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Psychometric validity, and measurement invariance of the PERMA model among youth in Malaysia

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ABSTRACT

PERMA is a multidimensional well-being model that has contributed greatly to the well-being of people and communities. This research aimed to create the PERMA instrument, which measures the five dimensions of well-being in Malaysia: positive emotions, engagement, positive relationships, meaning in life, and accomplishment, and to assess its factor structure, reliability, and measurement invariance. This study included 550 Malaysians between the ages of 18 and 30 years old ($M=28.49$, $SD = 6.18$). The sample was randomly split into two groups for exploratory factor analysis and confirmatory factor analysis to explore the PERMA model. The revised model revealed satisfactory internal consistency and reliability. Additionally, this study examined the measurement invariance of the PERMA model through gender, education, and marriage groups by multigroup confirmatory factor analysis. The findings revealed that measurement invariance was obtained across gender and education categories. This instrument uses multidimensional conceptualization to offer researchers studying youth well-being in Malaysia a specialized tool to assess and increase youth well-being levels. Eventually, the goal is for this tool to assist Malaysian youth in developing a deeper sense of self by identifying their talents and shortcomings and discovering strategies to thrive in life fully.

IMPACT STATEMENT

This manuscript presents research that develops the PERMA model to enhance the well-being of Malaysian youth. The PERMA focuses on positive emotions, engagement, positive relationships, meaning in life, and accomplishment. The study tailors the PERMA instrument to the Malaysian context, with a diverse sample of 550 Malaysians aged 18 to 30. The study's innovative approach ensures a reliable instrument for assessing well-being among Malaysian youth. The findings demonstrate that the PERMA maintains its applicability across diverse demographic categories. The specialized PERMA provides a culturally sensitive approach to evaluating and enhancing the well-being of Malaysian youth, offering practical utility for researchers, educators, and policymakers. The long-term goal of the PERMA is to empower Malaysian youth by fostering a deeper understanding of themselves and identifying their strengths and areas for growth. This research holds the potential to contribute significantly to the overall well-being and resilience of the Malaysian youth population.

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Introduction

Youth well-being has recently attracted considerable interest in study and policy. Yet, a standard definition of youth well-being as a concept has not been established because it is understood differently across diverse social, cultural, and academic contexts (UNESCO, 2020). In health science, the terms "quality of life" and "well-being" are frequently used interchangeably (Medvedev & Landhuis, 2018). Well-being in philosophy is typically perceived as what is favorable to a person from that individual's viewpoint (Waters et al., 2022). As no

agreed-upon definition exists, the precise idea of well-being is still debated (Park et al., 2022). Despite varying viewpoints and hypothetical stances on how to conceptualize youth well-being, academics have agreed on its multidimensionality (Jiang & Ngai, 2020). As it is commonly acknowledged that well-being encompasses various areas, pertinent research is increasingly adopting a multidimensional strategy that considers numerous facets of young people's lives.

Numerous characteristics and developments in youth well-being research need to be highlighted in addition

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to multidimensionality. The most essential is a "youth-centered focus" (Exenberger et al., 2019). Early literature and scientific work overwhelmingly emphasize mental health among youth from a deficit viewpoint (Rose et al., 2017). Recently, the scientific world has grown more interested in conducting studies on the positive qualities of human nature, especially among youths (García-Carrión et al., 2019). This view follows the research of positive psychology, which aims to comprehend how children and adolescents flourish in the absence of hardship and difficulty (Park & Peterson, 2008). In addition to the well-established disease-based perspective of human functioning, the positive psychology approach focuses on enhancing human potential by strengthening and developing positive traits inside each individual (Boniwell & Tunariu, 2019).

According to this viewpoint, the non-existence of issues does not always show positive development and well-being (Ben-Arieh, 2008). Youths' well-being should be viewed as a sign of flourishing youth development (Almuqrin et al., 2020). Seligman (2011) suggested the PERMA model, which includes happy emotions, engagement, positive relationships, meaning, and accomplishment, in line with the discipline of positive psychology. This model, which young people have used, promotes the notion that mental health is not determined by the absence of mental disorders (e.g., Carreno et al., 2023). Nonetheless, various instruments have been tried to measure young people's mental health. These measures are crucial for taking into account the viewpoint of youths when making decisions and determining the success of interventions, both at the personal and community levels (Hayes et al., 2023).

Although the PERMA directs how child and adolescent well-being is conceptualized, limitations remain in the measurements. The PERMA has not been adequately evaluated from the viewpoints of the young. Consequently, this study collected data from youths between the ages of 18 and 30 and used them as the unit of observation to measure their well-being. PERMA scale modifications and validations are currently being created in many cultural contexts. In terms of population categories, the PERMA has been verified in samples of students from the United States (Umucu et al., 2020), Turkey (Bülbül & Izgar, 2017), Italy (Giangrasso, 2021), Indonesia (Hidayat et al., 2018), India (Singh & Raina, 2020), Chile (Cobo-Rendón et al., 2020), and Venezuela (Cobo-Rendon et al., 2021). Adult samples have only occasionally been used in studies, such as those from Germany (Wammerl et al., 2019), Greece (Pezirkianidis et al., 2021), Australia (Ryan et al., 2019), Japan (Watanabe et al., 2018), and Ecuador (Lima-Castro et al., 2017), as well as one from Colombia that included

institutionalized seniors (Suárez et al., 2018). For college students, the PERMA has also been recognized (Umucu et al., 2020). Currently, there are no instruments available that can test the validity of the PERMA model of well-being in a sample of Malaysian youth. Consequently, the present research attempted to fill a measurement gap in the literature on youth well-being by adopting and verifying the PERMA evaluation tool for Malaysian youth. This research evaluated the dimensionality of the overall model (measure), determined the construct validity and reliability of the subscales, and examined the measurement invariance across gender, educational level, and marital status using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA).

Theoretical basis: a PERMA model

The PERMA serves as this study's conceptualization, clarification, and measurement framework for youth well-being. This well-being measurement strategy based on research emphasizes the following five components: positive emotion, engagement, relationships, meaning, and accomplishment (PERMA) as facets that contribute toward individual development. Positive emotions, which include pleasure, happiness, cheerfulness, and ecstasy, define the excellent sentiments that motivate individuals to act. Feelings help to improve human performance and development by allowing for broader thinking and encouraging congruent adaptive abilities and actions (Grewal et al., 2006). Feelings are a key sign of well-being and may be nurtured or learned to improve one's well-being (Fredrickson, 2001).

The second PERMA component is engagement, which refers to a mental and emotional association with activities or groups and how engaged or engrossed one feels when participating in an activity (Kern et al., 2015). When an individual is fully engaged, they enter a state of flow, which leads to emotions of joy, mastery, and personal fulfillment (Nakamura & Csikszentmihalyi, 2009). Good relationships are also associated with happiness, resilience, and life satisfaction (Walsh, 2011). These relationships allow people to get along with others, collaborate, exhibit understanding and sympathy, manage conflict resolution, and form and sustain social bonds (Noble & McGrath, 2012).

