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VALIDATION OF THE RESILIENCE & WELLBEING SCALE AMONG MALAYSIAN UNDERGRADUATE STUDENTS' CONTEXT

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ABSTRACT

The study aimed to validate the Malay version of the Brief Resilience Scale (BRS) and Flourishing Scale (FS) measures of resilience and wellbeing in one of Malaysian higher education institute. A total of 340 undergraduate students from the Institute of Teacher Education (Malacca Campus) were involved in this study. Exploratory factor analysis (EFA) and Confirmatory factor analysis (CFA) were employed in this investigation. Translation, back-to-back translation, pilot testing, and the validation of the BRS and FS were all part of the technique for translating and validating a questionnaire. The results showed that one factor on the FS (wellbeing) can explain 65.31% of the variances, while two factors on the BRS (resilience) can explain 66.93% of the variances. Six items on the resilience scale and eight on the well-being scale were found to have factor loadings higher than 0.60. In contrast to the well-being scale, which has eight items in a single factor, the resilience scale has three items in the first factor and three items in the second. The structure of the resilience scale consisted of three items in the first factor and three items in the second factor, while the structure of the wellbeing scale consisted of all eight items in one factor. The reliability of the well-being and resilience scale was 0.923 and 0.757, respectively. All fit indices, Average Variance Extracted (AVE), and Composite Reliability (CR), which demonstrate convergent validity and reliability, fulfil the requirements. Confirmatory Factor Analysis (CFA) demonstrates that both constructs are acceptable. This study found that both scales were internally reliable in measuring Malaysian university undergraduate students' well-being and resilience.

Keywords: Resilience, Wellbeing, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), Higher Education.

1. Introduction

In higher education, the validation of resilience and well-being scales is essential for understanding and enhancing students' mental health and academic performance. Resilience, defined as the ability to recover from adversity, and psychological well-being, which encompasses life satisfaction, purpose, and emotional stability, play crucial roles in students' success and overall well-being (Masten, 2018; Diener et al., 2010). Valid and reliable measurement tools are necessary to assess these constructs accurately, particularly among university students who are preparing for demanding professional roles, such as future educators. Trainee teacher, in particular, face unique challenges in their training and careers, making it essential to assess their resilience and well-being using psychometrically instruments (Abubakar et al., 2022).

Institut Pendidikan Guru (IPG) in Malaysia is a recognized Higher Education Institution (HEI) under the Ministry of Education Malaysia (MOE), specializing in teacher training and professional development. Governed by the Malaysian Qualifications Framework (MQF) and accredited by the Malaysian Qualifications Agency (MQA), IPG ensures its programs meet national higher education standards (MOE, 2023). Offering Bachelor's Degrees in Education (Ijazah Sarjana Muda Perguruan - ISMP), postgraduate diplomas, and continuous professional development, IPG aligns with universities but remains distinct due to its exclusive focus on teacher education (MQA, 2022). Unlike universities operating under the Ministry of Higher Education (MOHE), IPG functions directly under MOE, emphasizing structured pathways to employment within Malaysia's public school system (MOE, 2021). Its role as a crucial component of Malaysia's higher education ecosystem ensures the production of highly qualified educators, reinforcing national education policies and workforce demands (Abdullah et al., 2020).

The Brief Resilience Scale (BRS), developed by Smith et al. (2008), is widely used to measure resilience by assessing an individual's ability to bounce back from stress. However, its applicability and psychometric properties may vary across cultural contexts. Similarly, the Flourishing Scale (FS), introduced by Diener et al. (2010), evaluates psychological well-being based on self-perceived success in relationships, self-esteem, and life purpose. While these scales have been validated in various populations, their suitability for Malaysian undergraduate students, particularly teacher candidates, remains unexplored. Given that resilience has been identified as a crucial factor in mitigating stress and improving emotional stability in future educators (Brett et al., 2022; Kotera et al., 2022), validating these scales within this demographic is necessary for ensuring their effectiveness in research and practice.

Research has demonstrated that teachers with high resilience experience lower stress, reduced emotional exhaustion, and greater job satisfaction (Kärner et al., 2021; Mansfield et al., 2016). Furthermore, resilience has been found to be positively correlated with psychological well-being and hope, while negatively associated with burnout among trainee teachers (Kara & Usta, 2022; Zin et al., 2023). Therefore, understanding the resilience and well-being of teacher candidates is crucial for developing targeted interventions aimed at enhancing their capacity to handle classroom challenges effectively. Studies suggest that resilience training programs in higher education can significantly improve coping mechanisms and mental health outcomes (Bore et al., 2016; Owen et al., 2021). Consequently, validated measures are essential for research, intervention design, and policy-making to foster resilience and well-being among university students.

Despite the growing recognition of resilience and psychological well-being as critical determinants of academic success and mental health among university students, the psychometric validity of widely used measures such as the Brief Resilience Scale (BRS) and the Flourishing Scale (FS) remains unexplored in the Malaysian higher education context, particularly among teacher candidates. Given that resilience serves as a protective factor against stress, burnout, and emotional exhaustion issues prevalent in the teaching profession—there is a pressing need to validate these scales to ensure their applicability and reliability for this demographic. Without rigorous validation, research and interventions aimed at enhancing students' well-being may rely on instruments that do not accurately capture their psychological resilience and flourishing within the unique socio-cultural and academic landscape of Malaysia. Furthermore, as the Institut Pendidikan Guru (IPG) plays a pivotal role in producing highly qualified educators aligned with national education policies, equipping teacher candidates with validated resilience and well-being assessments is essential for developing targeted support programs. Therefore, this study seeks to fill a critical research gap by examining the validity, reliability, and factor structure of the Malay versions of the BRS and FS, providing psychometrically sound tools for future research, intervention strategies, and policy formulation in Malaysian higher education.

Thus, the present study has the following key objectives:

1. To evaluate the validity and reliability of the Malay version of the Brief Resilience Scale within a higher education context.

2. To examine the psychometric properties (e.g., reliability, validity, and factor structure) of the Brief Resilience Scale in the Malaysian university student context.

3. To assess the validity and reliability of the Malay version of the Flourishing Scale within a higher education context.

4. To analyze the psychometric properties (e.g., reliability, validity, and factor structure) of the Flourishing Scale in the Malaysian university student context.

In conclusion, validating resilience and well-being measures among university students, especially those training to become teachers, is essential for accurately assessing their ability to handle the demands of the teaching profession. By establishing the psychometric properties of these scales, this study aims to contribute to the development of culturally appropriate tools for mental health research, intervention planning, and policy implementation in higher education.

