# The Lifelong Learning Scale Through an Indonesian Lens: An Adaptation and Validation Study

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**ABSTRACT**: This study aims to adapt and validate the Wielkiewicz's Lifelong Learning Scale (LLS) to ensure its suitability for measuring lifelong learning tendencies among university students in Indonesia. The participants in this study consisted of 808 university students. The adaptation process followed the cultural adaptation guidelines proposed by Beaton et al. (2000), which included forward translation, synthesis, backward translation, expert committee, and test of the pre-final version. Data analysis involved content validity assessment, item discrimination analysis, reliability testing, and confirmatory factor analysis (CFA). The results indicated that Aiken's V values ranged from 0.80 to 0.93, item discrimination indices varied between 0.314 and 0.652, and reliability was $\alpha = 0.866$. The confirmatory factor analysis yielded $\chi^2 = 319$, RMSEA = 0.056, SRMR = 0.038, CFI = 0.930, and NFI = 0.905, indicating that the model fit the empirical data. Based on these findings, this measurement instrument is deemed valid and can be used to assess lifelong learning tendencies among university students in Indonesia.

## INTRODUCTION

A group of individuals engaged in the learning process within a higher education institution is commonly referred to as students (Badan Pengembangan dan Pembinaan Bahasa [BPPB], 2016; Sagita et al., 2017). According to Chen (2019), students' responsibilities extend beyond academic pursuits to include developing self-identity, enhancing moral values, and strengthening social cohesion. To achieve success, students must cultivate independence in their learning process and various other aspects of their personal and professional development (Juita et al., 2021). Independence and responsibility among students contribute to both academic and career success, ultimately fostering national development (Li & Gao, 2020).

National development is inextricably linked to technological advancements. The current era of technological progress, often referred to as the Society 5.0 era or the Era of Openness, necessitates the integration of Artificial Intelligence (AI), the Internet of Things (IoT), and other emerging technologies to address challenges across various sectors (Indarta et al., 2022). The demands of this era emphasize the need for highly skilled human resources to enhance productivity and sustain progress, ensuring that Indonesia remains competitive on the global stage (Hasibuan & Prastowo, 2019). High-quality human resources development begins with education, encompassing the learning processes within families, play environments, and formal schooling. Learning is generally defined as acquiring information or skills (De Houwer & Hughes, 2023). However, education confined to a specific timeframe is insufficient to cultivate high-quality human resources. In this context, lifelong learning emerges as an educational philosophy that encourages continuous

learning and a strategic necessity for navigating rapid globalization (Tabancalı & Öngel, 2022). Given the rapid evolution of technology and the shifting demands of the job market, lifelong learning is essential for students (Casap, 2019; Chaisongkram, 2020). As society grows increasingly complex due to technological advancements, lifelong learning is not merely advantageous but crucial for students' self-development, enabling them to compete in the workforce and achieve long-term success (Casap, 2019).

Several studies conducted in Indonesia indicate that the tendency for lifelong learning among high school and university students remains relatively low (Humaira' & Hurriyah, 2018; Karneli et al., 2023; Palupi et al., 2022; Salleh et al., 2019). This phenomenon has been attributed to several factors, including a lack of motivation for self-directed learning, the misuse of information technology for non-educational purposes, economic constraints and the high cost of education, an unmotivated peer environment, and insufficient family support (Abdullah & Gani, 2022; Agustina & Afriana, 2018; Lestari et al., 2020; Salleh et al., 2020).

Wielkiewicz and Meuwissen (2014) define lifelong learning as a continuous process of acquiring knowledge and skills, emphasizing an individual's motivation to remain engaged in their intellectual and professional development. This learning process extends beyond formal education, encompassing experiences that contribute to personal, professional, and social growth. Lifelong learning is also formally recognized in the Ketetapan MPR Nomor IV/MPR/1978 Tentang Garis-Garis Besar Haluan Negara (1978), which underscores the necessity of lifelong education in schools, families, and communities as a shared responsibility between the government, society, and families.

In an era of rapid globalization, continuous skill enhancement through lifelong learning ensures that individuals remain competent in the workforce (Bizon & Istrate, 2017). Individuals with a strong orientation toward lifelong learning benefit in numerous ways, including assessing and determining their own learning needs, recognising the significance of continuous learning and maintaining an open mindset toward new knowledge and experiences (Tekkol & Demirel, 2022).

