emotional problems, conduct problems, peer relationship problems,

Table 1: Factor loadings of four components through principal component analysis with varimax rotation (n=278)

Item Number	Optimism	Perseverance	Self-Contentment	Adaptability
36. learn from experiences "I tend to learn from new experiences rather than getting stressed by them."	0.646			
19. imagine the best outcomes	0.643			
7. feel confident	0.622			
6. try new ways	0.606			
31. see others positive	0.535			
12. don't get anxious	0.534			
1. hopeful about future	0.502			
11. take hardships		0.781		
25. best future conditions		0.705		
17. don't give up "I don't give up on something despite repeated disappointments."		0.653		
27. repeat efforts to achieve		0.571		
5. work enthusiasm		0.488		
23. don't get discouraged		0.467		
35. firm focus		0.454		
15. hard work			0.742	
26. stand for myself "When required I am able to stand up for myself"			0.638	
28. realistic expectations			0.534	
16. accept myself			0.481	
32. take initiatives			0.466	
4. feel happy satisfied			0.465	
14. emphasize views			0.443	
24. accept help				0.764
18. accept others' suggestions				0.741
29. pursue goal				0.728
20. take criticism				0.633
34. do not grudge "I do not grudge about things that I do not have and others have."				0.497
10. no comparison				0.434
2. speak clearly calmly				0.417
Eigenvalue	4.557	3.613	2.273	1.435
% of Variance	19.624	16.462	12.077	10.729

hyperactivity/inattention, and prosocial behaviors. Three derived scores are obtained: (a) Total difficulties score by summing the scores of all subscales except prosocial behaviors, (b) Externalization score by summing the scores from conduct and hyperactivity problems, and (c) Internalization score by summing the scores from emotional and peer relationship problems. The scale has acceptable reliabilities and is valid across different populations.^[21]

Neuroticism subscale (20-item version) of international personality item pool (IPIP)^[22]: This scale measures the trait of emotional stability and is based on big-five traits. The scale is reliable and valid and is freely available for use in researches (www.ipip.org). It has been widely used in various studies since its development.^[23] It is rated on a 5-point Likert scale.

The discriminant validity of temperament factors was found with age, as it was assumed that positive temperament may not show any association with age since temperament is biologically linked.

Procedure

The participants were approached online for data collection through a demographic sheet and the newly developed 36-item PTI. Consent form included the details about objectives of the study, the researchers conducting the study and their contact details, the ethical review board (<http://www.kpeindia.com/>) that approved the study (EC approval no. KPE/R/PTI.01-04), and the surety of confidentiality of data. Agreeing to provide data was considered as their consent through online mode. They were screened for current or previous psychiatric illness. They were provided an incentive of getting their results after the development of the valid scale. The average time taken on the questionnaires was 15 min. Links to the questionnaire were distributed through professional contacts of the first author, and the data was collected from several professional organizations throughout India. The study had got ethical approval. Similar procedures were followed for both exploratory and confirmatory analyses.

RESULTS

Exploratory factor analysis

To analyze the factor structure of 36 items in the scale, we ran the principal component analysis with varimax rotation using SPSS (version 25). The sample size of 278 individuals was around eight times the number of items on the scale (36), which made it adequate (must be 5–10 times) to qualify for factor analysis (Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.81). The results of the factor analysis yielded four principal factors that included seven items each, making a total of 28 items instead of the original 36 items. These factors had eigenvalues of greater than 1, with the factor loadings on the items ranging from .417 to .781. Factors with eigenvalues lower than 1 and items with factor loadings of less than .4 were excluded. Scree plot also showed a four-factor solution [Figure 1]. These four components were optimism (19.62% variance), perseverance (16.46% variance), self-contentment (12.08% variance), and adaptability (10.73% variance). The four components included items from all six scales that were initially identified during item selection. However, only four of these happened to have maximum loadings with items that did not overlap with others. The results of the exploratory factor analysis (EFA) are presented in Table 1.

