

Construct validation of Campus Well-being Scale based on School Well-being Scale using confirmatory factor analysis among students

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Abstract: School well-being in higher education is an important component that supports university students in achieving academic goals and adapting to the campus environment. However, to date, there are limited instruments available with proven validity and reliability for measuring school well-being in the campus environment for students. This study aims to obtain evidence of the validity and reliability of Campus Well-being Scale based on school well-being model. The research data involved 519 active students in the city of Semarang, recruited through purposive sampling. The respondents consisted of 74.4% (386) female students and 25.6% (133) male students, aged 18–25 and at least in their fourth semester. Confirmatory Factor Analysis (CFA) was conducted to assess the construct validity of the instrument. The second-order CFA model generated 27 items showing acceptable fit and conceptual consistency (CFI = .946, TLI = .942, RMSEA = .079, SRMR = .084). Reliability analysis showed good internal consistency, with McDonald's omega ranging from .694 to .839. These results confirm that the four-factor structure of Campus Well-being Scale: having, loving, being, and health, is both valid and reliable for assessing students' campus well-being. After completing various stages of the development of the scale, 27 items were found to be a suitable fit. Therefore, the scale was proven to be valid and reliable for use in measuring student well-being in higher education institutions and is able to complement current educational psychology assessment instruments.

Keywords: campus well-being; college student; reliability; school well-being; validity

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Introduction

Over the past decade, research on well-being has expanded rapidly; however, studies specifically focusing on students remain relatively limited (Sari et al., 2025; Yusoff et al., 2024; Zulkifli & Hamzah, 2024). In Indonesia, mental health problems among adolescents and young adults have become an important concern. The Indonesia–National Adolescent Mental Health Survey (I-NAMHS) found that approximately 34.9% of Indonesian adolescents experienced symptoms of mental health problems during the previous 12 months, while 5.5% experienced a mental disorder during the same period. Anxiety disorders were the most prevalent mental disorders, affecting approximately 3.7% of adolescents (Center for Reproductive Health et al., 2022). These findings highlight the importance of addressing mental health among young people, particularly within educational settings and higher education environments.

The 2018 National Health Survey (Riskesdas 2018) recorded that more than 19 million people aged over 15 suffered from emotional mental disorders, including 12 million cases of depression (Kementerian Kesehatan Republik Indonesia, 2018). According to Pusiknas (2024), Central Java recorded 356 suicide cases in 2023, the highest in Indonesia. This figure shows the need to strengthen student well-being, especially in urban university contexts such as Semarang. However, student well-being is often marginalized because universities place more emphasis on academic achievement and accreditation than on psychosocial aspects (Candra et al., 2014; Misbach et al., 2018). One tangible impact of this is the increase in violence in educational environments.

Despite the existence of Ministry of Education and Culture Regulation No. 82 of 2015 on the prevention of violence, Commission for the Protection of Women and Children (KPAI) recorded 541 cases of violence in schools and

campuses, which contributed to the decline in school well-being (Tim Litbang MPI, 2022). Social interaction factors also play a role; rigid and uncommunicative lecturer-student relationships can create an unfavorable academic atmosphere. Universities such as UGM and UIN Sunan Kalijaga are trying to overcome this through standard operating procedures for a friendly academic environment and lecturer performance evaluations by students (Rinepta, 2023; Sanjaya & Pratiwi, 2023).

In addition to social aspects, the poor physical condition of campuses is also an important factor, such as limited study space, poor lighting, noise, dust, and inadequate air circulation. According to Konu and Rimpelä (2002), school well-being encompasses physical, social, psychological, and health aspects that significantly affect students' comfort, productivity, and psychological well-being. Their findings emphasize the importance of developing a campus environment that is safe, comfortable, and supports the overall well-being of students.

Bonell et al. (2014) emphasize that academic achievement and student well-being must be carefully balanced, as a good balance yields positive outcomes not only for individual students but also for the overall campus environment. In the context of higher education, the school well-being model is used as an adapted conceptual framework to understand university students' learning experiences and mental health. Although the model was originally developed for school settings, its core dimensions are relevant to university contexts because students also experience academic demands, social relationships, opportunities for self-development, and health-related challenges.

Konu and Rimpelä (2002) developed the School Well-being model, which consists of four main dimensions: having, loving, being, and health. The having dimension refers to the physical and

organizational conditions that support learning, including the learning environment, curriculum, school facilities, and support services such as libraries, counseling, and health services. The loving dimension refers to the quality of social relationships, including relationships among students, relationships between students and teachers, and the involvement of family and community. The being dimension relates to students' opportunities for self-fulfillment, such as participating in decision-making, developing skills, and gaining meaningful learning experiences. The health dimension focuses on students' physical and mental health, which directly affects their overall well-being. Although the model was initially developed for the school context, its conceptual framework can be extended to higher education because these four dimensions are also relevant to students' lives on campus, including facilities and academic support (having), relationships with peers and lecturers (loving), autonomy and academic achievement (being), and physical and mental health balance (health).

In this study, school well-being theory is adapted into a campus well-being framework to suit dynamics of students' lives in higher education. This adaptation is necessary because university students experience well-being within campus environments that include academic demands, social relationships, institutional support facilities, and opportunities for self-development. A growing body of international research indicates that university students may experience a range of psychological challenges, including academic stress, loneliness, and depressive symptoms, which can adversely affect their well-being and academic functioning. Academic and family-related stress have been associated with higher levels of depression and poorer academic performance among higher education students (Deng et al., 2022). Similarly, research has demonstrated significant associations between stress, depression, anxiety,

and academic performance among university students (Zhang et al., 2024). Evidence from a systematic review and meta-analysis further indicates that stress is an important factor associated with academic performance among university students (Wunsch et al., 2021). Therefore, student well-being plays an important role in assessing the extent to which students' basic needs are met on campus. A positive campus environment characterized by care, trust, and appreciation of differences can increase student motivation and well-being (Rahmawati et al., 2024; Snyder & Lopez, 2006). This approach maintains the theoretical consistency of the Konu and Rimpelä (2002) model while ensuring its contextual relevance in understanding well-being in higher education.