2. Literature Review

The validation of resilience and well-being measures in higher education is crucial for understanding students' mental health and academic success. Resilience is the ability to recover from adversity, while psychological well-being encompasses life satisfaction, purpose, and emotional stability (Masten, 2018; Diener et al., 2010). The accurate assessment of these constructs is necessary, particularly among university students undergoing rigorous training for future professional roles. Teacher candidates, in particular, face significant stressors related to academic workload, teaching practicum, and career expectations, necessitating psychometrically sound measurement tools (Abubakar et al., 2022). This literature review critically examines resilience and well-being measurement, explores global and Malaysian perspectives, and identifies research gaps requiring further investigation.

2.1. Resilience in Higher Education Context

Resilience has been extensively studied in psychology and education as a key factor in mental health and academic persistence. Resilience among higher education students has become an increasingly relevant research topic, especially in light of the obstacles given by academic pressures, social dynamics, and external catastrophes. Defined as the ability to bounce back from stress or adversity, resilience is linked to lower psychological distress, better academic performance, and improved coping strategies (Masten, 2018). Studies have highlighted resilience as a protective factor against burnout, anxiety, and depression in university students (Brett et al., 2022; Kotera et al., 2022). In the context of higher education, resilience is typically linked to academic achievement and the ability to deal with the various challenges that students face. For example, Du et al. (2021) discovered that resilience training significantly improved health outcomes in students, implying that such treatments can improve students' coping skills and general well-being. Similarly, Trigueros et al. (2020) found that students with higher levels of resilience were better able to adjust to academic challenges and were less affected by stressors like exam pressure. This is consistent with the findings of Nandy et al. (2020), who discovered that resilience improves students' employability and workplace preparation, highlighting its significance beyond academic success.

The Brief Resilience Scale (BRS) by Smith et al. (2008) is one of the most widely used self-report instruments to assess resilience. The Brief Resilience Scale (BRS) has gained popularity in higher education research as a means of assessing students' resilience, particularly in the face of academic obstacles and stressors. While previous validations of the BRS in various cultural settings demonstrate its reliability and validity, its applicability to Malaysian students, particularly teacher candidates, remains unexplored. The BRS was originally designed to assess the ability to recover from stress and adversity, with a unidimensional structure based on exploratory factor analysis of varied samples (Fung, 2020). The BRS is a simple six-item questionnaire that measures a person's ability to recover from stress and adversity. Research relating resilience to academic success and mental health underscores its significance in higher education. Wilson et al. (2019), for example, show that resilience significantly predicts student achievement, implying that kids with stronger resilience perform better academically. However, further research has indicated a more sophisticated understanding of the scale's structure. For example, Fung (2020) observed that, while the BRS was first proposed as unidimensional, subsequent studies revealed the presence of two latent factors: positive resilience items and negatively valenced items. Previous research using CFA have confirmed this bifactor model, confirming the distinctness of these components and their usefulness in understanding student resilience.

Kyriazos et al. (2018) used both EFA and CFA to investigate the construct validity of the BRS, finding that resilience, as measured by the BRS, is strongly connected to stress and depression. Their findings suggest that the BRS effectively captures the resilience construct, distinguishing it from related psychological constructs. This is crucial for higher education settings, where understanding the interplay between resilience and mental health can inform interventions aimed at supporting students. The importance of ongoing research to improve the psychometric features of resilience scales in higher education as presented by Ghanizadeh (2023) show that resilience constructs may need to be reconsidered in light of current student obstacles, such as those presented by online learning environments. To summarize, the BRS have showed strong psychometric characteristics in higher education contexts using EFA and CFA in previous research from different population. The expanding understanding of resilience, particularly in connection to academic problems, emphasizes the need for specific context metrics.

2.2. Well-being in Higher Education Setting

Higher education institutions are increasingly recognizing the importance of mental health for student achievement and the overall quality of life. Well-being includes emotional, psychological, and social elements. Psychological well-being is a multidimensional construct that includes aspects such as self-acceptance, purpose in life, autonomy, and positive relationships (Diener et al., 2010). Grant-Smith (2023) defines well-being as feeling at ease with oneself, finding meaning and fulfillment, experiencing happy emotions, being resilient, and belonging to a respectful community. This comprehensive definition underscores the importance of both individual and communal factors in fostering well-being among students. Furthermore, Baik et al. (2019) underline the importance of universities empowering students in efforts that improve their well-being, thereby eliminating the stigma associated with mental health disorders and establishing a friendly campus climate. Academic achievement and well-being have an established link. Research shows that students who are happier typically perform better academically (Dougall, 2023; Stallman, 2010). Dougall (2023), for example, emphasizes how programs that focus on mental health can improve students' learning styles and self-perceptions.

On the other hand, Stallman (2010) discovered that students who were in psychological distress frequently had worse academic achievement, indicating that mental health problems can seriously impede academic progress. This correlation emphasizes the necessity for universities to prioritize mental health support as part of their educational mandate. Interventions aimed at promoting well-being have shown promise in enhancing student mental health. Despite the positive findings on well-being initiatives, there are still challenges with their implementation. Dooris et al. (2019) advocate for a "whole university" strategy, emphasizing a holistic commitment to health and well-being at all levels of the institution. This method necessitates not only the involvement of students, but also the active participation of instructors and staff in fostering a supportive environment. Furthermore, Ahern (2018) observes that the academic rigor commonly pursued in higher education can sometimes come at the expense of student mental health, emphasizing the importance of a balanced strategy that values both academic excellence and well-being. In conclusion, well-being is a critical aspect of the higher education experience, influencing both academic success and overall quality of life for students.

The Flourishing Scale (FS) has become a popular tool for assessing individuals' well-being and flourishing, especially those in higher education settings. Diener et al. (2010) established the Flourishing Scale, which measures several facets of well-being such as life meaning and purpose, supportive relationships, and self-acceptance. Flourishing, as measured by the FS, incorporates a broader range of psychological well-being, such as life satisfaction, positive relationships, and a sense of purpose. Previous research suggests that high psychological well-being correlates with academic engagement, motivation, and resilience (Kärner et al., 2021; Mansfield et al., 2016). However, the validation of FS in the Malaysian higher education context remains understudied, particularly among teacher candidates. The FS has been validated in various contexts, including among South African first-year students, where it demonstrated strong psychometric properties, affirming its utility in educational settings (Mostert et al., 2023). EFA studies have generally supported the unidimensional structure of the FS. For instance, Al-Dossary & Almohayya (2023), conducted EFA on a sample of special education teachers, revealing a one-factor solution that explained 49.9% of the variance in flourishing scores. This finding aligns with the original conceptualization of the FS as a single construct reflecting overall well-being.

The unidimensional character of the FS across a range of populations is further supported by CFA. For instance, Chua et al. (2022) verified the validity and dependability of the FS by conducting

CFA on it in a Malaysian environment. The Satisfaction with Life Scale's construct validity was reinforced by their study, which showed a substantial correlation between the FS scores and other well-being measures. Similarly, Hedrick et al. (2023) discovered that medical students with higher FS scores had lower burnout levels and higher work-life balance satisfaction, suggesting that the FS accurately measures pertinent aspects of student well-being. Furthermore, the FS has demonstrated robust psychometric qualities in a variety of cultural situations. The Greek version of the FS was verified by Kyriazos et al. using both EFA and CFA to establish its construct validity and reliability. According to the findings, the FS is a reliable instrument for assessing thriving across a range of demographics, including college students (Kyriazos et al., 2018).