Confirmatory factor analysis

To confirm the factor structure obtained through exploratory analysis, the data was analyzed for confirmatory analysis on a sample of 338 individuals (KMO measure was 0.84). Four models were tested to obtain the best fit statistics. For 1-factor and 2-factor models, χ^2 value was <0.05 , indicating a poor fit. Rest of the values of CFI and RMSEA and adjusted goodness of fit index (AGFI) also followed similar patterns. For the 3-factor model, χ^2 was >0.05 , which indicated a good fit. AGFI for the 3-factor model was <0.90 , whereas

for the 4-factor model AGFI was >0.90 (.932), which indicated a good fit for the 4-factor model. RMSEA for the 3-factor model was 0.091 (>0.08), whereas for the 4-factor model was 0.063 (<0.08), which indicates a good fit for the 4-factor solution. CFI for the 3-factor solution was 0.81, whereas for the 4-factor model was 0.96, indicating a good fit for the 4-factor model. The coefficient of internal consistency for all factors ranged from 0.72 to 0.91. Factor loadings for all 36 items ranged from 0.428 to 0.753, indicating high values. The results of the confirmatory factor analysis (CFA) are presented in Table 2. Correlations among the factors were computed. Optimism and perseverance had significant moderate relationships ($r = 0.54, P < 0.01$) while adaptability and self-contentment had moderate associations with each other ($r = 0.48, P < 0.05$). Other correlations were lower than 0.3 and not significant.

Second-order factors

Since the correlations between optimism and perseverance, and between adaptability and self-contentment were moderately significant, it was considered appropriate to conduct a second-order factor analysis using the correlation matrix of first-order factors. Higher-order factors were extracted using principal components analysis and promax rotation with Kaiser normalization (KMO measure for sampling adequacy was 0.83). The analysis [Table 3] revealed two uncorrelated factors ($r = 0.13, P > 0.05$), where items from optimism and perseverance factored into one component (factor 1) while items from adaptability and self-contentment grouped into the other component (factor 2). These factors were named Temporal positivity (factor 1: due to the future orientation of item contents and long-term goal-persistence with a positive attitude) and Dynamic positivity (factor 2: due to item contents focusing on adaptive skills and continuous evaluation of goal-attainments to maintain feelings of satisfaction).

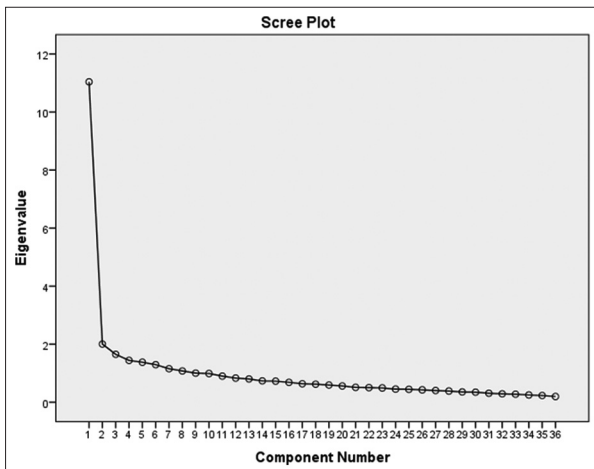


Figure 1: Scree plot of principal factors

Table 2: CFA statistics for the four-factor solution (n=338)

Factor	Cronbach's α	Eigen values	% of variance	Test-retest Reliability, r (n=98)
Optimism	0.84	4.35	21.46	0.89
Perseverance	0.86	3.26	16.22	0.86
Self-contentment	0.91	2.64	13.12	0.96
Adaptability	0.72	1.05	10.54	0.79

CFA - Confirmatory factor analysis

Table 3: Factor loadings of second-order factors

First-order factor	Temporal	Dynamic
Optimism	0.824	
Perseveration	0.711	
Self-Contentment		0.876
Adaptability		0.751
Eigenvalue	2.662	1.536
% of Variance	20.74	14.29

Reliability analysis

Test-retest reliability was assessed on a subsample of 98 participants from Stage 2 (CFA sample) after a period of 4 weeks. The test-retest reliabilities of the four factors ranged from 0.79–0.96 indicating consistency in factor scores [Table 2].