Moreover, meaning is the fourth component of the PERMA. It entails individuals' reflecting, mirrored, and introspective processes for recognizing past, present, and future occurrences (Magare et al., 2022). Meaning is linked to human identity and the act of giving rather than taking. Among college students, a strong feeling of meaning is associated with life satisfaction, good effect, and academic accomplishment (Tansey et al., 2018).

Lastly, accomplishment is also known as achievement, mastery, or competence in PERMA. Working toward and attaining goals, and being self-motivated to complete and master a task all contribute to a sense of accomplishment. This promotes well-being since individuals may look back on their lives with pride (Seligman, 2012).

Most variants of the PERMA model that support the PERMA hypothesis as a multidimensional construct include these five dimensions. The fact that a scale is structured to concisely measure five dimensions of happiness enables its use in academic studies. Research on well-being can open the way for novel contributions and, as a result, modify scientific paths, thus allowing individuals and groups to grasp their strengths and limitations.

The connection between the PERMA model and demographic factors

As stated before, the PERMA constructs are highly stable but may alter due to important life events such as marriage and intentional interventions like education (Kern et al., 2016). As a result, PERMA is thought to be less dependent on social variables such as educational level and marital status than on biological characteristics like gender. Nevertheless, there is a lack of knowledge on whether personal and demographic traits (e.g., gender, age, education, and marriage) influence an individual's PERMA constructs, and existing findings are inconsistent.

According to recent research, males, and females have equal average levels of well-being. However, since women experience positive and negative emotions more frequently and more strongly, they are over-represented at the end of the well-being scale (Wammerl et al., 2019). Pezirkianidis et al. (2021) confirmed that the PERMA components exhibit factorial invariance across gender groups in Greece. Previous research in Western nations also found gender inconsistency in the PERMA model.

Furthermore, additional personal characteristics like educational level and marital status have not been thoroughly examined previously. An individual's degree of well-being may also be affected by their marital status. It was believed that marriage helps in dealing with challenges, and married individuals experience less loneliness (Frey & Stutzer, 2010). Only two studies revealed that highly educated people were happier and more content with their lives than less educated individuals (Park et al., 2006; Ruch et al., 2010). Currently, no research has ever been conducted on the connection between marital status, educational background, and PERMA.

In conclusion, the factor equivalences of the PERMA model are only marginally supported by the investigations stated above. This study examines if the PERMA structures can be applied to Malaysian youths and presents the results of PERMA invariance tests that were conducted using demographic factors, including gender, education, and marital status. Validating the measurement equivalence of these constructs of PERMA improves reliability unquestionably, and future applications are made easier.

Methods

Participants and procedure

Quantitative data were gathered through a survey. The original sample included 560 youths from Peninsular Malaysia. The legal age range for youth in Malaysia is 15 to 30 years old (Youth Societies and Youth Development (Amendment) Act & 2019, 2019, 2019). The young people in the sample were chosen randomly from four states. Each of these states contributed about 140 individuals. To guarantee that the participants were represented by the current percentage in Malaysia, stratified random sampling was used. The mean age of the respondents in this research was 28.49; 65.6% of them were female. In terms of ethnicity, 41.09% of the respondents identified as Malay, 32.36% as Chinese, 21.45% as Indian, and 5.6% as "other". Finally, 291 respondents (52.90%) were single, while 259 (47.09%) were married.

The 550-person sample was divided into two groups to examine construct validity. Item analysis and EFA were performed on half of the sample ($n=275$), while CFA was performed on the other half ($n=275$). For the entire sample ($n=550$), measurement invariance and reliability analyses were conducted. Independent sample t-tests and one-way ANOVA were employed to assess the sample characteristics against the PERMA_S score. The results indicated that the PERMA_S score among females was higher than males ($p=0.001$). Moreover, the results indicated that the PERMA_S score for Indians was higher than among other races ($p=0.000$). Respondents with permanent jobs received significantly higher PERMA_S than those with another employment status ($p=.005$). The study population descriptions are presented in Table 1.

Data were gathered from May through July 2020. The participants for this study were provided with self-administered questionnaires, which were collected on the same day. Before completing the survey, all participants provided informed consent. It

Table 1. Sociodemographic descriptions and PERMA_S scores (N=550).

Variables	N (%) MEAN ± SD	PERMA scores MEAN ± SD	
Age		28.49 ± 6.18	
Gender			.001
Male	3.83 ± 4.22	3.824 ± .427	
Female	317 (57.63)	3.83 ± .422	
Race			.000
Malay	226(41.09)	226(41.09)	
Chinese	178(32.36)	3.577(.418)	
Indian	118(21.45)	3.91(.423)	
Other races	28(5.6)	3.8707(.285)	
Educational level			.303
≥high school	104(18.9)	3.84(.378)	
<high school	446(81.1)	3.82(.431)	
Marital status			.697
Married	259 (47.09)	259 (47.09)	
Single	291(52.90)	3.77(.465)	
Job-status			.005
Permanent	322(58.5)	3.88(.371)	
Contract	58 (10.5)	3.726(.428)	
Self-employed	27(4.9)	3.82(.485)	
Unemployed	143(26)	3.75(.497)	

took roughly 20 minutes to complete the survey, and then the data-gathering procedure occurred. The respondents completed the demographic questionnaire, PRMA instruments, and spiritual well-being scale. A total of 560 questionnaires were distributed among the students; four were incomplete and not useable for analysis. Moreover, six cases were removed from the analysis because of outlier values.

Measures

Well-being

The PERMA-Profilier was utilized to evaluate well-being (Butler & Kern, 2016). The PERMA-Profilier consists of 23 items, 15 of which assess the five pillars of well-being (positive emotion, engagement, relationships, meaning, and accomplishment), and eight were filler items. Each item (for example, "How often do you feel upbeat?") was graded on an 11-point Likert-type scale ranging from 0 (never) to 10 (always) or 0 (never) to 10 (always) (completely). Scores were computed by taking the average of the elements in each factor. Each participant also received an average well-being score. Butler and Kern (2016) reported acceptable internal consistency and test-retest reliability scores for positive feeling $\alpha=.88$, engagement $\alpha=.72$, relationship $\alpha=.82$, meaning $\alpha=.90$, and accomplishment $\alpha=.79$, as well as general PERMA $\alpha=.94$.

Overall well-being

Overall well-being was assessed with a solo item from the PERMA-Profilier (Butler & Kern, 2016). Higher average scores indicate greater happiness. The solo item (i.e., "How often you are completely overjoyed

when something good happens? [*Berapa kerap anda gembira apabila sesuatu yang baikberlaku?*]) was scored on an 11-point Likert-type scale ranging from 0 (not at all) to 10 (totally).

Negative emotion

Three questions from the PERMA-Profilier were used to assess negative emotion (Butler & Kern, 2016). Three questions gauge negative emotions including rage, despair, and anxiousness. An 11-point Likert-type scale was used to score the scale, with 0 representing never 10 representing always, or 10 representing not at all (completely).

Analytic strategy

Individual sample characteristics were defined using descriptive analysis. To examine the underlying structure of the PERMA, Sample 1 was subjected to EFA with principal axis factoring using IBM's SPSS 25 (Watkins, 2021). Promax rotation was used as the hypothesized factors would be correlated (Frank et al., 2016). Both the Scree plot and factor interpretability were considered for determining the number of factors to be retained. Item factor loadings greater than 0.3 were deemed adequate. In addition, an item having a factor loading of 0.32 or higher on more than two factors was considered a cross-loading item (Costello & Osborne, 2005).

