Attendibilità e validità del *Positive Mental Health Scale* in studenti universitari malesi

Chua Bee Seok[1], Walton Wider[2] e Rosnah Ismail[3]

Sommario

Il presente studio ha esaminato le proprietà psicometriche della *Positive Mental Health Scale* (PMHS) in studenti universitari malesi. La PMHS è un breve strumento self-report progettato per valutare le dimensioni chiave della salute mentale positiva, tra cui soddisfazione personale, atteggiamento prosociale, autocontrollo, autonomia, problem-solving, autorealizzazione e connessione interpersonale. Un totale di 477 studenti provenienti da università pubbliche e private in Malesia ha completato un survey online distribuito tramite WhatsApp e Telegram utilizzando Microsoft Forms. Sono state valutate l'analisi degli item, la coerenza interna, l'analisi fattoriale confermativa e la validità concorrente. La PMHS ha dimostrato un'eccellente coerenza interna, correlazioni item-totale soddisfacenti e una validità concorrente accettabile. Questi risultati supportano la PMHS come misura affidabile e valida della salute mentale positiva negli studenti universitari malesi e forniscono supporto empirico per il suo utilizzo nella ricerca, nello screening e nelle iniziative di promozione della salute mentale in contesti di istruzione superiore.

Parole chiave

Positive Mental Health Scale (PMHS), Proprietà psicometriche, Validità concorrente, Consistenza interna.

[1] Facoltà di Psicologia e Servizio Sociale, Universiti Malaysia Sabah, Kota Kinabalu, Malesia.
[2] Facoltà di Economia e Comunicazione, INTI International University, Nilai, Malesia.
[3] Facoltà di Psicologia e Scienze Sociali, University of Cyberjaya, Sepang, Malesia.

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Corrispondenza: Chua Bee Seok — e-mail: chuabs@ums.edu.my

Reliability and Validity of the *Positive Mental Health Scale* in Malaysian University Students

Chua Bee Seok[1], Walton Wider[2] and Rosnah Ismail[3]

Abstract

The present study examined the psychometric properties of the *Positive Mental Health Scale* (PMHS) among Malaysian university students. The PMHS is a brief self-administered instrument designed to assess key dimensions of positive mental health, including personal satisfaction, prosocial attitude, self-control, autonomy, problem-solving, self-actualization, and interpersonal connectedness. A total of 477 students from public and private universities across Malaysia completed an online survey distributed via WhatsApp and Telegram using Microsoft Forms. Item analysis, internal consistency reliability, confirmatory factor analysis and concurrent validity were evaluated. The PMHS demonstrated excellent internal consistency, satisfactory item-total correlations, and acceptable concurrent validity. These findings support the PMHS as a reliable and valid measure of positive mental health among Malaysian university students and provide empirical support for its use in research, screening, and mental health promotion initiatives in higher education settings.

Keywords

Positive Mental Health Scale (PMHS), Psychometric properties, Concurrent validity, Internal consistency.

[1] Faculty of Psychology and Social Work, Universiti Malaysia Sabah, Kota Kinabalu, Malaysia.
[2] Faculty of Business and Communications, INTI International University, Nilai, Malaysia.
[3] Faculty of Psychology and Social Sciences, University of Cyberjaya, Sepang, Malaysia.

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Correspondence: Chua Bee Seok — e-mail: chuabs@ums.edu.my

Introduction

Mental health challenges, including anxiety, depression, post-traumatic stress disorder, suicidal behavior, and substance use disorders, are increasingly prevalent worldwide, particularly among young adults. In the Asia-Pacific region, these conditions represent a growing public health concern, with university students identified as a risk population. In Malaysia, findings from the National Health and Morbidity Survey (NHMS) 2015 reported a 29.2% prevalence of mental health problems among Malaysian adults aged 16 and above, NHMS 2023 data show that the prevalence of depression among adults aged 15/16 years and older was 4.6%, representing about one million people, about double the rate recorded in 2019. The 2023 survey also found that younger adults (aged 16-29) experienced higher rates of depression compared with older age groups. In addition, the prevalence of broader mental health problems among children aged 5-15 increased from 7.9% in 2019 to 16.5% in 2023. These statistics indicate a growing mental health burden among younger Malaysians and also highlight the need for effective assessment and early identification strategies.