The FS has been associated with significant outcomes in higher education in addition to being validated psychometrically. This relationship underscores the importance of fostering well-being in educational settings, as it can lead to enhanced academic performance and overall life satisfaction (Mirzaei-Alavijeh et al., 2020). Despite the encouraging findings on the FS, several scholars have urged for more investigation into its dimensionality and usefulness in certain contexts. For example, while the FS is commonly seen as a one-dimensional scale, other research suggest that it may reflect several aspects of well-being that could be investigated further (Otgon et al., 2023). Future research could benefit from delving into the intricacies of flourishing and how various elements interact to shape students' experiences in higher education. Finally, the Flourishing Scale has shown significant psychometric features in higher education contexts using EFA and CFA. Its unidimensional form and validity across varied demographics make it an effective instrument for assessing student well-being. Continued research is essential to explore the complexities of flourishing and its implications for educational practices and student support services.

2.3. Global and Malaysian Perspectives on Resilience and Well-being

International studies indicate that resilience training significantly enhances students' coping mechanisms and mental health outcomes (Bore et al., 2016; Owen et al., 2021). Research in Western and Asian contexts demonstrates that resilience is crucial for mitigating stress and preventing emotional exhaustion among teacher trainees (Kara & Usta, 2022). Moreover, well-being interventions in higher education have been found to improve students' overall psychological stability and academic motivation (Zin et al., 2023). These findings highlight the importance of culturally appropriate measures to assess resilience and well-being. Malaysia's higher education landscape presents unique challenges that necessitate the validation of resilience and well-being measures. The Institut Pendidikan Guru (IPG) plays a pivotal role in teacher education, operating under the Ministry of Education Malaysia (MOE) (MOE, 2023). Given IPG's structured training pathways and the high demands placed on teacher candidates, resilience and well-being assessment tools must be adapted to suit the local context. Previous Malaysian studies have primarily focused on general university students, neglecting the specific experiences of teacher trainees (Abdullah et al., 2020). This gap underscores the need for localized psychometric validation of resilience and well-being scales to inform research, intervention strategies, and policy development.

Validating resilience and well-being scales among Malaysian teacher candidates is essential for developing reliable assessment tools in higher education research. By addressing key research gaps and providing empirical insights into resilience and psychological well-being, this study aims to contribute to the field of mental health research and policy formulation in Malaysia. The outcomes will help shape evidence-based interventions to support teacher trainees' mental health, ensuring their success in both academic and professional domains.

2.4. Theoretical framework that support BRS and FS

The Flourishing Scale (FS) and the Brief Resilience Scale (BRS) are grounded in distinct but interrelated theoretical frameworks within positive psychology and resilience research. The FS, developed by Diener et al. (2010), is deeply rooted in theory of psychological well-being, particularly the eudaimonic perspective, which emphasizes optimal human functioning and fulfilment beyond mere hedonic pleasure (Ryan & Deci, 2001). Eudaimonic well-being is conceptualized as a multidimensional construct encompassing self-acceptance, positive relationships, meaning and purpose in life, and personal growth (Keyes, 2002; Ryff & Singer, 2008). The FS integrates these theoretical underpinnings to measure individuals' perceived success in key psychosocial domains, aligning closely with self-determination theory (SDT), which postulates that well-being emerges from the fulfilment of basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 1985; Ryan & Deci, 2017).

On the other hand, the BRS, introduced by Smith et al. (2008), is primarily derived from resilience theory, which conceptualizes resilience as an individual's ability to recover from stress and adversity (Richardson, 2002). Unlike traditional resilience measures that emphasize protective factors or coping mechanisms, the BRS directly assesses bouncing back from difficulties, reflecting the homeostatic model of resilience (Luthar et al., 2000). This model suggests that resilience is a dynamic process rather than a fixed trait, influenced by biopsychosocial interactions that facilitate stress recovery and psychological adaptation (Bonanno, 2004; Fletcher & Sarkar, 2013). The BRS aligns with conservation of resources (COR) theory (Hobfoll, 1989), which posits that resilience emerges from individuals' ability to maintain and restore psychological resources under threat. This theoretical foundation supports the notion that individuals with higher resilience recover more efficiently, as they possess stronger regulatory mechanisms to mitigate the impact of stressors (Tugade & Fredrickson, 2004). Together, these instruments operationalize flourishing and resilience as core components of psychological well-being, reflecting contemporary positive psychology frameworks (Seligman, 2011). Their theoretical basis underscores the transition from deficit-based models of mental health toward a strengths-based perspective, advocating for a holistic approach to understanding human potential and adaptation in the face of challenges.

3. Methodology

The methodology for the study conducted are as follows:

3.1. Research Design

This study adopted a cross-sectional survey design, which is a well-established method for assessing psychological constructs across a population at a single point in time (Creswell & Creswell, 2017). This approach is particularly suited for understanding the current levels of resilience and well-being among Malaysian undergraduate students. It enables the efficient collection of data from large samples and provides an opportunity to identify patterns and relationships between constructs (Bryman, 2016; Saunders et al., 2019). The Malaysian higher education context, characterized by academic pressure, social challenges, and post-pandemic mental health concerns, provides a timely and relevant backdrop for assessing psychological resilience and flourishing among students (Hassan et al., 2022). Studies by Weziak-Bialowolska et al. (2021) and Smith et al. (2008) have demonstrated that instruments like the Flourishing Scale (FS) and Brief Resilience Scale (BRS) are effective in measuring these constructs in various

international contexts, yet their application in Malaysia demands careful contextual adaptation due to the country's distinct sociocultural characteristics. These include collectivist values, multilingualism, and ethnic diversity, which may influence how resilience and well-being are understood and expressed.

In addition to providing a quantitative assessment of these constructs, the study aims to validate the Malay-translated versions of the FS and BRS. The need for such validation is evident as Diener et al. (2010) and Smith et al. (2008) highlighted the importance of ensuring that psychological scales are appropriately adapted to local contexts to maintain their reliability and validity. Factorial analysis during the study revealed that certain items from the original scales were removed due to poor factor loadings or cultural misalignment. The emergence of two dimensions of resilience and well-being in the Malaysian context reflects the unique cultural perspectives on well-being (Ryff, 1989), which cannot be attributed solely to linguistic differences but must also consider cultural influences. For instance, communal support and collective goals may be more prominent in Malaysian students' conceptualizations of flourishing compared to more individualistic Western frameworks.

