American Journal of Educational Research, 2025, Vol. 13, No. 5, 268-276
Available online at http://pubs.sciepub.com/education/13/5/1
Published by Science and Education Publishing
DOI:10.12691/education-13-5-1

A Study of Positive Mental Health on Bengali Speaking Students of Higher Education in India and Bangladesh

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Received April 16, 2025; Revised May 17, 2025; Accepted May 25, 2025

Abstract Positive Mental Health (PMH) is a measure of an individual's present mental state. A study on PMH is done on higher education students of India and Bangladesh with verification of validity and reliability of the scale used to measure the PMH. Present study is done to verify validity and reliability of the PMH scale with respect to the respondents of India and Bangladesh. Further it is used to compare the PMH between men and women for India, Bangladesh and both the countries. The descriptive survey method is followed for the present study. Sample size for the present study is 617 and data is collected by simple random sampling technique from India and Bangladesh. PMH scale by [1] is administered for the present study. Descriptive (Mean, SD, SE and Coefficient of Correlation) and inferential statistics (Cronbach's α, McDoland's ω, Guttman's λ2, Confirmatory Factor Analysis (CFA), Principal Component Analysis (PCA), and Structure Equation Modelling (SEM)) are used by applying SPSS-26, JASP-0.18.1. PMH scale is valid and reliable for Bengali speaking higher education students of both the countries and it is reflected by the measures of correlation, validity, reliability, PCA, CFA and SEM. PMH differed significantly across female responders from India and Bangladesh. Differences in demographics, attitudes toward learning, and gender-related societal policies may explain the mental health similarities and disparities observed between respondents from India and Bangladesh. Further elements could play a role in the mental health challenges experienced by female students in Bangladesh, indicating the need for a comprehensive, multivariate analysis.

Keywords: *PMH, Correlation, Validity, Reliability, PCA, CFA, SEM, India, Bangladesh*

Cite This Article: Subir Sen, Surajit Mahato, Gurudas Mandal, and Birbal Saha, "A Study of Positive Mental Health on Bengali Speaking Students of Higher Education in India and Bangladesh." *American Journal of Educational Research*, vol. 13, no. 5 (2025): 268-276. doi: 10.12691/education-13-5-1.

1. Introduction

The volume of publications concerning PMH and well-being is currently surging at an exponential pace [2]. The mental health with two-continua model [3,4,5,6,7] showed that negative mental health (NMH) and PMH are interrelated although they are separate dimensions. Two major theories clarify the key elements of PMH and the idea of well-being. The eudaimonic perspective emphasizes human potential and optimal functioning, while the hedonic perspective concentrates on feelings such as happiness and life satisfaction. PMH is viewed as a representation of overall emotional, psychological, and social well-being since both approaches can be utilized [3,8]. Positive mental health signifies a comprehensive state of well-being where individuals can successfully handle life's challenges, recognize their potential, work efficiently, and make valuable contributions to their communities. It includes emotional, psychological, and social aspects, promoting resilience, nurturing healthy relationships, and fostering a sense of purpose. Instead of merely evading mental disorders, positive mental health focuses on flourishing, allowing individuals to experience increased joy, fulfillment, and an enhanced overall quality of life.

2. Literature Review

Comprehensive questionnaires incorporate items pertaining psychopathology and PMH using GHQ by [9] or examine various dimensions of PMH using MHC-SF by [10]. Vaughan [11] examined "Mental Health Measurement in the Post-COVID-19 Era," evaluating the DASS-21 (psychometric properties) among athletes and non-athletes. Their findings contribute to understanding mental health of athletes and their support together with comparative analyses with the non-athletes. Mahato and Das [12] conducted a study on mental well-being among students with respect to gender, institution and residence: insights from Purulia district, West Bengal. Main objectives of the study are to explore the positive mental

well-being among the students. Das and Mahato [13] studied positive mental health using clustering technique.

Boufellous [14] studied the Positive Mental Health. The Spanish version's general population validity is the goal of this study. Together with CFA and convergent validity with both risk and protective variables, descriptive analyses were also conducted on the items. When applied in many psychological contexts, particularly in the healthcare of the Spanish populace, the PMH scale possesses the required validity and reliability.

The Positive Mental Health Scale (PMHS) was intended to be translated into Turkish by [15]. A total of 360 college students, whose ages ranged from 18 to 25, took part in the study. Following an analysis of the scale's linguistic equivalence, validity and reliability were determined. Internal consistency, exploratory, and confirmatory factor analyses were used to evaluate the scale's psychometric qualities.

Almubaddel [16] constructed the Positive Mental Health (PMH) scale of Saudi Arabian version. The objective of the study was to validate the scale which was translated from English into Arabic for use in Saudi Arabia. The study involved 1148 adult volunteers from public universities in Saudi Arabia. The current study's results showed that the uni-factorial model satisfactorily fits the data based on exploratory and confirmatory factor analyses in various subsamples.