Importantly, mental health is not solely defined by the absence of psychological disorders but also includes positive mental functioning, such as emotional well-being, life satisfaction, and personal growth. Positive mental health has been shown to predict higher quality of life, greater productivity, and improved physical health outcomes. However, Toledano-Toledano et al. (2023) claimed that even if individuals seem to have positive mental health, it does not show that they are free from mental health issues, which is also called the absence of disorders. The World Health Organization (WHO) statistics showed that one in seven individuals will experience a mental health issue in their lives (World Health Organization, 2025). Many studies have demonstrated that good mental health is associated with a higher overall quality of life and can increase productivity, thereby improving physical health (Judijanto & Mulyapradana, 2024).

Consequently, the development and validation of reliable instruments to assess positive mental health are essential for advancing research and informing targeted interventions within higher education contexts. The *Positive Mental Health Scale* (PMHS) was originally developed to assess positive mental health as a unidimensional construct encompassing emotional, psychological, and social well-being. Lukat et al. (2016) established the scale's psychometric robustness across student, clinical, and community samples, reporting high internal consistency and strong convergent validity with life satisfaction, as well as negative associations with depressive symptoms. The PMH Scale originated from German item pools and was refined to its current 9-item form by Lukat et al. (2016), who confirmed its one-dimensionality across students (N = 5,406), general population (N = 1,394), and clinicians (N = 1,547). Internal consistency was high (Cronbach's

α = 0.82-0.93), with strong convergent validity against depression measures (*r* = -0.53 to -0.74) and life satisfaction (*r* = 0.75).

Cross-cultural validations reinforce its robustness. Almubaddel (2022) adapted it for Saudi university-affiliated adults (N = 1,148), reporting α = 0.86-0.87, good item-total correlations (0.42-0.67), and a unifactorial structure via EFA/CFA (48% variance explained; RMSEA = 0.07). Convergent validity was demonstrated with *r* = -0.65 with the *Beck Depression Inventory-II,* and measurement invariance across genders was established. Boufellous et al. (2023) in Spain (N = 845) found α = 0.96, one-dimensionality (RMSEA = 0.02, CFI = 0.97), and correlations with optimism (*r* = 0.79) and resilience (*r* = 0.92). Other adaptations include Portuguese university students (α = 0.92; Sequeira et al., 2024), cancer patients (PMH-8, PSI = 0.89; Vaganian et al., 2022), and parents of pediatric cancer patients (α = 0.92, unidimensional; Toledano-Toledano et al., 2023).

Subsequent cross-cultural validations have consistently supported the reliability and validity of the PMHS. Studies conducted in Spain, Saudi Arabia, and Portugal have confirmed its unidimensional structure, high internal consistency, and meaningful associations with resilience, optimism, and psychological well-being. Collectively, these findings suggest that the PMHS is a stable and culturally adaptable instrument for assessing positive mental health across diverse populations. They also demonstrated consistent high reliability, convergent/divergent validity, and utility in diverse groups, supporting its application in Malaysian university settings where no prior validation exists. Therefore, this study aimed to examine the psychometric properties of the *Positive Mental Health Scale* (PMHS) in a sample of Malaysian university students. These findings provide empirical support for the use of the PMHS in future research and in mental health promotion and intervention efforts within higher education settings.

Methods

Research design

This study employed a quantitative psychometric design, using a cross-sectional survey. An online questionnaire was used to collect data, as survey methods are well-suited for studies involving relatively large samples. Administering the questionnaire online allowed the researchers to reach students from different geographic regions, institutional types, and demographic backgrounds, thereby enhancing the representativeness of the sample and the generalizability of the findings. This approach also increased data collection accessibility and efficiency by enabling participation at any time and from any location.

