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The psychometric properties of interpersonal support evaluation list-short form (ISEL-16) on College Students

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ABSTRACT

The Interpersonal Support Evaluation List (ISEL) is an instrument for assessing perceived social support. It exists in both full and short forms, with the short version (ISEL-16) offering practical advantages in terms of efficiency for assessments and research. To date, there is no adapted version of the ISEL-16 available in Indonesian. This study aimed to adapt and validate the ISEL-16 for use in Indonesia through psychometric analysis. The adaptation process followed ITC guidelines, including obtaining permission, conducting back-to-back translations, evaluating language comparability and interpretability, and testing the instrument on a sample population. 292 active students were recruited using quota sampling. Validity and reliability were assessed using Confirmatory Factor Analysis (CFA) in AMOS 23. Results indicated that the ISEL-16 exhibits a good model fit with four factors: appraisal, tangible assets, belonging, and self-esteem. The findings confirm that the Indonesian version of the ISEL-16 is a valid and reliable measure of perceived students' social support. Theoretically, the adaptation reinforces the four-dimensional structure of social support previously established. Practically, it can be used to predict stress-related outcomes, such as crisis-related and academic stress, and is recommended for time- and resource-constrained research scenarios as well as for classical tests or exploratory studies.

Introduction

Social support encompasses a range of resources provided through interpersonal relationships. It is refers to the assistance individuals receive from their social networks (Cohen & Hoberman, 1983). Another scholar, Uchino (2004) defines it as the comfort, care, or assistance available from others, while Gottlieb and Bergen (2010) describe it as social resources offered by non-professionals within both formal support groups and informal settings. The American Psychological Association (2018) characterizes social support as providing assistance or comfort to others, typically to help them manage biological, psychological, or social stress. Collectively, these definitions highlight that social support serves as a crucial resource in interpersonal relationships, aiding individuals in coping with stress.

Research has consistently demonstrated the positive impact of social support on coping strategies. For instance, social support is associated with higher levels of gratitude, which can lead to positive life evaluations (Yunanto, 2020). It also encourages the adoption of

appropriate coping strategies (Widyasrini & Lestari, 2020) and positively influences self-esteem (Lestari & Fajar, 2020). Among individuals aged 15-25, higher perceived social support correlates with a greater tendency to engage in active coping strategies, as opposed to negative coping strategies (Mai et al., 2021). Conversely, the lack of social support is linked to adverse outcomes, including negative emotions, health issues, and symptoms of mental disorders. Research has shown that social support negatively correlates with stress (Ramania et al., 2019), depression (Grey et al., 2020; Qing & Li, 2021), loneliness (Zhang & Dong, 2022), poor sleep quality (Grey et al., 2020; Guo et al., 2022). Therefore, understanding individual perceptions of social support is essential for predicting their capacity to manage crises or stressors.

In educational settings, social support serves as a protective factor for students during times of crisis. For example, during the COVID-19 pandemic, higher levels of perceived social support were associated with lower anxiety levels and reduced impacts of the pandemic among participants aged 15-25 (Mai et al., 2021). Social support also mitigates the negative effects of other significant life stressors, such as divorce, bereavement, chronic illness, pregnancy, job loss, and excessive workload (Buchwald, 2017). Thus, social support provides substantial health and mental health benefits during periods of high stress.

Perceived social support during the early stages of university life is particularly beneficial for students' overall well-being and mental health (Adyani et al., 2019; Cobo-Rendón et al., 2020). College students with higher levels of social support are reported to have lower stress levels (McLean et al., 2022). Furthermore, Cage et al. (2021) found that perceptions of social support positively influence students' mental health during transitional periods in university life, such as entering college, adapting to new academic years, and preparing to leave the university environment.

Various instruments have been developed to measure social support, with the Interpersonal Support Evaluation List (ISEL) being particularly prominent due to its comprehensive representation of social support dimensions. Nick et al. (2018) identified four subtypes of social support—self-esteem or emotional support, social companionship, informational support, and instrumental support—that align closely with the subtypes proposed by (Cohen & Wills, 1985). Table 1 provides a comparison of available instruments for assessing perceptions of social support.

Table 1

Development of An Instrument for Perceptions of Social Support

No.	Instruments	Dimension	Psychometric Evidence
1	Social Support Questionnaire (SSQ) (Sarason et al., 1983)	Two parts: a list of people they can contact and rely on in certain situations and how satisfied they are with that social support	The internal reliability alpha coefficient α=0.97
2	Perceived Social Support Inventory (Procidano & Heller, 1983)	Support, information, and feedback	The internal reliability alpha coefficient α=0.90
3	Interpersonal Support Evaluation List (Cohen & Hoberman, 1983)	Appraisal, tangible, belonging, dan self-esteem	Total scale reliability ISEL-48 α=0.77 (appraisal α=0.77, tangible α=0.71, belonging α=0.75, dan self-esteem α =0.60)
4	Multidimensional Scale of Perceived Social Support (Zimet et al., 1988)	Multidimensional measurement of perceived social support from three main sources, family, friends, and significant other	Total scale reliability α=0.88. Significant Other α=0.91; Family α=0.87; and Friends α=0.85

