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Validation of Warwick Edinburg Mental WellBeing Scale among Married Couples

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Abstract

International interest in the conceptualization and contribution of mental well-being to all aspects of human life is increasing day by day. There is an increased evaluation of initiatives on mental health promotion and the demand for development and validation of instruments at a population level to monitor mental well-being. The present study describes the validation of a scale that comprises different characteristics of positive mental health. The scale was validated among married individuals in Pakistan through Confirmatory Factor Analysis. Internal consistency and construct validity was explored by correlating the WEMWBS and other scales that revealed the convergent and discriminant validity. A single factor hypothesis was supported by Confirmatory factor analysis. Chronbach alpha reliability was found to be 0.90 (married couples). WEMWBS showed high convergent validity with happiness scale and relational humor scale. It also showed high discriminant validity by negatively correlating with perceived stress scale. The scale was normally distributed across the population and did not show ceiling effects. WEMWBS should plea to those evaluating initiatives on promotion of mental health; therefore, it is vital to establish the sensitivity of a scale before it is recommended in this context.

Key Words: Mental Well-being, Construct Validity, Confirmatory Factor Analysis, Happiness Scale

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1. INTRODUCTION

The promotion of positive mental health and its significance in contributing towards individual's well-being has been increasing day by day. Mental health has been recognized as the foundation of well-being and effective functioning of both the community as well as individual (WHO,

2004). World health Organization has defined it as a state 'which allows individuals to make an effective contribution to their community, work productively and fruitfully, cope with the normal stresses of life and to realize their abilities.' Another aspect of positive mental health is the capacity for mutually enduring and satisfying relationships (WHO, 2001).

In both academic literature and policy, positive mental health has been used interchangeably with the mental well-being. Distinct characteristics, for instance, psychological functioning and affect are covered by this complex construct which are explained by two perspectives: the eudemonic perspective that focuses on self-realization and psychological functioning and the hedonic perspective that focus on the subjective experiences of happiness and life satisfaction (Ryan & Deci, 2001). The items in these perspectives that measure psychological functioning (for instance, making decisions) are often combined with affect (feelings of happiness or sadness) (Goldberg & Williams, 1988) in the same scales and are not related with the literature of poor mental health. This suggests that the poor mental health involves limitations in both hedonic and eudemonic well-being (Compton, Smith, Cornish, & Qualls, 1996; Keyes, Shmotkin, &Ryff, 2002; Waterman, 1993).

Major consequences for social outcomes and health have been recognized by positive mental health (Huppert FA, Wittington, 2004; Linley & Joseph, 2004). Hence, the positive mental health has been explicitly focused by new positive psychological therapies (Chmitorzet al., 2018; Emmelkamp&Meyerbröker, 2021; Fava, 1999; Fava, Rafanelli, Cazzarro Conti, & Grandi, 1998; Joseph & Linley, 2006). Lack of population-based measures is one of the major reasons that the field of positive mental health is partly under-researched (Hu, Brown, Twigg & Weich, 2007). A suitable measure that does not show ceiling effect in population samples is required to measure public mental health. Additionally, mental health promotion practitioners also demand mental health measure to evaluate their programmes and to measure well-being of individuals. Measures that assess mental health problems have a negative focus and they detract, rather than support, such initiatives.

Different conceptualizations of well-being have been taken by the existing instruments in this field as their starting point. The two states of happiness and depression are measured by the five-item Short Depression-Happiness Scale (SDHS) (Joseph, Linley, Harwood, Lewis, & McCollam, 2004) developed for use in therapeutic settings that assess well-being on a continuum. Psychological functioning is assessed by the 54-item Scale of

Psychological Well-Being (SPWB) (Ryff & Keyes, 1995) that focuses on eudemonic well-being. Its sub-scales measure autonomy, self-acceptance, environmental mastery, purpose in life, personal growth, and positive relations with others. Moreover, the cognitive-evaluative facets of well-being are measured by the five-item Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985). Affective-emotional aspects of well-being are measured by the commonly used twenty-item PANAS scale (Watson, Clark, & Tellegen, 1988) that is comprised of two dimensions: negative and positive affect (PANAS-NA and PANAS-PA) which are reported as independent and distinct concepts. Aspects of mental health and mental illness are covered by all these measures and include both negative and positively worded items. Five-item scale, WHO Wellbeing Index (WHO-5), of positively worded statements covers aspects of mental as well as physical health and aims to measure overall well-being (Bech, 2004).