To validate the factor structure obtained from the EFA, CFA was conducted using Sample 2. The CFA employed the weighted least square mean and variance adjusted (WLSMV) estimator, available in Mplus Version 8.0 software (Muthén & Muthén, 2019). WLSMV has demonstrated effectiveness for ordinal items (Beauducel & Herzberg, 2006; Flora & Curran, 2004) and has been shown to outperform robust ML estimation in accurately estimating factor loadings (Li, 2016).

After the CFA, multiple CFAs were performed to further assess the measurement invariance (configural, metric, scalar, and residual invariance) of the PERMA model across gender, race, and marital status, respectively. Additionally, internal reliability measures, including Cronbach's alpha and McDonald's omega (ω), were computed for the PERMA. To examine convergent validity, concurrent validity assessments were conducted using overall well-being and negative emotions.

Results

Distributional indices

The study computed the PERMA components' means, standard deviations, skewness, and kurtosis (Watkins,

2021). Furthermore, the Kolmogorov-Smirnov and Shapiro-Wilk tests for normalcy were assessed. If the tests yield significance for every item, the data is not normally distributed (Ghasemi & Zahediasl, 2012).

Exploratory factor analysis

The items were used in a factor analysis utilizing varimax rotation to verify the dimensionality of the PERMA-S. The factor analysis extraction approach considers the shared variance while exposing the underlying factor structure (Shrestha, 2021). Many iterations of factor analysis were conducted, each incorporating statistical criteria for item retention (Costello & Osborne, 2005): first, commonality must be more than .5; second, factor loadings must be larger than .5. The six-factor model was developed, with the remaining 40 components accounting for 47.8% of the observed variance (Kaiser-Meyer-Olin (KMO) = .889; Bartlett's test of Sphericity: $\chi^2 = 10547.444$, $df=2145$, and $p=.000$). Satisfactory levels of internal reliability (Cronbach's $\alpha >.7$; Nunnally, 1978) in addition to internal consistency (corrected

item-to-total-correlation $>.5$) was provided. Table 2 summarizes the findings of the EFA.

Confirmatory factor analysis

We studied a set of fifteen items using CFA with Mplus 8.3, focusing on the second random half of our Malaysian sample. The results for all the tested models are summarized in Tables 3 and 4. We introduced a proposed measurement model for PERMA (referred to as Model 1). The factor loadings for Model 1 items are in Table 4, all exceeding a value of .4. Therefore, we kept all items in all five factors, following the recommendation of Field (2013) to suppress factor loadings below 0.3 and consider scores above 0.4 as stable as suggested by Guadagnoli and Velicer (1988).

However, the results didn't show a satisfactory fit to the data, as indicated by various fit indices (see Model in Table 3). A closer look at the CFA results led us to make adjustments to the path model to enhance the fit indices. Notably, the parameter with the highest modification index was identified between Item PoE₁ ("How often do you feel joyful")

Table 2. Exploratory factor loadings that emerged from the PERMA's principal axis factoring (PAF) in Malaysian youth.

Factors	Item	EFA
1	How often do you feel joyful? [<i>Berapa kerap anda berasa gembira?</i>]	.613
	How often do you feel upbeat? [<i>Berapa kerap anda berasa ceria?</i>]	.589
	How often do you feel contented? [<i>Berapa kerapkah anda berasa puas?</i>]	.510
2	How often do you become absorbed in what you are doing? [<i>Berapa kerapkah anda rasa terbabat dengan apa yang anda lakukan?</i>]	.586
	How often do you feel excited in things surround you? [<i>Se kerap manakah anda merasa teruja dengan perkaraperkara di sekitar anda?</i>]	.673
	When you're doing something you like, how frequently do you lose track of time? [<i>Apabila anda melakukan sesuatu yang anda suka, berapa kerap anda kehilangan jejak masa?</i>]	.872
3	I always received help and support from close contact when I need it. [<i>Saya selalu menerima bantuan dan sokongan daripada kenalan terdekat apabila saya memerlukannya.</i>]	.709
	I always felt loved. [<i>Saya selalu rasa disayangi.</i>]	.682
	I am satisfied with every single one of my relationships. [<i>Saya berasa puas dengan setiap perhubungan saya.</i>]	.647
4	I live my life meaningfully. [<i>Hidup saya adalah bermakna</i>]	.869
	I feel that what I do in my life is valuable. [<i>Saya merasakan bahawa apa yang saya lakukan dalam hidup saya adalah berharga.</i>]	.885
	I always felt I had direction in my life. [<i>Saya selalu merasakan saya mempunyai hala tuju dalam hidup saya.</i>]	.784
5	I have spent a lot of time making progress towards accomplishing my goals. [<i>Banyak masa yang telah saya gunakan dalam membuat kemajuan ke arah mencapai matlamat saya.</i>]	.394
	I frequently achieve significant goals that I set for myself. [<i>Saya sering mencapai matlamat penting yang saya tetapkan untuk diri saya sendiri.</i>]	.563
	I carry out my responsibility to achieve my goals. [<i>Saya menjalankan tanggungjawab saya dalam mencapai cita-cita saya.</i>]	.614

Table 3. Summary of fit indices.

Path models	RMSEA(90%CI)	RMSEA	CFI	TLI	SRMR
Model 1	.035 (.037, .052)	.654	.854	.840	.074
Model 2 ^a	.045 (.041, .049)	.965	.873	.802	.048
Model 3 ^b	.041 (.034, .044)	1.000	.914	.904	.041

^aMeasurement model with covariance between the item of PoE 1 and EN 3 (covariance, $r=0.321$, $p<.001$).

^bMeasurement model with covariance between the item of PoE 1 and EN 3 and covariance between the item of RE1 and EN 2 (covariance, $r=0.342$, $p<.001$).

Table 4. Standardized factor loadings for model 1, model 2, model 3, and model 4.

Factors and Items	Factor loading		
	Model 1	Model 2	Model 3
Positive emotion			
PoE ₁	.367	.367	.489 ^a
PoE ₂	.678	.657	.700
PoE ₃	.650	.692	.708
Engagement			
EN ₁	.680	.680	.787
EN ₂	.732	.728	.784 ^a
EN ₃	.762	.767	.784 ^a
Relationship			
RE ₁	.732	.735	.808 ^a
RE ₂	.706	.706	.806
RE ₃	.743	.743	.789
Meaning			
ME ₁	.777	.776	.783
ME ₂	.706	.705	.800
ME ₃	.740	.743	.778
Accomplishment			
ACC ₁	.808	.808	.815
ACC ₂	.650	.650	.659
ACC ₃	.706	.706	.716

^aA Covariance between the error terms of RE1 and EN 2 and PoE 1 and EN3.

and EN₂ ("How often do you feel excited about things around you?"). Introducing covariance between the error terms for items PoE₁ and EN₂ resulted in an improved model fit (Table 3), with the factor loadings detailed in Table 4.