Several researchers have developed various measurement instruments for lifelong learning. The Effective Lifelong Learning Inventory (ELLI), developed by Crick and Yu (2008), consists of seven dimensions (changing and learning, critical curiosity, meaning-making, dependence and fragility, creativity, learning relationships, and strategic awareness) and has been validated among individuals aged 7 to 19 years, with reliability scores ranging from 0.75 to 0.82. The Lifelong Learning Tendencies Scale, designed by Coşkun and Demirel (2010), comprises four factors: motivation, perseverance, lack of regulation in learning, and lack of curiosity, with a reliability score of 0.860 across 27 items administered to first-year and final-year university students. Additionally, Kirby et al. (2010) developed the Lifelong Learning Scale, which measures five characteristics (goal setting, application of knowledge and skills, self-direction and evaluation, information-seeking, and adaptive learning strategies) across 14 items, with a reliability score 0.71. Wielkiewicz and Meuwissen (2014) developed the Lifelong Learning Scale (LLS), comprising 16 items with a reliability score of 0.915, which has been tested among university students. Usta (2023) introduced the Lifelong Learning Motivation Scale (LLMS), which consists of 11 items categorized into three lifelong learning factors, demonstrating a reliability score 0.646.

Among these instruments, the LLS (Wielkiewicz & Meuwissen, 2014) and LLMS (Usta, 2023) are among the most recent and relevant for assessing lifelong learning among university students. This study focuses on adapting the LLS developed by Wielkiewicz and Meuwissen (2014), as it demonstrates high reliability ($\alpha = 0.915$) and item discrimination values ranging from 0.553 to 0.752, making it suitable for evaluating the target population and phenomena under investigation. Furthermore, (Wielkiewicz & Meuwissen, 2014) assert that this scale can effectively measure lifelong learning tendencies among university students, working graduates, and individuals without higher education experience.

The Lifelong Learning Scale utilized in this study originated from Wielkiewicz et al. (2005), who incorporated select items from the "Academic Ethics" scale developed by Rau and Durand (2000). These items assess students' academic attitudes and behaviours, particularly regarding ethical conduct. Within lifelong learning, these items reflect the sustained commitment to academic integrity (Wielkiewicz et al., 2005). Additionally, Wielkiewicz et al. (2005) introduced items to evaluate students' interest in learning, extracurricular activities, reading habits beyond coursework, the significance of post-graduation learning, and engagement in classroom activities.

In Wielkiewicz and Meuwissen (2014) study, the scale underwent revision and validation, resulting in a 16-item instrument for measuring lifelong learning. This research, involving 575 university students (179 first-year, 135 second-year, 118 third-year, 136 fourth-year, and seven postgraduate students) aged 18 to 55 years, yielded corrected item-total correlations ranging from 0.553 to 0.752, with a Cronbach's alpha of 0.915, indicating a high level of internal consistency.

The LLS has been adapted into Turkish by Boztepe and Demirtaş (2016), involving 339 university students. The results of this study indicated that after testing the 16 items in the scale, the corrected item-total correlation values ranged from 0.39 to 0.57, with a Cronbach's Alpha of 0.85. Additionally, Confirmatory Factor Analysis (CFA) confirmed that the scale is unidimensional, meaning it measures a single core dimension: lifelong learning. Overall, the findings demonstrated that this measurement construct is reliable for assessing lifelong learning tendencies among university students in Turkey. Furthermore, ENGİN et al. (2017) also adapted the LLS into Turkish to examine the validity and reliability of the scale within the Turkish context. The first step in this adaptation process involved translating the items into Turkish by a language expert, followed by an evaluation by five other language experts to ensure accuracy and appropriateness. The translated version was then reviewed by five education experts, and a readability test was conducted with 25 undergraduate students to assess their comprehension of the scale. After undergoing these processes, the finalized scale was administered to 727 university students, yielding a reliability coefficient of 0.936. In the CFA analysis, the component matrix revealed that item 1 had a factor loading below 0.30, leading to its elimination from the scale as it was deemed unsuitable for measuring lifelong learning tendencies in this context. Consequently, only 15 items were retained as valid and reliable indicators of lifelong learning in Turkey. Additionally, the scale has been adapted into Portuguese by Matos et al. (2024) for a study involving 151 individuals aged 55 and above, with 13 items deemed valid. As far as the researchers have explored, no prior adaptation of the LLS into Indonesian has been found. Quantitative studies on lifelong learning in Indonesia (2014–2024) still predominantly rely on foreign measurement scales (Hidayat et al., 2022; Salleh et al., 2019, 2020), manually translated by researchers. Consequently, this study aims to adapt the LLS to Indonesian to facilitate further research, measurement, and intervention efforts related to lifelong learning in Indonesia.

