**International Journal of Evaluation and Research in Education (IJERE)**
Vol. 14, No. 4, August 2025, pp. 2565~2573
ISSN: 2252-8822, DOI: 10.11591/ijere.v14i4.33503 

# Psychometric properties of multidimensional life-satisfaction scale on Indonesian college students

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**Article Info**

***Article history:***

Received Nov 4, 2024
Revised May 6, 2025
Accepted May 20, 2025

***Keywords:***

Higher education
Life satisfaction
Psychometric evaluation
University students
Validity scale

**ABSTRACT**

College students face various challenges, making the emphasis on life satisfaction increasingly important. To promote life satisfaction in higher education specifically in Indonesia, highlighting a valid and reliable measurement tool is necessary. The multidimensional life-satisfaction scale (MLSS) has been widely used, but its psychometric properties require evaluation for application among college students in Indonesia. Hence, this study investigates the psychometric properties of the MLSS, involving 651 Indonesian college students who completed an online survey. Data were collected using the original 40-item Indonesian version of the MLSS and factor analysis was conducted to assess construct, convergent, and discriminant validity. Internal consistency was evaluated using Cronbach's alpha. Exploratory factor analysis (EFA) establishes a five-factor solution and confirmatory factor analysis (CFA) confirms the second model with fourteen items met the goodness-of-fit. The five constructs (family, friends, campus, environment, and self) indicate well enough score both on average variance extracted (AVE) (range from .50 to .64) and composite reliability (range from .66 to 80). Internal consistency was acceptable, and correlations between constructs were significant. All items demonstrated sufficient factor loading. The short-form self-report model of the MLSS was found to be valid and reliable for use with college students in Indonesia.



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## 1. INTRODUCTION

College students are vulnerable to experiencing mental disorders. This population frequently encounters numerous challenges such as academic pressure, social adjustments, personal growth, and career preparation [1], [2]. This situation collectively increases the risk of mental health difficulties [3] such as experiencing stress [4], [5], depression, and anxiety [6], [7]. Previous research has reported on the experience of mental difficulties among Indonesian college students and highlighted their condition. For instance, study by Astuti *et al.* [8] included 251 college students, a total of 52.88% reported feeling unhappy and 41.43% required psychological assistance. In addition, Kaligis *et al.* [9] reported more than 90% of college students (N=393) experience anxiety and 50% have suicidal thoughts. Multifaceted challenges college students face in their academic activities underlining risk factors that may be experiencing. This situation should be paid

serious attention and we highlight their state of life satisfaction due to its strong link with mental health [10] and academic advantages [11].

Life satisfaction, subjective well-being, and happiness are closely interrelated [12]. Students with high life satisfaction can be resilient in facing various challenges. Caballero-García and Ruiz [13] emphasize that life satisfaction correlates positively with academic performance and students will engage themselves more in their academic activities [14]. Promoting life satisfaction in higher education is essential [15]. Tavakoly *et al.* [16] emphasize that enhancing students' life satisfaction can foster greater happiness in the overall university experience.

Life satisfaction arises from an individual's cognitive appraisal of their living standards, which strongly influences behaviors and emotional states [17]. García-Martínez *et al.* [18] explains that satisfaction stems from fulfilling personal expectations, which are achieved through deliberate efforts. According to bottom-up theory, life satisfaction is shaped by cumulative satisfaction across various life domains [19]. Gilman and Huebner [20] identify that the life domains that are relevant among students include family, friends, environment, school, and self.

Exploring satisfaction in several areas of life among college students needed a trustworthy measurement tool. The multidimensional life-satisfaction scale (MLSS) is a tool commonly used to assess satisfaction across five life domains and has been widely applied [21]–[23]. Zullig *et al.* [24] examine the psychometric properties of the MLSS which involved a sample of university students in the Midwest. The brief MLSS confirms that several items exhibit moderate factors loading, and each construct of the life domain is only represented by one item. Schnettler *et al.* [25] explore the psychometric properties of the MLSS among college students in Chile and an abbreviated version of MLSS comprising 30 items was proposed for this population.