The psychological well-being of students is understood as a state in which individuals are able to realize their potential, accept their strengths and weaknesses, be independent, build positive relationships, master their environment, and have clear life goals (Aulia et al., 2020). Generation Z, which now dominates higher education, faces academic pressure, stress, and mental health issues, making well-being on campus an important issue. It is in line with the argument of Bonell et al. (2014) that academic achievement must be balanced with the well-being of students. The concept of school well-being proposed by Konu and Rimpelä (2002) emphasizes the fulfillment of primary needs in four dimensions (having, loving, being, and health) and although widely used in international research, it has had limited use in the context of students in Indonesia.

In the Indonesian context, school well-being is generally measured using the Konu and Rimpelä (2002) scale or the Brief Adolescents' Subjective Well-being in School Scale (BASWBSS) developed by Tian et al. (2013, 2015). Their approach refers to Diener's (1984) global subjective well-being scale, which views well-being as a multi-dimensional construct that includes cognitive

evaluation, positive affect, and negative affect. In addition, Karyani et al. (2015) proposed an alternative instrument with five aspects: social, cognitive, emotional, personal, and physical, which has been used in various studies (Rachmah, 2017).

Research in Indonesia has mostly examined school well-being in elementary to secondary school students, such as its relationship with academic achievement (Alsa et al., 2015); family support (Annisa & Kristiana, 2014; Azizah & Hidayati, 2015; Effendi & Siswati, 2016; Firmanila & Sawitri, 2015; Fitriah & Aprianty, 2021; Handrina & Ariati, 2017; Kartasmita, 2017; Rizki & Listiara, 2014); learning motivation (Hasanah & Sutopo, 2020; Rachmah, 2017); mindset growth (Wahidah & Royanto, 2019); adversity intelligence (Rohman & Fauziah, 2016); classroom climate (Muhid & Ferdiyanto, 2020); and juvenile delinquency (Laure et al., 2020). Intervention studies have also been conducted, such as PEDE training—which stands for *Pemaafan*, *Efikasi Diri*, and *Empati*, or forgiveness, self-efficacy, and empathy (Setyawan & Dewi, 2019); evaluation of the school well-being model (Prasetyo, 2010); the role of self-esteem as a mediator (Alwi et al., 2020); and the differences between full-day and half-day systems (Faizah et al., 2019; Rahma et al., 2020). However, research on university students as subjects remains limited, covering only optimism (Ahkam & Arifin, 2017) and a general description of campus well-being (Jalal, 2023).

Previous studies on school well-being have consistently been based on the conceptual model developed by Konu and Rimpelä (2002). This model views school well-being as the fulfillment of four basic student needs: having (school conditions), loving (social relationships), being (self-fulfillment), and health. Related studies in Indonesia and internationally have used this model as a reference, either through adaptation or replication of the instrument, as seen in Prasetyo (2010), Amalia (2021), Alwi et al. (2020), and Faizah et al. (2019). These studies mainly focused on elementary, junior high, and high school

students in school settings. Their findings indicate that school well-being is closely related to social support, self-efficacy, self-esteem, and interpersonal relationships at school.

However, to date, the model has not been specifically applied to the context of higher education. Research at the student level, such as that of Ahkam and Arifin (2017) and Jalal (2023), has begun to examine student well-being, but continues to use the school well-being scale adapted directly from Konu and Rimpelä (2002), without adjusting the indicators to the realities of campus life. In fact, students face different dynamics of well-being, including aspects of academic independence, stress management, organizational involvement, more complex social relationships, and career readiness. Therefore, our study, although based on the Konu and Rimpelä (2002) model, develops new scale items tailored to the context of student life, resulting in the Campus Well-being Scale instrument, aimed at describing student well-being more comprehensively and contextually in the campus environment.

Research on campus well-being in higher education, particularly the development of measurement instruments, remains very limited and needs to be strengthened. Moreover, the development of students in early adulthood (aged 18–25 years) is a period of transition from adolescence to adulthood that is very diverse and complex in terms of the issues faced (Arnett, 2000; Santrock, 2017). At this stage, individuals are required to adapt to various changes, such as academic independence, social responsibility, financial pressure, and career direction (Hurlock, 1980). The phase is also marked by the exploration of values, the search for identity, and increased psychological demands that make students' well-being different from that experienced in their school years. This complexity can affect emotional stability, learning motivation and academic engagement, which ultimately impact students' achievements and mental health.

In addition, early adulthood often intersects with the phenomenon of quarter-life crisis, which is a period of confusion, anxiety, and emotional pressure experienced by individuals in their twenties when facing the transition to adulthood (Karpika & Segel, 2021; Robbins & Wilner, 2001). Students who face academic pressure, social comparison, and anxiety about the future are at risk of experiencing stress and losing direction (MacRae, 2021; Vasquez, 2015; Yani, 2023). Therefore, research on student campus well-being is very important in examining how they direct their lives in this challenging phase of development.

Previous studies have placed greater emphasis on the determinants of school well-being, while instrument development for students in higher education remains limited. Therefore, this study develops a Campus Well-being instrument adapted from Konu and Rimpelä's (2002) model and extends it by incorporating additional aspects based on students' perceptions of a safe, comfortable, and supportive academic environment. The instrument is designed as an assessment tool to map the well-being conditions of students in Semarang City, while supporting higher education institutions' efforts to create a positive, healthy, and conducive learning environment for academic and psychological development (Anggreni & Immanuel, 2020). In addition, the instrument aims to function as an assessment of campus well-being conditions based on student perceptions, especially in Semarang City. The research question addressed is: What validity evidence supports the use and interpretation of the Campus Well-Being Scale scores for measuring students' well-being?