3.2. Population and Sampling Method

The target population of this study comprised 1046 final-year undergraduate trainee teachers enrolled at the Institute of Teacher Education, Malacca Campus. Although simple random sampling was the intended method to ensure unbiased representation, the actual sampling approach aligned more closely with voluntary or self-selection sampling, due to administrative and logistical limitations. Nonetheless, efforts were made to include participants from diverse academic backgrounds to achieve a broad representation of the population. Sample size determination was informed by Hair et al. (2014), who recommend a minimum of 100 respondents or a ratio of 5 to 20 respondents per variable for Structural Equation Modelling (SEM). As emphasized by Kline (2016) and Worthington and Whittaker (2006), larger samples are particularly valuable in CFA and EFA to ensure reliable parameter estimates, reduce sampling error, and allow for more stable model fit indices, even when working with models containing fewer variables. Accordingly, Exploratory Factor Analysis (EFA) was conducted on a subset of 100 respondents, while Confirmatory Factor Analysis (CFA) was carried out using a separate sample of 240 respondents, resulting in a total sample size of 340 trainee teachers. This exceeded the minimum threshold and provided robust statistical power for the psychometric evaluation, in line with best practices in scale validation.

3.3. Instrument

The study used two well-established psychometric instruments: the Flourishing Scale (FS) by Diener et al. (2010) and the Brief Resilience Scale (BRS) by Smith et al. (2008). The FS measures psychological well-being through 8 items rated on a 7-point Likert scale (1 = Strongly disagree to 7 = Strongly agree), while the BRS assesses resilience with 6 items rated on a 5-point Likert scale (1 = Strongly disagree to 5 = Strongly agree). Both instruments have demonstrated excellent psychometric properties, with reported Cronbach's alpha values exceeding .80 in various studies (Diener et al., 2010; Smith et al., 2008). These values indicate that the instruments are reliable for assessing psychological well-being and resilience. While well-being is widely recognized as a multidimensional construct encompassing psychological, emotional, social, and environmental domains (Ryff, 1989), this study focused specifically on psychological well-being and resilience. This decision aligns with the study's primary aim of validating the FS and BRS in the Malaysian context. The operationalization of these two constructs is central to the research, as they are

regarded as core internal strengths that significantly influence how individuals cope with challenges and flourish (Smith et al., 2008).

Given Malaysia's linguistic and cultural diversity, the FS and BRS underwent a rigorous translation process, following Brislin's (1986) guidelines for cross-cultural research. The instruments were first translated into Malay and then back-translated to ensure content accuracy and face validity. A panel of bilingual experts in psychology and education conducted the review process. The back-translation revealed some discrepancies, which were resolved through expert consensus, ensuring that the final Malay versions of the scales accurately reflected the meanings of the original items. Translation, rather than transliteration, was chosen to preserve semantic clarity and ensure that psychological constructs such as well-being and resilience were understood in a culturally relevant manner, in keeping with everyday language use among Malay speakers. This approach aligns with the recommendations of Benliyadi and Gupta (2024), who emphasized the importance of semantic equivalence in cross-cultural translations. An important methodological consideration was the use of two different Likert scales: a 7-point scale for the FS and a 5-point scale for the BRS. To address potential measurement inconsistencies caused by the differing scales, the study employed standardization techniques. Specifically, Z-score transformations were used to normalize the responses across both scales, ensuring that the results could be meaningfully compared (Cohen, Manion, & Morrison, 2018). Additionally, separate internal consistency analyses were conducted for each scale, and exploratory factor analyses (EFAs) were used to ensure that both instruments maintained their psychometric integrity in the Malaysian context. The factor analyses confirmed that the instruments retained their reliable internal structures, with Cronbach's alpha values above .80, indicating that both scales were appropriate for use in this population.

During the EFA, several items were removed from both scales due to poor factor loadings and cultural misalignment. These items often reflected individualistic aspects of well-being and resilience that are less relevant to the collectivist cultural values of the Malaysian student population. The analysis revealed two dimensions, one focusing on self-efficacy and emotional well-being and the other emphasizing adaptive coping strategies and social support. These findings are consistent with Yan et al. (2024), who noted that collectivist cultures often place greater emphasis on community and social support as essential aspects of psychological resilience. The emergence of these two dimensions highlights that the Malaysian context necessitates a different conceptualization of psychological well-being and resilience than what is typically observed in individualistic societies. Thus, while the FS and BRS were psychometrically robust in this study, the findings suggest that further refinements may be necessary to fully capture the complexities of well-being and resilience as understood by Malaysian students. These refinements could involve adapting certain items to better reflect cultural values and social structures. The study provides valuable insights into how psychological scales can be localized and emphasizes the need for cultural adaptations to ensure that these instruments remain valid and reliable in diverse cultural settings (Yan et al., 2024).

3.4. Data Collection Procedure

Prior to the data collection process, the researchers translated the BRS and FS into the Malay version through a back-to-back translation method. Once the instruments were translated, data collection was conducted via a self-administered online survey distributed through Google Forms. Ethical approval was obtained from the Ministry of Education Malaysia and the Institute of Teacher Education (Malacca Campus) before distribution. Respondents were invited through institutional communication channels and provided informed consent prior to participation. The

survey ensured anonymity and voluntary participation, adhering to the ethical research standards outlined by the American Psychological Association (APA, 2017).

3.5. Data Analysis

Data analysis was conducted using SPSS 26.0 for EFA and AMOS 24.0 for CFA. The analytical approach included:

3.5.1. Exploratory Factor Analysis (EFA): EFA was employed to assess the underlying factor structure of the modified FS and BRS scales. Principal Component Analysis (PCA) with Varimax rotation was utilized to enhance factor interpretability (Zainudin et al., 2018). Items with factor loadings below 0.60 were removed, following the threshold recommended by Hair et al. (2010) and Yıldırım & Güler (2022).

3.5.2. Confirmatory Factor Analysis (CFA): CFA was conducted to validate the factor structure and assess construct validity. Model fit was evaluated using three categories of fit indices as recommended by Hair et al. (2014):
- Absolute Fit: RMSEA < 0.08
- Incremental Fit: CFI, TLI, IFI, NFI, GFI, AGFI > 0.90
- Parsimonious Fit: Chi-square/df < 5.0

Convergent validity was assessed using Average Variance Extracted (AVE), requiring a threshold of >0.50 (Awang et al., 2018). Internal consistency and reliability were determined using Composite Reliability (CR), with a criterion of ≥0.60 (Awang et al., 2018). The study ensures a rigorous psychometric evaluation by integrating both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), methodologies widely recognized for establishing construct validity and reliability (Hair et al., 2019; Kline, 2016). To enhance the generalizability of findings, a simple random sampling technique was employed, minimizing selection bias and ensuring a representative sample (Bryman, 2016; Tabachnick & Fidell, 2019). Additionally, cross-cultural adaptation was meticulously conducted through standardized translation and back-translation procedures, a crucial step for maintaining the cultural relevance and linguistic equivalence of measurement instruments (Beaton et al., 2000; Van de Vijver & Leung, 2011). The study further strengthens its methodological rigor by leveraging well-established statistical software, specifically SPSS and AMOS, which are extensively utilized for robust data analysis in structural equation modeling (SEM) research (Byrne, 2016; Schumacker & Lomax, 2021). These methodological considerations collectively enhance the reliability, validity, and credibility of the research findings.