The study of Hasan [17] set out to examine the psychometric qualities of the PMH-scale in Bangla and validate it using the Brunel Mood Scale (BRUMS) and the Brief Aggression Questionnaire (BAQ). The study's sample comprised 298 members of Bangladesh's general population.

The purpose of study of Naghavi [18] was to validate the Positive Mental Health Scale (PMH-Scale) in Persian. The PMH-Scale's validity and reliability in Persian were determined using a sample of 573 Iranian students. It was shown that PMH moderated the relationship between depressive symptoms and suicidal thoughts and actions. The findings imply that the PMH-Scale is a quick, accurate, and legitimate indicator of psychological and subjective well-being that may be applied to research settings and Iranian student populations.

Present work is a comparison between Bengali speaking higher education students from India and Bangladesh. This comparison is done in several aspects like correlation, validity, reliability, PCA, CFA, SEM and t-test.

3. Objectives

Following objectives are considered for the present study:

a. To find out 'validity of the PMH scale' with respect to the respondents of India, Bangladesh and both the countries.
b. To find out 'reliability of the PMH scale' with respect to the respondents of India, Bangladesh and both the countries.
c. To check different parameters for the PMH scale by applying PCA, CFA and SEM with respect to the respondents of India, Bangladesh and both the countries.
d. To compare PMH of respondents of India and Bangladesh.

4. Hypotheses

Following hypotheses are constructed to fulfill the objectives stated above:

H_{01}: 'There is no significant difference between the students of India and Bangladesh with respect to PMH'.

H_{02}: 'There is no significant difference between the male and female students of India with respect to PMH'.

H_{03}: 'There is no significant difference between the male and female students of Bangladesh with respect to PMH'.

H_{04}: 'There is no significant difference between the male students of India and Bangladesh with respect to PMH'.

H_{05}: 'There is no significant difference between the female students of India and Bangladesh with respect to PMH'.

5. Methodology

Method: Descriptive survey research is applied to do the research work.

Sample and Sampling: Sample size for the present study is 617 (513 from India and 104 from Bangladesh). Subjects are selected by random sampling method.

Variables: Positive Mental Health and dichotomous variables like gender (male, female) and country (India, Bangladesh) are considered as variables.

Tool used: 'Positive Mental Health Scale (PMH-Scale)' developed by Lukat [1] is administered for the present study to measure Positive Mental Health.

Techniques followed: Statistical measures like descriptive statistics (Mean, SD and SE of means) and inferential statistics like t-test, coefficient of correlation, reliability analysis, CFA, PCA, and SEM have been done to analyze the collected data for the present work. Softwares SPSS-26 and JASP 0.18.1 are used to calculate statistical measures.

6. Results and Discussions

- **Correlation**

From table 1, table 2 and table 3, it is clear that Item-item and item-PMH correlations for respondents of India, Bangladesh and both the countries are significant at .001 level of significance. So, convergent validity under construct validity may be assumed because PMH is a unidimensional scale.

- **Reliability**

Table 4 represents the 'Cronbach's α', 'McDonald's ω' and 'Guttman's λ-2' for respondents of India, Bangladesh and both the countries. Here, highest value of ω is 0.85 and least value of ω is 0.826. Similarly, highest value of α and λ-2 are 0.85 and 0.851 respectively; least value of α and λ-2 are 0.82 and 0.827 respectively. Considering all the cases it may be concluded that PMH scale is highly reliable.

From table 5, it may be concluded that for all the cases if any item is dropped the reliability measures (ω, α and λ-2) decreases. It reflects the essentiality of every item in the

PMH scale.

• **Principal Component Analysis (PCA)**

To ascertain whether the data are appropriate for factor analysis, the 'Kaiser-Meyer-Olkin Test' [19] is a statistical test used. 'KMO' assesses model's the quality of each observed variable and overall sample adequacy. KMO is determined by the correlation between the variables used in the particular measuring tool. It is a scale ranging from 0 to 1, where values closer 1 designate a correlation between the variables and data that used to formulate it suitable for factor analysis; otherwise, the variables may be considered as uncorrelated and as a result it might not be influenced by a common factor. Here, overall measures are greater than 0.8 which indicate that the samplings are adequate.

