Validation of the Urdu Translation of Mental Health Continuum- Short form (MHC-SF): Education in Perspective[*]

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ARTICLE INFO	ABSTRACT
	Purpose: The construct of well-being using Mental Health Continuum-Short Form (MHC-SF) (Corey L. M. Keyes et al., 2008) has been studied across various cultures, validated across several populations and languages. However, there are no published psychometric properties of its Urdu version. This study is an attempt to bridge this gap. The need was felt to translate and linguistically validate the MHC-SF into the Urdu language for male and female Pakistani students. **Methodology** The study had two phases: In phase, I, the Urdu translation of the MHC-SF was carried out using Mapi guidelines for the standard forward and backward translation methods. In phase II, validation of the MHC-SF was determined, yielding confirmatory factor analysis. For the empirical evaluation, a sample of 712 students, including both 368 males and 344 females of undergraduate and postgraduate level with the age range of 18-28 years (M =23.58, SD= 3.35) were recruited. The psychometric evolution of the MHC-SF turned into excellent validity and reliability estimates for constructs. Moreover, strict measurement invariance was established for MHC-SF across males and females.

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Muhammad FARAN-Naima HASSAN-Bisma EJAZ-Amna KHAWAR-Nudra MALIK-Afreen
KOMAL-Amina MUAZZAM / Eurasian Journal of Educational Research 95 (2021) 36-54

37

Findings: The findings showed that the Urdu version of the MHC-SF had strong psychometric properties, and linguistically and culturally was acceptable. Thus MHC-SF was invariant at all measurement standards across males and females. **Implications for Research and Practice:** It is evident that this study would pave the way for positive psychology to make research available to measure the constructs more indigenously in future. Future research can utilize these psychometric properties of MHC-SF across different demographic variables.

Introduction

The Mental Health Continuum (MHC) scales an individual's positive mental health (C. L. Keyes, 2002; C. L. M. Keyes, 2009) in three dimensions: emotional (hedonic), social (eudaimonic), and psychological (eudaimonic). Emotional well-being is based on Bradburn's effect balance scale (Bradburn, 1969) and overall life satisfaction from Cantril's self-anchoring scale (Cantril, 1965). The social well-being is based on Keyes' model (Corey Lee M Keyes, 1998) while psychological well-being is based on Ryff's model (C. D. Ryff, 1989). MHC scales have been developed in two forms—long and short. The long-form (MHC-LF) was created at first and the short-form (MHC-SF) was developed later to meet the assessment needs. The MHC-LF consisted of 40 items while the MHC-SF was its abridged version of 14 items (C. L. M. Keyes, 2009).

MHC-LF and MHC-SF are therefore self-assessed questionnaires comprising items dealing with individuals' current psychological, emotional and social well-being. These items mainly use three scales: the positive emotional well-being, the psychological well-being, and social well-being scale with three approaches: hedonic (emotional well-being) eudaimonic (social well-being) and eudaimonic (psychological well-being). Both questionnaires are widely used as quantifiable and objective analytical models and have been measured with high validity internal consistency, and reliability. This makes these tests undisputed instrument to measure neuropsychological understanding of mental health disorders (Chowdhury, 2021; Corey L. M. Keyes et al., 2012). These tests are widely used across sectors like healthcare, education, and rehabilitation as evident in several studies (Góngora et al., 2017; Goretzko et al., 2020; Corey L. M. Keyes et al., 2010; Kormi-Nouri et al., 2013; Lupano Perugini et al., 2017; Santini et al., 2020; Żemojtel-Piotrowska et al., 2018).

Understanding Well Being Construct

Well-being is defined by the Oxford English Dictionary as "the state of being comfortable, healthy, or happy," which encompasses an individual's social, economic, and over-all satisfaction. Economics Foundation describes well-being as a concept that represents people's feelings at personal and social levels, and how they evaluate their lives as a whole (Foundation, 2012). The World Health Organization (WHO, 2005) equates well-being with good health, physical, mental and social, allowing every individual to work productively to serve the community while coping with normal stresses of life (WHO, 2005, 2014). Being an evolving concept, its definitions by different researchers show diverse perspectives. Rijavec et al. (2006), for instance,

Muhammad FARAN-Naima HASSAN-Bisma EJAZ-Amna KHAWAR-Nudra MALIK-Afreen KOMAL-Amina MUAZZAM / Eurasian Journal of Educational Research 95 (2021) 36-54

38

defined well-being as a condition in which all of a person's psychological faculties, i.e., mental functions and experiences, work in tandem to produce synchronization. (C. D. Ryff, 1989) states that well-being is not a simple matter of absence of negative and presence of positive emotions, but the complete well-being of a person depends on a wide range of diverse segments. The important segments include personal growth, healthy relationships with people, self-acceptance, purpose in life, autonomy and environmental mastery, social incorporation, social acceptance, social involvement, social actualization, and social consistency (Corey Lee M Keyes, 1998). In a recent definition, Halbreich (2021) observes that well-being comprises not only physical and emotional health, but it also includes measuring everyday functions, social and financial. It is a record of quantitative assessments of all such functions.