Table 1
(Continued)

No.	Instruments	Dimension	Psychometric Evidence
5	Interview Schedule for Social Interaction (Undén & Orth-Gomér, 1989)	Availability of social integration (AVSI); Adequacy of social integration (ADSI); Availability of attachment (AVAT); Adequacy of attachment (ADAT)	Reliabilitas: AVSI (α=0.77), ADSI (α=0.86), AVAT (α=0.80), and ADAT (α=0.94)
6	Social Support Scale (Peeters et al., 1995)	Instrumental support, intimate support, dan rewarding companionship	Reliability of Instrumental α=0.80; Intimate α=0.77; and Rewarding α =0.76

The ISEL, originally developed by Cohen and Hoberman (1983) with an initial total of 48 items. , is widely used to measure perceptions of social support. The ISEL-48, the full version of the scale, consists of four dimensions: appraisal (perceived availability of someone to talk to), tangible (availability of material assistance), self-esteem (favorable self-comparison), and belonging (availability of people to engage with). The total scale reliability for ISEL-48 is 0.77, with subscale reliabilities ranging from 0.60 to 0.77.

ISEL has been used in research in various settings in Indonesia. The use of ISEL in various settings, for example, in health settings with tuberculosis patient participants (Saraswati & Purwandari, 2023); in forensic settings with child prisoner participants (Sukma & Panjaitan, 2019); in educational settings with participants from undergraduate nursing study program students (Aeni et al., 2023) and student members of student and student associations (Akerina & Wibowo, 2022); and in workplace settings with contract employee participant (Atmaja & Chusairi, 2022). Despite its broad applicability, the short version of ISEL (ISEL-16), which maintains the four-dimensional structure, has not been adapted or validated in the Indonesian context.

The ISEL-16, a shortened version used in large epidemiological studies such as the Atherosclerosis Risk in Communities (ARIC) study, includes social, psychological, and health assessment instruments (ARIC Investigators, 1989). The ISEL-SF was administered to 14,348 participants at visit two inspections in 1990-1993 (Payne et al., 2012). The shorter instrument was selected from the original ISEL instrument to reduce the survey time burden and practical management considerations for ARIC study participants.

The ISEL-SF consists of 16 items taken from the full ISEL scale. The items selected were those with the highest factor loadings in each of the four subscales from the original analysis of the complete ISEL instrument (Brookings & Bolton, 1988). Given the importance of assessing social support efficiently, the ISEL-16 offers a valuable tool for settings where time and resources are limited.

No studies have empirically evaluated the psychometric properties of the ISEL-16 in the Indonesian context, creating a critical gap in the availability of validated tools for assessing perceptions of social support in this population. Addressing this gap is essential, particularly for applications in educational and crisis settings, where efficient and reliable assessments of social support are needed.

This study seeks to adapt and validate the ISEL-16 for use in Indonesia, drawing on previous psychometric evidence established with European American and African American participants (Payne et al., 2012). this research aims to provide a validated, efficient scale that enhances the assessment of social support, thereby contributing to the broader field of psychometrics.

Method

Participants

The study involved active students enrolled in Diploma and Bachelor programs across various majors in Central Java. The total student population in this region is 644,683 (Pusdatin Kemenristekdikti, 2019). Based on Isaac and Michael's table (Sugiyono, 2011), a sample size of 270 students was determined as appropriate for this population. A convenience sampling technique was employed due to its practicality, allowing researchers to access participants easily (Golzar et al., 2022).

Participants were recruited through known contacts who had access to potential subjects and were reached via WhatsApp and Instagram. The data collection process utilized online questionnaires shared through these platforms. A total of 292 students participated, aged between 17 and 29 years (M = 20.33, SD = 1.61). Participant ages were categorized into two groups based on Santrock (2019) theory adolescence (17-21 years) and early adulthood (22-29 years). Table 2 provides detailed demographic information about the respondents.

Table 2
Participant Demographic Data

Category	Frequency (N=292)	Percentage
Gender		
Man	43	14.7%
Woman	249	85.3%
Age		
17-21	230	78.8%
22-29	62	21.2%
Campus cluster		
SU (State university)	122	41.8%
PU (Private university)	160	54.8%
CU (Civil service university)	10	3.4%
Educational level		
Diploma	90	69.2%
Bachelor	202	30.8%