Methods

Participants

The study involved 519 active students from 15 universities in Semarang City. The respondents consisted of 74.4% (386) female students and 25.6% (133) male students, aged 18–25 and at

least in their fourth semester. The data collection process began with focus group discussions (FGDs) involving students, lecturers, educational staff, and faculty leaders to explore the needs for concepts and dimensions related to campus well-being. Next, the developed instrument was tested for validity and reliability on a group of students from several universities in the city before being used more widely. The final stage involved students from various universities in the city, who were the main respondents.

The purposive sampling technique was used. This involves selecting certain samples according to predetermined criteria that are deemed appropriate for the research objectives or problems in a population (Creswell & Creswell, 2017). The sample criteria for this study were students who were still active in at least the 2023 semester or batch, aged 18–25, and studying at a university in the city of Semarang.

Data Collection

The campus well-being instrument was developed based on the school well-being framework proposed by Konu and Rimpelä (2002), which comprises four core dimensions: having (facilities and campus conditions), being (self-development and recognition), loving (social relationships), and health (physical and mental state). While the original school well-being profile consisted of 42 items, the initial version of the Campus Well-being Scale was expanded to 68 items, including 34 favorable and 34 unfavorable ones distributed across the four dimensions.

The instrument development began with focus group discussions involving students, lecturers, administrative staff, and faculty leaders to explore the concept of campus well-being. The findings confirmed that all four dimensions of Konu and Rimpelä's model remained relevant in the higher education context. Based on these findings, the researchers constructed the Campus Well-being Scale by adapting the original theoretical

framework and aligning the items with the specific characteristics of student life in university settings.

Validity Evidence Based on Test Content and Response Process

Research questionnaires play an important role in accurately measuring constructs (Wallwey & Kajfez, 2023; Zickar & Keith, 2023). In our case, content validity was evaluated through expert judgment involving six experts, two psychometricians, two psychologists, and two lecturers with experience in researching school well-being. The experts evaluated the relevance of each item to its indicators using a five-point rating scale. According to Aiken (1985), for five raters using a five-point scale, Aiken's V values of around 0.70–0.90 indicate statistically significant content validity. The study met these criteria, with all items showing acceptable Aiken's V values above the minimum reference value.

Next, evidence of validity based on response processes was obtained from five students to ensure that the item language and wording were clearly understood. The students were asked to provide comments on each item if there was wording that was not understood or needed to be improved. All five students stated that items list were understandable, demonstrating that the items of Campus Well-being Scale were clear.

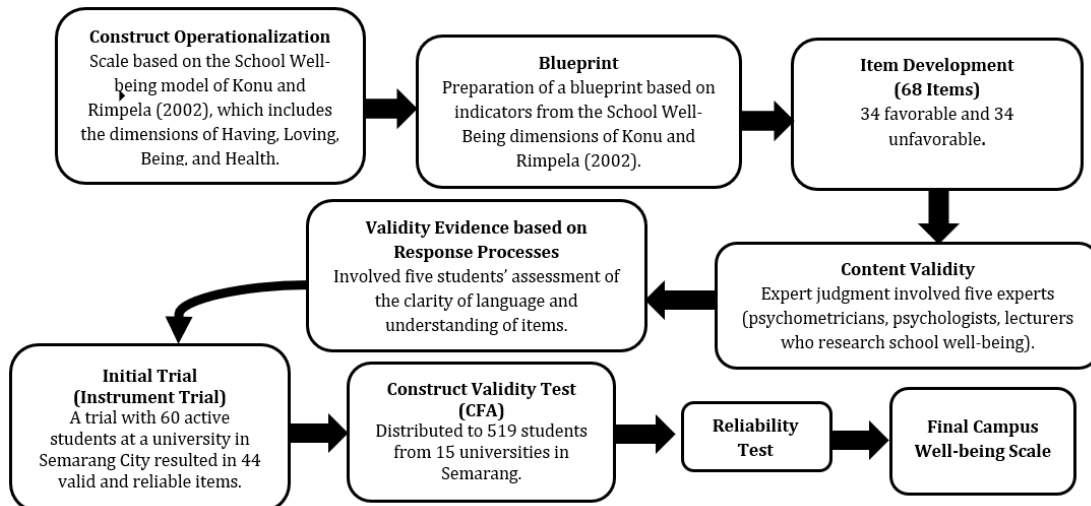
After evidence of validity based on response processes was obtained from the students, a pilot test was conducted with 60 active university students in Semarang. This resulted in 44 items with high internal consistency ($\alpha > 0.90$), with corrected item-rest correlations ranging from 0.312 to 0.659. Items meeting the correlation criteria were retained for further analysis, and these were subsequently administered to the 519 students. The data were then analyzed using CFA and reliability testing to confirm the factor structure of the instrument. The procedures for developing the Campus Well-being Scale are presented in Figure 1.

Data Analysis

The data were analyzed using CFA to examine the measurement structure of the Campus Well-being Scale (R. Brown, 2018; T. A. Brown, 2015; Kline, 2023). All analyses were performed using the *lavaan* package in R. Given the ordinal nature of the item responses, the weighted least squares mean and variance adjusted (WLSMV) estimator was applied, which is recommended for ordinal or non-normally distributed data because it provides more accurate and robust parameter estimates compared to maximum likelihood estimation (Li, 2016). The initial CFA model specified 44 observed items loading onto four latent dimensions: Having (11 items), Loving (15 items), Being (12 items) and Health (6 items).

Model goodness of fit was evaluated using indices appropriate for the WLSMV estimator. Absolute model fit was assessed using the chi-square statistic (χ^2), root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR), while incremental fit was evaluated using the comparative fit index (CFI) and Tucker-Lewis Index (TLI). The criteria applied were $RMSEA \leq .06$, $SRMR \leq .08$, and CFI and TLI $\geq .90$, following recommendations by Hu and Bentler (1999) and further methodological guidance from T. A. Brown (2015), and Kline (2023). Because the WLSMV estimator does not generate likelihood-based fit indices such as the Akaike information criterion (AIC) or Bayesian information criterion (BIC), model evaluation relied exclusively on these fit indices.

