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ASSESSMENT

Cultural Adaptation of New Affective Well-Being Measure in Hindi-Speaking Youth: Scale of Positive and Negative Experience

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Abstract This study is an attempt to culturally adapt the Scale of Positive and Negative Experience (SPANE, Diener et al. in Soc Indic Res 97(2):143–156, 2010) in the Indian context. The study was conducted on youth in the age range of 15–24 years ($N = 966$), and reliability and factorial validity of translated version (in Hindi) of SPANE were calculated. Convergent validity of translated scale was also examined with different measures of well-being (life satisfaction, psychological distress, and happiness) and positive expectations scales (optimism and self-efficacy). Results supported the original two-factor structure of SPANE, and the scale also demonstrated adequate internal consistency. Further analyses revealed structural invariance for scale items across gender, different age groups (adolescents and young adults), different residential areas (urban and rural), and different socioeconomic levels. Results also provided a support for the convergent validity of the Hindi version.

Keywords Positive and negative experiences · Subjective well-being · Reliability · Factorial validity · Convergent validity

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Introduction

Theoretical Framework

Defining well-being has long been a matter of debate. Researchers have tried to define it as the personal quality of a person, as closeness to god, goods, and services produced by a society, the absence of pathology in a person, and recently the well-being of a person has been defined as subjective evaluations of his/her life experiences. This construct was later considered as the subjective well-being of a person. Diener, Emmons, Larsen, and Griffin (1985) systematically elaborated upon the subjective evaluations of well-being and classified the construct of subjective well-being (SWB). According to them, subjective well-being has three components: positive experiences, negative experiences, and satisfaction with life. Life satisfaction component involves cognitive evaluations of the conditions of one's life, and the balance between pleasant experiences and unpleasant experiences reflects upon the affective component of SWB. Positive and negative affects reflect the day-to-day experiences of a person's life (Diener, Scollon, & Lucas, 2004), and life satisfaction is the judgment of life circumstances based on evaluations. Negative affect of a person is the resultant of experiences like fear, anger, and guilt, whereas positive affect is the resultant of experiences like cheer, curiosity, trust, and vigilance. These two components of affective well-being were thoroughly examined to define the structure of SWB (Bradburn, 1969; Diener et al., 1985; Watson & Tellegen, 1985).

Positive affect is considered as the level of pleasure when one is connected with the environment. Higher levels of positive affectivity encompass feelings like being active, lively and curious. It also reflects the high level of energy and concentration in a person. However, loneliness,

sadness, and lethargy are the outcomes of the lower level of positive affectivity (Watson & Tellegen, 1985). Negative affect is a common factor for the onset of different psychopathologies (anxiety disorders, depression, and lower level of satisfaction). It includes various negative emotional states such as anger, disgust, underestimation, guilt, and fear (Watson, Clark, & Tellegen, 1988).

Several measures were developed to assess the components of SWB. Diener et al. (1985) developed a widely recognized and accepted Satisfaction with Life Scale (SWLS) to assess the life satisfaction component of SWB. Hedonic Balance Scale (Schimmack, Diener, & Oshi, 2002), Positive and Negative Affectivity Scale (PANAS) (Watson et al., 1988), and Affect Balance Scale (Bradburn, 1969) were developed to assess remaining two components of SWB (positive and negative affects). Recently Diener et al. (2010) developed another Scale of Positive and Negative Experience (SPANE) to overcome the limitations of earlier scales measuring same constructs.

Literature Review

The SPANE is a 12-item scale that measures six common and six specific positive and negative emotions of a person. Diener et al. (2010) have outlined several advantages of the scale. First, the SPANE takes into account both general feelings (positive, good, pleasant, negative, bad, and unpleasant) and specific emotions (happy, joyful, contented, sad, afraid, and angry). Second, it appears to be less culturally biased. Third, earlier measures neglected some feelings, which are important for well-being. Fourth, the desirability of feelings and emotions was not addressed in other scales. Fifth, inadequate sampling methods were used in other scales. Sixth, the SPANE assesses responses on degree-based response format rather than frequency based. Finally, authors tried to avoid the use of a lengthy scale.