The construct of well-being is studied under two approaches, the hedonic approach and the eudaimonic approach. While the hedonic approach is linked with experiences of pleasure and recreation, eudaimonic relates to experiences of meaning and purpose. Both approaches contribute to overall well-being in different ways (Waterman, 1993).

Hedonic Approach

The hedonic approach to well-being comprises two primary components: cognitive and affective. The cognitive component examines the level of satisfaction that a person feels in his/her life. It refers to a person's assessment of one's own life in terms of cognition. Studies indicated that these cognitive and emotional elements of subjective well-being are significantly consistent with each other (Ed Diener et al., 1997). It is also described as the cognitive valuation of individual's life, and it goes hand in hand with the affective component. The affective component can be broadly understood in terms of affective balance and perceived life satisfaction. Affective balance is determined by subtracting the number of negative experiences a person has from the number of positive experiences they have. While perceived life satisfaction is the sense of satisfaction a person has with life (Ed Diener et al., 1997). The affective component also examines individual's life through the prism of emotions, both positive and negative (Ed Diener et al., 1997; Watson et al., 1988). Negative affectivity includes anxiety, anger, sadness while satisfaction, pleasure, and love are examples of positive affectivity. The positive affectivity can be studied under two levels, high positive and low positive, where the high positive affect could denote an increased level of energy while the low positive affect depicts fatigue and gloom (Bradburn, 1969) Further negative affect suggests a few disagreeable and aversive internal mood conditions (Watson et al., 1988).

In addition, there is another approach to understand hedonic psychology, Subjective Well-being (SWB). Snyder et al. (2001) define SWB as a wider concept than a person's cognitive and affective assessments. It includes experiencing pleasant emotions, low levels of negative mood, and high life satisfaction. Negovan (2010) states that SWB is simple and a state of positive emotions with a lack of discomfort. It is a broad canvas covering the entire spectrum of happiness from ecstasy to misery and pain, and thus it does not limit itself to examine only anxiety and depression rather it is more concerned with looking at varying degrees of happiness among people. E

Diener (1984) believed that SWB is possible in both general satisfaction with life and positive affectivity. Furthermore, SWB focuses more on the individual perception and understanding of happiness rather than the external frame of reference. For instance, regardless of the objective reality, if an individual is extremely satisfied and happy with his/her life and believes that he/she is highly prosperous, it would be considered a subjective view of happiness and well-being. The final distinctive trait of SWB is the permanence and stability it exhibits. The positive experiencing embodied in high SWB is a core concept of positive psychology because they make life rewarding (Ed Diener et al., 1985). In short, it can be said that SWB reflects the extent to which people think and feel that their life is going well (Lucas et al., 2003).

Eudaimonic Approach

In contrast with the hedonic approach, the eudaimonic approach to well-being focuses on human prosperity. In the literal sense, it means 'eu' (well-being) and daimonia (spirit). It denotes that the more pious and honorable is the life, the more it shall blossom (Felicia A. Huppert, 2009; Felicia A Huppert, 2009; C. L. Keyes, 2002; C. D. S. Ryff, B. H, 1998). The eudaimonia approach comprises two categories: psychological well-being and social well-being. Psychological well-being has recently been defined as "inter- and intraindividual levels of positive functioning" to include interpersonal relationships and attitudes that describe one's sense of "mastery and personal growth" (Heidrich et al., 2021). Psychological Well-Being is the archetype of gerontological and life-span research (Anstey et al., 2008).

