

Adaptation and validation of the academic stress inventory scale for college students

Adaptasi dan validasi skala *academic stress inventory* pada mahasiswa

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ABSTRACT

Research on academic stress in Indonesia tends to face limitations in measurement instruments. This is due to the relatively limited number of studies adapting academic stress scales into Bahasa Indonesia, particularly for university student populations. This study aimed to adapt and evaluate the validity of the Academic Stress Inventory as a psychological measurement tool applicable within the educational context. The adapted scale was based on Lin and Chen's theory of academic stress, encompassing seven dimensions: teacher stress, result stress, test stress, studying in group stress, peer stress, time management stress, and self-inflicted stress, comprising a total of 34 items. The participants in this study were 439 university students. Construct validity was examined using Confirmatory Factor Analysis (CFA) with Mplus 7. The results indicated that the measurement model demonstrated good fit (RMSEA = 0.04), confirming that the scale adequately measures academic stress. Furthermore, all items showed t-values greater than 1.96, indicating that each item was statistically significant and valid. The implication of this study is that the adapted Academic Stress Inventory can be utilized as a valid instrument to measure academic stress in future research contexts involving Indonesian university students.

ABSTRAK

Perkembangan riset stres akademik di Indonesia, cenderung mempunyai keterbatasan dalam alat ukur. Hal ini dikarenakan masih sedikit riset terkait adaptasi skala stres akademik ke dalam Bahasa Indonesia, khususnya untuk subjek mahasiswa. Penelitian ini bertujuan untuk mengadaptasi dan mengevaluasi validitas skala Academic Stress Inventory sebagai alat ukur psikologis yang dapat digunakan dalam konteks pendidikan. Skala yang diadaptasi menggunakan teori stres akademik Lin dan Chen, mencakup aspek teacher stress, result stress, test stress, studying in group stress, peer stress, time management stress, dan self-inflicted stress dengan jumlah 34 item. Partisipan dalam penelitian ini berjumlah 439 mahasiswa. Uji validitas yang digunakan adalah Confirmatory Factor Analysis (CFA) menggunakan Mplus 7. Hasil penelitian menunjukkan bahwa model skala fit (RMSEA = 0.04) mengukur stres akademik dan semua item memiliki nilai $t > 1.96$, tergolong valid. Implikasi penelitian ini adalah alat ukur Academic Stress Inventory dapat digunakan untuk mengukur variabel stres akademik pada penelitian selanjutnya.

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1. INTRODUCTION

University students today are predominantly members of Generation Z, defined as individuals born between 1997 and 2012. According to Prensky (2001), Generation Z is characterized as digital natives, meaning individuals who were born, raised, and developed alongside rapid advancements in digital technology. The characteristics of Generation Z students, who are highly engaged with technology and social media, have significant implications for their stress levels.

Frequent exposure to unrealistic life idealizations through social media platforms may trigger feelings of anxiety and self-dissatisfaction (Przybylski & Weinstein, 2013). In addition, increasingly intense competition in higher education places pressure on Generation Z students to achieve high academic standards, thereby intensify stress (Seemiller & Grace, 2016). Academic demands, social challenges, and uncertainty regarding the future have all been associated with elevated stress levels among students (Deasy et al., 2014). Sharma (2018) reported that a significant proportion of university students experience considerable stress due to the various challenges and demands encountered during their academic journey (Dewi et al., 2022).

The phenomenon of stress has become a critical issue among university students. This concern is underscored by several reported cases of student suicides in Indonesia in recent years, frequently associated with academic pressures such as unfinished theses, overwhelming coursework, and difficulties in completing final projects. Stress that is not properly managed may lead to maladaptive behaviors, including suicidal actions (Safitri & Dewi, 2020). Sun et al. (2011) further stated that stress arising from academic pressures increases the risk of depression and may contribute to the emergence of suicidal ideation.