Validity analysis

The results of validity analysis are given in Table 4 ($n = 98$). The convergent validity was established by correlating PTI factor scores with domains of SDQ and neuroticism subscale of IPIP. The factors of PTI had significant negative relationships with emotional problems, peer relationship problems, total difficulties, and internalization scores ($r = -0.34$ to -0.63) while associations with externalization scores were not significant. Positive relationships were found with prosocial behaviors scale ($r = 0.42$ to 0.56). Associations of factor scores of PTI were significantly negative with neuroticism subscale of IPIP ($r = -0.57$ to -0.71). The values of r for relationships of PTI factors with age ranged from 0.08 to 0.22, and none of the coefficients were significant, thereby establishing the divergent validity of the PTI. The discriminant validity is also established in the current study for conduct problems, hyperactivity/inattention, and externalization behaviors.

DISCUSSION

The current study aimed to develop a scale of positive temperament. To the authors’ knowledge, the construction of such a scale is attempted in the Indian context for the first time. The scale was constructed from previously available scales in the English language, and after the initial extraction of 15 factors, the process of item selection helped to finalize six factors which had a higher potential for contributing to happiness and satisfaction from life. The results of EFA of 36 items revealed that the scale contains four factors having 28 items, with seven items in each, where the items from six initial factors distributed to form only four. These factors were optimism, perseverance, self-contentment, and adaptability. The results from CFA confirmed the structure of four factors. Hence, the final Positive Temperament Inventory (PTI) contains four factors with 28 items. Second-order factors were identified

which grouped optimism and perseverance into one component called temporal positivity, while the other two factors of adaptability and self-contentment were grouped into dynamic positivity. The scale is short as compared to most available temperament scales. This makes its application convenient in counseling as well as research areas.

The six factors chosen for this study were based on theories of Cloninger *et al.*,^[11] Tellegen,^[10] Buss and Plomin,^[13] Evans and Rothbart,^[4] and Gray^[9] where the authors had used TCI, EAS, ATQ, and PANAS for the measurement of temperament. The factors constitute positive dimensions of temperamental traits, and those factors with NE content were excluded during the initial selection process. As our review revealed, most of the factors (78%) in existing scales were not measuring PE, and rest others were having mild-to-moderate correlations with PE.^[24] Although in many cases they had acceptable correlations with PE traits (like extraversion), conceptually speaking, PE is only one of the several aspects of such temperamental traits, and that too distantly related.^[25] The construction of this scale has added value to the literature by offering an alternative to the current temperament scales. Previous scales have several factors across different dimensions of temperament, while PTI has only positive temperament as its core construct.

However, despite this being a full scale of positive temperament, we did not find any single-factor pervading all the items. Hence, a total score cannot be calculated to give a composite score. These factors can best be treated as individual traits of positive temperament, which possibly contribute to distinct areas of positive functioning. For example, optimism may imply positive future orientation, but only through perseverance, one can achieve high results. According to Putnam,^[26] there are two different types of constructs of PE that can be classified on the basis of the prominence of approach behaviors associated with emotions: approach based (like extraversion, surgency, sensation seeking) and nonapproach based (like agreeableness, affiliation). It is expected that these traits would lead to different outcomes in one’s life, and overall satisfaction (well-being) is not possible through any one of them.^[27] Although any one of them is enough to make someone

Table 4: Validity statistics for PTI (n=98)