Standardized factor loadings were examined to evaluate the contribution of each item to its corresponding latent construct. A minimum loading value of .30 was applied as the criterion for item adequacy, consistent with commonly accepted standards in measurement development (Coşkun et al., 2023; Osborne, 2014). Measurement invariance at the metric level was evaluated following the procedures recommended by Chen (2007).

Figure 1*Procedures for Developing a Campus Well-being Measuring Instrument*

Reliability analysis was conducted to assess the internal consistency of the instrument. McDonald's omega coefficients were calculated for each dimension to evaluate reliability (McDonald, 2013). In addition, given the multidimensional structure of the Campus Well-being instrument, hierarchical omega was estimated to assess the reliability of the total scale score (Zinbarg et al., 2005).

Results

Evidence Based on Test Content

The results of the content validity analysis using Aiken's V show that the item validity indices across dimensions ranged from .79 to .96. Specifically, the Having dimension ranged from .79 to .83, Loving from .79 to .79, Being from .92 to .96, and Health from .96 to .96. According to Aiken (1985), the interpretation of V values depends on the number of raters and response categories; therefore, the values obtained in this study indicate acceptable content validity. The findings suggest that the items demonstrate adequate relevance to their respective indicators in measuring campus well-being. The results of

content validity testing of research measurement tools from expert judgment using Aiken's V Formula are presented in Table 1.

Evidence Based on Test Responses

The findings also highlight that the validity evidence based on the response process results show that most items on the campus well-being scale were clear and easy for respondents to understand. This response-process evidence served as an initial step before conducting the CFA to examine the internal structure of the instrument. The feedback received was generally minor, including spelling corrections, simplification of less familiar words, and sentence adjustments to make the items sound more natural in a student context.

Some revisions involved replacing overly formal or unfamiliar terms, adding conjunctions to improve sentence flow, and rewriting ambiguous statements. These refinements helped ensure that the items were understood in accordance with the researchers' intended meaning, thereby strengthening the validity evidence based on response processes.

Table 1

Results of Content Validity Testing of Research Measurement Tools from Expert Judgment using Aiken's V Formula

Aspect	Total Item	Aiken V
Having	11	0.79 – 0.83
Loving	15	0.79 – 0.79
Being	12	0.92 – 0.96
Health	6	0.96 – 0.96

Table 2

CFA Model Testing

Model	χ^2 (df)	CFI	TLI	RMSEA (90% CI)	SRMR
First Model (44)	3800.368 (896)	.946	.942	.079 (.077–.082)	.084
First-Order (27)	1107.273 (318)	.970	.967	.069 (.065–.074)	.074
Second-Order (27)	1113.205 (320)	.970	.967	.069 (.065–.074)	.074

Note. χ^2 = chi-squared; df = degree of freedom; CFI = comparative fit index; TLI = Tucker-Lewis Index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual

Evidence Based on Internal CFA Structure

Model of Comparison

Based on a series of CFA tests, three alternative models were compared: the initial model with a total of 44 items; a first-order model with a reduction in items to 27; and a second-order model that integrated the four main constructs (Having, Loving, Being and Health) into one higher-order factor, school well-being.

The estimation results show that the second-order model provided the best balance between model fit and conceptual suitability. Statistically, the model fit indices showed values of CFI = .946 and TLI = .942, which are close to the acceptability criteria of $\geq .95$ (Hu & Bentler, 1999), with RMSEA = .079 (with lower CI = .077 and upper CI = .082), still within the acceptable fit category. The SRMR value of .084 was also within acceptable limits (Byrne, 1989). Overall, these indicators suggest that the second-order model was acceptable, although not entirely perfect.

From a substantive perspective, the second-order model was more appropriate because the

concept of school well-being is viewed as a multidimensional construct built on four main domains. By modeling second-order factors, the analysis not only confirmed the validity of each dimension, but also showed that all four contributed to a clearer latent construct, namely school well-being. Additionally, the correlations between dimensions in the first-order model were very high (for example, that between Loving and Being reaching .995, indicating the presence of a more fundamental latent factor). This further strengthens the argument that the use of a second-order model was the most appropriate choice, as it was able to capture the close interconnection between dimensions, while simplifying the structure into one main construct. Table 2 compares the initial model, the first-order model and the second-order model.

Model of Modification

The researchers then modified the model. The reason for using the modified version was because the loading factor based on the modification indices from the WLSMV software is low. The process resulted in a reduction in the number of

items, from 11 to 7 for the Having aspect; from 15 to 8 for the Loving aspect; from 12 to 8 for the Being aspect; and from 6 to 4 for the Health aspect, resulting in a total of 27 items. The reduced model was then retested with first-order CFA and second-order CFA, both of which showed good model fit indices.

Second-Order Model

The results of the analysis using a second-order approach, as in the School Well-being Construct Theory (Konu & Rimpelä, 2002), show that this model was fit. It maintains good fit quality, but with fewer parameters, making its interpretation much easier. The results are not significantly different from the previous model, so this one was used as the final version. It maintains good fit quality, but with fewer parameters, making its interpretation much easier.

Three CFA models were compared: the initial model including all items, a first-order model with 27 items, and a second-order model in which the four dimensions (Having, Loving, Being, and Health) loaded onto a single higher-order factor of Campus Well-being. The fit indices indicated acceptable model fit (CFI = .946; TLI = .942; RMSEA = .079; SRMR = .084), supporting its adequacy despite minor deviations from optimal criteria (Byrne, 1989; Hu & Bentler, 1999).

Conceptually, the second-order model aligns with the understanding of school well-being as a multidimensional construct formed by interrelated domains. High correlations among first-order factors, particularly between Loving and Being, suggest the presence of a common underlying construct. Modeling a second-order factor therefore provides a more parsimonious and theoretically meaningful representation by capturing the shared variance between dimensions within a single overarching construct.

The final 27-item model demonstrated better fit to the data than the initial 44-item one, as reflected by improved CFI, TLI, RMSEA, and SRMR

values, indicating a more accurate representation of the measurement structure. Model refinement was conducted through a systematic item elimination process based on two criteria: items with factor loadings below the minimum threshold of .30 (T. A. Brown, 2015; Hair et al., 2006). and items with high standardized residual covariances (>3.0), which suggest local dependence and reduced discriminant validity (Byrne, 1989; Kline, 2023). Confirmatory Factor Analysis of the second-order model is presented in Figure 2.