In general, stress is described as an imbalance between perceived environmental demands and the personal and social resources perceived to cope with those demands (Lazarus & Folkman, 1984). In the academic context, stress arises from perceived pressures and evaluations of academic stressors related to learning and education (Govaerts & Grégoire, 2004). Furthermore, Lin & Chen (2009) define academic stress as pressure originating from teachers, academic achievement, examinations, group learning activities, peers, time management, and internal individual factors. The negative impact of academic stress experienced by students includes decreased academic performance that affects grade point average, as well as difficulties in concentration, memory disturbances, and impaired academic problem solving (Ambarwati et al., 2019).

Over the past five years, research on academic stress among university students has shown significant development. Previous studies have generally examined academic stress during and after the COVID-19 pandemic, as well as stress related to online learning. Therefore, further research on academic stress, particularly among university students, remains necessary. In Indonesia, the development of academic stress research tends to be limited in terms of measurement instruments. In recent years, academic stress has been measured using several scales, including: (1) The Academic Stress Scale (ASS) developed by Kohn and Frazer (1986); (2) The Student Life Stress Inventory developed by Gadzella (1994); (3) The Educational Stress Scale for Adolescents (ESSA) developed by Sun et al. (2011); (4) The Academic Expectations of Stress Inventory (AESI) developed by Ang and Huan (2006); and (5) The Academic Stress Inventory (ASI) developed by Lin and Chen (2009).

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Academic stress measurement instruments developed by previous researchers require cultural adaptation to prevent bias that may influence research results due to differences in linguistic meaning and cultural context. Measurement bias may result in several consequences, including: (1) Overlap in behaviors related to the construct being measured; and (2) Unfair advantages for one cultural group over another when assessing psychological attributes across diverse cultural settings (Andidar et al., 2021; Van De Vijver & Phalet, 2004). Based on these considerations, the researchers conducted an adaptation of the academic stress measurement instrument to minimize cultural bias in assessment.

In this study, the researchers adapted the Academic Stress Inventory (ASI) developed by Lin and Chen (2009), which consists of 34 items. Furthermore, Lin and Chen (2009) conceptualized the dimensions of academic stress as follows: (1) Test stress, encompasses anxiety when facing academic tests or exams; (2) Result stress, refers to the pressure that arises from the individual's efforts to achieve success in achieving learning outcomes; (3) Studying in a group stress, refers to the pressure experienced by individuals within a study group that causes stress; (4) Teacher stress, refers to stress caused by interactions between students and their instructors and the influence of their instructors' academic policies; (5) Peer stress, refers to stress related to the environment or other individuals; (6) Self-inflicted stress, refers to stress arising from an individual's ability to perform academically, which impacts their performance; (7) Time management stress, refers to an individual's commitment to managing their time for study.

Several academic stress measurement instruments have been adapted and modified by researchers across different cultural contexts. The Academic Stress Scale (ASS) was adapted into Italian by Perrella et al. (2024). The Academic Expectations of Stress Inventory (AESI) was adapted into Persian by Asgarabad et al. (2021) and into Bahasa Indonesia by Rachmawati et al. (2024). The Educational Stress Scale for Adolescents (ESSA) was adapted into Turkish by Celik et al. (2015). The Student Life Stress Inventory was adapted into Bahasa Indonesia by Praghlapati et al. (2021) and Lidya & Hapsari (2025). The Academic Stress Questionnaire (CEA) was adapted into Spanish by Pacheco-Castillo (2024). However, the Academic Stress Inventory developed by Lin and Chen (2009) has not yet been adapted into Bahasa Indonesia. Therefore, the researchers were interested in adapting the Academic Stress Inventory into the Indonesian language context, specifically for university student populations.

This study aims to culturally adapt the Academic Stress Inventory scale to ensure its suitability within the linguistic and cultural context of Indonesian university students. In addition, this study seeks to examine the content validity and internal structure of the adapted scale through expert judgment and confirmatory factor analysis.

2. METHODS

Sampling

The sampling technique used in this study was quota sampling. Quota sampling is a method of determining samples from a population based on predetermined criteria until the required number of participants is reached. This technique is applied when the researcher does not know the exact size of the population, while still considering sample feasibility factors in determining the sample quota (Sugiyono, 2018).