With its theoretical reinforcements, C. D. Ryff (1989) curtailed psychological well-being historically from Allport's (1961) notion of the established disposition of happiness (Burns et al., 2021). Rogers' (1961) entirely operative individual theory, and concept of self-actualization. C. D. Ryff (1989) also postulated six measurements of Psychological Well-Being: Autonomy, Positive Relations with Others, Environmental Mastery, Personal Growth, Purpose in Life, and Self-Acceptance. Autonomy denotes individuals' self-influential and self-governing aptitude to struggle with social burdens and perform in convincing ways. It is the directive of conduct from within. It is also the assessment of one's personal values. Secondly, positive relations with others denote sincere, sustaining, gullible dealings with others. It is about the entity's apprehension about the prosperity of others. It is the competence of durable responsiveness, fondness, and familiarity. It is the considerate of the 'give and take' of human relationships. Third, environmental mastery is the intelligence of mastery and capability in handling the situation. It is supervisory of a multifaceted array of exterior happenings. It is how persons makes active use of nearby occasions. It is the capability to pick or generate backgrounds apposite to private requirements and ethics.

Fourth, personal growth is the sensation of sustained progress and new involvements. It is the wisdom of understanding several possibilities to upgrade oneself as every human being must see oneself as rising and continuously growing. It finds new ways that reproduce more self-knowledge and efficiency. Fifth, purpose in life mentions a person's penalty area in life and sagacity of directedness. It is the sensation that there is a connotation to current and former life. It indicates that a person

grips principles that stretch life purpose. It denotes the incidence of goals and purposes for living by a person. Finally, self-acceptance is an optimistic acceptance of the self. It is the salutation and receipt of manifold features of self, counting good and bad makings, including the optimistic feeling about the previous life.

Social well-being, on the other hand, is self-assessment of one's circumstances and functioning in society. It is a sense of belonging to a community and making a contribution to society (Cicognani, 2014). Corey Lee M Keyes (1998) advanced a five-component model of social well-being comprising: social integration, social contribution, social coherence, social actualization, and social acceptance. These five elements holistically show how individuals overcome social challenges and interact with their social world comprising coworkers, friends, relatives, and neighbors. In a recent study (Colenberg et al., 2021) it emerged that social well-being can be extended all types of social needs, reactions to good or bad social behavior and people's perception about the social environment. It is contrary to the established theory of Corey Lee M Keyes (1998) as it is more context-bound and components of both hedonic and eudaimonic approaches can be seen.

The current study aimed to examine the Urdu version of MHC-SF model. The Urdu translation for this study was carried out in the Phase I of this research and its linguistic validation was conducted in Phase II. The translation method was a standardized forward-backward translation procedure (Institute, 2008). It should be noted that MHC-SF translated has been translated in various languages including French, Korean, Chinese, Japanese, Dutch, Norwegian, Swedish, and Finnish. These translated models have been used in hundreds of studies since these models were created to conduct psychometrical evaluations (Lamers et al., 2011).

Method

Research Design

The study adopted a psychometrical evaluation research design involving the MHC-SF (14 items) divided into hedonic (emotional well-being, 3 items); eudaimonic (social well-being, 5 items); and eudaimonic (psychological well-being, 6 items). All 14 items were measured on a 6-point Likert scale with a score between 0 and 5. The total score therefore ranged from 0 to 70 points. The higher is the score measured, the greater is the wellbeing.

Research Sample

The sample size of this study was based on the established fact that the larger is the sample size, the better it is to validate the scales. Hence, the sample was determined as per 10:1 criterion or 10 cases per item (Tabachnick, 2017). Eventually, for the empirical evaluation, 712 students were identified, which included 368 male and 344 female participants. They were both graduates and postgraduates in the age range of 18-28 years (M =23.58, SD= 3.35). The sample was purposely drawn from different educational institutions of Punjab, Pakistan.

Data Collection Instruments and Procedures

The current study was carried out in two phases. In phase I, the translation of Mental Health Continuum Short Form (MHC-SF) was carried out into the target language (Urdu) from the source language (English). In Phase II, the linguistic validation of MHC-SF was conducted. As said earlier, MHC-SF, contained 4-items, measuring responses on a 6-point Likert scale, from "Never", "Once or Twice a Month", "About Once a Week", "Two or Three Times a Week", "Almost Every Day", to "Every Day" (C. L. Keyes, 2009; C. L. M. Keyes, 2009; Corey L. M. Keyes et al., 2008). The MHC-SF comprised three subscales: emotional well-being, with 3 items; psychological well-being with 6 items; and social well-being with 5 items, each demonstrating sound psychometric properties, with alpha of 0.83, 0.83, and 0.74, respectively.

Data Analysis

The researcher analyzed the statistical evaluation of the both the versions of the scale. The Pearson product-moment correlation analysis was employed to see the correlation between the items of both original and translated versions. The correlation coefficients of each statement were between the range of 0.85 to 0.93 while Cronbach's alpha of English and Urdu versions was 0.79 and 0.87 respectively. Structural equation model (SEM) was employed to validate the factor structure of the scales using AMOS (Analysis of moment structure) version 24.0 (Bagozzi et al., 1988; Clark et al., 2016; Kline, 2015).