Despite the improved fit indices, we considered it insufficient. Further refining the model based on the modification index in the CFA results, we identified another noteworthy parameter, this time between item RE₁ ("I always received help and support from close contacts when I need it") and EN₃ ("When you're doing something you like, how frequently do you lose track of time"). Introducing covariance between the error terms for items RE₁ and EN₃ led to a final model demonstrating a good fit to the data (see Table 3), with the factor loadings presented in Table 4 and Figure 1.

Convergent and discriminant validity

In our final model, we calculated the CR, which ranged from .67 to .84. These values suggest a moderate to good reliability of the construct. The AVE for each factor ranged from .41 to .64. Although some AVE values were below the recommended .50, the CR values were above the suggested .60, indicating satisfactory convergent validity (refer to Table 5) according to Fornell and Larcker (1981). All correlations between factors were below the recommended value of .85, demonstrating good discriminant validity. To assess concurrent validity, we examined how the PERMA subscales correlated with two measures:

overall well-being and negative emotions. As shown in Table 5, PERMA and its subscales exhibited noteworthy and statistically significant low-to-moderate positive correlations with overall well-being and negative emotions. These findings provide some support for the concurrent validity of the PERMA.

Analyses of reliability and validity

Although the measuring model was tested construct by construct, the test of reliability, convergence, and discriminant validity was determined by considering multiple indicators simultaneously (Rasoolimanesh, 2022). For constructs with more than three indicators, we examined the reliability of individual items. Table 6 presents the Cronbach's alpha (α) and McDonald's omega (ω) values. Cronbach's alpha values for PERMA and its subscales varied from .681 to .827, indicating strong internal consistency. Similarly, McDonald's omega (ω) values were consistently above .70, except for the accomplishment scale, which displayed a lower value. Among the composite samples, the accomplishment subscale exhibited the lowest reliability, with the alpha (α) for engagement not surpassing 0.70.

Measurement invariance test

The goodness-of-fit (GOF) statistics of the PERMA in subsamples by gender, educational level, and marital status were provided in Table 7. The findings were satisfactory in the subsequent subsamples: males ($\chi^2 = 550.634$, $df=260$, $p<0.001$, CFI = .886, RMSEA = .077, SRMR = .029); females ($\chi^2 = 551.050$, $df=260$, $p<0.001$, CFI = .940, RMSEA = .056, SRMR = .029); lower high school ($\chi^2 = 450.014$, $df=260$, $p<0.001$, CFI = .838, RMSEA=.084, SRMR = .053); upper high school ($\chi^2 = 647.499$, $df=260$, $p<0.001$, CFI = .935, RMSEA= .059, SRMR =.031); married ($\chi^2 = 703.463$, $df=223$, $p<0.001$, CFI = .930, RMSEA = .060, SRMR = .030); and single ($\chi^2 = 584.505$, $df=260$, $p<0.001$, CFI = .915, RMSEA = .066, SRMR = .042).

Progressive measurement invariance tests were performed to establish the construct validity of the PERMA. Table 7 displays the GOF findings for the 4 levels of invariance models across gender, educational attainment, and marital status. First, by mandating that the factorial structure in each group be the same, we examined the configural invariance. The results revealed that PERMA's five-factor structure was equal across gender, educational level, and marital status. The researchers then continued to test

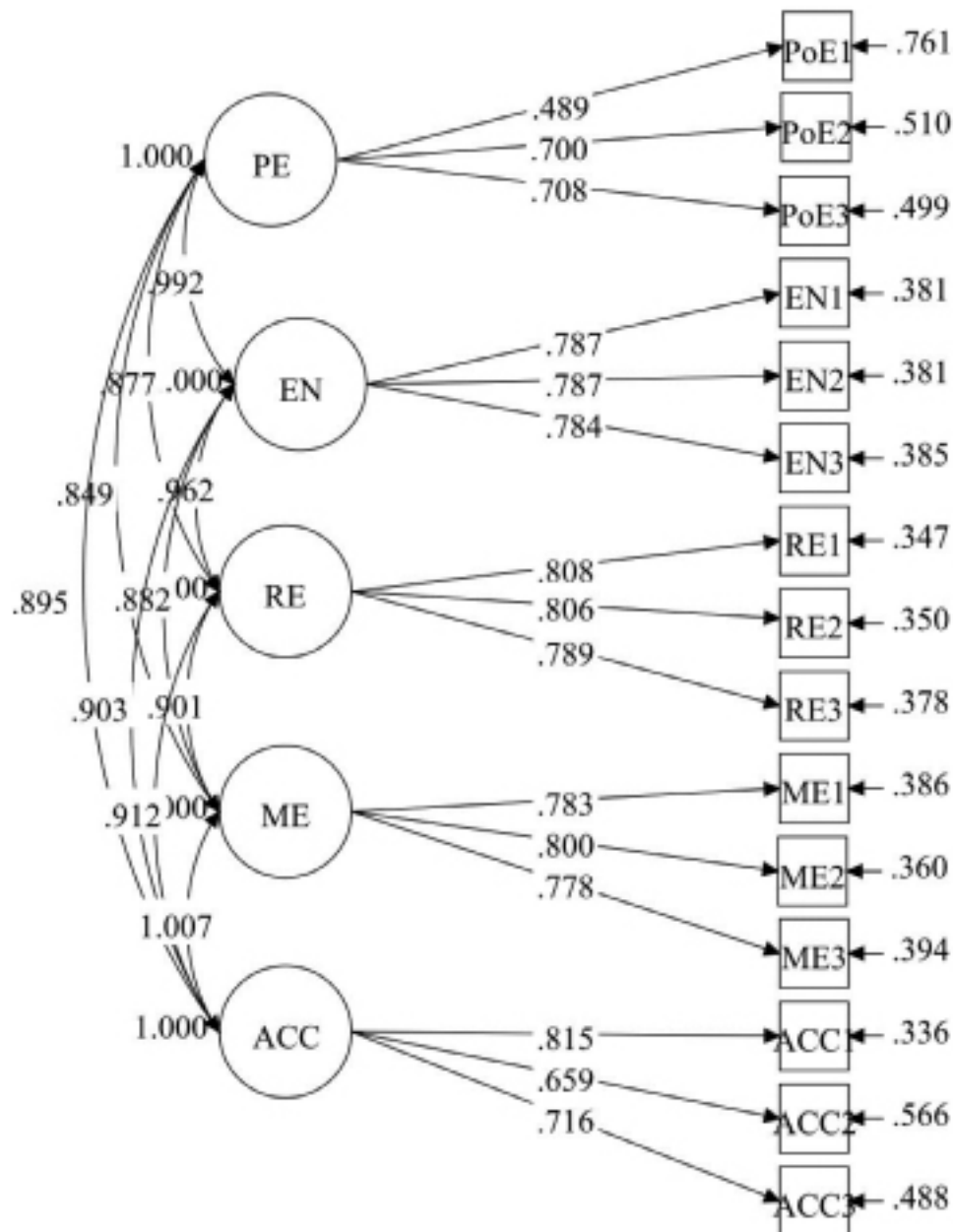


Figure 1. Confirmatory factor model for PERMA model.

Note. Positive emotion = PE, Engagement = EN, Relationship = RE, Meaning = ME, Accomplishment = ACC.