The characteristics of the research sample consisted of undergraduate students in the Greater Jakarta area, including Jakarta, Bogor, Depok, Tangerang, and Bekasi, aged between 18 and 22 years. The total number of participants in this study was 439 students.

Measurement

The measurement instrument used in this study was the Academic Stress Inventory (ASI) consisting of 34 items, developed by Lin and Chen (2009). The scale includes both favorable and unfavorable statements, with response options ranging from “strongly disagree,” scored as 1, to “strongly agree,” scored as 4 for favorable items.

Data Analysis

This study examined the construct validity of the Academic Stress Inventory (ASI), consisting of 34 items developed by Lin & Chen (2009), using Confirmatory Factor Analysis (CFA). This analysis was conducted to evaluate the overall model fit and to identify items that met validity criteria. Several model fit indices are used to determine whether a model can be considered fit (Ghaleb & Ya, 2024; Hooper et al., 2008), namely: (1) X²-Chi-square: The chi-square value is acceptable if the probability value is $p > 0.05$; (2) RMSEA (The Root Mean Square Error of Approximation): indicates the expected goodness of fit when the model is estimated in the population. An acceptable RMSEA value for a model is <0.08 ; (3) GFI (Goodness of Fit Index): The GFI value ranges from 0 to 1 (perfect fit); (4) AGFI (Adjusted Goodness of Fit Index): The expected AGFI value is equal to or greater than 0.090; (5) CMIN/DF: The Minimum Sample Discrepancy Function divided by the Degrees of Freedom. CMIN/DF is also called relative X², with an expected value of <2.0 or <3.0 ; (6) CFI (Comparative Fit Index): The recommended CFI value is $CFI > 0.95$; (7) TLI (Tucker Lewis Index): The recommended TLI value is $CFI > 0.95$.

According to Hartono & Muchtar (2018), the criteria for valid or significant items in CFA include: (1) The significance or validity of an item is determined by the t-value for the item's factor loading coefficient. If the t-value is >1.96 , the item is considered valid, and if the t-value is >1.96 , the item is considered invalid. Invalid items are dropped; (2) The factor loading coefficient of the item is examined. If the item is favorable, the factor loading coefficient should be positive, and vice versa. If the item is favorable but the factor loading coefficient is negative, the item is dropped; (3) If measurement errors are found, such as excessive item correlation, the item should be dropped. This is because the item is measuring not only what it is intended to measure but also something else.

3. RESULTS AND DISCUSSION

Results

The first step in adapting the Academic Stress Inventory (ASI) was translating the scale into Bahasa Indonesia by a professional translator with an academic background in English. After the translation process, the adapted ASI was pilot tested on a small group of five participants who were representative of the research population. This preliminary testing aimed to examine alternative wording, clarity of understanding, interpretation, and cultural relevance.

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Subsequently, expert judgment was conducted by two psychology lecturers to evaluate the appropriateness of the language used and to ensure that the meaning of each item in the adapted scale was equivalent to that of the original version.