While developing the new measure of affective well-being, Diener et al. (2010) included other well-being measures to determine the convergent validity of the newly developed measure. Principal axis factor analysis (PAF) and internal consistency were used to explore and estimate the factorial validity and reliability of the newly developed scale. Reliability score (α) of the scale ranged between 0.81 and 0.89. PAF analysis was run separately for positive and negative items. PAF for the positive emotions produced a single factor with an eigenvalue above 1.0 (3.69) which accounted for 61% of the variance in the scale. PAF produced similar one-factor structure for the negative items with an eigenvalue above 1.0 (3.19) which accounted for 53% of the variance in the scale. Factor loadings for all 12 items were found ranging from .49 to .81. Significant correlation was found between both subscales ($r = -.60$). Subsets of positive and negative emotions had moderate to

highly significant correlations with other measures of well-being.

Researchers around the globe took great interest in translating SPANE in local languages. Silva and Caetano (2013) translated it first in the Portuguese language to check the usability of this scale. Back-translation method was adopted to develop the Portuguese version. Two different samples were chosen to collect data on translated measure. The sample consisted of total 911 participants, of whom 50% ($N = 454$) were females. Authors also included different measures (Satisfaction with Life Scale, Subjective Happiness Scale, Single item measure of Happiness, and Flourishing Scale) to estimate the convergent validity of the translated SPANE.

Principle component analysis (PCA) produced two-factor structure identical with original scale with two eigenvalues (5.49 and 1.97) which accounted for 62% of the variance. Reliability of items in the scale was found between .89 and .90 for positive items, and .84 for negative items. Multi-group confirmatory factor analyses also confirm the invariance of two-factor structure in both samples. Authors suggested calculating psychometric properties for specific populations like adolescents and exploring its association with other well-being variables.

Next, Li, Bai and Wang (2013) translated SPANE in the Chinese language. Their focus was to explore the cultural influences on emotional expressions and use of SPANE for the broader population. Further, they also planned to examine the measurement invariance across gender, age, education level, and income. This study was conducted to establish the basic understanding of the emotional well-being of Chinese people. Twenty-one thousand seven hundred sixteen employees (21,716) from five provinces were invited for data collection. The age range of those employees was between 18 and 60 years. SWLS and satisfaction with life as a whole scale were used to examine the convergent validity of the translated version.

Unlike earlier translation, authors used confirmatory factor analysis (CFA) instead of PCA to explore the factor structure with different methods assuming scale items will replicate either single-factor or two-factor model with correlated errors or without correlated errors. Results indicated that reliability of items of the translated scale was ranging from .88 to .92. It was found that two-factor model with correlated errors represents best fit for translated version ($\chi^2 = 4611.2$, SRMR (Standard Root-Mean-Square Residuals) = .030, CFI (Comparative Fit Index) = .975 and RMSEA (Root-Mean-Square Error of Approximation) = .048). Multi-group CFA showed strict equivalence across gender, age groups, education level, and income levels. Further analysis revealed that SPANE-P and SPANE-N were found highly positively correlated with

SWLA and SWLW, and SPANE-N was found moderately negatively correlated with SWLS and SWLW.

Sumi ([2013](#)) did another translation of SPANE in the Japanese language. The reason behind translating SPANE in the Japanese language is to respond to the voices raised for an appropriate measure of emotional well-being in Japan. Convergent validity of the translated version was tested with SWLS, Subjective Happiness Scale, LOT-R, Positive and Negative affectivity Schedule (PANAS), Hopkins Symptoms Checklist, and Perceived Stress Scale. The translated scale was administered to 298 male and 222 female ($N = 520$) undergraduate students of age range from 18 to 27 years to estimate the psychometric properties of the Japanese version of SPANE. Cronbach's alpha was found .91 for positive emotions items and 0.90 for negative emotions items. exploratory factor analysis (EFA) produced a two-factor structure with an eigenvalue greater than 1.0. Both factors explain 43.4% of the variance. CFA also endorsed the two-factor structure of the translated version ($\chi^2 = 203.8$, $p < .01$, CFI $= .96$, GFI $= .94$, RMSEA $= .08$, and AIC $= 255.88$). Positive emotions were found low-to-moderate positive and negative correlation with different positive and negative indicators of wellness. Similar results were found for SPANE-N factor.