Applying these criteria produced a more parsimonious 27-item structure, consisting of seven indicators for Having, eight for Loving, eight for Being, and four for Health. The refined model was subsequently re-evaluated and showed improved feasibility in both first-order and second-order structures. This reduction is consistent with factor loading guidelines, which indicate that loadings below $\pm .30$ provide limited interpretive value, whereas higher loadings reflect stronger and more stable factor structures (Hair et al., 2006). The item selection process based on factor loadings is presented in Table 3.

The CFA results indicate that items with higher initial factor loadings were retained because of their significant contribution to the corresponding dimensions, with several items showing increased loadings after model refinement, suggesting improved measurement accuracy. Overall, the campus well-being measurement model demonstrated acceptable fit, with CFI and TLI values above .90, RMSEA below .08, and SRMR within acceptable limits (Hu & Bentler, 1999). Although the chi-square statistic was significant, this is common in large samples and therefore was not used as the sole criterion for evaluating model adequacy (Kline, 2023).

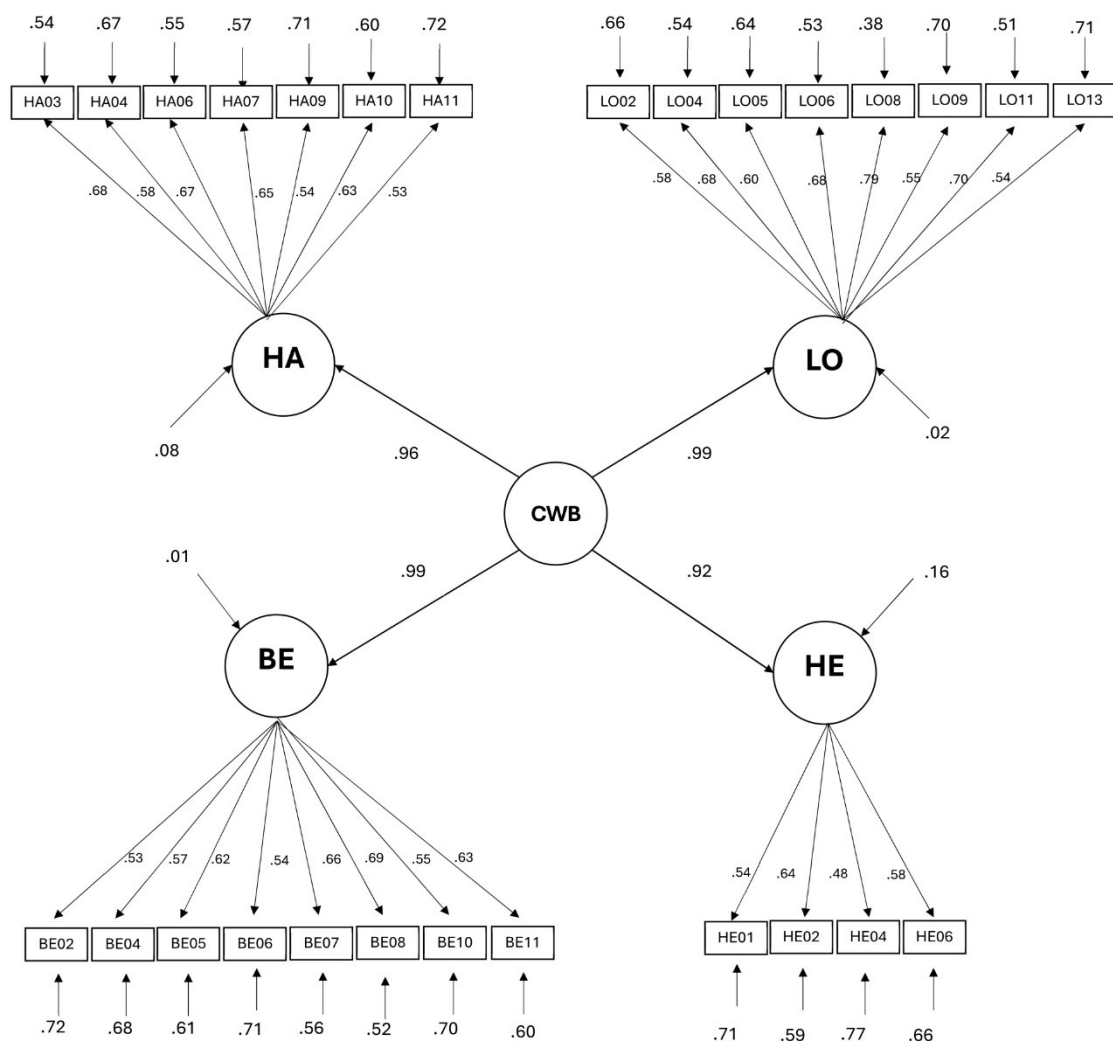
At the item level, standardized factor loadings ranged from moderate to high, indicating that most items adequately represented their latent constructs. Model revision was conducted using

two criteria: items with factor loadings below 0.30 and items showing high error correlations with multiple indicators were eliminated, as these conditions suggest weak construct representation or measurement redundancy (Byrne, 2013; Hair et al., 2006). Item elimination was carried out gradually with consideration of both statistical indicators and theoretical relevance. Given the

ordinal nature of the data, analysis employed the WLSMV estimator, with the final model showing consistently acceptable fit indices. All retained items in the final model demonstrated strong contributions to the construct, supporting the empirical robustness of the Campus Well-being measurement model.