Previous studies explain that the MLSS was effective in capturing college students' satisfaction in five life domains. In adapting these measurement tools to Indonesia, Lachmann *et al.* [12] argued that in different cultures, life satisfaction is interpreted differently. Consequently, MLSS was reevaluated for psychometric properties [26]. Although life satisfaction measurement tools were used widely in Indonesia [27], [28], no one research has reported psychometric evidence of MLSS. Thus, the current study fills existing research gaps by providing evidence-based psychometric properties of MLSS which are effective among college students in higher education. The MLSS captures satisfaction across five domains of life and these advantages enable more focused diagnostic, prevention, and intervention efforts in promoting mental well-being and more positive academic outcomes.

The aims of the present study examine the psychometric properties of MLSS for Indonesian college students. The following research questions set in this study are:

i) Does the MLSS consist of five constructs?
ii) Does the MLSS fulfil both validity of convergent and discriminant?
iii) Does the MLSS meet Cronbach's alpha reliability?

The contribution of this study gives evidence of the validity and reliability of measurement tools that are effectively used to assess satisfaction in five life domains of Indonesian college students.

## 2. METHOD

### 2.1. Research design

This quantitative research uses a cross-sectional survey design to collect data on satisfaction across specific life domains among college students. The research data is confidential and only used to evaluate the psychometric properties of MLSS which is effective for Indonesian students in higher education. According to the objectiveness of this study, the data was analyzed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA).

### 2.2. Population and sample

This research included students from a public university in Kupang City, Indonesia. The participants were recruited randomly on an online survey distributed via students' class WhatsApp group with permission from the department coordinator. The incomplete survey questionnaire was excluded from the research data. A total of 670 respondents participated and 651 participants fulfilled the inclusion criteria with a mean age of 20.15 (male=22.58%, and female=77.42%). According to the year level of participants, 34.25% were freshmen, 22.89% were sophomores, 39.48% were juniors, and 3.38% were seniors. The sample comes from several departments as: counseling (7%), English language education (2%), physics education (5%), Indonesian language education (6%), economics education (2%), geography education (3%), chemistry education (5%), mathematics education (15%), civic law education (3%), history education (16%), engineering education (9%), primary education (6%), early education (16%), and non-formal education (6%).

### 2.3. Instruments

MLSS were designed based on the theoretical framework by Gilman and Huebner [20] with five specific domains (family, friends, school, environment, and self). We reworded exchanging the original domain "school" for "campus". The initial MLSS consists of 40 items that measure life satisfaction in five domains and each domain is eight items respectively. Respond to each item using a 5-point Likert scale (5=strongly agree; 1=strongly disagree). The demographic of respondents was also collected such as gender, age, year level, and department.

A total of six experts were included with expertise in psychometrics, psychology, and higher education; two experts respectively. The expert evaluated the design of measurement tools regarding the readability, suitability, and fairness of the items [29]. When found different, discussions were held and an agreement was reached with all of experts on the 40-item and overall content of measurement instruments.

### 2.4. Statistical analysis

Data were analyzed using the statistical package for the social sciences (IBM SPSS) software (version 28) including descriptive analysis of participants' demographics, and EFA. According to both scores of the skewness and kurtosis, the normal distribution of data was assessed [30]. The Kaiser-Meyer-Olkin (KMO) and Bartlett's test was assessed to confirm the suitability of data. The principal axis factoring (PAF) with Promax rotation is considered [31]. The excluded criteria of items are factor loading less than .50 [32].