Participants

A total of 477 university students (344 female and 133 male) participated in the study. The sample comprised students aged 19 to 25 years (M = 20.66, SD = 2.58). With respect to ethnicity, the largest proportion of participants identified as Malay (34.6%), followed by Kadazandusun (22.40%), Chinese (8.80%), Bajau (7.80%), Indian (5.90%), Iban (4.20%), Murut (3.40%), Melayu Brunei (1.70%), and Bidayuh (.40%). An additional 10.70% of respondents identified as belonging to other ethnic groups. The majority of participants reported being Muslim (60.50%), followed by Christians (27.70%), Buddhists (6.70%), and Hindus (5.00%). One respondent (.20%) did not report religious affiliation. Regarding household income, most participants reported a monthly household income of RM 4,849 or below (60.00%). Approximately 29.40% reported an income between RM 4,850 and RM 10,960, while 10.70% indicated a household income of RM 10,960 and above. Most respondents were in their third year of study (58.10%), followed by second-year (22.20%), first-year (11.90%), and fourth-year (7.80%) students. Participants also rated their general health status. The majority described their health as good (41.30%) or very good (34.80%), while 13.60% reported excellent health. A smaller proportion rated their health as fair (9.40%) or poor (.80%).

Participants were recruited using convenience sampling. Convenience sampling involves selecting respondents who are easily accessible to the researcher and willing to participate, without strict inclusion criteria. This approach was chosen because university students are relatively easy to reach through institutional networks and online platforms, which increased the feasibility and efficiency of data collection. The study was conducted across Malaysia and included students from both Peninsular Malaysia and Borneo. Participants were drawn from multiple public and private universities to ensure diversity in institutional context and student characteristics. Data collection was conducted entirely online, with the questionnaire link distributed directly to students.

Instruments

Positive Mental Health Scale (*PMHS*)

The *Positive Mental Health Scale* (PMHS) was used to assess students' overall level of positive mental health. The PMHS is a brief, unidimensional, person-centered instrument developed to measure positive mental health as a global construct. It consists of 9 items that capture emotional, psychological, and social aspects of well-being. Each item is rated on a 4-point Likert scale from 1 (*not*

true) to 4 (*true*), with all items positively worded; higher scores indicate greater positive mental health.

The total PMHS score is obtained by summing the item responses, typically yielding a score range that reflects overall positive mental health, with higher totals representing better positive functioning. Previous studies have reported high internal consistency, good test-retest reliability, and satisfactory convergent and discriminant validity for the PMHS in student, clinical, and community samples. The scale has also shown a stable unidimensional factor structure in different cultural contexts, supporting its use as a robust measure of positive mental health.

The instrument underwent a rigorous back-to-back (forward-backward) translation procedure to ensure linguistic accuracy, semantic equivalence, and cultural appropriateness. The original English version of the *Positive Mental Health Scale* (PMHS) was independently translated into Malay by two bilingual experts with backgrounds in psychology, and the translations were subsequently reconciled into a single Malay version through consensus. This reconciled version was then back-translated into English by two independent bilingual translators who were blinded to the original instruments, and the back-translated versions were compared with the originals to identify discrepancies or inconsistencies in meaning. Minor linguistic refinements were made following this process to enhance clarity and cultural relevance.

Cognitive Fusion Questionnaire (CFQ)

The *Cognitive Fusion Questionnaire* (CFQ), developed by Gillanders et al. (2014), was used to assess the concurrent validity of the PMHS. CFQ assesses cognitive fusion, the tendency for individuals to become excessively entangled with their thoughts, which diminishes psychological flexibility. The CFQ measures the degree to which people treat their thoughts as literal truths that dictate their behaviors, rather than as passing mental events. Originally comprising 42 items, the instrument was later streamlined to a widely used 7-item unidimensional version (Trindade et al., 2018). Items are rated on a 7-point scale from 1 (*never true*) to 7 (*always true*), where higher scores indicate greater cognitive fusion, suggesting that respondents' thoughts more strongly control or dominate their actions. Lower scores, by contrast, reflect greater cognitive defusion, indicating that individuals can view their thoughts as distinct from reality and align their behavior more closely with personal values.

Data analysis

Data were analyzed using IBM SPSS Statistics Version 29.0. Descriptive statistics were computed to summarize participants' demographic characteristics.