Figure 2

Confirmatory Factor Analysis of Second-Order Model



Note. HA = Having, LO = Loving, BE = Being, HE = Health, CWB = Campus Well-being

Table 3*Item Selection Process Based on Load Factors*

Dimension	Item	Initial Loading	Final Loading	Description
Having	HA01	.314		Discarded
	HA02	.444		Discarded
	HA03	.681	.682	Maintained
	HA04	.557	.587	Maintained
	HA05	.469		Discarded
	HA06	.691	.671	Maintained
	HA07	.661	.654	Maintained
	HA08	.504		Discarded
	HA09	.531	.539	Maintained
	HA10	.616	.632	Maintained
	HA11	.553	.539	Maintained
Loving	L001	.552		Discarded
	L002	.627	.584	Maintained
	L003	.593		Discarded
	L004	.690	.675	Maintained
	L005	.610	.598	Maintained
	L006	.716	.675	Maintained
	L007	.547		Discarded
	L008	.761	.789	Maintained
	L009	.611	.554	Maintained
	L010	.469		Discarded
	L011	.685	.700	Maintained
	L012	.580		Discarded
	L013	.600	.545	Maintained
	L014	.565		Discarded
	L015	.466		Discarded
Being	BE01	.601		Discarded
	BE02	.541	.539	Maintained
	BE03	.517		Discarded
	BE04	.565	.567	Maintained
	BE05	.623	.624	Maintained
	BE06	.528	.542	Maintained
	BE07	.654	.661	Maintained
	BE08	.680	.698	Maintained
	BE09	.588		Discarded
	BE10	.583	.554	Maintained
	BE11	.684	.634	Maintained
	BE12	.540		Discarded
Health	HE01	.584	.542	Maintained
	HE02	.711	.643	Maintained
	HE03	.302		Discarded
	HE04	.557	.484	Maintained
	HE05	.472		Discarded
	HE06	.601	.580	Maintained

Reliability

The reliability analysis results show that all constructs in the model with 27 items have McDonald's omega (ω) coefficients. Based on the

criteria proposed by Nunnally and Bernstein (1994), reliability values above .70 are considered adequate for basic research, while ones above .80 indicate high reliability. In this study, the ω values

ranged from .694 to .839, indicating that all constructs had good internal consistency. In addition, the AVE values also showed good results, ranging from .517 to .581. According to Fornell and Larcker (1981), a construct is said to have good convergent validity if the AVE value is $\geq .50$. Therefore, all constructs in the model met the convergent validity criteria. The reliability indices are presented in Table 4.

Discussion

The study contributes to the measurement of well-being in higher education through the development of the campus well-being construct by testing and refining its factorial structure using CFA. The initial model showed an acceptable level of fit, but some items had less than optimal factor loadings, indicating that the model did not fully meet the construct validity criteria proposed by Hu and Bentler (1999). Subsequently, the model was modified using a second-order CFA approach through item reduction in the four main dimensions of Having, Loving, Being, and Health to obtain a more efficient structure. The test results showed that the reduced second-order model had stronger construct validity and better psychometric coherence, resulting in a more concise model that remained conceptually robust.

The model was then modified by reducing items in the four dimensions, leaving 27 items. Retesting with first-order and second-order CFA

showed improved psychometric performance. This indicated that the model was more concise but still had a robust structure.

A comparison of the three models, the initial model, the first-order reduction model and the second-order model, shows that the second-order model provided the best balance between statistical fit and conceptual clarity. Although its fit indices are slightly lower than those of the first-order model, the second-order specification is more consistent with the theoretical basis that campus well-being is a hierarchical construct composed of four main dimensions. The very high correlations between the first-order model dimensions of Loving and Being also reinforce the existence of more fundamental latent factors.

The reliability analysis results show that the campus well-being scale has high internal consistency, comparable to the results of Lathifah et al. (2021) on vocational high school students, which also demonstrated high reliability. Although the reliability values are similar, the measurement contexts are fundamentally different. Elindra's (2017) scale was developed and applied in a school context, where students' well-being is shaped by structured learning conditions and close teacher supervision, with the study assessing the well-being of students in a campus environment that demanded greater academic, social, and emotional independence.

Table 4
Reliability Indices

Construct	ω (Omega)	AVE
Total Omega	.931	
Hierarchical Omega	.815	
Having	.839	.524
Loving	.773	.581
Being	.741	.563
Health	.694	.517

Note. ω = Omega reliability, AVE = average variance extracted

This difference in context highlights the need to expand the construct of school well-being to that of campus well-being, so that the measurement tool can capture the dynamics of well-being at different stages of development and educational ecosystems.

To date, no new construct has specifically measured school well-being, but a number of similar studies on well-being support a multidimensional approach. One such study is that of Akhtar (2019), which compares models for measuring subjective well-being and finds that the three-factor model provides the best level of fit. These findings confirm that psychological well-being consists of interrelated but independent dimensions, thereby strengthening the conceptual basis for the campus well-being model and its four main dimensions. A similar study by Yusoff et al. (2024) developed the EPOCH (Engagement, Perseverance, Optimism, Connectedness, Happiness) scale, designed to evaluate adolescent well-being and positive functioning in Malaysia.

The findings of the present study further confirm that the campus well-being construct is multidimensional and hierarchical. Each dimension, namely Having, Loving, Being, and Health, demonstrates adequate construct validity while also contributing to a higher-level construct, namely campus well-being. These results are in line with Konu and Rimpelä's (2002) theoretical framework, which views school well-being as a multidimensional construct encompassing physical, social, personal, and health aspects. Empirical support for this hierarchical structure is also found in other studies on subjective well-being, such as Samudera's (2023) study, which demonstrated that subjective well-being among volunteers was validly represented through a second-order CFA model. This evidence suggests that well-being constructs, including campus well-being, tend to form a higher-order latent structure, making second-order CFA an appropriate model for representing them.

Studies on well-being in the context of education show that this aspect is an important concern at various levels, from primary to higher education (Aulia et al., 2020; Govorova et al., 2020; Jang-Jones & McGregor, 2019). These studies confirm that schools and universities play a significant role in shaping the well-being of students. This is in line with the global trend of placing well-being as an integral part of the learning experience.