Table 1. Item-item and item-PMH correlations for Indian respondents [* means p<.001]**

3	I1		I2		I3		I4		I5		I6		I7		I8		I9		PMH
1. I1	—																		
2. I2	0.471	***	—																
3. I3	0.421	***	0.313	***	—														
4. I4	0.399	***	0.367	***	0.277	***	—												
5. I5	0.324	***	0.313	***	0.384	***	0.342	***	—										
6. I6	0.383	***	0.380	***	0.493	***	0.444	***	0.394	***	—								
7. I7	0.362	***	0.428	***	0.369	***	0.413	***	0.496	***	0.484	***	—						
8. I8	0.305	***	0.344	***	0.358	***	0.370	***	0.384	***	0.443	***	0.361	***	—				
9. I9	0.365	***	0.364	***	0.327	***	0.411	***	0.340	***	0.456	***	0.484	***	0.372	***	—		
10. PMH	0.663	***	0.646	***	0.663	***	0.656	***	0.657	***	0.740	***	0.721	***	0.651	***	0.673	***	—

Table 2. Item-item and item-PMH correlations for respondents of Bangladesh [means p < .002]**

Items	I1		I2		I3		I4		I5		I6		I7		I8		I9		PMH
1. I1	—																		
2. I2	0.645	***	—																
3. I3	0.419	***	0.455	***	—														
4. I4	0.392	***	0.415	***	0.251	*	—												
5. I5	0.213	*	0.279	**	0.415	***	0.304	**	—										
6. I6	0.444	***	0.423	***	0.504	***	0.396	***	0.452	***	—								
7. I7	0.281	**	0.174		0.333	***	0.375	***	0.371	***	0.297	**	—						
8. I8	0.293	**	0.401	***	0.336	***	0.103		0.175		0.315	**	0.164		—				
9. I9	0.311	**	0.299	**	0.380	***	0.130		0.378	***	0.414	***	0.169		0.323	***	—		
10. PMH	0.709	***	0.714	***	0.726	***	0.581	***	0.614	***	0.742	***	0.531	***	0.537	***	0.593	***	—

Table 3. Item-item and item-PMH correlations for India and Bangladesh [* means p < .001]**

Items	I1		I2		I3		I4		I5		I6		I7		I8		I9		PMH
1. I1	—																		
2. I2	0.510	***	—																
3. I3	0.413	***	0.329	***	—														
4. I4	0.407	***	0.391	***	0.256	***	—												
5. I5	0.309	***	0.314	***	0.383	***	0.343	***	—										
6. I6	0.398	***	0.393	***	0.489	***	0.440	***	0.406	***	—								
7. I7	0.349	***	0.391	***	0.360	***	0.406	***	0.479	***	0.457	***	—						
8. I8	0.308	***	0.359	***	0.348	***	0.334	***	0.357	***	0.425	***	0.334	***	—				
9. I9	0.353	***	0.351	***	0.336	***	0.354	***	0.346	***	0.448	***	0.434	***	0.363	***	—		
10. PMH	0.673	***	0.662	***	0.663	***	0.648	***	0.653	***	0.742	***	0.693	***	0.636	***	0.657	***	—

Table 4. Reliability statistics for respondents of India, Bangladesh and both the countries

India

Estimate	McDonald's ω	Cronbach's α	Guttman's λ2
Point estimate	0.850	0.850	0.851
95% CI lower bound	0.831	0.829	0.830
95% CI upper bound	0.870	0.868	0.870

Bangladesh

Estimate	McDonald's ω	Cronbach's α	Guttman's λ2
Point estimate	0.826	0.820	0.827
95% CI lower bound	0.776	0.763	0.761
95% CI upper bound	0.876	0.867	0.877

India and Bangladesh

Estimate	McDonald's ω	Cronbach's α	Guttman's λ2
Point estimate	0.846	0.846	0.847
95% CI lower bound	0.828	0.826	0.821
95% CI upper bound	0.865	0.863	0.869

Table 5. Reliability statistics for respondents of India, Bangladesh and both the countries if items are dropped

India				Bangladesh				India and Bangladesh			
	If item is removed				If item is removed				If item is removed		
Item	'McDonald's' ω	'Cronbach's' α	'Guttman's' λ2	Item	'McDonald's' ω	'Cronbach's' α	'Guttman's' λ2	Item	'McDonald's' ω	'Cronbach's' α	'Guttman's' λ2
I1	0.837	0.835	0.837	I1	0.801	0.794	0.801	I1	0.831	0.829	0.831
I2	0.837	0.837	0.838	I2	0.798	0.791	0.798	I2	0.831	0.830	0.831
I3	0.838	0.838	0.839	I3	0.797	0.791	0.799	I3	0.833	0.833	0.834
I4	0.837	0.836	0.837	I4	0.818	0.811	0.818	I4	0.833	0.832	0.833
I5	0.837	0.836	0.838	I5	0.812	0.805	0.813	I5	0.833	0.832	0.833
I6	0.826	0.826	0.827	I6	0.791	0.787	0.795	I6	0.820	0.820	0.821
I7	0.829	0.828	0.829	I7	0.820	0.814	0.820	I7	0.827	0.826	0.828
I8	0.838	0.837	0.839	I8	0.821	0.815	0.822	I8	0.835	0.834	0.835
I9	0.835	0.834	0.835	I9	0.816	0.809	0.817	I9	0.832	0.831	0.832