Jovanovic ([2015](#)) has translated SPANE in the Serbian language to address an issue overlooked by previous translations. As original author had demonstrated the superior usability of SPANE over PANAS, none of the earlier translations attempted to check the incremental validity of SPANE over PANAS to predict well-being indicators. This study was conducted on two different samples (adolescents and young adults). Adolescent sample consisted of 295 participants (78% females) from two different schools, and young adults sample included 513 (62% females) undergraduate students. Convergent validity was checked using PANAS, seven items measuring depression of DASS-21, and The Mental Health Continuum-Short Form. Authors used the back-translation method to translate SPANE in the Serbian language. Reliability analysis showed incredible alpha score with .91 for SPANE-P, .88 for the SPANE-N in adolescent sample, and .88 for the SPANE-P and .80 for the SPANE-N. Further analysis revealed two-factor model with good fit to data: for young adult $\chi^2 = 115.03$, RMSEA $= .048$, and CFI $= .98$ and for adolescents $\chi^2 = 54.35$, RMSEA $= .009$, and CFI $= 1.00$.

Correlational analysis revealed a moderate positive correlation with PANAS-PA (Positive and Negative affectivity Schedule-Positive affectivity), life satisfaction, and general well-being, and a moderate negative correlation with PANAS-NA (Positive and Negative affectivity Schedule-Negative Affectivity) and depression with SPANE-P. On the other hand, SPANE-N shows a moderate positive correlation with PANAS-NA and depression and moderate negative correlation with PANAS-PA, life satisfaction, and general well-being. Z test found a stronger correlation of SPANE-P and N with indicators of well-being compare to PANAS. Hierarchical regression analysis was used to estimate the incremental validity of SPANE over PANAS. Analysis revealed that after controlling the effects of gender, age, and two subscales of PANAS (Positive and Negative), SPANE contributed significantly to the indicators of well-being. Commonality analyses further revealed the larger unique effect of SPANE subscales than PANAS subscales to predict indicators of well-being.

Recently, Telef ([2015](#)) estimated the psychometric properties of SPANE in Turkish culture. He translated SPANE in Turkish language using back-translation method. Data collection was carried out with 401 university students (68% female). SWLS, PANAS, and LOT-R were also used to examine the convergent validity of the translated version. Both exploratory and confirmatory analyses were used to explore the factor structure of the translated scale. Cronbach's alpha was found .88 for SPANE-P factor and .83 for SPANE-N factor. Exploratory factor analysis revealed a two-factor structure with an eigenvalue higher than 1.0. Both variables cumulatively contributed 60% to total variance. Confirmatory factor analysis also showed good data fit for two-factor model ($\chi^2 = 184.42$, RMSEA $= .07$, SRMR $= .04$, CFI $= .97$). The correlational analysis suggests a significant relationship between subscales of SPANE and PANAS, SWLS and LOT-R.

The Present Study

The primary aim of the present study was to work out the factor structure and reliability of SPANE Hindi version and explore the convergent validity of the translated measure with other well-being measures. Validation of SPANE in the Hindi language was planned, as none of the standard measures is available to assess the affective well-being component of SWB in Hindi-speaking population. In this study, we selected youth (15–24 years) population that includes both adolescents and adults (as per United Nations, [1995](#)). Keeping in mind the variables used in the earlier studies and their associations with positive and negative items of SPANE, the role of different demographic variables in the development of positive and negative experiences of a person was also examined. In the present study, LOT-R, SWLS, and DASS-21 were also included similar to earlier studies. Before translating the scale, researchers took permission from original authors. Back-translation procedure was used to translate the scale from original language to the Hindi language.

Method

Participants

The sample consisted of 966 students (466 males and 500 females) from colleges and schools of Varanasi and Kanpur District of Uttar Pradesh state in India. Age of participants ranged from 15 to 24 years ($M = 19.15$, SD = 2.26). Before data collection, authorities of schools and colleges were approached and the necessary permission was taken to start the data collection process. Data collection was done in classrooms, and male and female participants were contacted in their classrooms. Participants were informed about the study, and consent was taken before the administration of study tools. Participation in the study was voluntary, and participants had the right to withdraw from the data collection at any point in time. The researcher was present throughout the session to make necessary clarifications in case there were confusions and queries. The participants received no payment for their involvement.