### Study Aim

This study aims to conducting a psychometric property assessment of the LLS to ensure its validity and reliability as a robust measure of lifelong learning tendencies among university students in Indonesia.

## METHODS

### Design

This study was conducted through two main procedures: scale adaptation and psychometric property assessment. The adaptation process consisted of several stages, including the preparation stage, forward translation, synthesis, backward translation, and backward translation review. Subsequently, the study proceeded with the psychometric property assessment, which involved validity and reliability testing of the scale after the adaptation process.

**Participants**

This study involved 808 university students across Indonesia, utilizing a non-probability sampling technique, precisely convenience or accidental sampling. The demographic data collected in this study included gender, age, current level of education, university of origin, semester, and place of origin.

**Adaptation Procedure**

The scale adaptation process in this study followed the guidelines proposed by Beaton et al. (2000), which consist of five stages:

**Forward translation.** This stage involves translating the original scale from English into the target language (Indonesian). The translation process was conducted by two experts: one specializing in psychology and the other in English language studies.

**Synthesis.** At this stage, the two independent translations were synthesized into a single version. This process included selecting appropriate wording and making necessary linguistic adjustments to ensure clarity and accuracy. Two experts with a master's degree in psychology were involved in this phase.

**Backward translation.** The synthesized version of the scale was translated back into English to ensure conceptual equivalence between the adapted and the original scale. This stage involved three experts specializing in language and psychology.

**Expert committee review.** This stage involved a review conducted by a panel of five experts in psychology, including two with a doctoral degree and three with a master's degree. The purpose of this review was to assess the appropriateness of the adapted scale's items in measuring the intended construct (lifelong learning), ensure semantic equivalence with the original scale, and evaluate the cultural relevance of the adapted scale within the Indonesian context.

**Testing of the pre-final version.** The final pre-test aimed to evaluate the target participants' comprehension of the scale items. A total of 41 university students participated in this phase, where they reviewed and assessed the clarity of the instructions and the ease of understanding each item in the scale.

**Questionnaire**

The scale utilized in this study is the LLS, developed by Wielkiewicz and Meuwissen (2014). This unidimensional scale consists of 16 items that measure lifelong learning tendencies. The adapted version of the scale retains the original five response options: 1 = Never (*Tidak pernah*), 2 = Rarely (*Jarang*), 3 = Sometimes (*Kadang-kadang*), 4 = Often (*Sering*), and 5 = Always or Every Day (*Selalu atau setiap hari*). The adapted scale was then distributed to university students across Indonesia through various social media platforms over 10 days (December 3–December 12, 2024).

**Data Analysis**

Content validity will be assessed based on the evaluations of five experts. The evaluation will be conducted using a rating scale designed by the researchers, where experts will rate each item on a scale ranging from 1 (not relevant) to 4 (highly relevant). The standard for Aiken's V in this study, indicating that an item is valid, is set at 0.80, based on the number of raters (five experts) and the number of rating categories (Aiken, 1985). The discrimination power of each item will be assessed using item-rest correlation values obtained through statistical analysis in JAMOVI version 2.6.17. If an item's item-rest correlation exceeds 0.30, it will be considered to have good discrimination power (Azwar, 2022). The reliability analysis will be conducted using JAMOVI version 2.6.17, with Cronbach's Alpha ($\alpha$) as the reliability coefficient. If $\alpha$ > 0.70, the adapted scale items will be considered reliable and suitable for measuring individuals' lifelong learning tendencies (Bandur &

Budiastuti, 2018). The confirmatory factor analysis (CFA) will be performed using JAMOVI version 2.6.17. Model fit will be evaluated based on the following criteria: RMSEA < 0.06, CFI > 0.90, SRMR < 0.08, $\chi^2/df$ < 3.0, and NFI > 0.90 (Costa & Sarmento, 2019). Additionally, factor loadings will be examined, with a threshold of > 0.40 indicating that an item contributes significantly to the construct (Yong & Pearce, 2013).