Results

Phase I: Translation of the Mental Health Continuum Short Form (MHC-SF)

The translation of MHC-SF (C. L. Keyes, 2009; C. L. M. Keyes, 2009; Corey L. M. Keyes et al., 2008) into Urdu language was carried out by using a standardized forward-backward translation procedure (Institute, 2008). Permission from the author for the translation was sought. After the permission was granted, the translation process was completed with the following four steps: Forward Translation, Backward Translation, Review and Scrutiny, and Tryout.

Forward Translation.

Right at the outset, the 14-item MHC-SF scale was entrusted to two bilingual experts for forward translation. The first expert was an assistant professor in Psychology and the second was a PhD scholar in Psychology. Both translators were asked to translate the scale in a conceptual and connotational manner rather than literal translation of the items. They kept their translations simple, concise, and easily comprehensible for Pakistan's general population to understand the language. The use of heavy and complex Urdu words and jargon was avoided by utilizing of everyday usage of Urdu words. After the translations were complete, they were compared in terms of conceptual and connotational equality, celerity of speech, comprehensibility, and cultural linguistics. Inconsistencies between both forward translations were noted down and observations were referred to a supervisor. The supervisor detected a few discrepancies related to sentence formation and syntax. Some improvements were

suggested by the supervisor. Eventually, a single version of Urdu translation was finalized by choosing the best-formatted sentences. In the end, this version of backward translation was matched with the English source version for any missing words, mistakes, ambiguities, or discrepancies.

Backward Translation.

After arriving at a consensus on the final forwarded translation (Urdu) of the MHC-SF scale, two other bilingual experts translated it back into the original language (English). A backward translation aims to compare the source version and the translated version to see discrepancies due to contextual differences. The two bilingual experts were not the same who had carried out the forward (English -Urdu) translation, and they were blind to the original scale. The first translator was an assistant professor in English literature and the second was a psychology lecturer. After the two backward translations (Urdu-English) were completed, the researchers and the supervisor reviewed and compared them to detect similarity of expression and any discrepancies. These back-translated versions were checked for all items and such items were selected that conveyed the precise meaning of the items. After finalizing one backward translated version, it was compared with the original scale. No significant discrepancies were found between the final backward translation and the original scale. Both conveyed the same meaning and expression. It was therefore ensured that the translated /target language (Urdu) version presented the same concepts as the original or source language version.

Review and Scrutiny

Having completed final review of the Urdu translation of the MHC-SF scale and made necessary modifications in it, the proofreading and grammatical analysis were carried out. This task was assigned to an expert having master's degree in Urdu language and literature. In this phase, all grammatical and language proofreading was done successfully. No significant discrepancies were identified in in this step.

Tryout (Implementation).

The main objective of the tryout step was to establish the understanding and comprehensibility of the Urdu translated version of the MHC-SF scale. A sample of 30 participants was recruited with age range between 18 to 26 years for the tryout (implementation) step. These participants were both male and female with gender equally distributed. Participants were briefed about the purpose and nature of the research. First, the source (English) version of the scale was distributed among them after taking their written consent. Participants were instructed to underline any ambiguity if they found it during the response. After the interval of one week, the translated (Urdu) version of the scales was again given to the same participants who had earlier responded to the source (English) version. The participants did not report any major problem regarding the translation. They understood the conceptual meaning of each item. No ambiguities were found.

Phase II: Validation of Mental Health Continuum- Short Form (MHC-SF)

This step involved validating the MHC-SF scales (Urdu version) and determining its stringent psychometric properties, i.e., reliability and validity (convergent and discriminant) (Lamers et al., 2011). This validation of the scales took place across both male and female groups. During this phase, the confirmatory factor analysis was carried out on all 14 items of the MHC-SF scale (Urdu version) with its 6-point Likert scale to determine its factor structure. Structural equation model (SEM) was employed to validate the factor structure of the scales using AMOS (Analysis of moment structure) version 24.0 (Bagozzi et al., 1988; Clark et al., 2016; Kline, 2015). The PERMA consisted of three sub-factors, labeled as emotional, social and psychological well-being. The model fit indices of the tested model are presented in Table 1.

Table 1

Model Fit Indices for Confirmatory Factor Analysis of MHC-SF.