We report here on the testing of the factor structure of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS). This scale aims to build on preceding measures and captures psychological functioning and cognitive-evaluative dimensions, in a form short enough to be used in population-level surveys. Furthermore, it includes affective and emotional aspects that cover a wide conception of well-being. The scale supports promotion of mental health initiatives and is free from the ceiling effects in samples of population as it only focuses on positive aspects.

The development of WEMWBS was based on the scale known as Affectometer 2 developed in 1980s in New Zealand with an intuitive appeal to those individuals who worked in promotion of mental health in the UK (Kammann & Flett, 1983). One's well-being can easily be measured through the said scale. It aimed to measure well-being of individuals. It had both eudemonic and hedonic aspects of mental health, and a good range of positive items are covered by the scale (Stewart-Brown, 2002). This scale consists of total 20 adjectives and 20 items that relate to mental health and both negative and positive items are balanced. The validation of Affectometer 2 developed in UK showed good face validity, favourable construct validity with comparable scales, suitable test-retest reliability over time, and good discriminatory power between different population groups (Tennant, Fishwick, Platt, Joseph, & Brown, 2006; Tennant, Joseph, & Brown, (2007). Population mental health was monitored with the help of development of WEMWBS; it was deemed essential to include items related to mental well-being and are endorsed by the general UK population (Kammann & Flett,

1983). Furthermore, the scale has been translated into various languages, including Swedish (Haver, Akerjordet, Caputi, Furunes, & Magee, 2015), Norwegian (Trouseelard et al., 2016), and Spanish (Lopez et al., 2013). The WEMWBS is used in most of the research based on convenience for monitoring mental well-being and its good psychometric properties. However, a few items offer a slightly different perspective of mental well-being because they relate more to functioning than to feeling (Brown et al., 2011).

Hence, a measure of mental well-being that covers areas of psychological functioning and subjective well-being was developed. The scale has a single underlying construct with no reverse coded item (Tennant et al., 2006; Tennant et al., 2007). Moreover, it has satisfactory alpha reliability (α = .89). The aim of the present study is to validate the factor structure of mental well-being scale on a population of married couples. A broad range of attributes related to mental well-being are encompassed in this scale. Moreover, the study also aims to establish the convergent and discriminant validity of the WMWBS by correlating it with Relational Humor Inventory (RHI), Subjective Humor Scale (SHS), and Perceived Stress Scale (PSS) respectively. RHI is a self-reported instrument that measures humour in one's relationship. The usage of instrumental, negative, and positive humour in interpersonal relationships is measured through this instrument (Koning & Weiss, 2002). Subjective Happiness Scale (SHS) is a measures overall personal happiness. This instrument measures the extent to which one describes himself as happy or unhappy (Lyubomirsky & Tucker, 1998). It is assumed that WMWBS will positively correlate with both RHI as well as SHS revealing identical concepts. Moreover, Perceived Stress Scale (PSS) is a measure of assessing magnitude of stressful situations in an individual's life (Bentler, 1990; Cohen, Kamarck, & Mermelstein, 1983). Similarly, Fear of COVID 19 scale measures fear of corona virus among individuals that has been validated in Pakistan (Mehmood, Jafree, & Qureshi, 2020) hence it is assumed that WMWBS will show negative correlation with this scale revealing discriminant validity (different constructs such as, stress, fear).

The scale has been validated on married individuals because of the evidence in literature that married individuals show least number of mental health stressors and have high levels of psychological and emotional well-being (Braithwait, & Holt-Lunstad, 2017; Qadir, Khalid, Haqqani, & Medhin, 2013) as compared to the divorced or single individuals. It means marriage protects the couples against feelings of loneliness, despair, and sadness (Perveen & Malik, 2019). The intimacy between partners is an additional factor for better mental health. But to date, no valid instrument highlights this

perspective on mental health of couples (McDonald et al., 2017), Hence, it was essential to have a validated scale that can be used to assess mental health of married couples without any constraint.

2. METHODS

Ethics

This study was approved by institutional Review Board of National Institute of Psychology. It was assured that no physical or emotional harm will be inflicted on the participants and the data will only be used for research purposes.