Instrument

The Interpersonal Support Evaluation List (ISEL-16) was used to assess participants' perceptions of social support (Payne et al., 2012). ISEL-16 used in this study (Payne et al., 2012) is an abbreviated version of ISEL 48 developed by (Cohen & Hoberman, 1983), comprises 16 items and demonstrates a Cronbach's alpha value of 0.83. ISEL-16 evaluates four domains: appraisal, tangible assets, belonging, and self-esteem (Brookings & Bolton, 1988; Cohen & Hoberman, 1983; Payne et al., 2012). Each item is rated on a 4-point Likert scale: 0 = "definitely not appropriate," 1 = "likely not appropriate," 2 = "likely appropriate," and 3 = "definitely appropriate." Table 3 outlines the measurement scale and indicators used in the analysis before conducting the confirmatory factor analysis (CFA). ISEL-16 consists of 4 factors with 16 items before CFA analysis. Table 3 shows the blueprint of the measurement scale and explanation of indicators (Cohen & Hoberman, 1983; Cohen & Wills, 1985; Nick et al., 2018; Payne et al., 2012).

Table 3
Blueprint of ISEL-16 Before CFA

Factors	Indicators	Original Items*
Appraisal (AP)	Perceived willingness to discuss personal concerns or interests. Assistance in offering advice, sharing information or perspectives, and giving advice.	There really is no one who can give me an objective view of how I'm handling my problems (UF) When I need suggestions on how to deal with a personal problem, I know someone I can turn to (F) There is really no one I can trust to give me good financial advice (UF) There is at least one person I know whose advice I really trust (F)
Tangible Assets (TA)	Perceptions of the availability of material assistance. Examples include assistance with needed services, completing required tasks, and assistance with material resources.	6 (UF) If I were sick and needed someone (friend, family member, or acquaintance) to take me to the doctor, I would have trouble finding someone (UF) If I were sick, I could easily find someone to help me with my daily chores (F) If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, garden, etc.) (UF) It would be difficult to find someone who would lend me their car for a few hours (UF)
Belonging (BE)	Perceived availability to interact socially. Doing something or spending time with other people or expressions of inclusiveness.	When I feel lonely, there are several people I can talk to (F) I often meet or talk with family or friends (F) I feel like I am not always included by my circle of friends (UF) I don't often get invited to do things with others (UF)
Self-esteem (SE)	The perceived availability of others is in the form of positive feedback, with which the individual feels he is being compared well so that the individual can compare himself positively with others.	Most of my friends are more interesting than I am (UF) Most of my friends are more successful at making changes in their lives than I am (UF) I am more satisfied with my life than most people are with theirs (F) I have a hard time keeping pace with my friends (UF)

Note: *F=Favourable, UF=Unfavourable

Procedure

The adaptation process followed the International Test Commission (ITC) guidelines for translating and adapting tests (ITC, 2017). The stages included: (1) obtaining permission from the ISEL-16 developer, Thomas H. Mosley, via email; (2) ensuring adaptation considers linguistic, psychological, and cultural differences by selecting translators with relevant expertise; (3) forward translation (FT) was conducted by three independent translators, who were academics in psychology with experience living in countries where the instrument's original language is spoken.

The first two translators independently translated the instrument, and the third translator synthesized their versions into a final FT; (4) back translation (BT) involved three independent translators with qualifications in academia or professional experience, with English language certification and familiarity with the instrument's original language. The translators performed the BT independently, with the final BT being reviewed by an expert panel; (5) the final BT was reviewed by three English language experts to ensure linguistic comparabilityand interpretative equivalence (Sperber, 2004); and (6) conducting a large-scale field test to gather psychometric evidence.

Data Analysis

Psychometric evidence was evaluated using confirmatory factor analysis (CFA) to assess the internal structure. CFA was conducted to confirm the theoretical measurement model, examining how well the observed variables represented the underlying constructs (Hair et al., 2014). The model fit was evaluated using single equation modeling and global fit indices, including the Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Parsimonious Normal Fit Index (PNFI). These indices provide a comprehensive assessment of absolute fit, incremental fit, and parsimony fit (Ingarianti et al., 2019). Criteria for a good fit included GFI and CFI values greater than 0.9 and RMSEA values less than 0.08 (Schoot et al., 2012; Schreiber et al., 2006; Kline, 2023). TLI and PNFI range from 0 to 1, but models with a good fit have values closer to 1 (Hair et al., 2014; Schumacker & Lomax, 2010). The CFA was performed using AMOS 23 software.

Reliability was assessed using Cronbach's alpha and construct reliability (CR). Cronbach's alpha values between 0.70 and 0.90 indicate high reliability (Cohen et al., 2013; Hinton et al., 2004), with values above 0.70 considered acceptable (Bland & Altman, 1997). Reliability tests were conducted using IBM SPSS version 25. Construct reliability was calculated using the formula involving factor loadings and measurement error (Ghozali & Fuad, 2005):

$$\text{Construct Reliability} = \frac{(\sum \text{Standardized Loading})^2}{(\sum \text{Standardized Loading})^2 + (\sum \text{Measurement Error})}$$

Results

In the initial stage, the researcher asked permission from the ISEL-16 developer, Thomas H. Mosley, via email (tmosley@umc.edu) to adapt ISEL-16. The researcher received a reply to use the ISEL-16 instrument. In the second stage, the researcher looked for a forward-translation (FT) translator and FT synthesis as well as a back-translation (BT) translator and BT synthesis according to the specified criteria. The results of the FT translator search show the researcher got two FT translators, namely AKP as FT1 (a psychology academic with an IELTS score of 8 and experience living in Australia and England) and SR as FT2 (an academic, TOEFL score of 100, and experience living in the United States). FT synthesis was carried out by a psychology academic who had experience living in England.