Table 1. Participants Demographic (n = 808)

| ***Participants Demographic*** | | ***Frequency*** | ***Percentage*** |
|---|---|---|---|
| Gender | Male | 294 | 36.38% |
| | Female | 514 | 63.61% |
| | Total | 808 | 100% |
| Age | <18 years | 5 | 0.62% |
| | 18 – 21 years | 555 | 68.69% |
| | 22 – 25 years | 231 | 28.59% |
| | >25 years | 17 | 2.1% |
| | Total | 808 | 100% |
| Educational Level | Diploma (D1 – D4) | 21 | 2.6% |
| | Bachelor | 745 | 92.2% |
| | Master | 37 | 4.58% |
| | Doctoral | 1 | 0.12% |
| | Professional Psychology Education | 4 | 0.5% |
| | Total | 808 | 100% |
| Semester | <2 semester | 87 | 10.77% |
| | 2 – 4 semester | 305 | 37.75% |
| | 5 – 8 semester | 378 | 46.78% |
| | >8 semester | 38 | 4.7% |
| | Total | 808 | 100% |
| Area of Origin | Sumatera | 92 | 11.39% |
| | Borneo | 76 | 9.41% |
| | Java | 429 | 53.1% |
| | Southeast Nusa Islands | 40 | 4.95% |
| | Sulawesi | 83 | 10.27% |
| | Maluku Islands | 72 | 8.91% |
| | Papua | 16 | 1.98% |

## RESULTS AND DISCUSSION

### Results

#### *Participants Demographics*

The study involved 808 students from various regions across Indonesia. Regarding gender distribution, 63.61% of the participants were female (n = 514), while 36.38% were male (n = 294). Most participants (68.69%, n = 555) were between 18 and 21, while 28.59% (n = 231) were in the 22 to 25 age group. Regarding educational level, most participants (92.2%, n = 745) were undergraduate students (Bachelor's/S1), while 4.58% (n = 37) were graduate students (Master's/S2), with the remaining participants enrolled in Doctoral (S3), Professional Psychology Education, or Diploma programs. Regarding their academic progress, 48.78% (n = 378) were in their 5th to 8th semester, and 37.75% (n = 305) were in their 2nd to 4th semester. Participants came from diverse regions, with 53.1% (n = 429) originating from Java, followed by 11.39% (n = 92) from Sumatera, 10.27% (n = 83) from Sulawesi, 9.41% (n = 76) from Kalimantan, 8.91% (n = 72) from the Maluku Islands, 4.95% (n = 40) from the Nusa Tenggara Islands, and 1.98% (n = 16) from Papua. This distribution illustrates the broad geographic representation of students participating in the study (See Table 1).

### *Content Validity*

The content validity test in this study involved five experts in psychology. The content validity assessment focused on the relevance of each item to the measured construct and the clarity of each statement. The experts evaluated the content validity based on four rating criteria: 1 = Not clear and not relevant, 2 = Fairly straightforward and relevant, 3 = Clear and relevant, and 4 = Very clear and relevant

The results of the content validity assessment by the five experts were then analyzed using Aiken's V coefficient. The calculated content validity values ranged between 0.80 and 0.93 across all 16 items. According to Aiken (1985), the validity coefficient standard for a content validity test involving five experts is 0.80. Therefore, all items in the adapted scale are valid and fall within the very high validity category. The results of the content validity test are presented in the table below.

Table 2. Content Validity

| *No* | *Items* | *Value* | *Validity* |
|---|---|---|---|
| 1 | Saya menikmati tantangan intelektual yang mencakup berpikir dan menganalisis suatu hal | 0,80 | Valid |
| 2 | Saya membaca untuk mendapatkan pengetahuan baru | 0,93 | Valid |
| 3 | Saya berdiskusi dengan orang lain tentang hal-hal baru yang saya pelajari | 0,93 | Valid |
| 4 | Saya suka menganalisis masalah dan isu yang ditemui secara mendalam | 0,93 | Valid |
| 5 | Saya memandang diri saya sebagai seorang yang terus-menerus belajar sepanjang hidup | 0,80 | Valid |
| 6 | Membaca adalah aktivitas rutin yang saya lakukan | 0,87 | Valid |
| 7 | Menulis adalah aktivitas rutin yang saya lakukan | 0,87 | Valid |
| 8 | Saya adalah pembelajar yang termotivasi dari diri sendiri | 0,80 | Valid |
| 9 | Saya berkunjung ke berbagai perpustakaan dan toko buku untuk mencari buku dan majalah yang menarik | 0,93 | Valid |
| 10 | Saya berpartisipasi aktif dalam berbagai kegiatan diskusi di ruang kelas, lingkungan pekerjaan atau ketika bersama teman-teman | 0,93 | Valid |
| 11 | Saya melibatkan kemampuan berpikir kritis dalam setiap aktivitas yang saya lakukan | 0,80 | Valid |
| 12 | Membaca adalah kegiatan yang menyenangkan sekaligus menghibur bagi saya | 0,93 | Valid |
| 13 | Membaca adalah kegiatan yang menyenangkan sekaligus menghibur bagi saya | 0,87 | Valid |
| 14 | Saya menekuni berbagai hal yang menarik untuk saya pelajari | 0,80 | Valid |
| 15 | Saya senang mempelajari hal-hal baru | 0,87 | Valid |
| 16 | Saya banyak membaca hal-hal yang tidak terkait dengan pembelajaran di kelas maupun pekerjaan saya | 0,93 | Valid |