In the context of higher education, attention to student well-being is crucial because it is directly related to academic and non-academic success. In addition, the dimensions of religiosity and spirituality need to be taken into consideration, given that both are part of students' identity in Indonesia and factors that influence their psychological conditions. A comparison between the application of well-being in secular and religion-based education systems is therefore relevant for further study (Solichah et al., 2025).

International practices show that formal policies can provide an important foundation for developing institutional governance and student support systems related to well-being in higher education. New Zealand, for example, has regulated the implementation of well-being in higher education through *The Education (Pastoral Care of Tertiary and International Learners) Code of Practice 2021* (NZQA, 2021). This regulation explicitly requires institutions to ensure that students' well-being needs are addressed, making it a useful reference for developing similar policies in other higher education contexts.

Allardt's (1973) theory of well-being comprises three core dimensions: having, loving, and being. Konu and Rimpelä (2002) later adapted this framework to the school context by developing the school well-being model, which retained Allardt's three dimensions and added health as a fourth dimension (Konu & Lintonen, 2006; Konu & Rimpelä, 2002). The concept affirms that a healthy educational environment can

support the achievement of overall student well-being. Konu and Rimpelä (2002) emphasize that a quality campus is a healthy campus, namely an environment that supports social relationships, student self-development, and environmental health, all of which are important aspects of school well-being. In line with this, various studies show that stress plays a major role in determining the level of student well-being on campus.

International research has demonstrated that academic stress is an important factor associated with university students' well-being in higher education. Academic workload, evaluation pressure, academic demands, and difficulties in balancing academic and personal life can serve as sources of stress that affect students' well-being (Pérez-Jorge et al., 2025). Furthermore, the Study Demands–Resources perspective explains that students' well-being in higher education is influenced by the balance between study demands and the resources available to students (Bakker & Mostert, 2024).

Other studies also support the link between stress, adjustment, and school well-being. Kusuma and Gusniarti (2007) reported that good social adjustment is associated with low stress, while difficulty in adapting increases the risk. Christyanti et al. (2010) argued that students with good academic adjustment tended to experience low stress, while those who failed to adjust to academic demands were more prone to high stress, eventually reducing school well-being. In line with these findings, Karatzias et al. (2002) state that stress is a predictor of student satisfaction at school, while Huebner et al. (2014), highlight the influence of personality characteristics, such as self-esteem, internal locus of control, and extraversion, on school well-being.

A stressful and unpleasant campus environment can trigger negative reactions in students, such as stress, boredom, isolation, and even depression, which ultimately reduce

satisfaction with the campus and affect academic achievement. Huebner and McCullough (2000) emphasize that unpleasant learning experiences have the potential to be a source of stress and reduce the quality of life of students.

Stress is one of the psychological challenges commonly experienced by university students in higher education settings. Evidence from an umbrella review encompassing 1,655 primary studies and more than 8.7 million university students across various countries indicates that the prevalence of stress among university students is approximately 36.34% (Paiva et al., 2025). This finding is further supported by a recent systematic review and meta-analysis involving more than 255,000 university students from different regions worldwide, which reported an overall stress prevalence of 45.6%, with 14.5% of students experiencing high perceived stress. These findings highlight that student well-being is not solely determined by academic achievement but also encompasses students' psychological, social, and environmental conditions throughout their university experience.

One important psychological factor that contributes to school well-being is optimism. Individuals with high levels of this tend to face challenges more positively and adaptively (Andersson, 1996; Scheier & Carver, 1985). Optimism not only affects feelings and attitudes, but also influences health, motivation, and self-adjustment (Patton et al., 2004; Yates, 2002). Thompson and Gaudreau (2008) show that optimism acts as a mediator in increasing academic motivation, encouraging a positive approach to tasks, and reducing avoidance tendencies. Therefore, students with high levels of optimism are more likely to be intrinsically motivated, view academic activities as meaningful, and ultimately benefit more from their learning experiences.

One factor that influences school well-being is the quality of social relationships. Social support

from peers has been shown to reduce stress levels and improve student well-being (Riyanto, 2022). In this context, peer mentoring is an effective strategy, as it allows more experienced students to provide guidance and support to their peers. The presence of this kind of social support strengthens students' capacity to cope with academic pressure while maintaining their well-being.

In addition, school well-being is shaped by various individual and contextual factors, including supportive social relationships, meaningful social participation, leisure activities, personal characteristics, social roles, and the development of clear life goals (Keyes & Waterman, 2003). These factors help reduce stress, increase social integration, and strengthen a sense of meaning and satisfaction with academic life.

Previous studies also demonstrate that fulfilling students' needs through a healthy campus environment (school well-being) encourages active involvement in learning, good study habits, and optimal academic achievement (Az-Zahra & Udaranti, 2013). In general, learning achievement is influenced by internal factors such as personality and anxiety (Akbar et al., 2015), as well as external factors in the form of environmental support. School well-being plays an important role in creating a conducive learning climate so that educational goals can be achieved. However, educational practices often focus only on conceptual standards without considering student well-being, leading to boredom with campus life (Setyawan & Dewi, 2015).

Anxiety has also been shown to affect academic achievement. Davidson and Sarason (1961) found that students with high levels of anxiety tended to achieve lower grades than those with lower levels of anxiety. Academic anxiety, which arises from pressures in the learning environment, may cause feelings of fear, tension, and threat (O'Connor, 2007; Zulkarnain & Novliadi, 2009). Therefore, academic anxiety can

be seen as a consequence of school well-being not being optimally fulfilled.

Student well-being on campus is an important aspect of life that influences the study process and future success. An unpleasant learning experience can trigger stress, reduce the quality of life, and have a negative impact on students' mental health. Therefore, fulfilling school well-being plays a crucial role in enabling students to adapt to academic demands and maintain continuity of learning (Khairunnisa et al., 2022).

It also plays an important role in creating a conducive learning environment that supports the achievement of educational goals. However, practices in the field still tend to focus on achieving conceptual academic standards without considering factors that make students feel comfortable and satisfied with campus life. A stressful and monotonous campus environment can trigger stress, boredom, alienation, and even depression, which ultimately have a negative impact on students' adjustment and achievement (Setyawan & Dewi, 2015; Siswanto, 2007). Therefore, campus evaluation should not only be based on academic standards, but also on students' subjective experiences regarding the fulfillment of their material and non-material needs (Smith & Lindell, 2010).