Participants and Data Collection

Participants comprising 204 married couples (women = 102, men = 102) were approached in different areas of Rawalpindi and Islamabad. As per Anthoine et al. (2014) the minimum sample size required for validation should not be less than 150. A number of 200 and more is considered to be optimal for scale validation. Data collection was carried out through Convenient sampling technique before the COVID-19 through personally visiting the participants at different public and private institutes, universities, offices, and personally visiting their homes. The age of participants ranged from 21 years to above 50 (M = 88.80, SD = 23.91). Couples must be living together and at least one year of marriage was taken as an inclusion criterion for our research. Participants' demographic characteristics are given in the Table 1.

Initially participants' informed consent was taken to recognize their willingness for participating in the research study. The participants were briefed about the purpose of the study and full assurance was provided to them that the information provided by them will be kept confidential and will only be used for research purposes. Individual administration of questionnaires was carried out through convenient sampling technique. Participants were instructed in the questionnaire to read and answer each statement carefully. Voluntary participation was ensured. Time restriction or any other constraint was not applied. Participants were thanked for their cooperation in the end. At the end of data collection, scoring was conducted on all items in a standardized manner and an appropriate analysis on SPSS and AMOS was conducted to test the objectives of the study.

Table 1. Demographic Characteristics of the Sample (N = 204)

Study Demographics	Groups	F	%
Gender			
	Men	102	50
	Women	102	50
Age Range			
	21-30	60	29.4
	31-40	80	39.2
	41-50	44	21.6
	Above 50	20	9.8
No. of children			
	No children	34	16.7
	1-2 children	74	36.3
	3-4 children	64	31.4
	More than four	32	15.7
Duration of marriage			
	1-7 years	86	42.2
	8-14 years	41	20.1
	15-21 years	38	18.1
	22-28 years	28	13.7
	29-35 years	6	2.9

Measure for Validation

For cultural adaptation and validation of WEMWBS, World Health Organization (WHO) guidelines (2018) were followed.WEMWBS is 14-item measure that covers psychological functioning and subjective mental well-being. There is no reverse coded item in the scale. The Chronbach alpha reliability is reported as 0.89. The response options range from 1 to 5 where 1 denotes "*None of the time"*, 2 denotes "*Rarely*", 3 shows "*some of the time*", 4 shows "*often",* and 5 denotes "*all of the time"*. Three additional scales were chosen that measure the similar conceptions that were expected to be associated with mental well-being; for instance, happiness and humour.

Relational Humor Inventory is a self-report instrument consisting of 34 items that measure functions of humor in relationships. The five subscales include couple humor, partner instrumental humor, partner negative humor, partner positive humor, negative humor, and positive humor. The extent to which couples feel close to one another is measured by couple humor. The scale is scored on a five-point Likert scale. The response options range from 1 to 5 where 1 denotes "*not at all true"*, 2 denotes "*slightly true"*, 3 shows "*not*

decided", 4 denotes "*true"*, and 5 is meant for *"very true"*. The reliability of scale ranges from 0.73 to 0.85 (Koning & Weiss, 2002).

Subjective Happiness Scale (SHS) is a 4-item scale that measures one's overall personal happiness. Absolute rating is used to characterize participants as happy or unhappy. The responses of first two items ranged from 1 to 7 where 1 means "*not a very happy person" and* 7 means *"a very happy person".* Response options of next two items also ranged from 1 to 7 where 1 show "*not at all* to *a great deal*" and 7 shows "*to a great deal*". The fourth item is reverse coded. Overall, the alpha value of the scale is .94 (Lyubomirsky & Tucker, 1998).

Furthermore, an additional scale was used to assess the discriminate validity of WMWBS, the Perceived Stress Scale (PSS). This scale is a 10-item measure that measures the magnitude of the stressful situations in an individual's life. The thoughts and feelings during the last month were inquired by the items of the PSS. Respondents respond to a 5point Likert scale about their feelings in a certain situation. The score ranges from 0 to 4 where 0 denotes "*never",* 1 denotes "*almost never",* 2 shows "*sometimes",* 3 shows "*fairly often",* and 4 denotes *"very often".* Chronbach alpha of the scale is .80 (Cohen, Kamarck & Mermelstein, 1983). Four items are reversed coded which are 4, 5, 7, and 8.