CFA was performed with the IBM Amos software (version 22) to evaluate of model structure. The goodness-of-fit of the model was assessed with the comparative fit index (CFI)>.90 [33], the adjusted goodness-of-fit index (AGFI)>.90 [34], the goodness-of-fit index (GFI)>.90 [29], the root mean square error of approximation (RMSEA)<.80 [33], the normed fit index (NFI)>.90 [35], and the Tucker–Lewis index (TLI)>.90 [36]. Convergent validity was assessed based on factor loading (λ), average variance extracted (AVE), and composite reliability with acceptable criteria were greater than .50 respectively [37]. Furthermore, discriminant validity was evaluated by comparing the correlation coefficients cross-construct with the square root of each AVE.

## 3. RESULTS

### 3.1. General characteristics

This study examines the psychometric properties of MLSS using EFA and CFA. We split the data into subsample 1 (N=331) and subsample 2 (N=320). Table 1 presents the demographic data in each sub-sample. We use a sequence number of participants for distributing the data into the sub-sample. The first data response until respondent number 331 was included in sub-sample 1 and the rest in sub-sample 2. The descriptive data of MLSS in each sub-sample is presented in Table 2.

Table 1. Demographic data of participants in sub-sample

| Characteristics | | Subsample 1 | | Subsample 2 | |
|---|---|---|---|---|---|
| | | Frequency | Percentage (%) | Frequency | Percentage (%) |
| Gender | Male | 63 | 19.03 | 84 | 26.25 |
| | Female | 268 | 80.97 | 236 | 73.75 |
| Age | <19th | 106 | 32.02 | 116 | 36.25 |
| | 20th | 114 | 34.44 | 111 | 34.69 |
| | 21th | 63 | 19.03 | 53 | 16.56 |
| | 22th | 34 | 10.27 | 26 | 8.13 |
| | >23th | 14 | 4.23 | 14 | 4.38 |
| Level | Freshman (1) | 101 | 30.51 | 122 | 38.13 |
| | Sophomore (2) | 61 | 18.43 | 88 | 27.50 |
| | Junior (3) | 157 | 47.43 | 100 | 31.25 |
| | Senior (≥4) | 12 | 3.63 | 10 | 3.13 |
| Department | Counseling | 10 | 3.02 | 36 | 11.25 |
| | English language education | 13 | 3.93 | 2 | 0.00 |
| | Physics education | 35 | 10.57 | - | 0.00 |
| | Indonesian language education | 9 | 2.42 | 28 | 8.75 |
| | Economics education | 15 | 4.53 | - | 0.00 |
| | Geography education | 17 | 5.14 | - | 0.00 |
| | Chemistry education | 16 | 4.83 | 17 | 5.31 |
| | Mathematics education | 19 | 5.74 | 77 | 24.06 |
| | Civic law education | 8 | 2.72 | 9 | 2.81 |
| | History education | 37 | 11.18 | 67 | 20.94 |
| | Engineering education | 20 | 6.04 | 37 | 11.56 |
| | Primary education | 36 | 10.88 | - | 0.00 |
| | Early education | 87 | 26.28 | 17 | 5.31 |
| | Non-formal education | 9 | 2.72 | 30 | 9.38 |

Table 2. Descriptive data of MLSS on sub-sample

| Measure/Group | Mean | Standard deviation | Range | Minimum | Maximum | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|
| MLSS (sub-sample 1) | 3.90 | .34 | 2.40 | 2.60 | 5.00 | .17 | 1.39 |
| MLSS (sub-sample 2) | 3.82 | .36 | 2.45 | 2.55 | 5.00 | -.19 | 1.43 |

Both data in sub-sample 1 and sub-sample 2 evaluated their normal distribution assessed by both scores of skewness and kurtosis. For the skewness score, both sub-sample 1 and sub-sample 2 indicate that the distribution of data was a slight rightward skew (sub-sample 1) and otherwise (sub-sample 2). However, the distribution of data remains relatively symmetric (asymmetry outside -1 and +1) [38]. Furthermore, the kurtosis values indicate that the distribution is close to normal with slightly heavier tails than a pure normal distribution. Highlighting both scores of skewness and kurtosis in each sub-sample, the distribution of data lacks extreme deviations and it can be considered approximately normal respectively.