Model	χ^2	Df	χ^2/df	GFI	CFI	NNFI	RMSEA	SRMR
Model Fit	251.14	148	1.68	.95	.98	.97	.03	.04

Note: N=712, GFI= Goodness of fit index, CFI=comparative fit index, NNFI (TLI) =non-normed fit index; RMSEA=root mean square error of approximation, SRMR=Standardized root mean square

The absolute fit values for confirmatory factor analysis for MHC-SF scales (Urdu version) were χ^2 (148) = 251.14, $p < .05$. This is viewed like the chi-square test for absolute model fit, which is sensitive to the size of the sample. This is catered for a model, and the amounts of estimated parameters in the SEM model. Along these lines, researchers often recommend the wide range of fit indices to assess data consistency with the tested model, i.e., model fit. Hence, to evaluate the model fit, the suggested fit indices analyzed were GFI, CFI, NNFI, RMSEA, and SRMR. The criteria to assess the suitability of model fit for relative indices were as per the recommendations (Hair, 2010; Hu et al., 1999). It has been recommended that χ^2/df ought to be in the middle of 0 and 3, RMSEA and SRMR indices ought to be .08 or lesser. In, compression, CFI, NFI, and GFI indices of 0.90 or higher are considered excellent while 0.99 ≤ 0.8 is viewed as acceptable in some cases.

The indices of absolute and relative model fit were also analyzed and compared after the models' modification. So, the χ^2/df was 1.68 now, and the indices of RMSEA and SRMR were .03 and .04 respectively. The GFI, CFI, NFI indices were 0.95 0.98 and 0.97 individually for the first and second-order models. Subsequently, these indices were the best fit as well. To sum up, the sample variance-covariance and population variance-covariance were invariant. Figure 1 and Figure 2 illustrates the Confirmatory Factor Analysis for Mental Health Continuum Short-Form (MHC-SF) for males and female.

Confirmatory factor analysis (CFA) was employed to determine the psychometric properties including reliability, convergent validity, and discriminant validity of the MHC-SF. As shown in Table 2, McDonald's reliability coefficient and average variance

Muhammad FARAN-Naima HASSAN-Bisma EJAZ-Amna KHAWAR-Nudra MALIK-Afreen
KOMAL-Amina MUAZZAM / Eurasian Journal of Educational Research 95 (2021) 36-54

44

extracted (AVE) values were greater than the criteria of 0.7 and 0.50 respectively (Hair, 2010; Henseler et al., 2016).

Likewise, to assess convergent validity, factor loadings of scale items on their respective constructs were examined. All item's loadings met threshold value of almost 0.7 (Hair, 2010). The percentage of variance explained values of factors, i.e., emotional, social, and psychological well-being equal to 58.9, 65.0, and 54.9 respectively for males. The percentage of the variance for females for each factor, i.e., emotional, social, and psychological well-being, was 63.3, 51.4, and 57.3 respectively. The McDonald's reliability coefficients ranged from 0.81 to 0.90 for males, while the reliability range from 0.83 to 0.88.

Discriminant validity was tested in two different ways (Henseler et al., 2016; Voorhees et al., 2016). First, the square root of average variance extracted AVE values for each scale should be greater than the construct's respective correlation with all other factors (Fornell et al., 1981). Secondly, the average variance of a factor should be greater than the variance which is shared with all other factors means the average variance (AVE) extracted should be greater than the maximum shared variance (MSV) (Hair, 2010). Table 3 illustrates these descriptive statistics.

Table 3

Descriptive Statistics and Fornell - Larcker Criterion for the Factors of MHC-SF.

Factors	K	Males M(SD)	Females M(SD)	Emotional Well-being	Social Well-being	Psychological Well-being
Emotional Well-being	3	12.83(3.70)	8.65(3.57)	0.767		
				0.796		
Social Well-being	5	14.30(6.17)	18.26(4.53)	0.150	0.806	
				0.139	0.717	
Psychological Well-being	6	21.78(5.71)	20.86(6.61)	0.183	0.266	0.741
				0.024	0.148	0.757

Note. K = number of items, M = mean, SD = standard deviation bold = males, unbold = females

Measurement Invariance for MHC-SF

Measurement invariance test was also applied to assess the generalizability of the scales across two different populations, i.e., males and females. The purpose of measurement invariance was to assess that whether an instrument measure is interpreted conceptually or contextually in a similar fashion by participants across different groups (Barbara M. Byrne et al., 2010). Measurement invariance of a measure is all about the degree to which parameters encompassing the measurement are homogeneous across different groups (Barbara M Byrne, 2012; M. Byrne, 2008).