Table 5. Convergent and discriminant validity: Average PERMA factor associations with other constructs and the square root of AVEs.

No	Construct	CR	AVE	1	2	3	4	5	6
1	Positive emotions	.67	.41	.57					
2	Engagement	.83	.61	.284**	.63				
3	Relationship	.84	.64	.558**	.211**	.61			
4	Meaning	.83	.62	.565**	.329**	.669**	0.78		
5	Accomplishment	.78	.54	.333**	.208**	.431**	.475**	0.63	
6	Negative emotions	-	-	-.152*	-.231**	-.234**	-.192**	-0.006	0.61
7	Overall wellbeing	-	-	.468**	.287**	.377**	.301**	.265**	-.19**

Note. * $p < .05$, ** $p < .01$.

metric invariance (i.e. factorial weights constrained). The multigroup analysis demonstrated satisfactory outcomes across gender ($\Delta\chi^2 = 53.2$, $p=0.000$, ΔCFI

$= 0.004$, $\Delta RMSEA = 0.000$), educational level ($\Delta\chi^2 = 26.657$, $p=0.373$, $\Delta CFI = 0.001$, $\Delta RMSEA = 0.001$), and marital status ($\Delta\chi^2 = 20.504$, $p=0.720$, $\Delta CFI =$

0.000, $\Delta RMSEA = 0.001$), suggesting that factor loadings were invariant across gender and educational level.

Following that, a high invariance level (scalar invariance) was utilized to assess the equality of indicator intercepts across each group. The GOF statistics for gender ($\Delta\chi^2 = 96.594$, $p < 0.001$, $\Delta CFI = 0.007$, $\Delta RMSEA = .000$), educational level ($\Delta\chi^2 = 72.162$, $p = .022$, $\Delta CFI = .003$, $\Delta RMSEA = .001$), and marital status ($\Delta\chi^2 = 51.928$, $p = 0.399$, $\Delta CFI = .002$, $\Delta RMSEA = .002$) were acceptable. Since $\Delta\chi^2$ is also sample size dependent, even while the $\Delta\chi^2$ was satisfactory at $p < 0.01$ across gender and educational categories, the $\Delta RMSEA$ for gender remained lower than the 0.015 thresholds. Consequently, the findings demonstrated that each item's intercepts were also independent of gender and married status, in addition to the factor loadings (Table 8).

Finally, the present study investigated PERMA's residual invariance by constraining measurement residuals across groups. $\Delta\chi^2$ tests revealed significant results across gender ($\Delta\chi^2 = 95.629$, $p < 0.001$) and educational level ($\Delta\chi^2 = 69.162$, $p = 0.024$) when measurement errors were constrained as even. The results demonstrated no residual invariance across gender and educational levels; however, residuals were

invariant across marital status ($\Delta\chi^2 = 50.66$, $p = 0.197$). The gender and educational levels revealed configural and metric invariances. Residual invariance was detected across gender and marital status but not across educational levels.

Discussion

The present study aimed to assess the reliability and construct validity of the PERMA model in the context of Malaysian youth, utilizing psychometric evaluations that involved various statistical methods, including EFA and CFA, internal consistency tests, and assessments of measurement invariance. By adopting a youth-centered and optimistic approach, coupled with rigorous statistical methodologies, this research contributes a novel and comprehensive evaluation of the psychometric properties of the PERMA model specifically among Malaysian youths. This integration of methodology enhances the generalizability and applicability of present findings, providing valuable insights for both researchers and practitioners engaged in youth-focused work. Thus, this study represents the inaugural effort to investigate the factorial validity of the PERMA model among Malaysian youth.

The ultimate version of the PERMA included 15 items divided into five sub-scales. The CFA findings demonstrated that all items in each subscale moderately reflected their associated sub-construct, supporting the PERMA's construct validity. Furthermore, the PERMA and its subscales were positively associated with overall well-being while adversely related to negative emotion. The considerable connections with the predicted directions validated the PERMA's convergent validity. Previous research supports these findings (Carlton & Wong, 2023; Chue et al., 2023; Grenawalt et al., 2022; Kovich et al., 2023). According to Butler and Kern (2016), higher levels of positive emotion, engagement, relationships, meaning, and accomplishment are associated with better levels of physical health, and happiness, and lower levels of negative emotion in college students.

Table 6. PERMA description and evaluation of reliability.

Subscale	Item	M	SD	Corrected item-dimension correlation	α	ω
Positive emotions	PE ₁	3.78	.789	.434	.707	.732
	PE ₂	4.11	.892	.603		
	PE ₃	3.80	.762	.551		
Engagement	EN ₁	3.50	.921	.594	.720	.754
	EN ₂	3.75	1.007	.635		
	EN ₃	3.36	.855	.409		
Relationships	RE ₁	3.937	.842	.714	.807	.823
	RE ₂	3.951	.757	.730		
	RE ₃	4.293	.758	.537		
Meaning	ME ₁	4.12	.769	.661	.827	.834
	ME ₂	3.93	.824	.656		
	ME ₃	4.17	.851	.742		
Accomplishment	ACC ₁	3.991	.738	.448	.681	.684
	ACC ₂	4.186	.720	.516		
	ACC ₃	4.342	.643	.529		

Note. Mean = M, standard deviation = SD, Cronbach alpha = α , McDonald's omega = ω .

Table 7. Subsample structural validation classified by gender, marital status, and educational level.

Model	χ^2	df	TLI	CFI	AIC	BIC	SRMR	RMSEA
Two factors CFA (n=275)	513.632	260	.921	.932	643.631	878.722	.035	.060
Total sample (n=550)	692.900	260	.930	.940	822.900	1103.045	.030	.055
Female	551.050	260	.931	.940	681.050	933.285	.029	.056
Male	550.634	260	.869	.886	680.634	892.372	.048	.077
≥high school	450.014	260	.813	.838	580.014	623.910	.053	.084
<high school	647.499	260	.924	.935	777.499	1040.884	.031	.059
Married	497.124	260	.919	.930	627.124	857.814	.030	.060
Single	584.505	260	.902	.915	714.505	953.047	.042	.066

Table 8. Gender, marital status, and educational level-related measurement invariance of the PERMA.

Model	χ^2	df	CFI	RMSEA	$\Delta\chi^2$	Δdf	p	ΔCFI	$\Delta RMSEA$
By gender									
Configural invariance	1102.089	520	.922	.045					
Metric invariance	1155.311	545	.918	.045	53.2	25	<.001	0.004	.000
Scalar invariance	1198.683	570	.915	.045	96.594	50	<.000	0.007	.000
Residual invariance	1197.718	568	.915	.045	95.629	48	<.001	0.007	.000
By educational level									
Configural invariance	1002.618	520	.920	.045					
Metric invariance	1029.275	545	.920	.044	26.657	25	0.373	.001	.001
Scalar invariance	1074.780	570	.917	.044	72.162	50	.022	.003	.001
Residual invariance	1071.874	568	.917	.044	69.162	48	0.024	.001	.003
By marital status									
Configural invariance	1048.240	520	.936	.041					
Metric invariance	1068.744	545	.936	.040	20.504	25	0.720	.000	.001
Scalar invariance	1100.168	570	.936	.039	51.928	50	0.399	.002	.002
Residual invariance	1098.900	568	.936	.039	50.66	43	0.197	.000	.002

Note. Chi-square= χ^2 , degree of freedom=df, comparative fit index=CFI, root mean square error of approximation=RMSEA, the difference between models' $\chi^2 = \Delta \chi^2$, the difference between models' $df = \Delta df$, p-value, = p, the difference between models' CFI= ΔCFI , difference between models' RMSEA= $\Delta RMSEA$.