### 3.2. Construct validity

The EFA was conducted on sub-sample 1, and a KMO statistically was observed of .849 (≥.70) indicating good sample adequacy [39]. Further, Bartlett's test was observed significant ($\chi^2$=4327.458; df=528; p<.001) indicating the variances across the groups are not equal. Highlighting both results of KMO and Bartlett's test suggested the data fulfilled to EFA. In the extraction method, the PAF with the Promax rotation was performed. EFA explains a five-factor solution with 50.63% of the variants. There are 14 items removed from the original 40-item. Table 3 presents the distribution of accepted items in each five-factor.

The CFA was conducted on subsample 2 to evaluate the model structure of five constructs with 16 items following EFA results. According to Table 4, the initial model does not fit, and suggested to modify by excluding the item code FM 7 from the model. Evaluating the second model, the model structure indicates a goodness of fit but the factor loading of the item code FM 6 is less than .50. We excluded that item from the structure, and finally, overall the model structure is adequate. Table 4 shows the summary of goodness of fit indices of the model.

Table 3. Factor structure of MLSS on EFA (<.50 removed)

| Code | Abbreviated item description | Mean±SD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| FM 1 | Families get along well | 4.56±.65 | .72 | | | | |
| FM 2 | Doing fun things with parents | 4.40±.71 | .69 | | | | |
| FM 3 | Parents treat fairly | 4.56±.67 | .65 | | | | |
| FM 7 | Enjoy being at home with family | 4.34±.84 | .62 | | | | |
| FM 6 | Like spending time with parents | 4.07±.87 | .61 | | | | |
| FR 7 | Friends help when needed | 4.16±.75 | | .76 | | | |
| FR 3 | Friends are nice to me | 4.28±.67 | | .76 | | | |
| FR 5 | Friends are great | 4.22±.65 | | .72 | | | |
| FR 2 | Have enough friends | 4.11±.87 | | .61 | | | |
| CM 6 | Campus is interesting | 4.20±.63 | | | .60 | | |
| CM 8 | Learn a lot on campus | 4.33±.63 | | | .52 | | |
| EM 5 | Wish to live in a different house | 3.06±1.21 | | | | .66 | |
| EM 1 | Wish to live somewhere else | 2.93±1.33 | | | | .63 | |
| EM 4 | Wish to different people in the neighborhood | 3.34±1.16 | | | | .60 | |
| SF 1 | Fun to be around | 3.69±.97 | | | | | .73 |
| SF 6 | Most people like me | 3.75±.91 | | | | | .66 |
| | Cumulative (%) | | 24.6 | 31.8 | 37.6 | 42.9 | 50.6 |

Note: FM=Family, FR=Friends, CM=Campus, EM=Environment, SF=Self

Table 4. Summary of fit indices on CFA

| Model | $\chi^2$ | *df* | *p* | CFI | GFI | AGFI | RMSEA | NFI | TLI |
|---|---|---|---|---|---|---|---|---|---|
| Initial model | 222.18 | 94 | .00 | .92 | .92 | .88 | .06 | .87 | .90 |
| 1st modified | 169.41 | 80 | .00 | .93 | .93 | .90 | .06 | .88 | .91 |
| 2nd modified | 150.65 | 67 | .00 | .94 | .94 | .90 | .06 | .89 | .91 |

### 3.3. Convergent validity, discriminant validity and reliability

The model structure of five constructs explains that goodness-of-fit indices are fulfilled and factor loading of 14 items was sufficient. Further, the AVE, and composite reliability were acceptable respectively. Thus, it indicates that the MLSS statistically fulfills convergent validity. Factor loadings, AVE, and composite reliability are presented in Table 5.