The results of the search for BT translators, the researcher got two translators, namely AFS as BT1 (TOEFL score 80, institution Universiti Sains Malaysia, and experience living in Australia and Malaysia) and GA as BT2 (TOEFL score 110, institution International Institute of Social Studies, Erasmus University Rotterdam, and experience living in Singapore and the Netherlands). The BT synthesis translator is RK, who has an IELTS score of 8.9 and has experience living in Australia, the United States, England, and New Zealand. The BT synthesis results are reviewed by three experts in English, each with a TOEFL/IELTS score and experience living in the United States, England, and Australia.

The third stage is the forward translation (FT) process. The translation results of forward translation (FT) on several items were translated differently by the FT1 translator and the FT2 translator. For example, the original item "**How to deal with a personal problem**" is translated as "**cara mengatasi permasalahan personal**" and "**jalan keluar masalah pribadi saya**". The synthesis discussion decided to use the sentence "**bagaimana menyelesaikan masalah pribadi saya**" so that it is not different from the original item.

Original item "**I would have trouble finding someone**" was translated by both FT translators and placed at the beginning of the sentence, although there is no difference, but the synthesis discussion placed it at the end of the sentence like the original item. The original item "**Most of my friends**" is translated as "**Sebagian besar teman**" and "**Kebanyakan teman**", but the word "**kebanyakan**" is more appropriate because it is in accordance with the Indonesian Dictionary (KBBI).

Table 4
Forward Translation Synthesis

Item number	Original item	FT1 translator	FT2 translator	FT synthesis
AP1	There really is no one who can give me an objective view of how I'm handling my problems.	Tidak ada seorang pun yang dapat memberikan pandangan objektif mengenai bagaimana saya mengatasi masalah.	Tidak ada seorang pun yang dapat memberikan pandangan objektif tentang bagaimana saya mengatasi masalah.	Tidak ada seorang pun yang dapat memberikan pandangan objektif tentang bagaimana saya mengatasi masalah.
AP2	When I need suggestions on **how to deal with a personal problem**, I know someone I can turn to.	Ketika saya membutuhkan saran mengenai **cara mengatasi permasalahan personal**, saya tahu siapa yang dapat saya hubungi.	Ketika saya membutuhkan saran tentang **jalan keluar masalah pribadi saya**, saya tahu siapa yang harus saya hubungi.	Ketika saya membutuhkan saran tentang **bagaimana menyelesaikan masalah pribadi saya**, saya tahu siapa yang harus saya hubungi.
TA1	If I were sick and needed someone (friend, family member, or acquaintance) to take me to the doctor, **I would have trouble finding someone**.	Jika saya sakit, **saya akan kesulitan** untuk menemukan seseorang (teman, anggota keluarga, atau kenalan) yang bisa membawa saya ke dokter.	Jika saya sakit, **saya akan kesulitan** menemukan orang lain (teman, anggota keluarga, atau kenalan) yang bisa membawa saya ke dokter.	Jika saya sakit dan memerlukan orang lain (teman, anggota keluarga, atau kenalan) untuk mengantarkan saya ke dokter, **saya kesulitan untuk menemukannya**
TA2	If I were sick, I could easily find someone to help me with my daily chores.	Jika saya sakit, saya dapat dengan mudah menemukan seseorang yang dapat membantu saya melakukan tugas sehari-hari.	Jika saya sakit, saya dapat dengan mudah menemukan seseorang untuk membantu saya melakukan tugas sehari-hari.	Jika saya sakit, dengan mudah saya dapat menemukan seseorang untuk membantu saya melakukan tugas sehari-hari.
BE1	When I feel lonely, there are several people I can talk to.	Ketika saya merasa kesepian, terdapat beberapa orang yang bisa saya ajak bicara.	Jika saya merasa kesepian, ada beberapa orang yang bisa saya ajak bicara.	Jika saya merasa kesepian, ada beberapa orang yang bisa saya ajak bicara.
BE2	I often meet or talk with family or friends.	Saya sering bertemu atau berbicara dengan keluarga atau teman.	Saya sering bertemu atau berbicara dengan keluarga atau teman.	Saya sering bertemu atau berbicara dengan keluarga atau teman.
SE1	**Most of my friends** are more interesting than I am.	**Sebagian besar teman saya** lebih menarik dibandingkan saya.	**Kebanyakan teman saya** lebih menarik daripada saya.	**Kebanyakan teman saya** lebih menarik daripada saya.