4. Results

4.1. The Process of the back-to-back translation (The Malay Version of BRS and FS Scale)

Ensuring linguistic and conceptual equivalence of survey instruments is critical, especially in cross-cultural studies. The translation process described in the table above follows the back-to-back translation method, which is widely recognized as a rigorous approach to achieving semantic consistency (Beaton et al., 2000; Brislin, 1970). The method involves two main stages of translation:

1. Translation from English to Malay: This step is crucial in adapting the questionnaire to a linguistic and cultural context that resonates with Malay-speaking respondents.

2. Translation from Malay back to English (or the original language of the questionnaire): This process ensures conceptual equivalence by translating the Malay version back to its original language and comparing both versions for discrepancies. Relevance to BRS and FS Scale

The expert panel involved in the translation of the instrument are shown in the table 1 below:

Table 1: Panel Involved in Back-to-Back Translation

Back-to-Back Translation	Field of Expertise	Experts and Institutions
Translation from English to Malay	Malay Language	Senior Malay Language Teacher, Ministry of Education (KPM)
	Malay Language	Malay Language Lecturer, UiTM Shah Alam
	Malay Language	Munsyi Dewan Bahasa dan Pustaka (DBP)
Translation from Malay to the original language of the questionnaire	English Language	Excellent English Teacher, Ministry of Education (KPM)
	English Language	Lecturer, Pahang Matriculation College
	English Language	MUET Teacher & Subject Matter Expert (SME), Form 6 College

The involvement of language and subject matter experts in a back-to-back translation process significantly enhances the validity and reliability of SEM-based survey instruments. In studies utilizing BRS and FS scales, this method ensures cultural and linguistic equivalence, preventing measurement distortions. The rigorous translation approach described above aligns with best practices in psychometric research, reinforcing the credibility of cross-cultural studies.

4.2. Expert Validation on the Malay Version of the BRS and FS

Three experts in the field of educational psychology who are fluent in Malay and English confirm the content validity. The expert selection criteria are that the expert must have a PhD in the field of educational psychology and have a lot of experience in this field. All experts have revised this instrument based on the objectives of the study. The panel involved in this process are shown in the table below:

Table 2: Expert Involved in the Validation Procedure

Validation Process	Field of Expertise	Experts and Institutions
Content Validity	Educational Psychology	Senior Lecture, Universiti Pendidikan Sultan Idris (UPSI)
	Educational Psychology	Senior Lecture, Open University Malaysia (OUM)
	Educational Psychology	Senior Lecture, University Putra Malaysia (UPM)

4.3. Exploratory Factor Analysis of the Malay Version of BRS Scale (Resilience).

To validate an instrument in the EFA Procedure, three analyses are required: KMO and Bartlett's Test, Total Variance Explained Analysis, and Scree Plot Graph, and Component Matrix with Varimax Rotation (Rotated Component Matrix). The results of these three analyses are as follows:

4.3.1. KMO and Bartlett's Test: Principal Component Analysis and Varimax rotation were used to factor six items. The Kaiser-Mayer-Olkin (KMO) test result is 0.740, as seen in Table 3. Because it meets the minimal value of 0.6 suggested by Tabachnick and Fidell (2007) and Chua (2014), this number is considered satisfactory. The items are appropriate for factor analysis since the KMO value shows that there is no severe multicollinearity issue in the data. Results from the Bartlett's Test are significant (p=0.000, p<0.05). These results suggest that the items are sufficiently connected to form factors, enabling further factor analysis (Hair, 2019).

Table 3: The Result of KMO and Barlett's Test For Resilience Instruments

Kaiser-Meyer-Olkin (KMO)	Measure of sampling adequacy	.740
Bartlett's test of sphericity	Approx. Chi-square sphericity	246.882
	df	45
	Sig.	.000

4.3.2. Total Variances Explained Analysis and Scree Plot Graph: Table 4 below summarizes the variance explained for the resilience instrument. There are two components with eigenvalues above 1. Both factors account for 66.93% of total variance change. The total variance obtained exceeded 60%. Factors 1 and 2 contributed 34.39 and 32.53 percent of the variance, respectively, based on the sum of squared loadings during extraction. This indicates that the number of components and elements is appropriate for the field.

Table 4: Total Variances Explain

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	2.761	46.010	46.010	2.064	34.398	34.398
2	1.255	20.915	66.925	1.952	32.527	66.925

Extraction method: principal component analysis

The scree plot graph in Figure 1 below shows that there are two main factors that are extracted into the resilience construct and correspond to the results in Table 4.
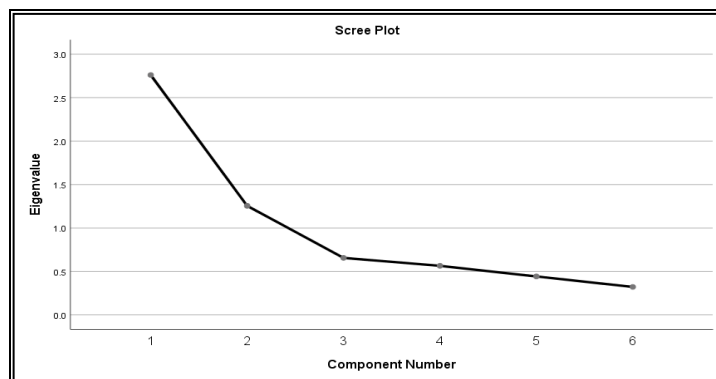

Figure 1: Scree Plot graph for resilient construct

4.3.3. Rotated Component Matrix with Varimax Rotation: After determining the number of factors, the researcher examines the factor loading of each item, which indicates which factor the items are related to and if they will be eliminated from the analysis. Following varimax rotation, a Rotated Component Matrix is used to display the relationship between the items and their factors. The items were removed from the analysis if their factor loading was less than 0.60. This construct's items are divided into two categories and nothing was taken out of this construct. The results show that three items in the first factor had factor loadings between 0.73 and 0.81, whereas three items in the second factor had factor loadings between 0.74 and 0.80. The factor loading results for each item are displayed in Table 5.