In this investigation, all scores consistently fell within the average range, indicative of positive youth well-being in Malaysia. A comparison with Butler and Kern (2016) survey highlighted moderate factor loading scores among Malaysian respondents in positive emotions and relationships scales, though the initial indicator for positive emotion value scores, specifically joy, was relatively low. Compared to the total sample, Malaysian youth exhibited a more positive attitude toward life, optimism about the future, and a dedication to fostering trusting relationships. Prioritizing relationships and positive emotions correlated with overall well-being, improved a sense of responsibility for one's choices.

Positive emotions, acceptance, and recognition emerged as crucial components influencing independence, coping with challenges, and perceiving problems as growth opportunities. Despite higher values in negative emotions within our research sample compared to the total, it underscores the emotional component's significance in Malaysian youth well-being, aligning with Butler and Kern (2016) call for a balanced consideration of positive and negative mental health aspects. Considering the present results in light of previous information, the authors infer that values observed in the engagement and accomplishment scales, when contrasted with the total sample, highlight the role of goal-setting and achievement in influencing overall well-being. Individuals scoring higher on these scales likely attribute greater importance to setting goals and experiencing a sense of accomplishment, positively impacting their well-being.

The engagement scale evaluates factors related to active participation and involvement in activities, while the accomplishment scale assesses feelings of achievement and success. Elevated values in these

scales suggest an emphasis on the positive impact of pursuing and achieving goals on overall well-being, aligning with psychological theories that stress the importance of goal-setting and accomplishment in enhancing life satisfaction and happiness.

Additionally, because the PERMA-Profiler is a relatively new well-being survey, the researchers are unaware of any research on the inter-individual variances of the PERMA components when other sociodemographic variables are considered. The current study investigated gender, educational level, and marital status measurement invariance for the PERMA model among Malaysian youths. Regarding measurement invariance, multigroup CFA findings demonstrated that the PERMA exhibited configural, metric, and scalar invariances across marital status and educational levels. This study proved its importance because of the following reasons. First of all, this was the first study in Malaysia to create and evaluate a valid and reliable multidimensional scale to measure youth well-being. This scale corrected the measurement gaps and considered the limitations of earlier research. Youths were the focus of the observation and the analysis in this study, which was inspired by the recent theoretical shift toward a youth-centered approach. By approving a strength-based viewpoint, the developed PERMA might be employed as a positive-favored evaluation instrument for assessing positive growth. It helps appreciate, assess, and support youth to thrive from their point of view.

Also, the development of PERMA had important effects on research and practice. Research gaps between Western and Eastern nations might be bridged by creating and verifying a reliable scale in an Asian country, which could also facilitate different cultural comparisons in youth well-being studies.

Additionally, the creation of social policies and intervention programs to support youth's healthy progress and growth was constrained by the absence of comprehensive knowledge of youth well-being. The constructed scale could provide a reliable psychometric assessment instrument that may be applied to surveys, therapeutic youth work, and program evaluation to gauge and track many elements of young people's growth. Prospect studies might use this to investigate how "input" elements affect certain aspects of youth development and offer experimental and practical support for youth work and policy initiatives.

Limitations and direction for future studies

Notwithstanding the importance and merits of the current study, certain limitations must be considered for future research. First, only four Malaysian states were included in the study's sample. Hence, it would be challenging to generalize the results to other populations and locations across Malaysia. Replications helped assess the validity, reliability, and generalizability of study results, as Peterson and Merunka (2014) recommended. Future studies might thus gather a more diversified sample to ascertain whether this evaluation instrument could be used to assess youth in other areas of Malaysia. Due to time and financial restrictions, this study had a small sample size, and there were far fewer youth participants than in European studies. Hence, great care should be used concerning generalizability and bias. Another noteworthy finding from our study was that the modified PERMA scale demonstrated its adaptability to gender, marital status, and education levels. To further understand how successfully PERMA may be used across cultures and ethnicities, an additional study contrasting PERMA with particular cultural theories of well-being would be highly beneficial. Finally, self-reported measures were used, which have limitations (Lucas & Baird, 2006; Paulhus & Vazire, 2007). Future studies must address these issues and investigate self-report impact by questioning families about their children's degree of positive functioning to address the concerns regarding discriminant validity, construct proliferation, and mono-method bias. Furthermore, future PERMA research may use longitudinal studies to advance understanding of how important linkages endure or alter over time. Moreover, the engagement factor has poor reliability.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The data supporting this study's findings are available from the corresponding author upon request.

References

- Almuqrin, A., Zhang, Z. J., Alzamil, A., Mutambik, I., & Alhabeeb, A. (2020). The explanatory power of social capital in determining knowledge sharing in higher education: A case from Saudi Arabia. *Malaysian Journal of Library & Information Science*, 25(3), 1–12. <https://doi.org/10.22452/mjlis.vol25no3.5>
- Beauducel, A., & Herzberg, P. Y. (2006). On the performance of maximum likelihood versus means and variance adjusted weighted least squares estimation in CFA. *Structural Equation Modeling: A Multidisciplinary Journal*, 13(2), 186–203. https://doi.org/10.1207/s15328007sem1302_2
- Ben-Arieh, A. (2008). Indicators and indices of children's well-being: Towards a more policy-oriented perspective.