### *Descriptive Statistics*

The descriptive statistical results of the 16 adapted statement items indicate that the mean values range from 3.78 to 4.41, with standard deviations between 0.708 and 1.183. Additionally, the skewness values of these 16 items range from -0.568 to -1.664, while the kurtosis values range from -1.078 to 1.969. Kangwanrattanakul and Krägeloh (2024) stated in their study that skewness values within the range of -1.96 to +1.96 significantly indicate that the data can be classified as normally distributed when the sample size exceeds 300. Furthermore, Sovey et al. (2022) explained that kurtosis values within the range of -7 to +7 also indicate a normal data distribution. Therefore, it can be concluded that the 808 data points in this study are normally distributed. A more detailed statistical description is presented in the table 3.

### *Items Discrimination Power*

The item discrimination analysis was conducted in a single round, with no items being eliminated. The item-rest correlation values ranged from 0.314 to 0.652, meeting the criteria for well-functioning items, as the standard threshold for acceptable item discrimination is ≥0.30 (Azwar, 2022). These results indicate that all items in the adapted LLS effectively differentiate participants based on their lifelong learning tendencies (See Table 3).

### *Reliability*

A scale is considered reliable if it meets the threshold of Cronbach's Alpha (α) ≥ 0.70 (Budiastuti & Bandur, 2018). The results of this reliability analysis indicate that the adapted LLS demonstrates high internal consistency, confirming its suitability for measuring lifelong learning tendencies among university students in Indonesia. The reliability test results indicate a Cronbach's Alpha value of 0.866, which exceeds the 0.70 threshold. This finding suggests that the adapted LLS demonstrates high reliability, confirming that the scale is a valid and dependable instrument for measuring lifelong learning tendencies among university students in Indonesia.

Table 3. Descriptive Statistics

| *Items* | *Mean* | *SD* | *Skewness* | *Kurtosis* | *correlation* | *Loadings* |
|---|---|---|---|---|---|---|
| 1 | 4,27 | 0,708 | -0,698 | 0,293 | 0.575 | 0,607 |
| 2 | 4,28 | 0,791 | -1,239 | 1,6515 | 0.491 | 0,515 |
| 3 | 4,41 | 0,898 | -1,664 | 1,9691 | 0.439 | 0,459 |
| 4 | 4,04 | 0,829 | -0,568 | -0,0703 | 0.547 | 0,577 |
| 5 | 4,15 | 0,888 | -1,010 | 0,7616 | 0.549 | 0,603 |
| 6 | 3,83 | 1,046 | -0,711 | -0,166 | 0.652 | 0,718 |
| 7 | 3,80 | 1,128 | -0,798 | -0,2101 | 0.648 | 0,712 |
| 8 | 4,09 | 0,856 | -0,872 | 0,6009 | 0.550 | 0,588 |
| 9 | 3,78 | 1,149 | -0,807 | -0,2445 | 0.609 | 0,670 |
| 10 | 4,17 | 0,828 | -1,059 | 1,3619 | 0.452 | 0,476 |
| 11 | 4,23 | 0,758 | -0,902 | 1,0195 | 0.505 | 0,536 |
| 12 | 4,20 | 0,856 | -1,020 | 0,8060 | 0.431 | 0,485 |
| 13 | 3,87 | 1,183 | -0,662 | -1,0788 | 0.314 | 0,330 |
| 14 | 4,20 | 0,873 | -1,027 | 0,4479 | 0.438 | 0,460 |
| 15 | 4,19 | 0,921 | -1,199 | 0,7320 | 0.397 | 0,429 |
| 16 | 4,16 | 0,821 | -0,996 | 1,1707 | 0.466 | 0,500 |

### *Confirmatory Factor Analysis*

**Kaiser-Meyer-Olkin Measure of Sampling Adequacy Test**. Confirmatory factor analysis begins by examining the KMO Test results, which aim to assess sample adequacy and data suitability before proceeding to the confirmatory factor analysis stage. The test results show that the KMO value for the 16 items in this study is 0.931, which meets the KMO standard value of >0.50 (Kaiser, 1974). Therefore, the data obtained in this study is suitable for further analysis in the confirmatory factor analysis stage.