Instruments

Following measures were included in the study along with Scale of Positive and Negative Experience: Satisfaction with Life Scale (SWLS), Depression Anxiety and Stress Scale-21 (DASS-21), The Oxford Happiness Questionnaire short-form (OHQ-SF), Life Orientation Test-Revised (LOT-R), and General Self-Efficacy Scale (GSES). Scales available in the English language were translated into Hindi language. Necessary permissions were taken from original authors to use and translate the scales into Hindi language. SWLS and GSES were taken from the web page of original authors. OHQ and LOT-R were translated into Hindi language, and the Hindi version of DASS-21 was used with permission from the translators (Singh, Prabhuappa, Eqbal, & Singh, 2013).

Scale of Positive and Negative Experience (Diener et al., 2010)

It is a 12-item scale which includes six items to assess positive experiences and six items to assess negative experiences of a person. Responses are made on a 5-point scale ranging from 1 (very rarely or never) to 5 (very often or always). Scores of positive and negative scales are separately calculated to assess the response. Total score on positive emotions can range from 6 to 30, and on the negative scale the range is same. A combined score can be produced by subtracting the negative score from the positive score, which presents balance scores which can range from −24 to 24.

Satisfaction with Life Scale (Diener et al., 1985)

Hindi version of Satisfaction with Life Scale assesses satisfaction with life of a person as a whole using 5 items. Items are positively framed and responses were given on a 7–point Likert scale ranging from strongly disagree to strongly agree. The item-total correlations for the five items were: .81, .63, .61, .75, and .66.

Oxford Happiness Questionnaire Short Form (Hill & Argyle, 2002)

It is an 8-item scale developed to measure the personal happiness of a person. Six-point scale (ranging from agree strongly to disagree strongly) is for responses. Three items are reversed keyed among eight items. Scores on this measure range from 8 to 48. The reliability of 8-item scale was found significant and strongly correlated with the full version ($r = .93$).

Life Orientation Test-Revised (LOT-R) (Scheier, Carver, & Bridges, 1994)

Translated version of LOT-R is a short test consisting of 10 items. It measures the optimistic and pessimistic behavior of a person. Six out of 10 items can be used to derive the overall score on the test. The remaining 4 items are fillers. Among 6 items, 3 items are positively keyed, and 3 are negatively keyed. Cronbach's alpha was found to be .78 for this scale.

Hindi Version of General Self-Efficacy Scale (Sud, Schwarzer, & Jerusalem, 1998)

It is a 10-item scale to assess the general self-efficacy or optimistic self-belief of an individual. Responses are made on a 4-point scale ranging from totally disagree to totally agree. Total of responses on these items ranges from 10 to 40. Cronbach's alphas ranged from .76 to .90 in samples from 25 nations.

Analysis of Data

Data were collected from 966 youth of age 15 to 24 years. Data were divided into two sets (483 each) to run EFA and CFA separately. Internal consistency and principal component analysis (PCA) were used to analyze reliability and factorial validity of Hindi version of SPANE. Pearson's correlation was computed to explore the association between positive and negative emotions, and among all the variables used in present study.

Table 1 Outcomes of descriptive statistics and item analysis for different items of SPANE

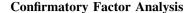|	Mean	SD	Item-total r	α (Item deleted)
Positive emotions items				
Positive	3.69	1.12	.313	.77
Good	3.93	1.01	.428	.75
Pleasant	3.75	1.01	.363	.75
Happy	3.92	.948	.439	.75
Joyful	3.92	.980	.486	.74
Contented	3.67	1.13	.334	.76
Negative emotions items				
Negative	3.32	.998	.389	.75
Bad	3.27	1.62	.467	.74
Unpleasant	3.37	1.02	.484	.74
Sad	3.22	.905	.452	.75
Afraid	3.46	1.17	.340	.76
Angry	3.20	.944	.325	.77

Results

Mean, SD and Item Analysis of Items in Hindi Version of SPANE

Table 1 indicates that the mean scores of different items were well above the mean level and item-total correlations (range of .31–.48) were above the acceptable minimum of .30 (Nunnally & Bernstein, 1994). The SPANE showed satisfactory internal consistency as α value with all the items range from .74 to .77.