Table 5: Factor and Factor Loading

No	Items	Result of Factor Loading 1	2
	Factor 1: Resilient Capacity		
1	I tend to bounce back quickly after hard times. ("*Saya cenderung untuk bangkit semula daripada kesukaran.*")	.805	
5	I usually come through difficult times with little trouble. ("*Saya boleh pulih walaupun masih menghadapi sedikit kesukaran.*")	.791	
3	It does not take me long to recover from a stressful event. ("*Saya tidak memerlukan masa yang lama untuk bangkit semula daripada situasi yang tertekan.*")	.733	
	Factor 2: Resilient Disturbance		
R2	I have a hard time making it through stressful events. ("*Saya sukar menghadapi situasi yang menimbulkan tekanan.*")		.804
R6	I tend to take a long time to get over setbacks in my life. ("*Saya mengambil masa yang lama untuk pulih daripada kekecewaan dalam hidup.*")		.745
R4	It is hard for me to snap back when something bad happens. ("*Sukar untuk saya bangkit semula setelah sesuatu yang buruk terjadi.*")		.741

Two factors are supported by the items in this study. Additionally, by displaying the Cronbach alpha value, researchers assess the validity of the scale. The scale is valid for use in research studying university students' resilience, as evidenced by the present dataset's Cronbach alpha of 0.757, which is classified as a strong value. Following the EFA procedure, Cronbach's alpha values for the complete resilient construct are shown in Table 6.

Table 6: Cronbach's Alpha Coefficient For The Entire Factor After (EFA)

Factor	Number of items	Alpha value
Factor 1: Resilient Capacity	3	.724
Factor 2: Resilient Disturbance	3	.702
Overall Resilient Factor	6	.757

Cronbach's Alpha value >0.7 indicates that the construct of the research instrument has a high construct value (Hair et al., 2014).

4.4. Confirmatory Factor Analysis of the Malay Version of BRS Scale (Resilience).

The researcher proceeded with the Confirmatory Factor Analysis (CFA) approach after finishing the exploratory factor analysis (EFA) procedure. The following conclusions were drawn from the data collected:
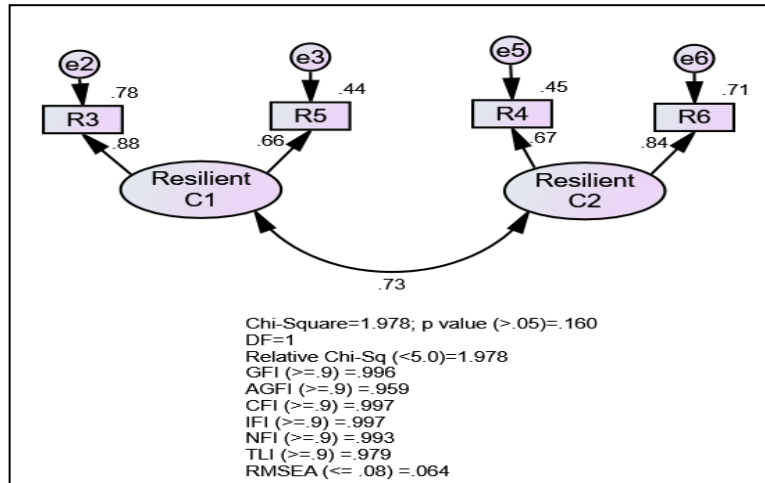
Figure 2: CFA result for Resilience Construct

The Resilient construct has two components resulting from the EFA Analysis. Component 1 & 2 consists of three items previously in the EFA, but 1 item from both components had removed because of its lower factor loading. So now, both components had two items respectively. Figure 2 illustrates the measurement model that measures the resilient construct. The fitness indices in Figure 2 shows that the resilient construct model had reached its level as shown in Table 7 below. This means that the construct validity of resilient had been achieved (Awang et al., 2023).

Table 7: Findings of Construct Validity (Fit Indices)

Criteria	Fitness Indices	Cut of Value	Index value obtained	Status
Absolute fit	RMSEA	≤ 0.08	0.064	Fit
Incremental fit	CFI	≥ 0.90	0.997	Fit
	TLI	≥ 0.90	0.979	Fit
	IFI	≥ 0.90	0.997	Fit
	NFI	≥ 0.90	0.993	Fit
	GFI	≥ 0.90	0.996	Fit
	AGFI	≥ 0.90	0.959	Fit
Parsiminious Fit	Chisq/df	≤ 5.0	1.978	Fit

Next step would be evaluated the convergent validity value through the Average Variance Extracted (AVE) and Composite Reliability (CR) values shown in table 8 below:

Table 8: AVE and CR value for Resilient Construct

	Construct	Item	Factor Loading	AVE (above 0.5)	CR (above 0.6)
All	Resilience Component1	R3	0.88	0.61	0.75
		R5	0.66		
	Resilience Component2	R4	0.67	0.58	0.73
		R6	0.84		

AVE values have attained the 0.5 criterion, as seen in Table 6. This demonstrates that this construct's convergent validity has been attained (Awang et al., 2023). In addition, every Composite Reliability (CR) rating has beyond the 0.6 cutoff point. This indicates that the construct's Composite Reliability was attained (Awang et al., 2023; Chua, 2014). The findings indicate that the BRS scale, which has been divided into two dimensions, meets all the established

criteria in the CFA analysis, including goodness-of-fit indices, convergent validity, and discriminant validity. Therefore, this BRS scale is appropriate for use in the context of higher education in Malaysia, especially for trainee teachers.

4.5. Exploratory Factor Analysis of the Malay Version of FS Scale (Wellbeing).

The results of the exploratory factor analysis for the well-being construct are as follows.

4.5.1. KMO and Bartlett's Test: The dataset is suitable for factorial analysis because the KMO value was 0.919 and the Barlett's test of sphericity was significant. Table 9 shows the outcome.

Table 9: The Result of KMO and Barlett's Test For Wellbeing Instruments

Kaiser-Meyer-Olkin (KMO)	Measure of sampling adequacy	.919
Bartlett's test of sphericity	Approx. Chi-square sphericity	759.921
	df	28
	Sig.	.000

4.5.2. Total Variances Explained Analysis and Scree Plot Graph: Principal components analysis employed Varimax rotation with a coefficient of 60. Eight components with eigenvalues greater than one were found in the data, accounting for 65.31% of the variance. Table 10 provides comprehensive details regarding the eigenvalue and its variances.