The campus environment is therefore an important factor that affects student well-being. A conducive campus environment can foster comfort and increase the motivation to learn (Naibaho et al., 2012), while a poor environment can decrease motivation. Students who are new to the campus world also face adaptation challenges, both in terms of differences in social groups, cultural backgrounds, and learning systems that are different from those at school (Ahmad, 2010). The inability to adapt has the potential to cause stress and negatively impact student well-being. In line with this, Papalia et al. (2009) emphasize that students who are satisfied with their campus will perform better in academic activities, while

dissatisfaction can interfere with their performance and behavior.

Well-being refers to successful functioning across the life course, integrating physical, cognitive, and socio-emotional functions (Bornstein et al., 2003). In the educational context, this broader concept of well-being can be operationalized as school well-being. Konu and Rimpelä (2002) conceptualized school well-being through four dimensions: having (school conditions), loving (social relationships), being (means for self-fulfillment), and health (health status).

Students who are satisfied with their campus tend to be more enthusiastic about academic activities, while dissatisfaction leads to low achievement and maladaptive behavior (Papalia et al., 2009). Factors that influence school well-being include social relationships, leisure time, social participation, personality characteristics, optimistic attitudes, self-control, and life goals and aspirations (Keyes & Waterman, 2003). Optimism, in particular, helps students adapt more effectively to various academic situations by supporting positive expectations, persistence, and constructive responses to academic challenges (Scheier & Carver, 1985).

A number of studies show that high school well-being has a positive impact on various psychological aspects of students, such as adversity intelligence (Rachmah, 2017; Rohman & Fauziah, 2016); resilience (Saraswati et al., 2018); and optimism (Ahkam et al., 2020). In addition, well-being at school also increases self-confidence, creativity, tolerance, the ability to work together and altruism (Cohen & Pressman, 2006). These conditions contribute to the formation of positive character and support academic success (Mashford-Scott et al., 2012). Conversely, low school well-being often triggers academic stress (Muhid & Ferdiyanto, 2020), and delinquency intention (Effendi & Siswati, 2016). Therefore, such well-being is very important in creating a

peaceful learning environment that supports mental health (Buchori et al., 2021).

Students' well-being can be understood through their perceptions of the academic setting, institutional support for learning, and the quality of social relationships surrounding them. Higher education institutions serve not only as spaces for knowledge acquisition, but also as important contexts for social development and personality formation (Tian et al., 2015). When the learning atmosphere is perceived as poor, monotonous, or stressful, students may experience negative psychological outcomes, including stress, alienation, loneliness, and depression (Azizah & Hidayati, 2015). In this regard, school well-being provides a useful framework for examining the extent to which students' needs are fulfilled within educational settings. Konu and Rimpelä (2002) conceptualize this construct through four dimensions: conditions of the institution (having), social relationships (loving), self-fulfillment (being), and health. Similarly, Snyder and Lopez (2006) argue that a positive educational climate is shaped by care, mutual trust, and respect for differences. Lecturers also contribute to this process by providing motivation, clear learning goals, and supportive guidance that strengthen students' overall well-being.

The campus well-being instrument has several important practical implications. The measuring tool can be used by universities to detect student welfare issues early on, whether in terms of physical, psychological, social or campus environment aspects. In addition, the results of campus well-being measurements can be used as a basis for designing campus intervention programs. By understanding through assessment, the aspects of well-being that are lacking, campuses can develop data-based well-being improvement programs, including counseling services, the strengthening of lecturer-student relationships, and improving campus facilities.

Furthermore, the instrument can be widely adapted. Although developed for the city of Semarang, it has the potential to be adapted to other universities in Indonesia, both public and private, with modifications to suit the local context.

This study has several limitations. The sample was restricted to students in Semarang City, which may limit the generalizability of the findings. In addition, data collection was conducted using Google Forms rather than a fully integrated digital platform. Methodologically, the instrument development relied on a classical test theory approach, making item characteristics potentially sample-dependent. In addition, the sources of validity evidence were not comprehensively examined, as the analysis focused mainly on construct validity and internal consistency, while criterion-related validity, quantitative content validity, and measurement invariance across groups were not assessed. Future research is therefore encouraged to involve more diverse student populations across regions, types of universities, and academic disciplines; apply

modern psychometric approaches such as item response theory or Rasch modeling; and further strengthen the validity evidence and practical implementation of the campus well-being instrument.

Conclusion

The CFA results supported the theoretically proposed four-factor structure of the Campus Well-being Scale, comprising Having, Loving, Being, and Health. All items demonstrated adequate factor loadings, and the reliability and validity indicators confirmed that each dimension had good internal consistency and convergent validity. The overall model also showed satisfactory fit, indicating that the hypothesized factor structure was consistent with the empirical data. These findings suggest that the instrument is valid and reliable for assessing student well-being in higher education, as it captures key aspects of institutional conditions, social relationships, self-fulfillment, and health.[]

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Conflict of Interest

The authors declare no financial conflicts of interest or personal relationships that could have influenced the integrity of the research reported in this article.

Author Contribution Statement

Wening Wihartati: Conceptualization; Data Curation; Formal Analysis; Investigation; Methodology; Validation; Visualization; Writing Original Draft; Writing Review & Editing. **Ari Yuniastuti:** Conceptualization; Data Curation; Formal Analysis; Investigation; Methodology; Project Administration; Validation; Visualization. **Irwan Budiono:** Conceptualization; Data Curation; Formal Analysis; Investigation; Methodology; Project Administration; Validation; Visualization; Research Assistant. **Yuni Wijayanti:** Conceptualization; Data Curation; Formal Analysis; Investigation; Methodology; Project Administration; Validation; Visualization; Research Assistant. **Tommy Tanu Wijaya:** Methodology; Validation; Writing Original Draft; Writing Review & Editing

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