- European Journal of Education*, 43(1), 37–50. <https://doi.org/10.1111/j.1465-3435.2007.00332.x>
- Boniwell, I., & Tunariu, A. D. (2019). *Positive psychology: Theory, research and applications* (2nd ed.). McGraw-Hill Education.
- Bülbül, A. E., & Izgar, G. (2017). Effects of the patience training program on patience and well-being levels of university students. *Journal of Education and Training Studies*, 6(1), 159–168. <https://doi.org/10.11114/jets.v6i1.2900>
- Butler, J., & Kern, M. L. (2016). The PERMA-Profilers: A brief multidimensional measure of flourishing. *International Journal of Wellbeing*, 6(3), 1–48. <https://doi.org/10.5502/ijw.v6i3.526>
- Carlton, S., & Wong, J. H. K. (2023). Applying the PERMA Framework to Young Volunteers in Aotearoa New Zealand. *International Journal of Applied Positive Psychology*, 8(3), 599–620. <https://doi.org/10.1007/s41042-023-00108-3>
- Carreno, D. F., Eisenbeck, N., Greville, J., & Wong, P. T. (2023). Cross-cultural psychometric analysis of the mature happiness scale-revised: mature happiness, psychological inflexibility, and the PERMA model. *Journal of Happiness Studies*, 24(3), 1075–1099. <https://doi.org/10.1007/s10902-023-00633-7>
- Chue, K. L., Yeo, A., Nie, Y., & Chew, L. C. (2023). Modifying the PERMA profiler to assess student well-being. *Current Psychology*. <https://doi.org/10.1007/s12144-023-04550-z>
- Cobo-Rendon, R. C., Parra, J. A. A., & García-Álvarez, D. D. J. (2021). Análisis psicométrico del perfil de bienestar “PERMA-PROFILER” en una muestra estudiantes de Psicología [Psychometric analysis of the “PERMA-PROFILER” well-being profile in a sample of students of Psychology]. *Anuario de Psicología*, 51(1), 35–43. <https://doi.org/10.1344/ANPSIC2021.51/1.28677>
- Cobo-Rendón, R., Pérez-Villalobos, M. V., & Díaz-Mujica, A. (2020). Propiedades psicométricas del PERMA-Profilers para la medición del bienestar en una muestra de estudiantes universitarios chilenos [Psychometric properties of the PERMA-Profilers for the measurement of well-being in a sample of Chilean university students]. *Revista Ciencias de la Salud*, 18(1), 119–133. <https://doi.org/10.12804/revistas.urosario.edu.co/revsalud/a.8775>
- Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research, and Evaluation*, 10(1), 1–9.
- Exenberger, S., Banzer, R., Christy, J., Höfer, S., & Juen, B. (2019). Eastern and Western children’s voices on their well-being. *Child Indicators Research*, 12(3), 747–768. <https://doi.org/10.1007/s12187-018-9541-8>
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). SAGE Publications. https://books.google.com/books?hl=en&lr=&id=c0Wk9luBmAoC&oi=fnd&pg=PP2&dq=Field+A.+Discovering+statistics+using+IBM+SPSS+statistics:+sage%3B+2013&ots=LclpJM3s1H&sig=B5nzkpP45JgFp_H2qNIAbDlloU
- Flora, D. B., & Curran, P. J. (2004). An empirical evaluation of alternative methods of estimation for confirmatory factor analysis with ordinal data. *Psychological Methods*, 9(4), 466–491. <https://doi.org/10.1037/1082-989X.9.4.466>
- Fornell, C., & Larcker, D. F. (1981). *Structural equation models with unobservable variables and measurement error: Algebra and statistics*. Sage.
- Frank, J. L., Jennings, P. A., & Greenberg, M. T. (2016). Validation of the mindfulness in teaching scale. *Mindfulness*, 7(1), 155–163. <https://doi.org/10.1007/s12671-015-0461-0>
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *The American Psychologist*, 56(3), 218–226. <https://doi.org/10.1037/0003-066x.56.3.218>
- Frey, B. S., & Stutzer, A. (2010). Happiness and public choice. *Public Choice*, 144(3–4), 557–573. <https://doi.org/10.1007/s11127-010-9681-y>
- García-Carrión, R., Villarejo-Carballido, B., & Villardón-Gallego, L. (2019). Children and adolescents mental health: A systematic review of interaction-based interventions in schools and communities. *Frontiers in Psychology*, 10, 918. <https://doi.org/10.3389/fpsyg.2019.00918>
- Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: A guide for non-statisticians. *International Journal of Endocrinology and Metabolism*, 10(2), 486–489. <https://doi.org/10.5812/ijem.3505>
- Giangrasso, B. (2021). Psychometric properties of the PERMA-Profilers as hedonic and eudaimonic well-being measure in an Italian context. *Current Psychology*, 40(3), 1175–1184. <https://doi.org/10.1007/s12144-018-0040-3>
- Grenawalt, T. A., Umucu, E., Reyes, A., Baylin, A., Strauser, D. R., Tansey, T. N., & Wagner, S. (2022). Psychometric validation of the PERMA-profiler as a well-being measure for young adult survivors of pediatric central nervous system tumor. *Rehabilitation Counseling Bulletin*, 65(4), 255–265. <https://doi.org/10.1177/00343552211025509>
- Grewal, D., Brackett, M., & Salovey, P. (2006). Emotional intelligence and the self-regulation of affect. In D. K. Snyder, J. Simpson, & J. N. Hughes (Eds.), *Emotion regulation in couples and families: Pathways to dysfunction and health* (pp. 37–55). American Psychological Association.
- Guadagnoli, E., & Velicer, W. F. (1988). Relation of sample size to the stability of component patterns. *Psychological Bulletin*, 103(2), 265–275. <https://doi.org/10.1037/0033-2909.103.2.265>
- Hayes, D., Edbrooke-Childs, J., Town, R., Wolpert, M., & Midgley, N. (2023). A systematic review of shared decision making interventions in child and youth mental health: Synthesising the use of theory, intervention functions, and behaviour change techniques. *European Child & Adolescent Psychiatry*, 32(2), 209–222. <https://doi.org/10.1007/s00787-021-01782-x>
- Hidayat, R., Habibi, A., Saad, M. R. M., Mukminin, A., & bin Wan Idris, W. I. (2018). Exploratory and confirmatory factor analysis of PERMA for Indonesian students in mathematics education programmes. *Pedagogika*, 132(4), 147–165. <https://doi.org/10.15823/p.2018.132.9>
- Jiang, S., & Ngai, S. S. (2020). Social exclusion and multi-domain well-being in Chinese migrant children: Exploring the psychosocial mechanisms of need satisfaction and need frustration. *Children and Youth Services Review*, 116, 105182. <https://doi.org/10.1016/j.childyouth.2020.105182>
- Kern, M. L., Benson, L., Steinberg, E. A., & Steinberg, L. (2016). The EPOCH measure of adolescent well-being.