**Bartlett's Test of Sphericity**. Bartlett's Test of Sphericity results show a significance value of <0.001, which meets Bartlett's Test of Sphericity standard value of <0.05 (Purwanto, 2018). Therefore, the data obtained in this study is suitable for testing in the confirmatory factor analysis.

**Factor Loadings**. Based on the results of the confirmatory factor analysis, the factor loading values range from 0.330 to 0.718. A detailed description of the factor loading values for each statement item is presented in the table 3. The table 3 shows that the factor loading value for item number 13 (0.330) is below the threshold of 0.40. This indicates that item 13 has a weak correlation with the measured construct (Yong & Pearce, 2013). Therefore, item 13 should be removed and excluded from further analysis. Figure 1 is the path diagram illustrating the factor loading values for each statement item.

### Model Fit

The statistical test results show a $\chi^2$ value greater than 3, precisely 319. Additionally, the RMSEA value is 0.056, which is less than 0.06; the SRMR is 0.038, which is less than 0.08; the CFI is 0.93, which is greater than 0.90; and the NFI is 0.905, which is greater than 0.90. These results

indicate that the adapted scale demonstrates a good Goodness of Fit (GOF) (Costa & Sarmento, 2019) and can be classified as an "acceptable fit" according to Matsunaga (2010).

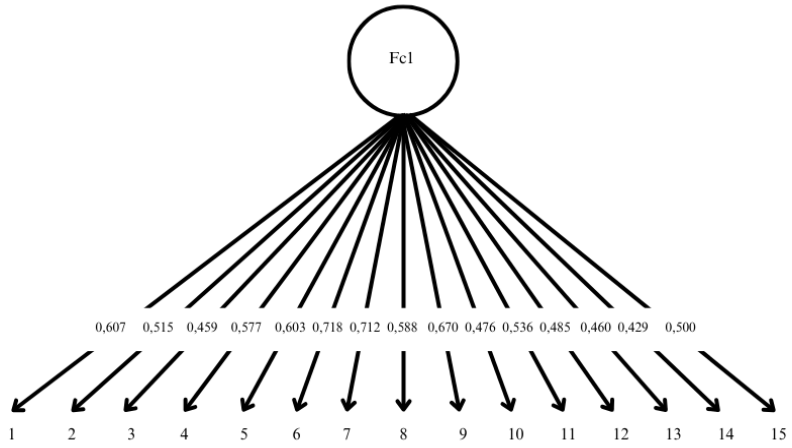


Figure 1. Path Diagram

Table 6. Model Fit

| $\chi^2$ | *RMSEA* | *SRMR* | *CFI* | *NFI* |
|---|---|---|---|---|
| 319 | 0,0561 | 0,0386 | 0,930 | 0,905 |

**Discussion**

A total of 808 data points were successfully collected and analyzed in this study. The item discrimination power test or item selection test was conducted first to analyze and select the items that statistically function similarly to the measured construct (Azwar, 2022). In this case, the item discrimination power test in this study was conducted to select the items from the adapted scale that still measure the same construct as lifelong learning.

The item discrimination power test results show that the item-rest correlations for the 16 items in the adapted scale range from 0.314 to 0.652. Based on the standard for good item values, which is ≥0.30, as proposed by Azwar (2022), it can be concluded that the 16 items in this study have good item discrimination power and can be used to measure the tendency for lifelong learning in students. The Turkish version of LLS, adapted by Boztepe and Demirtaş (2016), shows item-total correlation values ranging from 0.39 to 0.60, similar to the Indonesian version. Additionally, the adaptation of the Turkish version of LLS developed by ENGİN et al. (2017) shows slightly higher item correlations (0.385–0.749) than the previous Indonesian and Turkish versions.