Table 6. Kaiser-Meyer-Olkin Test for respondents of India, Bangladesh and both the countries

India		Bangladesh		India and Bangladesh	
'Kaiser-Meyer-Olkin Test'		'Kaiser-Meyer-Olkin Test'		'Kaiser-Meyer-Olkin Test'	
	'MSA'		'MSA'		'MSA'
Overall 'MSA'	0.894	Overall 'MSA'	0.812	Overall 'MSA'	0.894
I1	0.874	I1	0.790	I1	0.866
I2	0.895	I2	0.755	I2	0.885
I3	0.873	I3	0.879	I3	0.874
I4	0.911	I4	0.781	I4	0.900
I5	0.894	I5	0.809	I5	0.900
I6	0.892	I6	0.869	I6	0.892
I7	0.882	I7	0.748	I7	0.894
I8	0.919	I8	0.819	I8	0.923
I9	0.916	I9	0.850	I9	0.924

Table 7. Component Loadings for respondents of India, Bangladesh and both the countries

India			Bangladesh			India and Bangladesh		
Component Loadings			Component Loadings			Component Loadings		
	PC1	Uniqueness		PC1	Uniqueness		PC1	Uniqueness
I6	0.746	0.444	I6	0.754	0.432	I6	0.748	0.440
I7	0.732	0.464	I2	0.730	0.467	I7	0.703	0.506
I9	0.681	0.536	I3	0.726	0.473	I1	0.671	0.550
I4	0.661	0.563	I1	0.713	0.492	I2	0.669	0.552
I1	0.659	0.565	I5	0.614	0.622	I9	0.661	0.564
I5	0.652	0.575	I9	0.583	0.660	I5	0.650	0.577
I2	0.652	0.575	I4	0.577	0.667	I4	0.650	0.577
I3	0.645	0.584	I8	0.521	0.728	I3	0.647	0.581
I8	0.643	0.586	I7	0.521	0.729	I8	0.628	0.605

Comparable to correlation coefficients, component loadings can be squared to determine the amount of variation that is explained. Consequently, the component loadings indicate the extent to which a component accounts for the variance in a variable. Here, for all cases values are satisfactory.

• Confirmatory Factor Analysis (CFA)

The degree to which the variance of items (variables) contributes to the variation of the PMH is explained by R-squared. Every item contributed to the variation of PMH for India, Bangladesh and both the countries.

We take into account the 'Comparative Fit Index (CFI)' and 'Tucker-Lewis Index (TLI)' in the table of 'Fit indices'. The TLI and CFI values are, respectively, 0.933 and 0.950 for Indian respondents. The fact, these values exceed 0.90 for India, Bangladesh, and both countries data. It suggests a suitable model fit.

Factor loadings for respondents of India, Bangladesh and both the countries are satisfactory and significant at .001 levels of significance. Standard errors are very low for all the cases.

• Structure Equation Modelling (SEM)

All the loadings for three cases are significant at .001 levels of significance. The differences are small for three cases. As a result factor loadings for respondents of India, Bangladesh and both the countries are similar in nature.

Path diagrams are directed graph that show the pattern of relationships between variables. The directions of the causal linkages between variables are indicated by straight arrows connecting them. Factor loadings are mentioned on the straight arrows. An outline for a structural equation model (SEM); For latent variables, use oval/circular forms

are represented by c1, c1 and CT for India, Bangladesh and both the countries respectively. Rectangular forms are used to depict the measured variables. Measurements errors in each observed variable are shown by the curved arrows are low for three cases. Path diagrams for all the cases are satisfactory for the construction of PMH scale.

Table 8. R-Squared values for respondents of India, Bangladesh and both the countries

India		Bangladesh		India and Bangladesh	
R-Squared		R-Squared		R-Squared	
	R^2		R^2		R^2
I1	0.355	I1	0.579	I1	0.375
I2	0.351	I2	0.651	I2	0.373
I3	0.348	I3	0.502	I3	0.353
I4	0.368	I4	0.324	I4	0.354
I5	0.357	I5	0.372	I5	0.352
I6	0.504	I6	0.575	I6	0.508
I7	0.480	I7	0.260	I7	0.429
I8	0.342	I8	0.259	I8	0.323
I9	0.401	I9	0.331	I9	0.368

Table 9. Fit indices for respondents of India, Bangladesh and both the countries

India		Bangladesh		India and Bangladesh	
Fit indices		Fit indices		Fit indices	
Index	Value	Index	Value	Index	Value
‘CFI’	0.950	‘CFI’	0.937	‘CFI’	0.946
‘TLI’	0.933	‘TLI’	0.916	‘TLI’	0.928
‘NNFI’	0.933	‘NNFI’	0.916	‘NNFI’	0.928
‘NFI’	0.932	‘NFI’	0.893	‘NFI’	0.930
‘PNFI’	0.699	‘PNFI’	0.716	‘PNFI’	0.698
‘RFI’	0.909	‘RFI’	0.858	‘RFI’	0.907
‘IFI’	0.950	‘IFI’	0.938	‘IFI’	0.946
‘RNI’	0.950	‘RNI’	0.937	‘RNI’	0.946