Variable	Emotional problems	Conduct problems	Hyperactivity	Peer relationships	Prosocial behaviors	Total difficulties	Externalization	Internalization	Neuroticism	Age
Optimism	-0.37*	0.03	0.08	-0.34*	0.47*	-0.48*	0.11	-0.59*	-0.59*	0.11
Perseverance	-0.49*	0.14	0.17	-0.45*	0.42*	-0.52*	0.15	-0.63*	-0.71**	0.21
Adaptability	-0.36*	0.21	0.13	-0.58*	0.53*	-0.58*	0.18	-0.52*	-0.57**	0.08
Self-contentment	-0.41*	0.26	0.10	-0.46*	0.56*	-0.54*	0.19	-0.57*	-0.62**	0.22

* $P < 0.05$, ** $P < 0.01$. PTI – Positive Temperament Inventory

positive, the presence of other positive traits is equally needed. Approach-based traits involve an orientation toward high stimulus intensity, while the others involve a subjective state of well-being irrespective of stimuli intensity.^[28] Hence, PTI can be said to have perseverance and adaptability as approach-based constructs, which require active efforts toward increased well-being, while optimism and self-contentment are more subjective in nature and do not need any force of motivation. However, the analysis for second-order factors found that temporal positivity constitutes those domains that require future orientation, and not approach-based behaviors, while the dynamic positivity implies temperamental traits that are focused on present-state positivity. This conception is different from the ones realized by previous authors^[12,26] who emphasized more on the motivational aspects of temperament, rather than the time-related ones. It can be mentioned that time-perspective is an important component of our personalities and people differ in their time-orientation toward life, which is related to their emotionality.^[14]

Each factor deserves a separate mention. Optimism describes a positive outlook in the future. It implies that things would eventually turn out to be good and favorable, despite odds in current circumstances.^[29] Optimism is related to better subjective health outcomes. A chronic or severe health condition brings a threat to one's life and existence. Optimism has been found linked with better coping during unhealthy states.^[30] Although objective outcomes may vary, optimism helps to improve functionality in life and contributes to happiness during crisis conditions.^[31] Such a trait helps to welcome the positive possibility in the future, in the face of uncertain circumstances. This lessens the distress associated with crisis situations. In PTI, optimism has the maximum variance of 21.5% in scores of positive temperament. This trait seems to be the most significant of all, somehow contributing to larger variations in happiness. It does look obvious from a theoretical point of view also because higher optimism is a subjective evaluation of a better future. It is more abstract and there is no limit to what extent one can be optimistic. Whatever be the distress, optimism always gives hope and a positive feeling of a better future. In fact, optimism can be a cognitive aspect to the feelings of happiness because a happy and positive outlook is characteristic of well-being.^[32]

Perseverance is the second most important factor in PTI. It leads to 16.2% variance in positive temperament. It also constitutes one of the important factors in Cloninger's model of temperament. Persistence in tasks makes one expect the best results. Perseverance, like optimism, depends on positive subjective evaluations of best possible outcomes. One has to persist on any

difficult task to achieve a desirable outcome in the future, near or distant. Persistence leads to better success and higher rates of achievement through goal-directed behaviors.^[33] It has been found to correlate to success in sports, business, and even gambling. People who believe in their abilities would not leave the results of their efforts to luck or chance and prefer to make constant attempts in fulfilling the goal. Perseverance has been correlated with self-efficacy and internal locus of control as well as higher impulsivity and low frustration tolerance.^[34] In fact, this factor has two items from the locus of control trait that constituted six initial factors. Unlike optimism, perseverance predicts better outcomes in career and relationships, rather than health conditions. In conditions of high perseverance and low optimism, levels of depression are high, accompanied by feelings of increased arousal and anxiety.^[35] Therefore, both are equally important for mental health.