Table 4
(Continued)

Item number	Original item	FT1 translator	FT2 translator	FT synthesis
SE2	Most of my friends are more successful at making changes in their lives than I am.	Sebagian besar teman saya lebih sukses dalam melakukan perubahan dalam hidup mereka dibandingkan saya.	Sebagian besar teman saya lebih sukses membuat perubahan dalam hidup mereka ketimbang saya.	Sebagian besar teman saya lebih sukses dalam melakukan perubahan dalam hidup mereka dibandingkan saya.

The fourth stage is the back translation (BT) translation process. The results of the FT synthesis process are translated back into English (back translation). Translators BT1 and BT2 translate the back translation (BT) results, which translator BT3 then reviews. The results of the back translation (BT) synthesis are relatively the same between translators BT1 and BT2, so the BT synthesis translator also does not experience any obstacles. An example of BT results can be seen in Table 4.

Table 5
Back Translation Synthesis

Item number	FT synthesis	BT1 translator	BT2 translator	BT synthesis
AP3	Tidak ada seorang pun yang dapat saya percaya untuk memberikan nasihat yang baik terkait keuangan.	There is no one I can trust to give good financial advice	I cannot trust anyone to give a good financial advice	There is no one I can trust to give good financial advice
AP4	Setidaknya ada satu orang yang saya kenal yang nasihatnya dapat saya percaya.	I know at least one person whose advice I can trust	I know at least one person whose advice I can trust	I know at least one person whose advice I can trust
TA3	Jika saya harus keluar kota selama beberapa minggu, saya akan kesulitan untuk menemukan seseorang untuk menjaga rumah atau apartemen saya (seperti mengurus tanaman, hewan peliharaan, taman, dll).	If I were to go out of town for weeks, it will be hard for me to to find someone to look after my house or apartment (such as tend the plants, pets, garden, etc)	If I have to go out of town for several weeks, it will be difficult for me to find someone to look for my house or apartment (i.e. taking care of my plants, pets, garden, etc.)	If I have to be out of town for a few weeks, it will be difficult for me to find someone to look after my house or apartment (such as taking care of plants, pets, gardens, etc.)
TA4	Akan sulit bagi saya untuk menemukan seseorang yang mau meminjamkan mobilnya kepada saya selama beberapa jam.	It will be difficult for me to to find someone who could lend me their car for a few hours	It will be difficult for me to find someone willing to lend me h/er car for several hours	It would be difficult for me to find someone who would lend me their car for a few hours
BE3	Saya merasa tidak selalu dimasukkan dalam lingkaran teman-teman saya.	Sometimes I feel excluded from my friendship circles	Sometimes I feel excluded from my friendship circles	Sometimes I feel excluded from my friendship circles
BE4	Saya jarang dilibatkan untuk melakukan sesuatu dengan orang lain.	I'm rarely involved in doing things with other people	I am rarely involved to do something with other people	I am rarely involved to do something with other people

Table 5
(Continued)

Item number	FT synthesis	BT1 translator	BT2 translator	BT synthesis
SE3	Saya lebih puas dengan kehidupan saya daripada kebanyakan orang dengan kehidupan mereka.	I am more satisfied with my life than others with theirs	I am more satisfied with my life than others with theirs	I am more satisfied with my life than most people with theirs
SE4	Saya kesulitan mengimbangi teman-teman saya.	I find it hard to keep up with my friends	I find it hard to balance my friends	I have a hard time keeping up with my friends

The fifth stage is the process of reviewing the BT synthesis results. The BT synthesis results were compared with the original version of ISEL-16 in English by reviewing language comparability and interpretability similarity. In this process, the BT synthesis items were then reviewed by the ISEL-16 instrument developers and experts in the field of English. The average value of language comparability ranged from 1 to 2.67, and the average value of interpretability similarity ranged from 1 to 3, based on Sperber (2004), the value is stated as acceptable.

The sixth stage is psychometric testing on a large sample. The results of a large-scale study with 292 respondents showed that the BE dimension had the highest average (7.68) in general for all categories, followed by the TA (5.92), AP (4.23), and SE (4.20) dimensions (see Table 5). The same pattern also occurs in sub-categories, where the BE dimension has the highest average among all sub-categories, such as in the gender sub-category, namely men and women, the age sub-category, namely teenagers and early adults, etc. The AP dimension has the lowest average for male participants, while the SE dimension has the lowest average for female participants. In adolescent participants, the AP dimension had the lowest average, while in early-adulthood participants, the initial SE dimension had the lowest average.