Table 10. Factor loadings for respondents of India, Bangladesh and both the countries (CFA)

	‘Factor loadings’							
							‘95% Confidence Interval’	
	‘Factor’	‘Indicator’	‘Estimate’	‘Std. Error’	‘z-value’	p	‘Lower’	‘Upper’
India	Factor 1	I1	0.420	0.030	13.799	< .001	0.361	0.480
		I2	0.382	0.028	13.705	< .001	0.328	0.437
		I3	0.462	0.034	13.618	< .001	0.396	0.529
		I4	0.409	0.029	14.141	< .001	0.352	0.465
		I5	0.425	0.031	13.850	< .001	0.365	0.485
		I6	0.508	0.029	17.273	< .001	0.450	0.565
		I7	0.479	0.029	16.725	< .001	0.423	0.536
		I8	0.419	0.031	13.508	< .001	0.358	0.479
		I9	0.428	0.029	14.910	< .001	0.372	0.484
	‘Factor loadings’							
							‘95% Confidence Interval’	
	‘Factor’	‘Indicator’	‘Estimate’	‘Std. Error’	‘z-value’	p	‘Lower’	‘Upper’
Bangladesh	Factor 1	I1	0.761	0.045	17.071	< .001	0.673	0.848
		I2	0.807	0.045	17.765	< .001	0.718	0.896
		I3	0.709	0.044	16.053	< .001	0.622	0.795
		I4	0.570	0.045	12.732	< .001	0.482	0.657
		I5	0.610	0.045	13.469	< .001	0.521	0.698
		I6	0.758	0.047	16.280	< .001	0.667	0.850
		I7	0.510	0.050	10.103	< .001	0.411	0.608
		I8	0.509	0.048	10.501	< .001	0.414	0.604

	I9	0.575	0.051	11.363	< .001	0.476	0.674

	‘Factor loadings’						‘95% Confidence Interval’	
	‘Factor’	‘Indicator’	‘Estimate’	‘Std. Error’	‘z-value’	p	‘Lower’	‘Upper’
India and Bangladesh	Factor 1	I1	0.444	0.029	15.569	< .001	0.388	0.500
		I2	0.399	0.026	15.540	< .001	0.348	0.449
		I3	0.469	0.031	15.038	< .001	0.408	0.530
		I4	0.412	0.027	15.091	< .001	0.359	0.466
		I5	0.419	0.028	15.021	< .001	0.364	0.474
		I6	0.512	0.027	18.997	< .001	0.459	0.564
		I7	0.444	0.026	16.997	< .001	0.393	0.495
		I8	0.404	0.028	14.284	< .001	0.349	0.460
		I9	0.413	0.027	15.478	< .001	0.360	0.465

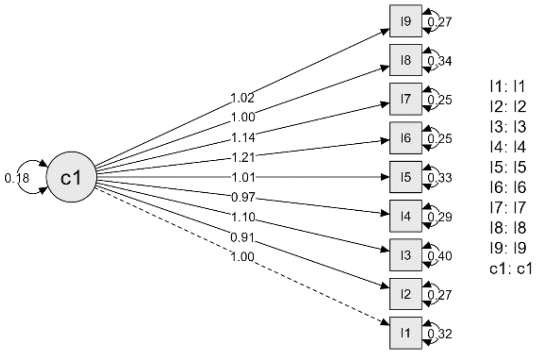
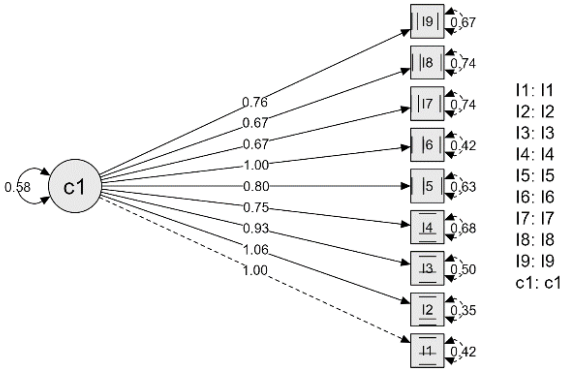
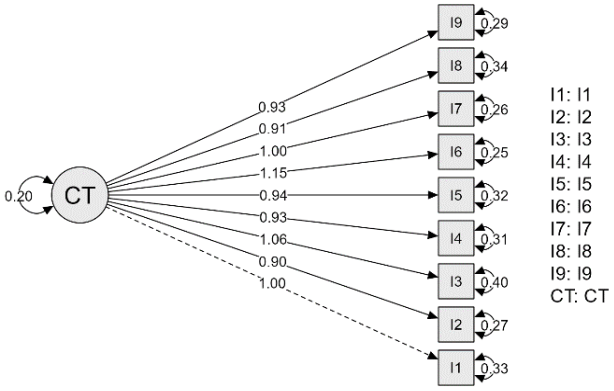
Table 11. Factor loadings for respondents of India, Bangladesh and both the countries (SEM)