The third important factor of PTI that causes 13.1% of the variance in scores is self-contentment. This trait is important because we all make evaluations of past accomplishments, and positive self-evaluations are an important marker of a healthy mindset. Unlike the other two traits discussed above, which were primarily concerned with future outcomes, self-contentment is associated with positive evaluations of the past, whether success or failures. This makes PTI significant as it assesses positive subjective past interpretations, in addition to healthy futuristic expectations. Self-contentment measures overall perceptions about past experiences and outcomes that are currently part of our life's script and are unchangeable. This trait signifies the extent to which one accepts past life as a consequence of favorable as well as unfavorable circumstances. This helps one to accept life as it is, with little to no resistance as how it should have been. Studies show that people with a high number of traits that lead to self-contentment have fewer experiences of negative mood and lower rates of depression.^[36] It is negatively related to neuroticism and other clinical variables which otherwise suggest higher ruminative tendencies.^[37] It also encourages self-compassionate thinking by lowering the effects of intrusions and negative thoughts.

The fourth trait of adaptability, or loosely described as flexibility, contributes to 10.5% of the variance in positive temperament scores. Adaptability implies changing oneself to changing circumstances of daily life (accommodation-assimilation). It fits quite accurately, in theoretical ways, with the other three traits of PE in PTI. Adaptability helps to shift from past to future, brings balance in expectations, and yields contentment and optimism.^[38] With increased flexibility, one can be positive in life because negative

events and poor relationships effect less in such cases. Adaptability helps in adjusting to difficult conditions which can't be controlled or changed, hence, leading to higher acceptance. This helps in reducing distress and developing coping strategies to deal with stresses. Adaptability has significance over the developmental course where one has to pass through changing circumstances.^[39] It signifies an immediate reaction tendency, unlike the other three traits, because it is under constant updation due to varying stressful conditions. It is necessary not only in competitive environments but also in interpersonal contexts which demand a constant change of expectations and perceptions.

Applications of PTI

PTI can be utilized for various purposes like counseling, career assessment, clinical decision making, as well as in work-related environments. In counseling, it can help to inform about positive prospects of growth and future happiness. Positive traits are generally less explored in everyday life; hence, during times of stress, they may not be available as a source of inspiration. However, as theory suggests, we all have several positive traits in varying degrees that are biological and cultivated through experience.^[40] Positive guidance for positive outcomes is one of the main goals of counseling and may aid the individual to choose the right course of action based on one's predispositional positive traits.

Career counseling requires an evaluation of one's strengths and weaknesses in order to select the right career. Positive temperament provides a source of encouragement and helps in developing a positive attitude toward goals for future success. Career decisions are complicated sometimes and may require belief in favorable outcomes under uncertain circumstances. Optimism and perseverance are related to successful career growth and achievements.^[41]

Clinical interventions focus on reducing negative outcomes of illnesses that have resulted in reduced capacities to perform in daily life. It is equally necessary that positive attributes of personality be reinforced in order to help in overcoming distress. Building coping skills and learning conflict-resolution strategies require a positive mindset toward successful treatment. Lower levels of adaptability are generally implicated in depression and anxiety disorders.^[42] Therefore, increasing one's adaptability may aid in relieving the distress caused by illness.

A workplace is a stressful situation and offers several challenges to deliver optimal performance. Such a performance is detrimental to one's success in life and career. Lack of success is generally related to lower levels of positive traits and a higher number of stressors.^[43]

In the face of stressors, positive temperamental traits provide the necessary sustainability and persistence. Career sometimes gives results after a long-term effort. Traits like perseverance and adaptability are some of the most necessary constituents of future success.^[44]