Figure 1. Confirmatory Factor Analysis for Mental Health Continuum Short-Form (MHC-SF) for males.

Figure 2. Confirmatory Factor Analysis for Mental Health Continuum Short-Form (MHC-SF) for females

Muhammad FARAN-Naima HASSAN-Bisma EJAZ-Amna KHAWAR-Nudra MALIK-Afreen
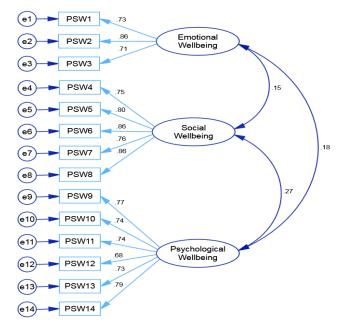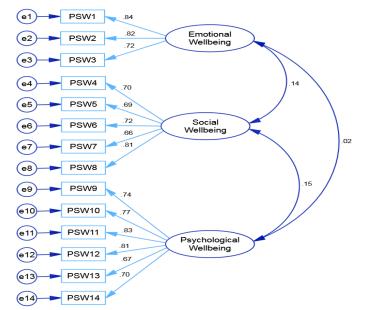KOMAL-Amina MUAZZAM / Eurasian Journal of Educational Research 95 (2021) 36-54

46

Table 2

Confirmatory Factor Analysis for MHC-SF For Males and Females.

Factors	Males				Females			
	ω	*AVE*	*MSV*	λ	ω	*AVE*	*MSV*	λ
• *Emotional Well-being*	0.810	0.589	0.033		0.838	0.633	0.019	
خوش (Happy)				.731				.843
زند گی میں دلچسپی لینا (Take interest in Life)				.855				.817
زند گی سے مطمئن (Satisfied with life)				.708				.722
• *Social Well-being*	0.902	0.650	0.071		0.840	0.514	0.022	
کہ آپ کے پاس کچھ ایسا اہم موجود ہے جس سے آپ معا شرے کو فائدہ پہنچا سکیں (That you have something important that you can use for advice.)				.746				.697
کہ آپ کا تعلق ایک معا شرے سے ہے (مثلا سماجی گروہ، اسکول، ہمسائیگی ،وغیرہ) (That you belong to a community (such as a social group, school, neighborhood, etc.)				.797				.689
کہ ہمارا معاشرہ تمام لوگوں کے لیئے ایک اچھی جگہ ہے یا بہتر جگہ بن رہی ہے (That our society is a good place for all people or is becoming a better place)				.862				.717
کہ لوگ بنیادی طور پر اچھے ہیں That people are basically good				.762				.663
کہ ہمارے معاشرے کا کام کرنے کا طریقہ آپ کے لیئے قابل فہم ہے That the way our society works is understandable to you				.856				.811
• *Psychological Well-being*	0.879	0.549	0.071		0.889	0.573	0.022	

Table 3

Confirmatory Factor Analysis for MHC-SF For Males and Females.

کہ آپ کو اپنی شخصیت کے زیادہ تریپلوپسند ہیں (That you are more interested in your personality)	.771	.743
آپ اپنی روز مرہ زندگی کی ذمہ داریوں کو اچھے طریقے سے سنبھال لیتے ہیں (You manage your daily life well.)	.739	.772
کہ آپ کے دوسروں کے ساتھ پُر اعتماد تعلقات ہیں (That you have a trusting relationship with others.)	.736	.829
کہ آپ ایسے(دشوار) تجربات سے گزرے ہیں جنھوں نے آپ کو میچور بونے اور ایک بہتر انسان بننے میں مدد کی (That you went through (difficult) experiences that helped you mature and become a better person)	.681	.811
سوچنے اور اپنے نظریات اور رائےکے اظہار میں پُر اعتماد ہونا (Be confident in thinking and expressing your ideas and opinions)	.725	.673
کہ آپ کی زندگی با سمت اور با معنی ہے۔ (That your life is meaningful and meaningful.)	.787	.700

Note. ω = McDonald's reliability, AVE = Average variance extracted, MSV = maximum shared variance λ (lambda) = standardized factor loading

Muhammad FARAN-Naima HASSAN-Bisma EJAZ-Amna KHAWAR-Nudra MALIK-Afreen KOMAL-Amina MUAZZAM / Eurasian Journal of Educational Research 95 (2021) 36-54

48

Measurement Invariance for MHC-SF

Measurement invariance test was also applied to assess the generalizability of the scales across two different populations, i.e., males and females. The purpose of measurement invariance was to assess that whether an instrument measure is interpreted conceptually or contextually in a similar fashion by participants across different groups (Barbara M. Byrne et al., 2010). Measurement invariance of a measure is all about the degree to which parameters encompassing the measurement are homogeneous across different groups (Barbara M Byrne, 2012; M. Byrne, 2008).