A reliability test was also conducted in this study to assess the consistency and stability of the measurement tool (Budiastuti & Bandur, 2018) and to test the extent to which the adapted measurement tool can be trusted (Azwar, 2022). The reliability value for the 16 items in the adapted scale in this study was 0.866. In contrast, the Turkish versions studied by Boztepe and Demirtaş (2016) and ENGİN et al. (2017) showed reliability values of 0.78 and 0.93, respectively. Azwar (2022) explains that the reliability coefficient ranges from 0 to 1, with scales whose reliability values are closer to 1 being considered better. In line with this, Budiastuti and Bandur (2018) also explain that a reliability coefficient greater than 0.70 ($\alpha>0.70$) is categorized as acceptable reliability, $\alpha>0.80$ as good reliability, $\alpha>0.90$ as excellent reliability, and one as perfect reliability. Therefore, this scale can be considered reliable and classified as having good reliability ($\alpha = 0.866$).

Content and Construct Validity

Content validity was conducted in this study to ensure that the LLS adapted into Indonesian consistently measures the tendency for lifelong learning among students, similar to the original scale. Furthermore, Ingarianti et al. (2022) explain that content validity results can indicate how well

the items in the scale represent the construct being measured. Content validity in this study was carried out by involving five experts (two PhD psychologists and three Master's-level psychologists) and was analyzed using Aiken's V method. The results of the content validity test in this study show Aiken's V values for the 16 items ranging from 0.80 to 0.93, indicating that all items in the Indonesian version of LLS are valid (Aiken, 1985).

Confirmatory factor analysis (CFA) was conducted as part of construct validity to test whether the measurement results through the items correlate or have a high relationship with the theoretical construct underlying the measurement tool (Azwar, 2022). CFA examines whether a variable can be accurately represented by several dimensions or factors that constitute the variable (Purwanto, 2018). Azwar (2022) explains that during the CFA process, this analysis tests the consistency of grouping the items into the factors formulated in prior research.

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy Test and Bartlett's Test of Sphericity are prerequisites to be met before performing CFA. These tests are required because the KMO Test and Bartlett's Test of Sphericity assess the suitability of the data before proceeding to CFA (Budiastuti & Bandur, 2018). The KMO value and significance from Bartlett's Test of Sphericity in this study showed favorable results, with KMO = 0.931 (>0.70) and Bartlett's Test significance <0.001 (<0.05), thus confirming that CFA can be performed on the adapted scale (Kaiser, 1974; Purwanto, 2018).

The factor loadings table from the analysis indicates that the factor loading values for each statement item converge into a single factor, confirming that the adapted scale is unidimensional, meaning it measures only one factor. The correlation coefficients of the 16 statement items in the factor loadings range from 0.330 to 0.718 ($\lambda > 0.40$). One item must be eliminated from the adapted scale, specifically item number 13, which states, "Reading is an enjoyable and entertaining activity for me" with a factor loading of 0.330 (< 0.40). The low correlation between item 13 and the lifelong learning construct may be due to students primarily reading for academic purposes rather than for enjoyment, making this statement less relevant to university students in Indonesia. The remaining 15 statement items have factor loadings ranging from 0.459 to 0.718 ($\lambda > 0.40$), indicating a strong correlation with the lifelong learning construct (Yong & Pearce, 2013). The highest factor loading is found in item number 6 ($\lambda = 0.718$), which states, "Reading is a routine activity that I engage in." This finding aligns with previous research by Wielkiewicz & Meuwissen (2014), which highlights that reading is one of the most common forms of learning among individuals.

In the adaptation performed by Boztepe and Demirtaş (2016), the items with the highest factor loading were item 9 (reading), and items 10 and 11 (interest and engagement). Meanwhile, ENGİN et al. (2017) found that the highest factor loading was for item 14, which discusses the interest in learning new things. This suggests that individual learning methods are not limited to specific activities but can vary depending on an individual's abilities and interests (Khalqi et al., 2023; Rahman, 2020; Saefiana et al., 2022; Zagoto et al., 2019).

The CFA results in this study show a sizeable $\chi^2$ value of 319. The large sample size influences this significant $\chi^2$ value because $\chi^2$ calculations involve multiplying the minimal function (Fmin) by the sample size (N), and as the sample size increases, the $\chi^2$ value increases as well (Umar & Nisa, 2020). Therefore, the Goodness of Fit (GOF) assessment should not rely solely on the $\chi^2$ value but also consider other CFA indicators such as RMSEA, SRMR, CFI, and NFI (Costa & Sarmento, 2019). Each of the indicators in this study showed favorable values (RMSEA = 0.056, SRMR = 0.038, CFI = 0.930, and NFI = 0.905), meeting the standards (RMSEA <0.06, SRMR <0.08, CFI >0.90, and NFI >0.90) outlined by Costa and Sarmento (2019), thus concluding that this scale has a good Goodness of Fit (GOF) and can be classified as an acceptable fit (Costa & Sarmento, 2019; Matsunaga, 2010).