CONCLUSIONS

Positive temperament inventory is a new scale that caters to the growing need for assessing positive traits in personality. The scale is reliable and valid, as shown in this study. The dearth of literature and fewer scales measuring positive temperament inspired the authors to create this scale. The prime intention was to develop such a scale for measuring positive temperament in the Indian context. The dataset used to create this scale was taken from adult individuals in a wide age range across various professions. The shorter nature of the scale would make it applicable across wider contexts owing to possibility of fast administration and easy scoring. Authors assert that the four factors of the scale make it brief and provide a concise measurement of some major dimensions of PE. Future studies would enlighten about other properties and correlates of the scale, like validation with scales of happiness and positive affect. The development of this scale would enable researchers to study predictors of positive outcomes. In the future, clinicians can also benefit by making predictions of positive health outcomes.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Rothbart MK, Derryberry D. Development of individual differences in temperament. In: Lamb ME, Brown AL, editors. *Advances in Developmental Psychology*. Vol 1. Hillsdale, NJ: Erlbaum; 1981. p. 37-86.
2. Rothbart MK, Bates JE. Temperament. In: Eisenberg N, Damon W, Lerner RM, editors. *Handbook of Child Psychology*. 6th ed. Vol 3. Hoboken, NJ: Wiley; 2006. p. 99-166.
3. Allport GW. *Personality: A Psychological Interpretation*. New York: Holt; 1937.
4. Evans DE, Rothbart MK. Development of a model for adult temperament. *J Res Pers* 2007;41:868-88.
5. Rothbart MK. *Becoming Who We Are: Temperament and Personality in Development*. New York: Guilford Press; 2011