Construct Validity

Confirmatory Factor Analysis (CFA) was conducted using weighted least squares estimation across the study sample. It has been suggested that for validation purpose, CFA should be used as it verifies the factor structure of a set of observed variables with accuracy. Moreover, it can also allow the researcher to test whether there exists an underlying relationship between latent and observed variables. Hence, we used this strategy and conducted CFA on our data. AMOS software (version 22) was used for analysis of the data. Statistical fit indices were observed with no dependency between the residuals.

Based on a correction for degrees of freedom, the adjusted goodness of fit index (AGFI) and goodness of fit index (GFI) were assessed with their desired levels being > 0.8 and >0.9 respectively (Bentler, 1990; Cole, 1987). A small amount of variance and unexplained variance is indicated by the desired value of the Root Mean Square Error of Approximation (RMSEA) i.e., below 0.06 level (Hu & Bentler, 1999). The value of chi-square should be non-significant, however, with a p-value < 0.05, indicates an actual significant

covariance between measures that remained unexplained by the models (Bentler & Bonnet, 1980). However, it is largely dependent upon the sample size that leads to an overstatement of lack of fit (Cole, 1987).

Internal Consistency

Homogeneity of the global score was measured by calculating the Cronbach's alpha. Estimates for Internal consistency were sought i.e., $\alpha > 0.70$ [30]. Item-total score correlations, adjusted for overlap, were calculated for each item; considerable but not excessive values (less than 0.8 and greater than or equal to 0.2) were sought (Nunnally, 1994).

Criterion Validity

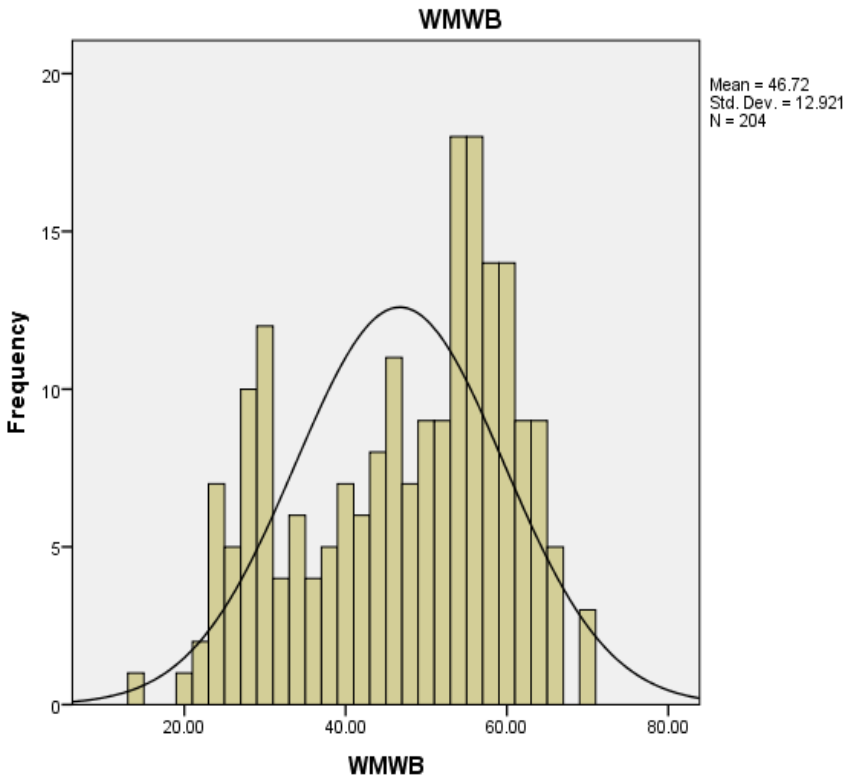
Correlations between scores on the WEMWBS and three other scales capturing similar and different dimensions of physical and mental health and well-being were calculated using Pearson Product Moment Correlation. Based on the content of each scale, we hypothesized that WEMWBS would show positive correlations with scales capturing well-being or positive affect (SHS and RHI) and negative correlation with scale capturing poor mental well-being (PSS).

3. RESULTS

Content Validity

Little evidence of skewed distribution was observed from the item response frequencies of the items from respondents. At least one person has used all response categories for all items (Figure 1).