- Psychological Assessment*, 28(5), 586–597. <https://doi.org/10.1037/pas0000201>
- Kern, M. L., Waters, L. E., Adler, A., & White, M. A. (2015). A multidimensional approach to measuring well-being in students: Application of the PERMA framework. *The Journal of Positive Psychology*, 10(3), 262–271. <https://doi.org/10.1080/17439760.2014.936962>
- Kovich, M. K., Simpson, V. L., Foli, K. J., Hass, Z., & Phillips, R. G. (2023). Application of the PERMA model of well-being in undergraduate students. *International Journal of Community Well-Being*, 6(1), 1–20. <https://doi.org/10.1007/s42413-022-00184-4>
- Li, C.-H. (2016). Confirmatory factor analysis with ordinal data: Comparing robust maximum likelihood and diagonally weighted least squares. *Behavior Research Methods*, 48(3), 936–949. <https://doi.org/10.3758/s13428-015-0619-7>
- Lima-Castro, S., Contreras, E. K. P., Quizphe, C. C., & Vélez, M. C. (2017). Adaptación del Perfil PERMA en una muestra ecuatoriana [Adaptation of the PERMA Profile in an Ecuadorian sample]. *Eureka (Asunción, En Línea)*.
- Lucas, R. E., & Baird, B. M. (2006). Global self-assessment. In M. Eid & E. Diener (Eds.), *Handbook of multimethod measurement in psychology* (pp. 29–42). American Psychological Association.
- Magare, I., Graham, M. A., & Eloff, I. (2022). An assessment of the reliability and validity of the PERMA well-being scale for adult undergraduate students in an open and distance learning context. *International Journal of Environmental Research and Public Health*, 19(24), 16886. <https://doi.org/10.3390/ijerph192416886>
- Medvedev, O. N., & Landhuis, C. E. (2018). Exploring constructs of well-being, happiness and quality of life. *PeerJ*, 6, e4903. <https://doi.org/10.7717/peerj.4903>
- Muthén, B., & Muthén, L. (2019). *Mplus: A general latent variable modeling program*. Muthén & Muthén. <https://www.statmodel.com/download/Mplus-A%20General%20Latent%20Variable%20Modeling%20Program.pdf>
- Nakamura, J., & Csikszentmihalyi, M. (2009). Flow theory and research. In *Handbook of positive psychology* (2nd ed., pp. 195–205). Oxford.
- Noble, T., & McGrath, H. (2012). Wellbeing and resilience in young people and the role of positive relationships. In S. Roffey (Ed.), *Positive relationships: Evidence based practice across the world* (pp. 17–33). Springer.
- Nunnally, J. C. (1978). *Psychometric theory*. McGraw-Hill.
- Park, C. L., Kubzansky, L. D., Chafouleas, S. M., Davidson, R. J., Keltner, D., Parsafar, P., Conwell, Y., Martin, M. Y., Hanmer, J., & Wang, K. H. (2022). Emotional well-being: What it is and why it matters. *Affective Science*, 4(1), 52–58. <https://doi.org/10.1007/s42761-022-00169-8>
- Park, N., & Peterson, C. (2008). Positive psychology and character strengths: Application to strengths-based school counseling. *Professional School Counseling*, 12(2), 85–92. <https://doi.org/10.5330/PSC.n.2010-12.85>
- Park, N., Peterson, C., & Seligman, M. E. (2006). Character strengths in fifty-four nations and the fifty US states. *The Journal of Positive Psychology*, 1(3), 118–129. <https://doi.org/10.1080/17439760600619567>
- Paulhus, D. L., & Vazire, S. (2007). The self-report method. *Handbook of Research Methods in Personality Psychology*, 1(2007), 224–239.
- Peterson, R. A., & Merunka, D. R. (2014). Convenience samples of college students and research reproducibility. *Journal of Business Research*, 67(5), 1035–1041. <https://doi.org/10.1016/j.jbusres.2013.08.010>
- Pezirkianidis, C., Stalikas, A., Lakioti, A., & Yotsidi, V. (2021). Validating a multidimensional measure of wellbeing in Greece: Translation, factor structure, and measurement invariance of the PERMA Profiler. *Current Psychology*, 40(6), 3030–3047. <https://doi.org/10.1007/s12144-019-00236-7>
- Rasoolimanesh, S. M. (2022). Discriminant validity assessment in PLS-SEM: A comprehensive composite-based approach. *Data Analysis Perspectives Journal*, 3(2), 1–8.
- Rose, T., Joe, S., Williams, A., Harris, R., Betz, G., & Stewart-Brown, S. (2017). Measuring mental wellbeing among adolescents: A systematic review of instruments. *Journal of Child and Family Studies*, 26(9), 2349–2362. <https://doi.org/10.1007/s10826-017-0754-0>
- Ruch, W., Proyer, R. T., & Weber, M. (2010). Humor as a character strength among the elderly: Empirical findings on age-related changes and its contribution to satisfaction with life. *Zeitschrift Fur Gerontologie Und Geriatrie*, 43(1), 13–18. <https://doi.org/10.1007/s00391-009-0090-0>
- Ryan, J., Curtis, R., Olds, T., Edney, S., Vandelanotte, C., Plotnikoff, R., & Maher, C. (2019). Psychometric properties of the PERMA Profiler for measuring wellbeing in Australian adults. *PloS One*, 14(12), e0225932. <https://doi.org/10.1371/journal.pone.0225932>
- Seligman, M. E. (2012). *Flourish: A visionary new understanding of happiness and well-being*. Free Press.
- Seligman, M. E. P. (2011). *Flourish*. Simon & Schuster.
- Shrestha, N. (2021). Factor analysis as a tool for survey analysis. *American Journal of Applied Mathematics and Statistics*, 9(1), 4–11. <https://doi.org/10.12691/ajams-9-1-2>
- Singh, K., & Raina, M. (2020). Demographic correlates and validation of PERMA and WEMWBS scales in Indian adolescents. *Child Indicators Research*, 13(4), 1175–1186. <https://doi.org/10.1007/s12187-019-09655-1>
- Suárez, C. A. H., Vergel, V. H., & Núñez, R. P. (2018). Adaptación del perfil Perma de bienestar subjetivo para adultos mayores institucionalizados colombianos [Adaptation of the Perma profile of subjective well-being for Colombian institutionalized older adults]. *Investigación*, 15, 1–2018.
- Tansey, T. N., Smedema, S., Umucu, E., Iwanaga, K., Wu, J.-R., Cardoso, E. d S., & Strauser, D. (2018). Assessing college life adjustment of students with disabilities: Application of the PERMA framework. *Rehabilitation Counseling Bulletin*, 61(3), 131–142. <https://doi.org/10.1177/0034355217702136>
- Umucu, E., Wu, J.-R., Sanchez, J., Brooks, J. M., Chiu, C.-Y., Tu, W.-M., & Chan, F. (2020). Psychometric validation of the PERMA-profiler as a well-being measure for student veterans. *Journal of American College Health: J of ACH*, 68(3), 271–277. <https://doi.org/10.1080/07448481.2018.1546182>
- UNESCO. (2020). *UNESCO strategy on education for health and well-being: Contributing to the sustainable development goals*. UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000246453>
- Walsh, R. (2011). Lifestyle and mental health. *The American Psychologist*, 66(7), 579–592. <https://doi.org/10.1037/a0021769>

- Wammerl, M., Jaunig, J., Mairunteregger, T., & Streit, P. (2019). The German version of the PERMA-Profiler: Evidence for construct and convergent validity of the PERMA theory of well-being in German speaking countries. *Journal of Well-Being Assessment*, 3(2-3), 75–96. <https://doi.org/10.1007/s41543-019-00021-0>
- Watanabe, K., Kawakami, N., Shiotani, T., Adachi, H., Matsumoto, K., Imamura, K., Matsumoto, K., Yamagami, F., Fusejima, A., Muraoka, T., Kagami, T., Shimazu, A., & L Kern, M. (2018). The Japanese Workplace PERMA-Profiler: A validation study among Japanese workers. *Journal of Occupational Health*, 60(5), 383–393. <https://doi.org/10.1539/joh.2018-0050-OA>
- Waters, L., Dussert, D., & Loton, D. (2022). How do young children understand and action their own well-being? Positive psychology, student voice, and well-being literacy in early childhood. *International Journal of Applied Positive Psychology*, 7(1), 91–117. <https://doi.org/10.1007/s41042-021-00056-w>
- Watkins, M. W. (2021). *A step-by-step guide to exploratory factor analysis with SPSS*. Routledge.
- Youth Societies and Youth Development (Amendment) Act, 2019. (2019). *Youth Development (Amendment) Act (2019)*. *Laws of Malaysia*. Laws of Malaysia. http://www.federalgazette.agc.gov.my/outputaktap/20190821_A1602_BI_WJW013964%20Act%20A1602.pdf