Internal consistency reliability of the PMHS was determined using the Cronbach's alpha method. A threshold of a coefficient of ≥ 0.70 indicated an acceptable reliability, and a coefficient above 0.80 indicated good reliability (Gillanders et al., 2014). Item analysis was conducted by inspecting item-total correlations and descriptive indices for each item. The recommended criterion of ≥ .30 indicated that the items correlated well with the overall scale (Rauwenhoff et al., 2021). Confirmatory factor analysis (CFA) was conducted using SPSS-AMOS to evaluate the unidimensional measurement model of the *Positive Mental Health Scale* (PMHS). A one-factor model, in which all nine PMHS items loaded onto a single latent positive mental health factor, was specified a priori, consistent with previous validation studies of the PMHS (Lukat et al., 2016). Model fit was evaluated using multiple goodness-of-fit indices, including the chi-square statistic (χ^2) and the ratio of chi-square to degrees of freedom (χ^2/df), as well as absolute and incremental fit indices: the goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), Tucker-Lewis index (TLI), incremental fit index (IFI), and the root mean square error of approximation (RMSEA), in accordance with established guidelines for structural equation modeling (Hu & Bentler, 1999; Kline, 2023).

Results

Reliability of the Positive Mental Health Scale (PMHS)

The reliability of the *Positive Mental Health Scale* (PMHS) was examined using the Cronbach's alpha internal consistency method, with .70 set as the minimum acceptance criterion. The nine PMHS items yielded a Cronbach's alpha of .92, indicating excellent internal consistency and suggesting that the items reliably assess a common underlying construct of positive mental health.

Item Analysis of the Positive Mental Health Scale (PMHS)

Item analysis was conducted using corrected item-total correlations and inter-item correlations (see Table 1). Corrected item-total correlations ranged from .65 to .73, all above the recommended threshold of .30, demonstrating that each item contributes meaningfully to the total score. Cronbach's alpha if an item is deleted ranged from .906 to .911, which is lower than the overall alpha, indicating that the removal of any single item would not improve reliability and that all items should be retained. The reliability findings indicated that the PMHS is a psychometrically sound instrument for measuring positive mental health in this sample of university students.

Table 1
Item Total Correlation Analysis of the *Positive Mental Health Scale* (PMHS)

Items	Item Total Correlation	Cronbach's Alpha if Item Deleted
PMHS_1	.699	.908
PMHS_2	.653	.911
PMHS_3	.696	.909
PMHS_4	.726	.906
PMHS_5	.728	.906
PMHS_6	.736	.906
PMHS_7	.711	.908
PMHS_8	.733	.906
PMHS_9	.693	.909

Confirmatory Factor Analysis of the Positive Mental Health Scale (PMHS)

The confirmatory factor analysis (CFA) results indicated that the one-factor model demonstrated an acceptable fit to the data. The chi-square statistic was significant, $\chi^2(27) = 140.92$, $p < .001$, which is common in large samples. The χ^2/df ratio was 5.22, falling within the range considered acceptable for complex models. Incremental fit indices showed good model fit, with CFI = .95, TLI = .94, IFI = .95, NFI = .94, and RFI = .92, all exceeding the recommended cut-off value of .90. Absolute fit indices were also satisfactory, with GFI = .94 and AGFI = .90. The RMSEA value was .09 (90% CI [.079, .110]), indicating an acceptable level of approximation error given the model complexity. Although the RMSEA value slightly exceeded the conventional .08 cut-off, incremental fit indices consistently indicated good model fit, which has been noted as acceptable when evaluating models with strong theoretical grounding and adequate sample size. The standardized root mean square residual was low (RMR = .02), further supporting the adequacy of the model fit (see Table 2).

Overall, the CFA findings support the hypothesized unidimensional structure of the PMHS in the Malaysian university student sample. All items demonstrated strong and significant standardized factor loadings, confirming that they adequately represent the underlying positive mental health construct. These results provide further evidence for the construct validity of the PMHS and support its use as a reliable measure of positive mental health in this population.