The measurement invariance is determined at three stages: at the first stage, weak invariance of factor loadings (also called metric invariance including configural invariance) is established; at the second stage, strong invariance of factor loadings of the items to intercepts invariance (i.e., metric, and scalar invariance) is determined; and at the third stage, strict invariance of factor loadings (mean intercepts, factor covariance, and error variance invariance) is established. Invariance of the measures can also be categorized in full and partial measurement invariance where full measurement included configural, metric, scalar, factor variance-covariance, and error variance invariance. In contrast, partial invariance accounted for configural, metric, and scalar invariance across groups (Hair, 2010).

The evaluation of the measurement invariance involved a series of a sequential set of nested models that typically began with the establishment of a well-fitting baseline model (unconstrained configural model) (see Table 4).

Table 4

Testing for the Strict/Full Measurement Invariance of MHC-SF.

Model	χ^2	df	$\Delta\chi^2$	Δdf	CFI	ΔCFI	RMSEA	SRMR
Unconstrained Configural Invariance	199.87	74	-		.976	-	.049	.399
	251.14	148	51.27	74	.978	.002	.031	.041
Metric Invariance	271.98	162	20.84	14	.969	-009	.42	.47
Scalar Invariance	293.01	176	21.03	14	.962	-.006	.53	.56
Factor Covariance Invariance	299.26	179	6.25	3	.953	-.009	.55	.57
Error Variance Invariance	314.07	193	21.06	14	.946	-007	.58	.61

Note. CFI=comparative fit index; RMSEA=root mean square error of approximation; SRMR=Standardized root mean square; $\Delta\chi^2$ = chi square change; Δdf= degree of freedom change; ΔCFI= change in comparative fit index.

The procedure of measurement invariance comprised evaluation of the fit series of progressively constrained models against a preceding constrained model. The constraints on the nested model (depending on the type of invariance) were successively added, and then models were progressively analyzed. For the evaluation of the comparison of the nested models, which are constrained, theorists suggest

conducting the likelihood ratio test (also known as the chi-square test of difference). This chi-square difference value (delta chi-square) is distributed as chi-square, with degrees of freedom equal to the difference in degrees of freedom (delta degree of freedom). If the chi-square difference test is statistically non-significant (p>.05), in the contrast of two nested models, it suggests that the two models are invariant across different groups (Hair, 2010).

However, the chi-square test is sensitive to the sample size, the number of parameters to be estimated, and the non-normality of the distribution (Hair, 2010). Cheung et al. (2002) suggested a robust criterion for the evaluation of invariance investigation, the change in cumulative fit index (CFI) (delta CFI), to determine whether the models compared are invariant or not. If the change in CFI is 0.01 or less, it is considered that all equal constrained specified for the nested models are acceptable. In the same vein, when there is a change in CFI greater than 0.01 across two nested models, the most restrictive model is not invariant.

The first stage unconstrained model was compared with the well-fitted multi-group (constrained model), which depicted that the structure of factor was invariant across the males and females. Test of invariance of the configural model where $\Delta\chi^2$ = 51.27 with Δdf =74 at p>.05, ΔCFI was .002. It is therefore concluded that the number of latent factors and the structure of factor loadings of the items of MHC-SF was similar across different groups, i.e., male and female. Consequently, the findings validated the configural invariance of the measurement model and allowed the determination for further stringent invariant models, i.e., metric, scalar, factor variance, and error variance invariances.

In the second stage, after the establishment of the configural invariance, the most crucial test of invariance was the analysis of metric invariance, i.e., equal factor loading. When the factor loadings of MHC-SF were equally constrained across both groups, male and female, the differences in the ΔCFI between the configural model and the constrained model (metric) did not exceed 0.01. Moreover, the $\Delta\chi^2$ = 20.84 with Δdf =14 at p>.05 also indicated the establishment of metric invariance.

In the third stage, invariance of mean and intercept (scalar invariance) were investigated. Equality of mean and intercept (scalar invariance) was considered as the most stringent test for measurement invariance, in which means and intercepts for the latent factors were compared to be equal across groups. The findings indicated that scalar invariance was established, the ΔCFI of both constrained models, i.e., (metric and scalar), also confirmed a considerable improvement with the change of -.006. While the estimates of scalar invariances were $\Delta\chi^2$ = 21.03 with Δdf =14 at p>.05. This indicated the homogeneity of means and intercepts across males and females.