	‘Factor Loadings’						‘95% Confidence Interval’	
	‘Latent	Indicator’	‘Estimate’	‘Std. Error’	‘z-value’	p	‘Lower’	‘Upper’
India	c1	I1	1.000	0.000			1.000	1.000
		I2	0.909	0.083	10.982	< .001	0.747	1.072
		I3	1.099	0.102	10.811	< .001	0.900	1.298
		I4	0.972	0.088	11.003	< .001	0.799	1.145
		I5	1.011	0.094	10.713	< .001	0.826	1.196
		I6	1.208	0.100	12.058	< .001	1.011	1.404
		I7	1.140	0.096	11.837	< .001	0.951	1.329
		I8	0.995	0.094	10.546	< .001	0.810	1.180
		I9	1.017	0.091	11.229	< .001	0.840	1.195

	‘Factor Loadings’						‘95% Confidence Interval’	
	‘Latent	Indicator’	‘Estimate’	‘Std. Error’	‘z-value’	p	‘Lower’	‘Upper’
Bangladesh	c1	I1	1.000	0.000			1.000	1.000
		I2	1.060	0.096	11.097	< .001	0.873	1.248
		I3	0.931	0.084	11.111	< .001	0.767	1.096
		I4	0.749	0.076	9.898	< .001	0.600	0.897
		I5	0.801	0.076	10.494	< .001	0.652	0.951
		I6	0.997	0.089	11.170	< .001	0.822	1.172
		I7	0.670	0.079	8.463	< .001	0.515	0.825
		I8	0.669	0.076	8.845	< .001	0.521	0.817
		I9	0.756	0.081	9.342	< .001	0.598	0.915

	‘Factor Loadings’						‘95% Confidence Interval’	
	‘Latent	Indicator’	‘Estimate’	‘Std. Error’	‘z-value’	p	‘Lower’	‘Upper’
India and Bangladesh	CT	I1	1.000	0.000			1.000	1.000
		I2	0.898	0.073	12.275	< .001	0.754	1.041
		I3	1.056	0.088	12.014	< .001	0.884	1.228
		I4	0.928	0.077	12.031	< .001	0.777	1.079
		I5	0.943	0.079	12.004	< .001	0.789	1.097
		I6	1.152	0.084	13.725	< .001	0.987	1.316
		I7	0.999	0.077	12.930	< .001	0.848	1.151
		I8	0.910	0.078	11.606	< .001	0.756	1.064
		I9	0.929	0.076	12.215	< .001	0.780	1.078

Table 12. Path diagrams for respondents of India, Bangladesh and both the countries

India	
Bangladesh	
India and Bangladesh	

• Comparison

√ India vs Bangladesh

Table 13. Group statistics for India and Bangladesh

	'Country'	N	'Mean'	'SD'	'SE_M'
PMH	India	513	17.02	4.268	.188
	Bangladesh	104	15.82	4.084	.400

Table 14. t-test between students of India and Bangladesh

't'	'df'	'Sig. (2-tailed)'	'Mean Difference'	'Std. Error Difference'
2.646	615	.008	1.206	.456

To compare the state of PMH between the students of India and Bangladesh, let us recall the 'null hypothesis':

H_{01}: 'There is no significant difference between the students of India and Bangladesh with respect to PMH'.

Results showed that the difference in means between the students of India and Bangladesh is significant at .01 level of significant (t=2.646, Sig. =.008 for df=615). As a result, the 'null hypothesis' H_{01} is rejected. Hence, alternative hypothesis H_{a1}, which states 'There is a significant difference between the students of India and Bangladesh with respect to PMH' is accepted. From table 13, PMH of Indian students found better.

√ India (Male vs female)

Table 15. Group statistics for 'Male and Female students' of India

	'Gender'	N	'Mean'	'Std. Deviation'	'Std. Error Mean'
PMH	'Male'	209	17.25	4.392	.304
	'Female'	304	16.87	4.181	.240

Table 16. t-test 'between male and female students' of India

't'	'df'	'Sig. (2-tailed)'	'Mean Difference'	'Std. Error Difference'
.992	511	.322	.380	.384

To compare the state of PMH between the 'male and female' students of India, let us recall the null hypothesis:

H02: 'There is no significant difference between the 'male and female' students of India with respect to PMH'.

Results showed that the difference in means between the 'male and female' students of India is not significant (t=.992, Sig. =.322 for df=511). As a result, the 'null hypothesis' $H_{02}$is accepted.