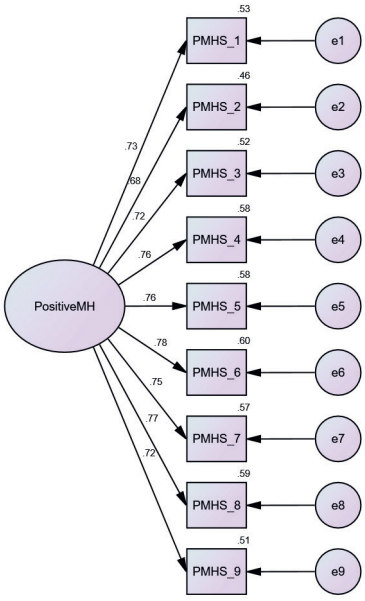
Table 2

Confirmatory Factor Analysis Fit Indices for the One-Factor Positive Mental Health Scale Model

Fit Index	Value	Recommended Cut-off
χ^2 (df)	140.92 (27)	—
χ^2/df	5.22	< 5.00 (acceptable)
GFI	.94	≥ .90
AGFI	.90	≥ .90
NFI	.94	≥ .90
RFI	.92	≥ .90
IFI	.95	≥ .90
TLI	.94	≥ .90
CFI	.95	≥ .90
RMR	.02	≤ .08
RMSEA	.09	≤ .08 (acceptable ≤ .10)

Note. χ^2 = chi-square; df = degrees of freedom; GFI = Goodness-of-Fit Index; AGFI = Adjusted Goodness-of-Fit Index; NFI = Normed Fit Index; RFI = Relative Fit Index; IFI = Incremental Fit Index; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index; RMR = Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation.

Figure 1



The Positive Mental Health Scale: Path Diagram of the Tested Models (Confirmatory Factor Analysis) (n = 477).

Concurrent Validity of the Positive Mental Health Scale (PMHS)

The concurrent validity of the *Positive Mental Health Scale* (PMHS) was evaluated by examining its association with the *Cognitive Fusion Questionnaire* (CFQ). From a theoretical perspective, higher levels of cognitive fusion are expected to be associated with poorer psychological functioning and lower levels of well-being. Accordingly, a negative relationship between PMHS and CFQ scores was anticipated. The findings revealed a statistically significant, moderate negative correlation between the two measures ($r = -.36$, $p < .001$), indicating that higher positive mental health was associated with lower cognitive fusion. These results provide empirical support for the concurrent validity of the PMHS.

Discussion

The present study aimed to examine the reliability, item characteristics, and construct validity of the *Positive Mental Health Scale* (PMHS) among Malaysian university students. Overall, the findings provide strong empirical support for the PMHS as a psychometrically sound instrument for assessing positive mental health in this population.

The PMHS demonstrated excellent internal consistency in the current sample, with a Cronbach's alpha of .917. This level of reliability exceeds the commonly accepted threshold of .70 and is consistent with previous validations conducted in diverse populations, including German students and community samples (Lukat et al., 2016), Portuguese university students (Sequeira et al., 2024), Saudi adults (Almubaddel, 2022), and Spanish community samples (Boufellous et al., 2023). The high internal consistency observed suggests that the nine items coherently measure a single underlying construct of positive mental health.

Item analysis further supported the robustness of the PMHS. Corrected item–total correlations ranged from .653 to .733, indicating that all items contributed meaningfully to the overall scale. Inter-item correlations were moderate, suggesting conceptual coherence without redundancy. Importantly, Cronbach's alpha did not increase with the deletion of any item, supporting the retention of all nine items. These findings align with previous research indicating stable item performance across cultural contexts (Lukat et al., 2016; Toledano-Toledano et al., 2023).

Construct validity of the PMHS was supported by factor-analytic findings from the *Cognitive Fusion Questionnaire* (CFQ). The two-factor solution clearly distinguished PMHS items from CFQ items, with all PMHS items loading strongly

on one factor and CFQ items loading on a separate factor. This pattern confirms that positive mental health, as measured by the PMHS, is empirically distinct from cognitive fusion, a construct associated with psychological inflexibility and distress (Gillanders et al., 2014).