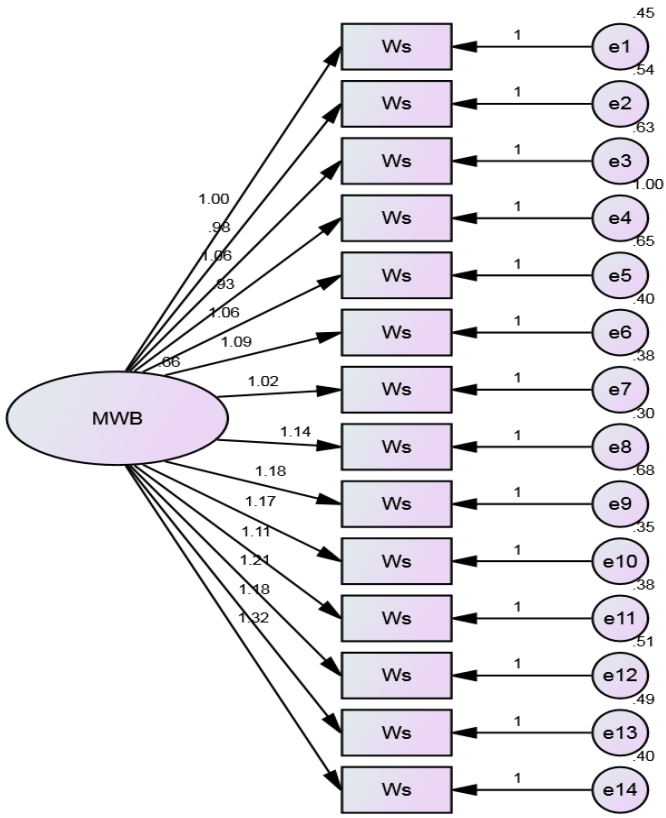
Moreover, two independent raters were selected who reviewed the items of a questionnaire for comprehensiveness, clarity, and readability. Both the raters (MS Psychology) showed agreement where they assigned a score of +1 to items indicating them as favourable for the scale.



Confirmatory Factor Analysis

Estimated factor matrix showed a match with the hypothesized factor matrix revealed through confirmatory factor analysis of the 120 respondents. The AGFI, GFI, CFI, IFI, and TLI were above their desired levels i.e., greater than 0.90. Additionally, the value of RMSEA = 0.063 was found below the desired upper limit. Significant lack of fit is indicated by the value of the chi-square (chi squared=139.7, df = 77, $p < 0.0001$), but the interpretation should be made with caution as it is highly dependent upon the sample size. The confirmatory factor analysis from the 201 married individuals showed adequate values of RMSEA, AGFI, GFI, CFI, TLI, and IFI (AGFI = 0.89, RMSEA = 0.063, GFI = 0.91, CFI = 0.97, TLI = 0.96, IFI = 0.97). Loadings (> 0.5) onto a single factor were shown by all the items.

Figure 2: Estimates of Fit Revealed through Confirmatory Factor Analysis of Warwick Mental Well-Being Scale.



Internal Consistency

The alpha reliability of WEMWBS was found to be adequate for the study sample ($\alpha = 0.90$). Scores of WEMWBS were calculated for all respondents. The values for item-total correlations, corrected for overlap, were found within the range of ($r = 0.35^{**}$ and 0.83 (overall sample), $r = 0.31^{**}$ and 0.84^{**} (husbands), and $r = 0.75^{**}$ and 0.88^{**} (wives). The correlations have been found within the desirable range; hence, the validity of this global score has been supported.

Construct Validity

Construct validity was assessed with convergent and discriminant validity parameters. Following table reveals the correlation matrix between mental well-being scale, relational humor inventory, and subjective happiness scale.

Table 2. Correlation Matrix among Warwick-Edinburgh Mental Well-being Scale, Subjective Happiness, Relational Humor, and Perceived Stress Scale for Couples (N = 60).