Table 5. Factor loading, correlation between construct and reliability of MLSS (N=320)

| No | Abbreviated item description | Mean±SD | Standardized factor loading | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| 1 | Family (CR=.75; α=.83) | 4.47±.76 | (AVE=.50) | .56 | .44 | .56 | -.10 | .67 |
| | Families get along well | 4.47±.76 | .70 | | | | | |
| | Doing fun things with parents | 4.36±.77 | .80 | | | | | |
| | Parents treat fairly | 4.59±.69 | .60 | | | | | |
| 2 | Friends (CR=.80; α=.74) | 4.16±.50 | (AVE=.55) | | .74 | .69 | -.08 | .61 |
| | Have enough friends | 4.14±.82 | .52 | | | | | |
| | Friends are nice to me | 4.31±.66 | .71 | | | | | |
| | Friends are great | 4.23±.56 | .70 | | | | | |
| | Friends help when needed | 4.19±.68 | .72 | | | | | |
| 3 | Campus (CR=.66; α=.70) | 4.28±.54 | (AVE=.58) | | | .76 | -.08 | .68 |
| | Campus is interesting | 4.18±.68 | .72 | | | | | |
| | Learn a lot on campus | 4.37±.61 | .56 | | | | | |
| 4 | Environment (CR=.75; α=.73) | 3.17±.93 | (AVE=.51) | | | | .71 | -.12 |
| | Wish to live somewhere else | 3.04±1.26 | .80 | | | | | |
| | Wish to live in a different house | 3.09±1.15 | .71 | | | | | |
| | Wish to different people in the neighborhood | 3.38±1.04 | .57 | | | | | |
| 5 | Self (CR=.67; α=.70) | 3.80±.69 | (AVE=.64) | | | | | .80 |
| | Fun to be around | 3.74±.87 | .62 | | | | | |
| | Most people like me | 3.86±.81 | .57 | | | | | |
| | Life satisfaction (α=.71) | 4.00±.39 | | | | | | |

Note: CR=Composite reliability

The square root AVE in each construct indicates that exceeds its correlations with other constructs. It is demonstrated that each construct measures a distinct concept without overlapping with others. Therefore, the five constructs of MLSS with 14 items statistically fulfill discriminant validity.

The internal consistency was assessed using alpha Cronbach with greater than .70 as an acceptable value [40]. The coefficient alpha Cronbach of MLSS was observed at .71 and it indicates enough reliability. Evaluating each construct, the reliability was observed sufficiently respectively. It indicates that each construct of MLSS is reliably measured by its associated items.

## 4. DISCUSSION

The present study aimed to examine the psychometric properties of MLSS among Indonesian college students. Conducting data in sub-sample 1, EFA explains a five-factor structure, and a total of 14 items were removed. Furthermore, conducting data in sub-sample 2, the structure of the model was evaluated. The initial CFA indicates the model did not fit and modifications are needed. The structure of the model met the goodness of fit index in the third modification.

The final version of MLSS comprises five constructs as family, friends, campus, environment, and self, and it is in line with previous studies [41], [42]. Each construct met the criteria of AVE and composite reliability. Factor loading for each item was satisfactory, with the highest value on the item "doing fun things with parents" and the item "wish to live somewhere else". These two items are the strongest in explaining life satisfaction among Indonesian college students. The research by Izzo *et al.* [43] found that family is a strong predictor of happiness among adolescents. Further, the research by Soares *et al.* [44] also found that positive communication in family and parental support are strong predictors of adolescents' life satisfaction. In line with previous studies, it is relevant that the item "doing fun things with parents" strongly explains college students' life satisfaction in Indonesia.

The construct of MLSS shows a significant correlation and it indicates there is no coefficient correlation exceeds the square root of each AVE. Internal consistency in each construct indicates adequate and only the construct "family" indicates satisfactory. These findings line with the properties psychometric of MLSS in the Persian version [45] and the Turkish version [46]. Overall, a short-form self-report model of the Indonesian version of MLSS is adequate and reliable enough to assess the satisfaction of Indonesian college students in five life domains. These findings also are in line with a previous study by Pittman *et al.* [47] which found a brief model of MLSS is more suggested in diverse samples of adolescents.