Factor Structure of Hindi Version of SPANE

EFA was used to examine the factor structure of Hindi version. Kaiser–Mayer–Olkin measure (which calculates the sample adequacy for the overall scale and variables) and Bartlett test of sphericity (which calculates whether r-matrix resembles the identity matrix) indices were used. Both indices (KMO = .826) and Bartlett's test of sphericity ($\chi^2 = 1156.20$, $p < .001$) indicated that the correlation matrix was adequate for using PCA.

The PCA was conducted using varimax rotation with Kaiser normalization process. The PCA extraction method produced a two-factor solution with two eigenvalues greater than 1 (3.43 and 1.92), explaining 44.62% of the variance. Factor loadings for items on factor one were: .72, .69, .69, .65, .63, and .62, and loading for items on factor two were: .73, .69, .66, .65, .60, and .56. The two-factor structure was obtained for the Hindi version of SPANE. Further, this two-factor model was evaluated using CFA.

Confirmatory Factor Analysis

AMOS 18.0 version was used to evaluate data fit for the two-factor model (Arbuckle, 2009). CFA was performed to reproduce the two-factor model of the SPANE from the data set. Following indices of fitness of the model were assessed to test the assumed model: χ^2, Goodness-of-Fit Index (GFI), Comparative Fit Index (CFI), Root-Mean-Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), and Akaike Information Criterion (AIC). Lower χ^2 value with insignificant p value indicates excellent fit. GFI and CFI value more than .95 suggested a better fit. The value of .07 or lower for RMSEA is considered as acceptable value. The well-fitting model should have SRMR value less than .05. Model with the minimum AIC value will be preferred.

Confirmatory factor analysis provided a two-factor model with following fit indices: $\chi^2 = 52.53$, $p > .05$; $\chi^2/df = 1.05$, $p > .05$; CFI = .995, GFI = .982, RMSEA = .010, 90% CI = .000–.032, SRMR = .032, and AIC = 108.53. All the indices of the goodness-of-fit model suggested excellent fit of data. Regression weights range from .30 to .54, which is above the acceptance level.

Multi-group CFA

As we have recorded different demographic characteristics of respondents, we tried to explore the factor structure of the scale for gender (male and female), in two different age groups (adolescents and adults), for the residential environment (urban and rural), and across five socioeconomic status (SES).

For ascertaining the factorial invariance initially, the unconstrainted model was drawn and then the constrained model (constraining the regression weights) was drawn for different variables. The significant difference between two models was calculated using stat wiki tools package (Gaskin, 2012). The outcomes of CFAs to explore the structural invariance for different variables are shown in tables (Table 2).

Four different CFAs were carried out to draw the structural variance in SPANE. For gender (male and female) unconstrained model: $\chi^2 = 104.34$, $p > .05$, $\chi^2/df = 1.06$, $p > .05$, CFI = .987; GFI = .967, RMSEA = .012, 90% CI = .000–.028, SRMR = .037, and AIC = 220.34. When regression paths were constrained for males and females, constrained model: $\chi^2 = 115.5$, $p > .05$; $\chi^2/df = 1.05$, $p > .05$, CFI = .988, GFI = .963, PGFI = .679, RMSEA = .010, 90% CI = .000–.027, SRMR = .041, and AIC = 207.50. Gender-wise models have invariance at both levels (configural

Table 2 CFA exploring structural invariance for gender

Model	χ^2	χ^2/df	SRMR	GFI	CFI	RMSEA	AIC
Unconstrained	104.34	1.06	.037	.967	.987	.012	220.34
Constrained	115.5	1.05	.041	.963	.988	.010	207.50

Table 3 CFA exploring structural invariance for age groups

Model	χ^2	χ^2/df	SRMR	GFI	CFI	RMSEA	AIC
Unconstrained	107.8	1.06	.045	.963	.988	.011	215.76
Constrained	118.25	1.04	.048	.959	.991	.009	202.25

Table 4 CFA exploring structural invariance for urban and rural settings

Model	χ^2	χ^2/df	SRMR	GFI	CFI	RMSEA	AIC
Unconstrained	102.81	1.00	.041	.967	.993	.004	210.81
Constrained	114.92	1.00	.048	.961	.998	.002	203.92

Table 5 CFA exploring structural invariance for different SES groups

Model	χ^2	χ^2/df	SRMR	GFI	CFI	RMSEA	AIC
Unconstraint	374.90	1.44	.052	.904	.810	.030	634.90
Constrained	409.20	1.40	.052	.893	.808	.029	603.20

and metric). Difference between both models' $\chi^2 = 11.2$ with $df = 12$, is insignificant at .05 level (Table 3).