√ Bangladesh (Male vs female)

Table 17. Group statistics for Male and Female students of Bangladesh

	Gender	N	Mean	Std. Deviation	Std. Error Mean
PMH	'Male'	59	16.54	3.757	.489
	'Female'	45	14.87	4.336	.646

Table 18. t-test 'between male and female students' of Bangladesh

't'	'df'	'Sig. (2-tailed)'	'Mean Difference'	'Std. Error Difference'
2.108	102	.038	1.676	.795

To compare the state of PMH between the 'male and female' students of India, let us recall the null hypothesis:

H_{03}: 'There is no significant difference between the 'male and female' students of Bangladesh with respect to PMH'.

Results showed that the difference in means 'between the male and female students' of India is significant (t=2.108, Sig. =.038 for df=102). As a result, the 'null hypothesis' $H_{03}$is not accepted.

Hence, alternative hypothesis H_{a3}, which states 'There is a significant difference between the male and female students of Bangladesh with respect to PMH' is accepted. From table 17, PMH of male students found better.

√ Male (India vs Bangladesh)

Table 19. Group statistics for India and Bangladesh male students

	'Country'	N	'Mean'	'SD'	'SE_M'
PMH	India	209	17.25	4.392	.304
	Bangladesh	59	16.54	3.757	.489

Table 20. t-test between male students of India and Bangladesh

't'	'df'	'Sig. (2-tailed)'	'Mean Difference'	'Std. Error Difference'
1.124	266	.262	.706	.628

To compare the state of PMH between the male students of India and Bangladesh, let us consider the null hypothesis:

H_{04}: 'There is no significant difference between the male students of India and Bangladesh with respect to PMH'.

Results showed that the difference in means between the students of India and Bangladesh is significant at .01 level of significant (t=1.124, Sig. =.262 for df=266). As a result, the 'null hypothesis' H_{04} is failed to be rejected.

√ Female (India vs Bangladesh)

Table 21. Group statistics for India and Bangladesh female students

	'Country'	N	'Mean'	'SD'	'SE_M'
PMH	India	304	16.87	4.181	.240
	Bangladesh	45	14.87	4.336	.646

Table 22. t-test between female students of India and Bangladesh

't'	'df'	'Sig. (2-tailed)'	'Mean Difference'	'Std. Error Difference'
2.983	347	.003	2.002	.671

To compare the state of PMH between the female students of India and Bangladesh, let us consider the null hypothesis:

H_{05}: 'There is no significant difference between the female students of India and Bangladesh with respect to PMH'.

Results showed that the difference in means between the students of India and Bangladesh is significant at .01 level of significant (t=2.983, Sig. =.003 for df=347). As a result the null hypothesis H_{05} is rejected. Hence, alternative hypothesis H_{a5}, which states 'There is a significant difference between the female students of India and Bangladesh with respect to PMH is accepted. From table 21, PMH of Indian female students found better.

Findings

Major findings are listed below:

1. Each item of the scale is significantly related to each other and total score of PMH.
2. McDonald's ω, Cronbach's α and Guttman's λ-2 for respondents of India, Bangladesh and both the countries showed the high reliability of the measure of PMH.
3. Data are appropriate for factor analysis, overall measures of the Kaiser-Meyer-Olkin Test are greater than 0.8 which indicate that the samplings are adequate.
4. Component loadings in PCA are satisfactory.
5. In CFA, R-squared values of every item contributed to the variation of PMH for India, Bangladesh and both the countries are satisfactory.
6. Factor loadings in CFA for respondents of India, Bangladesh and both the countries are satisfactory and significant at .001 levels of significance.
7. In SEM, all the loadings for three cases (India, Bangladesh and both the countries) are significant at .001 levels of significance. The differences are small for three cases (India, Bangladesh and both the countries).

8. In SEM, from path diagram latent variables are low compared to factor loadings for India, Bangladesh and both the countries.
9. There is a significant difference between the students of India and Bangladesh with respect to PMH' is accepted. From table 13, PMH of Indian students found better.
10. Difference in means between the 'male and female' students of India is not significant
11. There is 'no significant difference between the male and female students' of Bangladesh with respect to PMH
12. There is 'no significant difference between the male students' of India and Bangladesh with respect to PMH.
13. There is a 'significant difference between the female students' of India and Bangladesh with respect to PMH.

Conclusion

The item scores for the sets of respondents from Bangladesh, India, and both nations in this PMH study are shown noteworthy correlations. Results using PCA, CFA, and SEM are also comparable across all cases. The comparison of respondents from Bangladesh and India is reliable because reliability scores are also noteworthy. According to PMH scores, female students in Bangladeshi and Indian higher education differ significantly from one another. This discrepancy might result from societal cultural differences, attitudes toward female students' education, and a lack of learning opportunities. The demographic differences between these two countries, attitude towards learning, openness in societal policies regarding gender and biases may be other dimensions that may be the causes for the possible similarities and differences between the respondents of India and Bangladesh. There may be some other constructs responsible for the backwardness of women students of Bangladesh regarding PMH. An extensive and multivariate study may be considered to enlighten the present state of mental health.