Table 6
Mean (M) and Standard Deviations (SD) of the ISEL-16

Category	AP M (SD)	TA M (SD)	BE M (SD)	SE M (SD)
All	4.23 (1.54)	5.92 (2.10)	7.68 (2.64)	4.20 (2.02)
Gender				
Man	3.62 (1.36)	5.88 (2.04)	7.25 (2.47)	4.07 (1.84)
Woman	4.34 (1.55)	5.92 (2.11)	7.75 (2.67)	4.22 (2.05)
Age				
17-21 (Adolescent)	4.30 (1.47)	5.84 (2.04)	7.74 (2.62)	4.32 (2.06)
22-29 (early-adulthood)	4.00 (1.76)	6.19 (2.28)	7.46 (2.76)	3.77 (1.78)
Campus cluster				
SU (State university)	4.22 (1.54)	5.91 (2.04)	7.63 (2.45)	4.34 (1.94)
PU (Private university)	4.23 (1.57)	5.89 (2.15)	7.68 (2.77)	4.06 (2.06)
CU (Civil service university)	4.50 (1.08)	6.40 (2.01)	8.30 (3.12)	4.70 (2.21)
Educational level				
Diploma	4.35 (1.53)	5.84 (2.18)	7.77 (2.51)	4.51 (2.01)
Bachelor	4.18 (1.54)	5.95 (2.06)	7.64 (2.71)	4.06 (2.01)

The results of the initial CFA analysis before modification (Figure 1.) showed that there were items with factor loadings (FL) values below 0.5, so these items had to be deleted (Hair et al., 2014). The items are AP1 and AP3 (appraisal), TA2 (tangible assets), and SE3 (self-esteem). Items with an FL value close to 0.5 are not deleted first, namely AP4 items

with consideration; if rounded up, the result is 0.5. The parameters for the accuracy of the ISEL-16 model, namely RMSEA, GFI, CFI, and TLI, and only PNFI was fit (0.577).

After that, a second CFA analysis was carried out, namely modification by deleting items with FL <0.5. The result is an FL value of 0.5, except for the TA1 item. The TA1 item was not deleted because FL with a value of ±0.30 to ±0.40 was considered to meet the minimum level for structural interpretation (Hair et al., 2014). The parameters for the accuracy of the ISEL-16 model are also not fit, namely RMSEA, GFI, CFI, TLI, and only PNFI fit (0.597). However, the result is fit if the GFI and CFI values are rounded.

Figure 1
Model CFA Before Modification

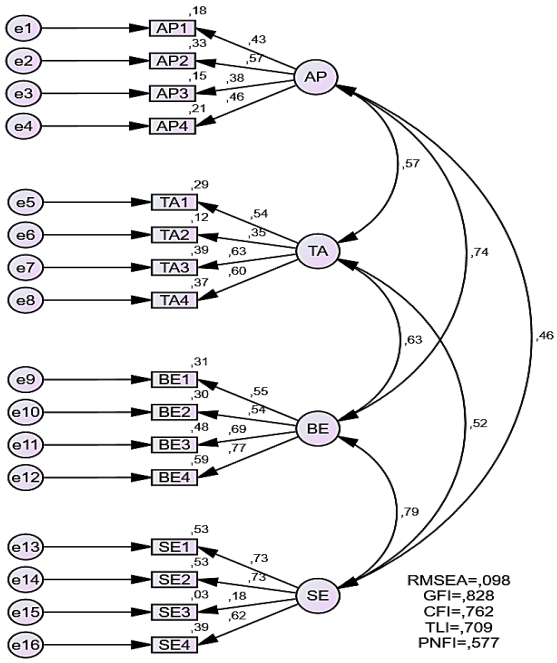
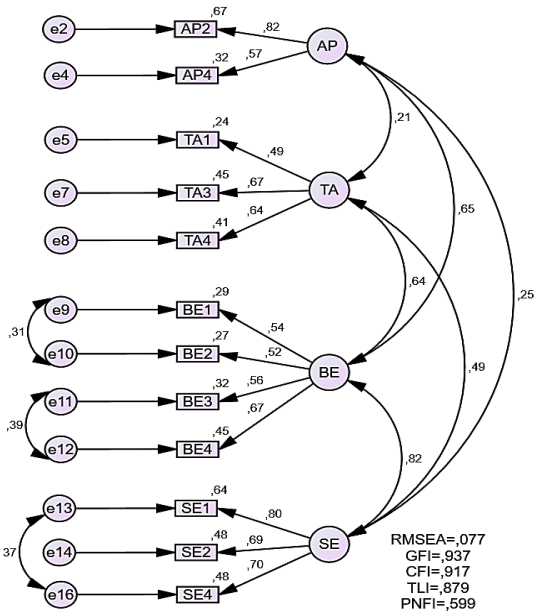


Figure 2
Model CFA Final



The researcher then carried out a third CFA analysis, namely carrying out covariance (correlation) between errors according to the suggested modifications (modification indices), namely at e9<->e10, e11<->e12, and e13<->e16. After the third CFA analysis, the ISEL-16 fit model accuracy parameters are fit, namely RMSEA=0.077, GFI=0.937, CFI=0.917, TLI=0.879, and PNFI=0.599 (Figure 2, Table 6).