For age (adolescents and adults) unconstrained model: $\chi^2 = 107.8$, $p > .05$; $\chi^2/df = 1.06$, $p > .05$, CFI $= .988$; GFI $= .963$; RMSEA $= .011$, 90% CI $= .000$–.027, SRMR $= .045$, and AIC $= 215.76$. When regression paths were constrained for adolescents and adults, constrained model: $\chi^2 = 118.25$, $p > .05$; $\chi^2/df = 1.04$, $p > .05$, CFI $= .991$; GFI $= .959$; RMSEA $= .009$, 90% CI $= .000$–.025, SRMR $= .048$, and AIC $= 202.25$. Age-wise models have invariance at both levels (configural and metric). Difference between both models' $\chi^2 = 10.45$ with $df = 12$, is insignificant at .05 level (Table 4).

For different residential settings (urban and rural) unconstrained model: $\chi^2 = 102.81$, $p > .05$; $\chi^2/df = 1.00$, $p > .05$, CFI $= .993$; GFI $= .967$; RMSEA $= .004$, 90% CI $= .000$–.027, SRMR $= .041$, and AIC $= 210.81$. When regression paths were constrained for urban and rural settings, constrained model: $\chi^2 = 114.92$, $p > .05$; $\chi^2/df = 1.00$, $p > .05$, CFI $= .998$; GFI $= .961$; RMSEA $= .002$, 90% CI $= .000$–.025, SRMR $= .048$, and AIC $= 203.92$. Setting-wise models have invariance at both levels (configural and metric). Difference between both models' $\chi^2 = 12.11$ with $df = 12$, is insignificant at .05 level (Table 5).

For different SES levels unconstrained model: $\chi^2 = 374.90$, $p < .01$; $\chi^2/df = 1.44$, $p < .01$, CFI $= .810$; GFI $= .904$; RMSEA $= .030$, 90% CI $= .022$–.037, SRMR $= .052$, and AIC $= 634.90$. When regression paths

were constrained across different SES levels, constrained model: $\chi^2 = 409.20$, $p < .01$; $\chi^2/df = 1.40$, $p < .01$, CFI $= .810$; GFI $= .893$; RMSEA $= .029$, 90% CI $= .022$–.035, SRMR $= .052$, and AIC $= 603.20$. SES level-wise models have invariance at all levels (configural and metric). Difference between both models' $\chi^2 = 34.3$ with $df = 33$, is insignificant at .05 level (Table 6).

Outcomes of Descriptive Statistics for Different Measures

The mean score for SPANE-P was 22.94 (SD $= 3.94$), and mean score for SPANE-N was 16.38 (4.16). Mean scores for three components of DASS 21 were: depression (6.27, SD $= 4.18$), anxiety (6.36, SD $= 3.83$), and stress (7.83, SD $= 3.70$). Mean score for Happiness measure was 34.49 (SD $= 5.99$), for optimism measure 20.61 (SD $= 2.96$), and for self-efficacy measure 32.25 (SD $= 4.66$).

Convergent Validity of SPANE

Product moment correlation statistics was used to explore the correlations and intercorrelations between and among different measures of well-being and two subscales of SPANE. Nearly all the measures significantly correlated with two subscales of SPANE. Only optimism was found to be insignificantly correlated with negative emotions. Life satisfaction was not found significantly correlated with anxiety, stress, and optimism.