Item Response Format and Average Scores of LLS in Indonesia

As with the original scale, the Indonesian version of LLS also measures students' tendency to learn lifelong. In the original scale, the response format used is a Likert scale with five response

choices: never (1), rarely (2), sometimes (3), often (4), and always or daily (5). Therefore, the response format for items in this study also uses a Likert scale with five response options: never (1), rarely (2), sometimes (3), often (4), and always or daily (5). Azwar (2022) explains that response options such as those used in this study are suitable for measuring the frequency and behaviour of individuals.

The Indonesian version of LLS testing results on 808 students across Indonesia show an average score of 62.05, with a minimum score of Xmin = 15 and a maximum score of Xmax = 75. This score indicates that the tendency for lifelong learning among students in Indonesia falls within the moderate category.

In accordance with the original scale's development purpose, the Indonesian version of LLS was also adapted to measure the tendency for lifelong learning among Indonesian students. The scale consists of 16 items with five response options (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always or daily) and can be completed in approximately 5 to 10 minutes. Scoring is performed by summing all the item scores and then dividing the total by the number of items (15). In general, a high score on the Indonesian version of the LLS indicates a strong tendency for lifelong learning, whereas a low score suggests a weaker tendency for lifelong learning.

**Implications**

This study highlights the importance of lifelong learning among university students in Indonesia. From a theoretical perspective, this study is expected to expand the reference materials on lifelong learning in Indonesia and serve as a valuable resource for various studies involving lifelong learning. Additionally, this research can contribute to the development of lifelong learning theory by identifying specific dimensions or aspects that may be more relevant or unique within the Indonesian context. From a practical perspective, the adapted and validated measurement tool can serve as a foundation for further in-depth research on the factors influencing lifelong learning motivation and behavior among university students. Additionally, this instrument is expected to be a valuable reference for other researchers seeking to develop similar tools for studies in psychology and education.

**Limitations and Further Research**

This study has several limitations that should be acknowledged. First, the validity tests were limited to content and construct validity, particularly confirmatory factor analysis. Future research should incorporate criterion validity testing to examine the scale's predictive ability concerning future behaviours and its correlation with relevant external criteria. Second, this study relied on self-reported data, which may introduce response biases, such as social desirability or self-perception errors. Future studies could complement self-reported data with objective behavioural assessments or qualitative methods to comprehensively understand lifelong learning tendencies.

Third, this study's sample consisted exclusively of university students in Indonesia, which may limit the generalizability of the findings. Future research could expand the sample to include individuals from different educational backgrounds, age groups, or cultural contexts to test the scale's applicability across diverse populations. Lastly, while this study focused on assessing the psychometric properties of the adapted scale, future research could explore its application in examining the relationship between lifelong learning tendencies and other psychological, educational, or socio-economic variables. Employing longitudinal designs could also provide insights into how lifelong learning tendencies develop over time and their long-term impact on academic and professional outcomes. By addressing these limitations, future research can further strengthen the validity, reliability, and applicability of the Lifelong Learning Scale, contributing to a more comprehensive understanding of lifelong learning behaviours.

## CONCLUSION

This study successfully developed the Indonesian version of the LLS, the Skala Pembelajaran Sepanjang Hayat. The scale underwent a rigorous cultural adaptation process, including forward translation, synthesis, backward translation, expert committee review, and pre-final version testing, ensuring its applicability for measuring lifelong learning tendencies among Indonesian university students. The content validity assessment confirmed that the Indonesian version of LLS is valid, with a high validity range (0.80 – 0.93). Additionally, the scale demonstrated good item discrimination (0.314 – 0.652), high reliability (α = 0.866), and confirmatory factor analysis results that meet established psychometric standards (RMSEA = 0.056, SRMR = 0.038, CFI = 0.93, and NFI = 0.905). These findings indicate that the Indonesian adaptation of LLS is a robust and reliable instrument for assessing lifelong learning tendencies in Indonesian university students.

## AUTHOR CONTRIBUTION STATEMENT

MCER and HASM agree to the final version of this article.

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