Table 7
Parameter Fit

Fit Categories	Parameters fit	Output	Criteria	Notes
Absolute fit	Root means square error of approximation (RMSEA)	0.077	≤0.08	fit
	Goodness of fit index (GFI)	0.937	≥0.9	fit
Incremental fit	Comparative fit index (CFI)	0.917	≥0.9	fit
	Tucker-Lewis Index (TLI)	0.879	0-1	fit
Parsimony fit	Parsimonious normal fit index (PNFI)	0.599	0-1	fit

Calculate estimated reliability in general with Cronbach's alpha and for each manifest variable using Construct Reliability (CR). Cronbach's alpha value for all items is α = 0.81 (Table 7). The manifest variables have their respective CR values as follows: AP = 0.66; TA = 0.63; BE = 0.73; SE = 0.74 (Table 8).

Table 8
Total Reliability Estimation

Estimate	Cronbach's (α)	Average interitem correlation
Point estimate	0.81	0.27
95% CI lower bound	0.78	0.23
95% CI upper bound	0.84	0.32

Table 9
Construct Reliability (CR)

Variables and Indicators	*FL	FL^2	Error	**CR
Appraisal				
AP2	0.82	0.67	0.33	0.66
AP4	0.57	0.32	0.68	
Total	1.39	0.99	1.01	
Tangible Assets				
TA1	0.49	0.24	0.76	0.63
TA3	0.68	0.46	0.54	
TA4	0.64	0.41	0.59	
Total	1.81	1.11	1.89	
Belonging				
BE1	0.55	0.3	0.7	0.73
BE2	0.54	0.29	0.71	
BE3	0.7	0.49	0.51	
BE4	0.76	0.58	0.42	
Total	2.55	1.66	2.34	
Self-Esteem				
SE1	0.74	0.55	0.45	0.74
SE2	0.73	0.53	0.47	
SE4	0.62	0.38	0.62	
Total	2.09	1.46	1.54	

Note: *FL= factor loading, **CR= construct reliability

ISEL-16 consists of 4 factors with 12 items after CFA analysis. Table 7 shows the blueprint of the measurement scale.

Table 10
Blueprint of ISEL-16 After Final CFA

Factors	Items*
Appraisal (AP)	8 (F), 15 (F)
Tangible Assets (TA)	6 (UF), 11 (UF), 14 (UF)
Belonging (BE)	2 (F), 3 (F), 4 (UF), 9 (UF)
Self-esteem (SE)	1 (UF), 10 (UF), 16 (UF)

Note: *F=Favourable, UF=Unfavourable

Discussion

This study aims to adapt the Indonesian version of the ISEL-16 instrument (short form) to be used in Indonesia. The Indonesian version of the ISEL-16 factor structure test found that

the four-factor hierarchical model had model fit and factor loading. The fit value shows that the proposed model is suitable, meaning that the ISEL-16 measurement, whose structure is supported by these four dimensions, is valid according to empirical data (Azwar, 2019). These results align with previous research supporting a four-factor structure for the ISEL-16 (Chen et al.,2020; Payne et al., 2012; Porricelli et al., 2024; Ranjbaran et al., 2015). Research by Chen et al. (2020) also supports a factor structure with four dimensions, and the ISEL-16 instrument with four factors is also supported in several studies .

While the ISEL-16 demonstrated a good overall model fit, four items (AP1, AP3, TA2, and SE3) had factor loadings below the recommended threshold of 0.5 and were therefore excluded. The Appraisal (AP) dimension now comprises only two indicators. According to Hair et al. (2014) a minimum of three indicators per factor is preferable for comprehensive coverage of the construct. Although this represents a limitation of the current study Kline (2016) suggests that a model with at least two indicators per factor can still be considered identified if it includes multiple factors. This finding contrasts with Payne et al. (2012), where each manifest variable included four indicators.

Researchers conduct covariance (correlation) between errors according to modification indices. Sometimes, some measurement errors of one indicator are partially correlated with measurement errors of other indicators, the possible causes being the presence of items that have similar wording and response bias caused by participants' agreement with the attitude statement, regardless of the content of the statement (Brown, 2015). Covariance between errors can be done as long as they are in the same dimension. The covariance between errors is intended to improve the model's fit (Uyun et al., 2021).

Internal consistency analysis using Cronbach's alpha and Construct Reliability (CR) showed an overall reliability coefficient of $\alpha = 0.813$, indicating consistent reflections of social support perceptions across items. This value is comparable to the original instrument's $\alpha = 0.83$ (Payne et al., 2012). Furthermore, the CR value for each manifest variable (indicator) is AP = 0.66; TA = 0.63; BE = 0.73; SE = 0.74. CR values above 0.7 are indicated by the dimensions of Belonging (CR=0.73) and Self-esteem (CR=0.74). CR indicates internal consistency, meaning all measures represent the same latent construct. The rule of thumb for reliability estimation is 0.7 or higher, thus indicating good reliability (Hair et al., 2014). Two dimensions, the Appraisal dimension (CR = 0.66) and the Tangible Assets dimension (TA = 0.63), have CRs below 0.7. However, a value of 0.6 to 0.7 is acceptable, provided that the indicators of the other construct validity models are good (Hair et al., 2014).