These results are consistent with earlier studies demonstrating negative associations between PMHS scores and indicators of psychopathology, such as depression and anxiety (Lukat et al., 2016; Boufellous et al., 2023; Almubaddel, 2022). Together, these findings support the PMHS as a valid measure of positive mental health that captures adaptive functioning rather than simply reflecting low levels of psychological symptoms.

The confirmatory factor analytic results support the unidimensional structure of the PMHS in the Malaysian university student sample. This finding aligns with the original scale development (Lukat et al., 2016) and subsequent validations across different cultural and clinical populations, including cancer patients (Vaganian et al., 2022) and caregivers of children with chronic illness (Toledano-Toledano et al., 2023). The consistency of the unidimensional structure across studies suggests that positive mental health represents a coherent global construct encompassing emotional, psychological, and social well-being.

The validity of the *Positive Mental Health Scale* (PMHS) was further supported by the concurrent validity evident with its association with the *Cognitive Fusion Questionnaire* (CFQ) score among Malaysian university students. As theoretically expected, a significant and moderate negative correlation was observed between PMHS and CFQ scores, indicating that higher levels of positive mental health were associated with lower levels of cognitive fusion. This finding supports the concurrent validity of the PMHS and suggests that it captures a dimension of psychological functioning that is meaningfully related to, yet distinct from, cognitive processes linked to psychological distress.

Cognitive fusion reflects the tendency to become overly entangled with one's thoughts, which has been consistently associated with reduced psychological flexibility and poorer well-being (Hayes et al., 1999; Gillanders et al., 2014). In contrast, positive mental health emphasizes adaptive functioning and emotional well-being beyond the absence of mental illness (Keyes, 2002; Lukat et al., 2016). The observed negative association aligns with this theoretical distinction and is consistent with prior research demonstrating moderate relationships between well-being indicators and cognitive inflexibility (Trindade et al., 2018).

Overall, these findings provide empirical support for the use of the PMHS as a valid measure of positive mental health in Malaysian university students and highlight its utility for research and mental health assessment within this population. Importantly, the present findings extend the cross-cultural applicability of the PMHS to the Malaysian context, where validated tools for assessing positive mental health remain limited. Given Malaysia's multicultural and multilingual

population, the demonstrated reliability and validity of the PMHS provide valuable evidence for its use in higher education settings for research, screening, and mental health promotion initiatives.

Conclusion

The present study provides strong evidence for the reliability and validity of the *Positive Mental Health Scale* (PMHS) among Malaysian university students. The scale demonstrated excellent internal consistency, sound item functioning, and clear construct validity. Factor analytic findings supported the unidimensional structure of the PMHS, consistent with previous international research. Overall, the PMHS emerges as a brief, reliable, and valid instrument for assessing positive mental health in Malaysian higher education settings. Its use can contribute to research, early screening, and the development of strength-based mental health promotion and intervention programs. By focusing on positive mental health rather than solely on psychological symptoms, the PMHS supports a more holistic and proactive approach to student well-being.

Implications for Research and Practice

The validation of the PMHS among Malaysian university students has several practical implications. First, the brevity and strong psychometric properties of the scale make it well-suited for large-scale screening and research in university settings. Second, the PMHS can complement symptom-based measures by capturing students' strengths and psychological resources, consistent with a positive psychology and mental health promotion approach (Keyes, 2005).

From an applied perspective, the PMHS may assist educators, counselors, and policymakers in identifying students with lower levels of positive mental health who may benefit from preventive or strength-based interventions. The scale may also be useful for evaluating the effectiveness of mental health promotion programs and resilience-building interventions in higher education institutions.

Limitations and Future Research

Despite its strengths, this study has several limitations. First, the use of convenience sampling and self-report measures may limit the generalizability of the findings and introduce response bias. Second, the cross-sectional design precludes conclusions about temporal stability and causal relationships. Future research should examine test-retest reliability and longitudinal associations between positive mental health and academic or psychological outcomes.

Additionally, future studies could explore the measurement invariance of the PMHS across gender, ethnicity, and academic levels within Malaysia. Incorporating clinical or diagnostic measures would also allow for stronger conclusions regarding the scale's discriminant validity. Finally, confirmatory factor analysis and item response theory approaches could further refine the psychometric evaluation of the PMHS in Malaysian samples.

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