Table 1 Results of adaptation of the Academic Stress Inventory (ASI) scale

Dimension	Original statements In English	Translation to Bahasa Indonesia	Expert Judgement 1	Expert Judgement 2
Teacher stress	I feel that the forms and content of exercises and reports of some teachers are too strict.	<i>Saya merasa bahwa bentuk dan isi tugas serta laporan dari beberapa dosen terlalu ketat.</i>	<i>Saya merasa bahwa tugas dan laporan dari dosen terlalu ketat. (I feel that the assignments and reports from the lecturers are too strict.)</i>	<i>Saya merasa bahwa tugas dan laporan dari dosen terlalu berat. (I feel that the assignments and reports from the lecturers are too tough.)</i>
	I feel that the exercises and reports of some teachers are too difficult.	<i>Saya merasa bahwa tugas dan laporan dari beberapa dosen terlalu sulit.</i>	<i>Saya merasa tugas dan laporan dari dosen terlalu sulit. (I feel that the assignments and reports from the lecturers are too difficult.)</i>	<i>Saya merasa tugas dan laporan dari dosen terlalu sulit. (I feel that the assignments and reports from the lecturers are too difficult.)</i>
	I feel that the exercises and reports of some teachers are excessive.	<i>Saya merasa bahwa tugas dan laporan dari beberapa dosen terlalu banyak.</i>	<i>Saya merasa tugas dan laporan dari dosen terlalu banyak. (I feel that the assignments and reports from the lecturers are too many.)</i>	<i>Saya merasa tugas dan laporan dari dosen terlalu banyak. (I feel that the assignments and reports from the lecturers are too many.)</i>
	I feel that I do not understand a lot about some teachers' teaching content.	<i>Saya merasa bahwa saya tidak terlalu memahami materi yang diajarkan oleh beberapa dosen.</i>	<i>Saya tidak terlalu memahami materi yang diajarkan oleh beberapa dosen. (I do not fully understand the material taught by some lecturers.)</i>	<i>Saya tidak terlalu memahami materi yang diajarkan oleh beberapa dosen. (I do not fully understand the material taught by some lecturers.)</i>
	Some teachers provide too much data; this causes me to be unable to finish studying and to assimilate the knowledge.	<i>Beberapa dosen memberikan terlalu banyak data, sehingga saya tidak mampu menyelesaikan pembelajaran dan menyerap pengetahuan tersebut.</i>	<i>Beberapa dosen memberikan terlalu banyak materi, sehingga saya tidak mampu menyelesaikan dan menyerap pembelajaran. (Some lecturers provide too much material, so I am unable to complete and fully absorb the lessons.)</i>	<i>Beberapa dosen memberikan terlalu banyak materi, sehingga saya tidak mampu menyelesaikan dan menyerap pembelajaran. (Some lecturers provide too much material, so I am unable to complete and fully absorb the lessons.)</i>

	I feel a lot of pressure because some subjects use foreign language books.	<i>Saya merasa tertekan karena beberapa mata kuliah menggunakan buku referensi berbahasa asing.</i>	<i>Saya merasa tertekan karena beberapa mata kuliah menggunakan referensi berbahasa asing. (I feel pressured because some courses use references in foreign languages.)</i>	<i>Saya merasa tertekan karena beberapa mata kuliah menggunakan referensi berbahasa asing. (I feel pressured because some courses use references in foreign languages.)</i>
	I feel that I am not able to adapt to some teachers' teaching methods.	<i>Saya merasa tidak mampu beradaptasi dengan metode pengajaran beberapa dosen.</i>	<i>Saya sulit beradaptasi dengan metode pengajaran beberapa dosen. (I find it difficult to adapt to the teaching methods of some lecturers.)</i>	<i>Saya sulit beradaptasi dengan metode pengajaran beberapa dosen. (I find it difficult to adapt to the teaching methods of some lecturers.)</i>
	I feel that once I got into university, I could not keep up with the speed of the teachers' instruction.	<i>Setelah masuk universitas, saya merasa tidak dapat mengikuti kecepatan pengajaran dari beberapa dosen.</i>	<i>Setelah masuk universitas, saya sulit mengikuti kecepatan pengajaran dari beberapa dosen. (After entering university, I find it difficult to keep up with the teaching pace of some lecturers.)</i>	<i>Setelah masuk universitas, saya sulit mengikuti kecepatan pengajaran dari beberapa dosen. (After entering university, I find it difficult to keep up with the teaching pace of some lecturers.)</i>
	In some courses, I have to spend a lot of time looking for data and information	<i>Dalam beberapa mata kuliah, saya harus menghabiskan banyak waktu untuk mencari data dan informasi.</i>	<i>Dalam beberapa mata kuliah, saya menghabiskan banyak waktu untuk mencari materi. (In some courses, I spend a lot of time searching for materials.)</i>	<i>Dalam beberapa mata kuliah, saya menghabiskan banyak waktu untuk mencari materi. (In some courses, I spend a lot of time searching for materials.)</i>
Result stress	I feel that my parents think that I am not serious with my studies.	<i>Saya merasa bahwa orang tua saya berpikir saya tidak serius dalam belajar.</i>	<i>Orang tua berpikir saya tidak serius dalam belajar. (My parents think that I am not serious about studying.)</i>	<i>Orang tua berpikir saya tidak serius dalam belajar. (My parents think that I am not serious about studying.)</i>
	I have conflicts with my parents due to my academic results.	<i>Saya memiliki konflik dengan orang tua saya akibat hasil akademik saya.</i>	<i>Saya memiliki konflik dengan orang tua karena hasil akademik. (I have conflicts with my parents because of my academic results.)</i>	<i>Saya memiliki konflik dengan orang tua karena hasil akademik. (I have conflicts with my parents because of my academic results.)</i>