The factor variance across both groups was also tested, which indicated that both constrained models, i.e., scalar and factor covariance were invariant across both groups. The ΔCFI was -.009 and the $\Delta\chi^2$ = 6.25 with Δdf =3 at p>.05. Moreover, the evidence of error variance invariance also indicated the equivalence of error variance across both groups. The variance of constrained models, i.e., factor covariance and

Muhammad FARAN-Naima HASSAN-Bisma EJAZ-Amna KHAWAR-Nudra MALIK-Afreen
KOMAL-Amina MUAZZAM / Eurasian Journal of Educational Research 95 (2021) 36-54

50

error, was also invariant, since ΔCFI was -.007, $\Delta\chi^2$ = 21.06 with Δdf =14 at p>.05. Hence, the results showed the strict measurement invariance of the MHC-SF.

Discussion, Conclusion and Recommendations

The MHC-SF scale comprised three specific factors. The first factor, emotional well-being, included three items. The second factor, social well-being included five items. The third factor, psychological well-being, included three items (Corey L. M. Keyes et al., 2008). All items of the MHC-SF scale were translated in simple and comprehensible Urdu, the target language. One of the items "You have warm and trusting relationships with others" was found double-barreled because, in the cultural context of Urdu speakers, one has warm relations, but it may or may not possible that one has trusting relation too and vice versa. This problem was discussed with the original author of the tool and the author suggested to omit the word "warm." The finalized translation of the item after consensus read: "you had trusting relationships with others." This contextualization and comprehensibility were the primary concern in the Phase I (translation phase) of this study.

In Phase II, MHC-SF was linguistically validated across males and females. In this phase, a psychometric evolution of the MHC-SF was also carried out, which turned into excellent reliability and validity estimates for the constructs. McDonald's reliability (omega coefficient) was used to determine the internal consistency of MHC-SF. Hayes et al. (2020) argued that methodologists have warned that Cronbach's alpha (α) is not an optimal coefficient of internal reliability. At the same time, the use of McDonald's omega (ω) as a measure of reliability was more optimal for confirmatory factor analysis. The evidence of validity, i.e., average variance extracted (AVE) for convergent validity, ended up with excellent estimates. The maximum shared variance (MSV) for discriminant validity also fell within the acceptable ranges as suggested by (Hair, 2010). Moreover, the Fornell and Larcker criteria were taken into account while determining the scale's discriminant validity (Fornell et al., 1981).

Further, measurement invariance with strict invariance (including configural, factor loadings, mean intercepts, factor covariance, and error variance invariances) was established for the constructs (Hair, 2010). The findings of measurement invariance of strict invariance were also supported with excellent estimates. Hence, it was concluded that MHC-SF is invariant at all measurement standards across males and females.The study faced certain limitations. First, the MHC-SF scale was verified only on the students' population. Second, the sample size was also small which prevented establishing norms for the scale to make it psychometrically stronger. Future research with the Urdu version of the MHC-SF should be carried out with a diverse age range and a larger sample. Moreover, the psychometric properties of MHC-SF can be established across different demographic variables such as age, education, etc. different from what was used in this study.

Keyes' original model (1998) made a greater emphasis not only on the social well-being as it was the case in other contemporary models but also on emotional and psychological well-being, in line with the WHO definition of mental health. The MHC-

Muhammad FARAN-Naima HASSAN-Bisma EJAZ-Amna KHAWAR-Nudra MALIK-Afreen
KOMAL-Amina MUAZZAM / Eurasian Journal of Educational Research 95 (2021) 36-54

51

SF (Urdu version) used in this study measured mental health and well-being programs in primary, secondary, and tertiary education, leading to diplomas and degrees. The study findings showed a good validity and reliability of the items of the Urdu version and proved its linguistic validity as all the items ended up with excellent psychometric estimates for both males and females. The measurement invariance test revealed that the measure was invariant at all aspects of measurement invariance, i.e., configural, metric, scalar, factor covariance, and error variance across both males and females. The evidence also showed that the Urdu version of MHC-SF can be used in future studies in Pakistan and other Urdu-speaking population groups. The findings suggest that a significant improvement in students' mental health and social and emotional skills. This leads to the conclusion that well-being provision in educational institutions and curricula can lead to a decrease in classroom misbehavior and bullying.

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53

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54

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