Table 10: Total Variances Explain

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	5.225	65.312	65.312	5.225	65.312	65.312

Extraction method: principal component analysis

The scree plot graph in Figure 3 below demonstrates that just one main factor was extracted into the well-being construct, which corresponds to the findings in Table 10.
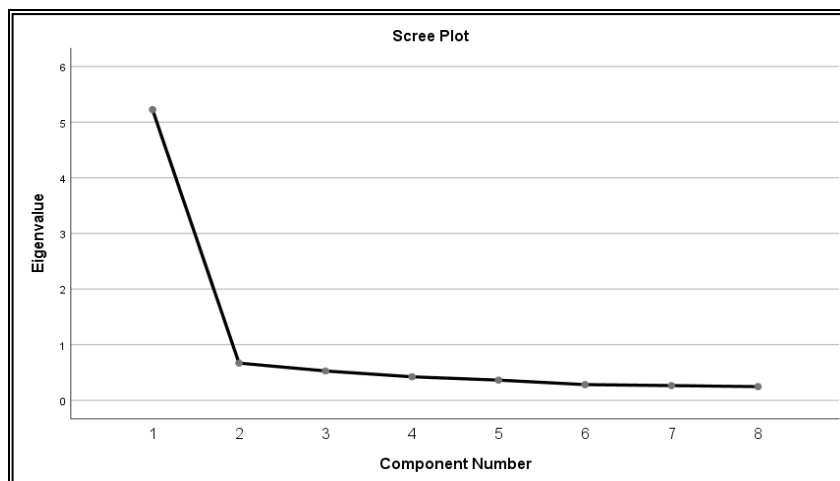

Figure 3: Scree plot graph for wellbeing construct

4.5.3. Rotated Component Matrix with Varimax Rotation: Table 11 shows the overall factor loading values for the well-being construct components. The varimax rotation matrix findings show that the factor loading values range between 0.736 and 0.861. The factor loading value for

each item exceeds the 0.6 minimum threshold value recommended by Hair et al. (2019) and Zainudin Awang et al. (2018). Not a single item has a factor loading less than 0.60.

Table 11: Factor and Factor Loading

No	Items	Result of Factor Loading 1
1	I am engaged and interested in my daily activities. ("*Saya melibatkan diri dan menyukai aktiviti harian saya.*")	.861
2	I am optimistic about my future. ("*Saya optimis terhadap masa depan.*")	.834
3	I am competent and capable in the activities that are important to me. ("*Saya cekap dan berkebolehan dalam aktiviti yang penting bagi diri sendiri.*")	.826
4	I am a good person and live a good life. ("*Saya seorang yang baik dan menjalani kehidupan yang baik.*")	.818
5	I actively contribute to the happiness and well-being of others. ("*Saya menyumbang secara aktif terhadap kebahagiaan dan kesejahteraan orang lain.*")	.808
6	I lead a purposeful and meaningful life. ("*Saya menjalani kehidupan yang bermatlamat dan bermakna.*")	.798
7	People respect me. ("*Saya dihormati oleh orang lain.*")	.778
8	My social relationships are supportive and rewarding. ("*Hubungan sosial saya menyokong dan memberikan ganjaran.*")	.736

Cronbach's alpha value was used to confirm the instrument's reliability. With a Cronbach's alpha of 0.923, this scale has extraordinarily high dependability.

4.6. Confirmatory Factor Analysis of the Malay Version of FS Scale (Wellbeing).

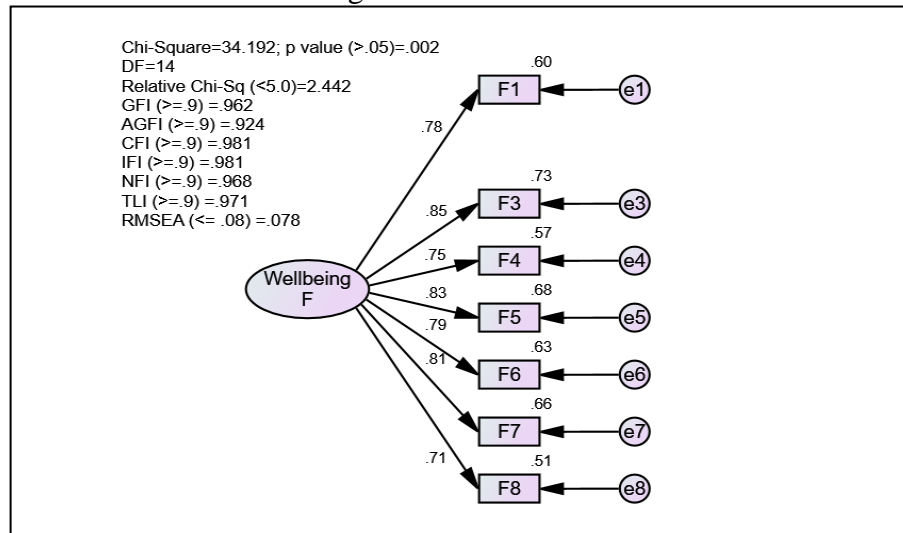The results for the CFA of the wellbeing instrument are showed as below:

Figure 4: CFA for wellbeing construct

The wellbeing construct is unidimensional resulting from the EFA Analysis. Item F2 was removed from the construct because its lower factor loading that less than 0.5. So now, the construct only has 7 items only. Figure 4's fitness indices demonstrate that this construct satisfies every fit criterion listed in Table 10 below. This indicates that the wellbeing construct's construct validity has been achieved (Awang et al., 2023).

Table 12: Goodness Fit of Test Criteria

Criteria	Fitness Indices	Cut of Value	Index value obtained	Status
Absolute fit	RMSEA	≤ 0.08	0.078	Fit
Incremental fit	CFI	≥ 0.90	0.981	Fit
	TLI	≥ 0.90	0.971	Fit
	IFI	≥ 0.90	0.981	Fit
	NFI	≥ 0.90	0.968	Fit
	GFI	≥ 0.90	0.962	Fit
	AGFI	≥ 0.90	0.924	Fit
Parsiminious Fit	Chisq/df	≤ 5.0	2.442	Fit

The next step would be to analyze the convergent validity value using the Average Variance Extracted (AVE) and Composite Reliability (CR) values presented in Table 13.

Table 13: Goodness fit of test criteria

Construct	Item	Factor Loading	AVE (above 0.5)	CR (above 0.6)
Welbeing	F1	0.78	**0.624**	**0.920**
	F3	0.85		
	F4	0.75		
	F5	0.83		
	F6	0.79		
	F7	0.81		
	F8	0.71		

Table 13 reveals that all AVE values have exceeded the threshold value of 0.5, as have the CR values of 0.6. These findings indicate that the FS scale, meets all the established criteria in the CFA analysis, including goodness-of-fit indices, convergent validity, and discriminant validity. Therefore, this FS scale is appropriate for use in the context of higher education in Malaysia, especially for trainee teachers.

5. Discussion

This study set out to examine the psychometric robustness of the Malay versions of the Brief Resilience Scale (BRS) and the Flourishing Scale (FS), with a specific focus on their applicability among university students in Malaysia, particularly teacher trainees. As mental health and well-being gain increasing recognition as integral to educational success, the validation of culturally adapted instruments for measuring resilience and psychological flourishing is both timely and essential. The findings from this study offer compelling evidence supporting the reliability and validity of both tools, while also contributing meaningfully to the existing literature on psychological assessment in higher education settings.