6. Eysenck HJ. *The Biological Basis of Personality*. Springfield, IL: Thomas; 1967.
7. Costa PT Jr, McCrae RR. Personality in adulthood: A six-year longitudinal study of self-reports and spouse ratings on the NEO Personality Inventory. *J Pers Soc Psychol* 1988;54:843-53.
8. Zuckerman M, Kuhlman DM, Camac C. What lies beyond E and N?: Factor analyses of scales believed to measure basic dimensions of personality. *J Pers Soc Psychol* 1988;54:96-107.
9. Gray JA. The neuropsychology of emotion and personality. In: Stahl SM, Iverson SD, Goodman EC, editors. *Cognitive Neurochemistry*. Oxford, UK: Oxford University Press; 1987. p. 171-90.
10. Tellegen A. Structures of mood and personality and their relevance to assessing anxiety, with an emphasis on self-report. In: Tuma AH, Maser JD, editors. *Anxiety and the Anxiety Disorders*. Hillsdale, NJ: Erlbaum; 1985. p. 681-706.
11. Cloninger CR, Svrakic DM, Przybeck TR. A psychobiological model of temperament and character. *Arch Gen Psych* 1993;50:975-90.
12. Thomas A, Chess S. *Temperament and Development*. New York: Brunner/Mazel; 1977.
13. Buss AH, Plomin R. *A Temperament Theory of Personality Development*. New York: Wiley; 1975.
14. Costa PT, McCrae RR. Personality stability and its implications for clinical psychology. *Clin Psychol Rev* 1986;6:407-23.
15. Lucas RE, Le K, Dyrenforth PS. Explaining the Extraversion/positive affect relation: Sociability cannot account for extraverts' greater happiness. *J Pers* 2008;76:385-414.
16. Caspi A, Roberts BW. Personality development across the life course: The argument for change and continuity. *Psychol Inq* 2001;12:49-66.
17. Buss AH, Plomin R. *Temperament: Early Developing Personality Traits*. Hillsdale, NJ: Erlbaum; 1984.
18. Carver CS, White TL. Behavioral inhibition, behavioral activation, and the affective responses to impending reward and punishment: The BIS/BAS Scales. *J Pers Soc Psychol* 1994;67:319-33.
19. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: The PANAS scales. *J Pers Soc Psychol* 1988;54:1063-70.
20. Goodman R. The strengths and difficulties questionnaire: A research note. *J Child Psychol Psychiatry* 1997;38:581-6.
21. Hill CR, Hughes JN. An examination of the convergent and discriminant validity of the strengths and difficulties questionnaire. *Sch Psychol Q* 2007;22:380-406.
22. Goldberg LR. The development of markers for the Big-Five factor structure. *Psychol Assess* 1992;4:26-42.
23. Johnson JA. Measuring thirty facets of the Five Factor Model with a 120-item public domain inventory: Development of the IPIP-NEO-120. *J Res Pers* 2014;51:78-89.
24. Strelau J. *Temperament: A Psychological Perspective*. New York: Plenum Press; 1988.
25. Kasch KL, Rottenberg J, Arnow BA, Gotlib IH. Behavioral activation and inhibition systems and the severity and course of depression. *J Abnorm Psychol* 2002;111:589-97.
26. Putnam SP. Positive emotionality. In: Zentner M, Shiner RL, editors. *Handbook of Temperament*. New York, US: Guilford Press; 2012. p. 105-23.
27. Carver CS, Harmon-Jones E. Anger is an approach-related affect: Evidence and implications. *Psychol Bull* 2009;135:183-204.
28. Gruber J, Johnson SL. Positive emotional traits and ambitious goals among people at risk for mania: The need for specificity. *Int J Cogn Ther* 2009;2:176-87.
29. Segerstrom SC. Optimism and immunity: Do positive thoughts always lead to positive effects? *Brain Behav Immun* 2005;19:195-200.
30. Roy B, Diez-Roux AV, Seeman T, Ranjit N, Shea S, Cushman M. Association of optimism and pessimism with inflammation and hemostasis in the Multi-Ethnic Study of Atherosclerosis (MESA). *Psychosom Med* 2010;72:134-40.
31. Allison PJ, Guichard C, Fung K, Gilain L. Dispositional optimism predicts survival status one year after diagnosis in head and neck cancer patients. *J Clin Oncol* 2003;21:543-48.
32. Carver CS, Scheier MF, Miller CJ, Fulford D. Optimism. In: Snyder CR, Lopez SJ, editors. *Oxford Handbook of Positive Psychology*. 2nd ed. New York: Oxford University Press; 2009. p. 303-11.
33. Martin RP. Activity level, distractibility, and persistence: Critical characteristics in early schooling. In: Kohnstamm GA, Bates JE, Rothbart MK, editors. *Temperament in Childhood*. New York: Wiley; 1989. p. 451-61.
34. Eaton WO. Measuring activity level with actometers: Reliability, validity, and arm length. *Child Dev* 1983;54:720-6.
35. Maziade M, Caron C, Cote R, Boutin P, Thivierge J. Extreme temperament and diagnosis. *Arch Gen Psych* 1990;47:447-84.
36. Ekman P. An argument for basic emotions. *Cogn Emot* 1992;6:169-200.
37. Goldsmith HH, Pollak SD, Davidson RJ. Developmental neuroscience perspectives on emotion regulation. *Child Dev Perspect* 2008;2:132-40.
38. Nusslock R, Abramson L, Harmon-Jones E, Alloy L, Coan J. Psychosocial interventions for bipolar disorder: Perspective from the behavioral approach system (BAS) dysregulation theory. *Clin Psychol Sci Pract* 2009;16:449-69.
39. Shiota MN, Keltner D, John OP. Positive emotion dispositions differentially associated with Big Five personality and attachment style. *J Posit Psychol* 2006;1:61-71.
40. Rothbart MK, Hwang J. Temperament and the development of competence and motivation. In: Elliot AJ, Dweck CS, editors. *Handbook of Competence and Motivation*. New York: Guilford Press; 2005. p. 167-84.
41. Rydell A, Berlin L, Bohlin G. Emotionality, emotion regulation, and adaptation among 5- to 8-year-old children. *Emotion* 2003;3:30-47.
42. Watson D. *Mood and Temperament*. New York: Guilford Press; 2000.
43. Lecic-Tosevski D, Vukovic O, Stepanovic J. Stress and personality. *Psychiatriki* 2011;22:290-7.
44. Ong AD, Bergeman CS, Bisconti TL, Wallace KA. Psychological resilience, positive emotions, and successful adaptation to stress in later life. *J Pers Soc Psychol* 2006;91:730-49.