	1	2	3	4	5	6	7	8	9	10	11
1. RHI	-	.90**	.43**	.94**	.79**	.72**	.86**	.83**	-.46	.55*	.56**
2. PH		-	.12	.83**	.84**	.46**	.88**	.85**	-.62**	.60**	.66**
3. NH			-	.35**	-.01	.82**	.07	.00	.38**	-.16	-.20
4. IH				-	.69**	.64**	.80**	.77**	-.43**	.55**	.54**
5. PPH					-	.29**	.82**	.83**	-.72**	.64**	.67**
6. PNH						-	.37**	.34**	-.09	.15	.03
7. PIH							-	.87**	-.66**	.65**	.72**
8. CH								-	-.72**	.71**	.70**
9. PSS									-	-.64**	-.69**
10. SHS										-	.66**
11.WEMWBS											-

Note: *p < .05, **p < .01; WEMWBS = Warwick-Edinburgh Mental Well-being Scale, RHI = Relational humor Inventory, PH = Positive Humor, NH = Negative Humor, IH = Instrumental Humor, PPH = Partner Positive Humor, PNH = Partner Negative Humor, PIH = Partner Instrumental Humor, CH = Couple Humor, PSS= Perceived social Stress, SHS = Subjective Happiness Scale.

Table 2 shows correlations between WEMWBS and other selected scales of the study. Strong convergent validity has been revealed by WEMWBS through positive correlation with relational humor and all its positive subscales (positive humor, instrumental humor, partner positive humor, partner instrumental humor, and couple humor) while it negatively related with negative humor showing the evidence of discriminant validity. Additionally, the scale also shows positive relation with Subjective Happiness Scale further indicating its convergent validity and strong negative correlation with Perceived Stress Scale showing the evidence of discriminant validity.

4. DISCUSSION

The present study was conducted with the objective of testing the factor structure of WEMWBS. The scale covers almost all the concepts of positive mental health, for instance, positive functioning, satisfying interpersonal relationships, positive affect, eudemonic and hedonic aspects. This reveals the scale's good face validity. At a population level, the WEMWBS falls well against the accepted criteria. WEMWBS did not show a ceiling effect unlike other commonly used measures of mental health. This indicates that the scale has potential for documenting overall improvements in a population's mental well-being. Response rates of both husbands and wives' sample were found to be high (see Figure 1). Additionally, the confirmatory factor analysis suggested that the scale has a single underlying concept, supporting the one factor solution. The estimates of fit (AGFI, CFI, TLI, IFI, GFI, and RMSEA) fell in acceptable ranges. In both the samples of married men and married women, the internal consistency was found to be high (see Table 2). Overall, the alpha reliability of the scale was adequate ($\alpha = .89$). WEWMBS has good criterion related validity. It correlated positively with relational humor and subjective happiness revealing evidence for convergent validity and correlated negatively with perceived stress showing the evidence for discriminant validity (see Table 2).

The present study has a few limitations as well. Though the scale supported the single factor structure, however, there are certain concepts, for instance, purpose in life, and spirituality that are still debatable about their relevance in mental health. This factor structure is only tested among married couples; there is still room for its endorsement and relevance among general community members. Validation study on WEMWBS in a sample of UK students also found a single factor hypothesis as per the results of CFA. The study found that WEMWBS shares common characteristics with scales for instance, Psychological Well-Being Scale, Satisfaction with Life Scale, the Short Depression Happiness Scale, and WHO-5. The single-item measure of Emotional Intelligence Scale and Life Satisfaction showed lower correlations with WEMWBS, but it can be suggested since these scales consists of single items, hence, their own validity is questionable. The study did not assess the scale's test-retest reliability on the student sample. Future researchers may work on test-retest reliability as well. Cross cultural validation of the scale should also be made focus by researchers (Tennant et al., 2007).

Additionally, there are a few limitations of the scale; for instance, the scale's ability to detect small changes in mental well-being (after an

intervention or a significant life event) at both individual and population-levels have not been explored before. Hence, if future researchers work on exploring this aspect of the scale utilizing longitudinal research design; this would indeed be an important step in evaluation of scale's suitability. Moreover, sample size was also small. Hence, in order to have greater generalizability, the scale should also be validated with a greater sample size.

5. CONCLUSION

WEMWBS is a reliable tool to measure mental well-being as it shows high reliability and significant level of internal consistency and against accepted criteria. It is short, relatively unsusceptible to bias, meaningful, and acceptable for measuring mental health of married couples and community members. Owing to its positive focus, the scale is likely to appeal those evaluating mental health promotion initiatives; further research is needed to ensure that the scale is sensitive to change. Exploration is required to look into the possibility that the scale could be shortened further. In the meanwhile, the scale's lack of ceiling effects and strong psychometric performance suggests that it is suitable for measuring mental well-being at a population level. Furthermore, the study is useful for mental health practitioners at the indigenous level to have a valid tool to assess and guide the married couples in improving their mental health.

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