The Malay version of the Brief Resilience Scale demonstrated strong psychometric properties, affirming its suitability for assessing resilience among Malaysian university students. The rigorous translation process, employing the back-to-back method and involving both linguistic and subject-matter experts, ensured semantic and conceptual equivalence between the original and translated versions. This approach aligns with best practices in cross-cultural research and reinforces the cultural and academic appropriateness of the instrument. Content validation by

educational psychologists further confirmed the relevance of the BRS items to the lived experiences of Malaysian teacher trainees. This is particularly significant given the demanding nature of teacher education programs in Malaysia, which often involve heavy academic workloads, extended teaching practicums, and long-term career planning factors that collectively contribute to elevated stress levels among students.

Exploratory Factor Analysis (EFA) revealed a two-factor structure for the BRS Resilient Capacity and Resilient Disturbance—accounting for 66.93% of the total variance. This bifactor model offers a more nuanced understanding of resilience, capturing both students' strengths and their vulnerabilities in responding to stress. These findings align with previous studies by Fung (2020) and Kyriazos et al. (2018), who similarly advocated for a multidimensional conceptualization of the BRS. Confirmatory Factor Analysis (CFA) supported this two-factor structure, with fit indices such as RMSEA = 0.064 and CFI = 0.997 falling within recommended thresholds. Internal consistency, measured through Cronbach's alpha, exceeded the 0.70 benchmark for both factors, reinforcing the scale's reliability.

Theoretical grounding for these results can be found in resilience theory, particularly the homeostatic model proposed by Luthar et al. (2000), which views resilience as an adaptive and dynamic process rather than a static trait. This perspective is especially relevant for teacher trainees, whose academic journeys are often marked by emotional and psychological challenges. The observed bifactor structure of the BRS reflects this complexity, distinguishing between those who can quickly recover from setbacks and those who may experience prolonged emotional distress. These findings also support the scale's potential utility in future research aimed at designing interventions and support mechanisms tailored to the resilience needs of Malaysian teacher candidates.

Beyond construct validity, the BRS demonstrated strong psychometric soundness through analyses of Average Variance Extracted (AVE) and Composite Reliability (CR), both of which exceeded conventional thresholds. These results affirm the scale's convergent validity and internal consistency, consistent with the psychometric standards proposed by Hair et al. (2014) and Awang et al. (2023). The findings are also theoretically congruent with Hobfoll's (1989) Conservation of Resources (COR) theory, which posits that resilience reflects an individual's capacity to conserve and restore personal resources when facing stress. Thus, the validated Malay version of the BRS not only holds theoretical coherence but also provides a practical tool for assessing adaptive capacities in the local higher education context.

Similarly, the Malay version of the Flourishing Scale exhibited exceptional psychometric properties. EFA results confirmed a unidimensional structure explaining 65.31% of the total variance, with all items loading significantly on a single factor. This aligns with the original conceptualization by Diener et al. (2010) and is corroborated by more recent validation studies across varied populations (Al-Dossary & Almohayya, 2023; Mostert et al., 2023). The high Cronbach's alpha value of 0.923 indicates excellent internal consistency, validating the scale's reliability in measuring psychological well-being among teacher trainees.

The Flourishing Scale is theoretically rooted in the eudaimonic tradition of well-being, which emphasizes meaning, self-actualization, and positive social relationships over fleeting emotional states. According to Ryan and Deci (2001), flourishing involves the fulfilment of basic psychological needs and the realization of one's potential. The present findings confirm the scale's alignment with these constructs and underscore its relevance within the Malaysian higher education setting, where student well-being is increasingly recognized as a predictor of academic

success. Prior research, such as that by Zin et al. (2023), supports this relationship, showing that well-being positively correlates with academic engagement and reduces psychological distress particularly among pre-service teachers.

CFA further validated the unidimensional nature of the FS, with the final model (after removing one item with sub-threshold factor loading) showing excellent fit (RMSEA = 0.078; CFI = 0.981). In addition, the AVE and CR values surpassed the accepted benchmarks, confirming strong convergent validity and internal consistency. These findings reinforce the FS's status as a theoretically grounded and psychometrically sound instrument for assessing psychological well-being in Malaysian higher education.

The construct of flourishing also maps closely onto Self-Determination Theory (SDT) as articulated by Deci and Ryan (1985), which posits that well-being stems from the fulfilment of psychological needs for autonomy, competence, and relatedness. The FS items pertaining to life purpose, optimism, social connection, and life satisfaction resonate well with these domains. In Malaysia's competitive and performance-driven academic environment, the capacity to measure holistic well-being is essential. The FS provides educators with a validated tool for identifying students' psychological states, guiding support strategies, and evaluating the effectiveness of mental health and well-being programs aimed at fostering sustainable personal and academic development.

6. Conclusion

This study evaluated the psychometric properties of the Malay versions of the Brief Resilience Scale (BRS) and the Flourishing Scale (FS) among Malaysian university students, focusing specifically on teacher trainees. Through a rigorous process involving translation, expert validation, and both exploratory and confirmatory factor analyses, the findings affirmed the validity, reliability, and theoretical integrity of both instruments within the Malaysian higher education context. The BRS exhibited a two-factor structure Resilient Capacity and Resilient Disturbance highlighting the complex, multidimensional nature of resilience among students facing academic and personal challenges in teacher education. In contrast, the FS retained its unidimensional structure, effectively measuring psychological well-being and optimal functioning. Both scales met or exceeded established psychometric standards, including internal consistency, convergent validity, and model fit, confirming their appropriateness for the Malaysian educational landscape.

The validation of these tools has significant implications. For research, the BRS and FS offer robust, culturally adapted instruments for assessing resilience and flourishing, enabling longitudinal studies, cross-cultural comparisons, and the development of targeted psychological interventions. The bifactor structure of the BRS provides a nuanced understanding of resilience, while the unidimensional FS offers straightforward application across diverse research settings. In practice, these validated scales can enhance institutional support frameworks in higher education, particularly for teacher education programs. Routine assessments of students' resilience and well-being, through tools like the BRS and FS, can identify at-risk students and guide the design of tailored support services such as resilience-building workshops and mental health campaigns that foster psychological well-being.

From a policy perspective, this study provides empirical support for integrating psychological assessments into national educational quality assurance frameworks. As Malaysia moves towards

a more holistic, student-centered approach to higher education, instruments like the BRS and FS can play a key role in monitoring and improving student welfare. The Ministry of Higher Education may consider incorporating these validated scales into institutional performance indicators to ensure that non-academic aspects of student development are systematically addressed. Future research should expand the validation of these instruments to a wider range of student populations, including those in technical, vocational, and postgraduate education. Longitudinal studies are recommended to track the evolution of resilience and flourishing over time, offering insights into critical periods for intervention. By embedding these measures in the broader discourse on student well-being, Malaysian higher education institutions can take a proactive role in fostering the psychological strengths necessary for academic and lifelong success.

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