Table 6 Mean, SDs, and correlations

	M	SD	N	1	2	3	4	5	6	7	8	9
LS	22.04	4.89	483	–								
SPANE-P	22.29	4.04	483	225**	–							
SPANE-N	14.78	3.36	483	−152**	−397**	–						
DEP	6.61	4.13	483	−.082	−298**	.309**	–					
ANX	6.63	3.78	483	.017	−.152**	.203**	.532**	–				
STR	8.05	3.66	483	−.021	−.188**	.242**	.535**	.662**	–			
HAPP	34.23	6.01	483	.175**	.331**	−.172**	−.413**	−.276**	−.299**	–		
OPT	20.54	2.99	483	.036	.141**	.055	−.173**	−.113**	−.138**	.299**	–	
GSE	32.12	4.60	483	.156**	.328**	−.211**	−.388**	−.296**	−.314**	.461**	.226**	–

LS life satisfaction, *DEP* depression, *ANX* anxiety, *STR* stress, *HAPP* happiness, *OPT* optimism, *GSE* general self-efficacy

** $p < .01$

Discussion

The present study was conducted to establish the reliability of Hindi version of SPANE and to explore the factor structure of the translated scale. Calculation of convergent validity of the translated scale was also done. Along with this, the factor structure of the scale was explored across gender (males and females), different age groups (adolescent and adult), setting (urban and rural), and SES (high, upper middle, middle, lower middle, and lower).

The result suggests that SPANE-H has good reliability and factor structure for the present sample. Cronbach's alpha values were .73 for SPANE-P, .77 for SPANE-N, and .77 for SPANE-B. Though the Cronbach's alpha was found to be lower compared to the original scale and other translations, it is above the acceptance level suggested by Nunnally (1978). The lower level of alpha scores of the Hindi version of SPANE can be explained in terms of the approach adopted in emotion-eliciting situations. It is suggested that endorsing cultural and personal ideologies (individualism and collectivism) for the evaluation of emotion-eliciting situations might result in different outcomes (Matsumoto, 2006). Matsumoto et al. (2008) compared cultures on the individualism and collectivism dimension and found that people of collectivistic cultures show a lower level of emotion expressivity than those of individualistic cultures. Several studies (Hofstede, 1980; Triandis, 1995; Verma, 1999) indicated that the Indian culture is collectivist in nature and the majority of people manifest collectivist orientations, values, and behavior. This might be a possible reason for the lower level of reliability of the Hindi version of SPANE. Findings of the present study are consistent with the results obtained in other contexts, English version (SPANE-P = .87; SPANE-N = .81); Portuguese version (SPANE-P = .89; SPANE-N = .84); Chinese version (SPANE-P = .92; SPANE-

N = .91); Japanese version (SPANE-P = .91; SPANE-N = .90) and Turkish version (SPANE-P = .88; SPANE-N = .83).

PCA suggests a two-factor structure with moderate-to-high factor loading on both factors. Further, CFA suggests a good model fit for the two-factor structure as reported in other studies. Multiple-group CFA produced strict invariance in factor structure for all variables.

Pearson's correlations also revealed a moderate inter-correlation between positive and negative emotions ($r = -0.41$). SPANE-P factor indicated low-to-moderate ($r = .15$ to $-.34$) correlation with other measures of well-being and positive expectancies. SPANE-N also exhibits low-to-moderate correlations ($r = -.13$ to $-.33$). Other measures were also found significantly intercorrelated.

Conclusion

In summary, the Hindi version of SPANE demonstrated adequate internal consistency and similar factor structure as found in the original study (Diener et al., 2010) and other translations. Further, analysis showed satisfying incremental validity over positive expectancies. Results also suggest that SPANE Hindi version can be useful across gender, age groups, residential areas, and SES levels. Researchers can use this scale as a valid and reliable instrument for measuring the positive and negative emotions of a person in the Indian culture. Results obtained from multiple CFA analyses support the findings of earlier studies. Results of the analyses show structural invariance in scale items for all demographic variables used in the study.

Further research is required to confirm the psychometric properties of the Hindi version in other groups, such as workers in different organizations, people from later stages

of adulthood, older people, clinical groups, and heterogeneous groups. In addition, test–retest reliability of the Hindi versions should be evaluated. It is also suggested that while using SPANE in the Indian context, its factor structure must be explored beforehand. Finally, as there are numerous measures that correspond to the many dimensions of well-being, it would be useful to examine correlations between the scores on the Hindi version and in the scores on those measures not included in the present study.

Compliance with Ethical Standards

Informed Consent All the participants provided informed consent prior to participation in the study.

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