The findings of this study are similar to several previous studies with evaluate the psychometric properties of MLSS in different countries and cross cultures. For example, the study by Schnettler *et al.* [25] Chilean version of MLSS (30 items) for college students confirms the five-factor structure (CFA) and the domain of "friends" having the highest score in both AVE=.56 and CR=.88. In our findings, the highest score of both CR=.80 and AVE=.64 in the domain of "friends" and "self" respectively. furthermore, in the study by Jovanovic and Zuljevic [48], Serbian version of MLSS (25 items) for high school students also confirms the five-factor structure (EFA and CFA) with a factor loading range from .41 to .86. In our findings, a factor

loading range from .52 to .80. Based on previous study, Indonesian version of MLSS explain measurement tools which robust psychometric properties.

The present study significantly contributes to related literature on measuring life satisfaction bottom-up theory-based for students, specifically in higher education. By emphasizing the factor structure of MLSS, this study broadens the understanding within a cultural context, particularly relevant for developing countries. Practical implications, this scale offers a trustworthy measurement tool that can be effectively employed by counselors in higher education, enabling more focused diagnostic and intervention efforts. Researchers in this field can also use these measurement tools to collect accurate data from participants. In the context of personal development, policy makers in higher education will get accurate data about the experiences of students in their academic activities so that the academic programs offered are more adaptive. It will help navigate risk factors related to mental health among college students that can affect their overall performance and activities on campus.

This study has several limitations as the sample is restricted to college students from one region in Indonesia, the cross-sectional design of data collection may introduce bias, and the psychometric evaluations conducted were limited to the validity of content, construct, convergent, and discriminant. Therefore, future research should aim to broaden the sample to include college students from various regions in Indonesia, enhancing the generalizability of the results. Additionally, longitudinal studies are recommended to assess the stability of the Indonesian version of the MLSS over time, ensuring the tool's consistency in measuring multidimensional life satisfaction among college students. To further strengthen the validity of the Indonesian version of MLSS, future research should also consider correlating this instrument with other established standardized measures.

## 5. CONCLUSION

This study demonstrated the psychometric properties of the MLSS among Indonesian college students, establishing a consistent factor structure and good reliability. The five dimensions: family, friends, campus, environment, and self, represent key areas related to life satisfaction in this population. Both EFA and CFA confirm the overall validity such as content, construct, convergent, and discriminant. The coefficient reliability is explained well enough. Despite some limitations, this study contributes meaningfully to the existing literature on life satisfaction providing a reliable and culturally appropriate measurement tool for the Indonesian college student population. Future research should broaden the sample, test longitudinal stability, and enhance the validity of the Indonesian MLSS through correlations with standardized measures.

## ACKNOWLEDGMENTS

The authors would like to thank and appreciate all those who have contributed to the research including the research team, respondents, department coordinators, and leaders at Universitas Nusa Cendana.

## FUNDING INFORMATION

This study gets financial support for article publication fees with Grant No. 19/KU/2024 from the Faculty of Teacher Training and Educational Sciences – Universitas Nusa Cendana.

## AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

| Name of Author | C | M | So | Va | Fo | I | R | D | O | E | Vi | Su | P | Fu |
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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

## CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

## INFORMED CONSENT

All participants in this study provided written informed consent before their involvement. They were given a comprehensive explanation of the study's objectives, procedures, potential risks and benefits, measures to ensure the confidentiality of their data, and their right to decline or withdraw from the study at any stage without any negative consequences. Participation was entirely voluntary, and no form of coercion or undue influence was involved.

## ETHICAL APPROVAL

All procedures involving human participants were conducted in accordance with applicable national regulations and institutional policies, and adhered to the ethical principles outlined in the Declaration of Helsinki. The study protocol received ethical approval from the Research Ethics Committee of the Faculty of Public Health, Universitas Nusa Cendana (Approval No. 2023036-KEPK).

## DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author [IPAA], upon reasonable request.

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