Issues related to translation, literacy, and cultural differences, such as the representation of functional social support, were observed as potential factors influencing lower reliability (Merz et al., 2014). For example, AP1 “Tidak ada seorang pun yang dapat memberikan pandangan objektif tentang bagaimana saya mengatasi masalah,” and AP3 “Tidak ada seorang pun yang dapat saya percaya untuk memberikan nasihat yang baik terkait keuangan.” These two items did not adequately represent perceptions of social support in the context of Indonesian students, so they were removed from the instrument. The AP1 and AP3 factors were removed, resulting in a minimal number of items, namely two items, which allows for a low AP construct reliability value of CR=0.66. The various results of psychometric properties show that local cultural influences and research samples greatly influence the adaptation of the instrument and are related to the cultural and socio-cultural context in which they live so that the response is also inseparable from local cultural influences (Rahmawati et al., 2022). Nevertheless, the psychometric results can provide initial evidence that the ISEL-16 overall social support score can be applied to Indonesian society with student samples.

The BE dimension generally has the highest average (7.68) for all categories, while the SE dimension has the lowest average (4.20). This is in contrast to the theory of "Social Supports as Buffers of Life Change Stress" by (Cohen & Hoberman, 1983), the need for positive feedback (self-esteem) is the best predictor of overall life stress levels, while appraisal and tangible assets contribute little to the explanation of variations in life stress (Ghesquiere et al., 2017). These findings also explain that the COVID-19 pandemic, which is a stress trigger, has produced a need to overcome problems, which is best met through togetherness support or social interaction (BE).

Age-related trends show that social support for interaction (BE) is highest among students aged 17-21(Adolescents) and 22-29 (early adulthood), aligning with Romeo et al. (2024) findings on the importance of emotional support in academic settings. Maluenda-Albornoz et al. (2023) also emphasized that first-year students who feel more support from peers and lecturers, where this support also makes them feel a greater sense of belonging to their educational community, will contribute to students showing cognitive progress (more effort and intellectual engagement), affective (enjoyment, positive attitudes, etc.), and behavior (participation, compliance, etc.).

Differences in perceptions of social support between genders also emerged, and some were consistent with previous research. The differences in subscales show that women and men prefer to get support from parties willing to interact socially (BE) and prefer support from parties with the necessary resources (TA). This finding is different from the research of Payne et al. (2012), who found that women prefer support from individuals who provide both trust and social interaction, while men value support related to self-esteem and tangible assets. These differences underscore the need for tailored support interventions.

Although this study contributes to evaluating the psychometric properties of the Indonesian version of the ISEL-16, there are several limitations. First, several items (AP1, AP3, TA2, and SE3) are still not appropriate to the participants' context so that future research can modify the four items according to the participants' context. Second, this research does not contain convergent validity, which is evidence-based on relationships with other variables, namely the relationship between instruments and other theoretically related constructs (Foster & Cone, 1995; Groth-Marnat, 2009) such as the social support scale (Lestari et al., 2023), grief complicated (Ghesquiere et al., 2017), social network integration, perceived stress, anxiety, depression, and life engagement (Merz et al., 2014). Third, the imbalance in the number of male and female participants calls for future research to address this issue.

Conclusion

The adaptation of the ISEL-16 for Indonesian students successfully demonstrates that the instrument measures students' perceptions of social support across four dimensions: Appraisal (AP), Tangible Assets (TA), Belonging (BE), and Self-esteem (SE). Confirmatory Factor Analysis (CFA) confirms that these dimensions exhibit good construct validity with adequate factor loadings and fit parameters. Reliability analysis, including Cronbach's alpha and construct reliability (CR), supports the instrument's robustness, with values indicating satisfactory reliability. Theoretical implications of this adaptation include enhancing the psychometric evidence for the ISEL-16 and refining the understanding of social support dimensions within the Indonesian context. Practically, the adapted ISEL-16 provides valuable insights for education, psychology, and higher education policy, facilitating the development of targeted interventions and support programs tailored to students' needs. Additionally, the Indonesian ISEL-16 is a recommended instrument for research in

conditions where costs and time are limited. Future research should explore convergent validity to further validate the Indonesian ISEL-16 and consider modifications to better align with the participants' context. Expanding research to include diverse and broader samples beyond students is also recommended to strengthen the instrument's applicability and generalizability.

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Declarations

Author contribution. SWR, as the single author, established the research topic, collected data, analyzed data samples, produced the report, and editing.
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Additional information. If readers need information regarding the ISEL-16 instrument, they can contact the researcher via email.

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