References

[1] Lukat, J., Margraf, J., Lutz, R., van der Veld, W.M., & Becker, E.S. (2016). Psychometric properties of the Positive Mental Health Scale (PMH-scale). *BMC Psychology*, *4* (8), 1-14.

[2] Miret, M., Cabello, M., Marchena, C., Mellor-Marsá, B., Caballero, F. F., Obradors-Tarragó, C., Haro, J. M., & Ayuso-Mateos, J. L. (2015). The state of the art on European well-being research within the area of mental health. *International Journal of Clinicaland Health Psychology*, *15*, 171-179.

[3] Keyes, C. L. (2007). Promoting and protecting mental health as flourishing-A complementary strategy for improving national mental health. *American Psychologist*, *62*, 95-108.

[4] Westerhof, G. J., & Keyes, C. L. (2010). Mental illness and mental health: The two continua model across the lifespan. *Journal of Adult Development*, *17*, 110-119.

[5] Huppert, F. A., & Whittington, J. E. (2003). Evidence for the independence of positive and negative well-being: Implications for quality of life assessment. *British Journal of Health Psychology*,*8*, 107-122.

[6] Weich, S., Brugha, T., King, M., McManus, S., Bebbington, P., Jenkins, R., Cooper, C., McBride, O., & Stewart-Brown, S. (2011). Mental well-being and mental illness: Findings from the Adult Psychiatric Morbidity Survey for England 2007. *The British Journal of Psychiatry*, *199*, 23-28.

[7] Wang, X., Zhang, D., & Wang, J. (2011). Dual-factor model of mental health: surpass the traditional mental health model. *Psychology*, *2*, 767-772.

[8] Keyes, C. L., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality and Social Psychology*, *82*, 1007-1022.

[9] Hu, Y., Stewart-Brown, S., Twigg, L., & Weich, S. (2007). Can the 12-item General Health Questionnaire be used to measure positive mental health?. *Psychological Medicine*, *37*(7), 1005–13.

[10] Lamers, S. M. A., Westerhof, G. J., Bohlmeijer, E. T., ten Klooster, P. M., & Keyes, C. L. M. (2011). Evaluating the psychometric properties of the Mental Health Continuum-Short Form (MHC-SF). *Journal of Clinical Psychology*,*67*(1), 99–110.

[11] Vaughan, R. S., Edwards, E. J., & MacIntyre, T. E. (2020). Mental Health Measurement in a Post Covid-19 World: Psychometric Properties and Invariance of the DASS-21 in Athletes and Non-athletes. *Frontiers in Psychology*, *11*, 1-14.

[12] Mahato, S., & Das, B. (2024). Mental Well-Being Among Students with Respect to Gender, Institute and Residence: Insights from Purulia District, West Bengal. *The Social Science Review a Multidisciplinary Journal*, *2*(2), 164-175.

[13] Das, B., & Mahato, S. (2024). Analysing Positive Mental Health among Students in Purulia District, West Bengal, Using Clustering Techniques. *The Social Science Review A Multidisciplinary Journal*, *2*(3), *12-26.*

[14] Boufellous, S., SÃ¡nchez-Teruel, D., Robles-Bello, M. A., Lorabi, S., & Irhomis Mendoza-Bernal, I. (2023). Psychometric Properties of the Positive Mental Health Scale in a Spanish Population. *SAGE Open*, *13*(2), 1-7.

[15] Akbaba, A. Y., & Eldeleklioğlu, J. (2017). Adaptation of Positive Mental Health Scale into Turkish: A Validity and Reliability Study. *Journal of Family, Counseling and Education*, *4*(1), 44-54.

[16] Almubaddel, A. (2022). Psychometric properties of a Saudi Arabian version of the Positive Mental Health (PMH) scale. *Almubaddel Psicologia: Refexão e Crítica. 35:*29, 1-9.

[17] Hasan, M. T., Hasan, M.M., Aktarina Perven, A., & Mozibul H.A. Khan, M. H. A. (2023). Validation and psychometric properties of the Bangla version of positive mental health scale (PMH-scale). *Heliyon*, *9*, 1-8.

[18] Naghavi, A., Teismann, T., Asgari, Z., Eizadifard, R., & Brailovskaia, J. (2021). Validation of the Persian version of the Positive Mental Health Scale. *BMC Psychiatry*, *21:472*, 1-7.

[19] Kaiser, H. F. (1974). An Index of Factorial Simplicity. *Psychometrika*, *39* (1), 31–36.