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	I feel that there is vast difference between my current results and high school results.	<i>Saya merasa ada perbedaan besar antara hasil akademik saya saat ini dengan saat di sekolah menengah.</i>	<i>Saya merasa ada perbedaan besar antara hasil akademik di perkuliahan dengan di sekolah menengah. (I feel that there is a big difference between academic performance in university and in high school.)</i>	<i>Saya merasa ada perbedaan besar antara hasil akademik di perkuliahan dengan di sekolah menengah. (I feel that there is a big difference between academic performance in university and in high school.)</i>
	I worry that my academic results will not meet my parents' expectations.	<i>Saya khawatir bahwa hasil akademik saya tidak akan memenuhi harapan orang tua saya.</i>	<i>Saya khawatir jika hasil akademik saya tidak memenuhi harapan orang tua. (I am worried that my academic performance does not meet my parents' expectations.)</i>	<i>Saya khawatir jika hasil akademik saya tidak memenuhi harapan orang tua. (I am worried that my academic performance does not meet my parents' expectations.)</i>
	I feel that the results of my recent tests are imperfect and have regressed.	<i>Saya merasa bahwa hasil tes saya baru-baru ini tidak memuaskan dan mengalami penurunan.</i>	<i>Saya merasa bahwa hasil tes baru-baru ini tidak memuaskan dan mengalami penurunan. (I feel that my recent test results are unsatisfactory and have declined.)</i>	<i>Saya merasa bahwa hasil tes baru-baru ini tidak memuaskan dan mengalami penurunan. (I feel that my recent test results are unsatisfactory and have declined.)</i>
Tests Stress	I do not get good enough sleep at night because I worry about school tests	<i>Saya tidak mendapatkan tidur yang cukup di malam hari karena khawatir tentang ujian sekolah.</i>	<i>Saya tidak mendapatkan tidur yang cukup di malam hari karena khawatir tentang ujian. (I do not get enough sleep at night because I worry about exams.)</i>	<i>Saya tidak mendapatkan tidur yang cukup di malam hari karena khawatir tentang ujian. (I do not get enough sleep at night because I worry about exams.)</i>
	I stay up late before all the big and small school tests	<i>Saya sering begadang sebelum ujian-ujian besar maupun kecil di sekolah.</i>	<i>Saya sering begadang sebelum ujian. (I often stay up late before exams.)</i>	<i>Saya selalu kurang tidur untuk mempersiapkan ujian. (I often have lesser sleep to prepare for exams.)</i>
	I worry that I have to redo the compulsory courses in which I fail.	<i>Saya khawatir harus mengulang mata kuliah wajib jika saya gagal.</i>	<i>Saya khawatir harus mengulang mata kuliah wajib jika gagal. (I am worried that I will have to retake a compulsory course if I fail.)</i>	<i>Saya khawatir harus mengulang mata kuliah wajib jika gagal. (I am worried that I will have to retake a compulsory course if I fail.)</i>

	I feel that the tests and class content of some subjects are variable, which causes me to be unable to prepare adequately.	<i>Saya merasa bahwa tes dan isi kelas beberapa mata kuliah sering berubah-ubah, sehingga saya tidak dapat mempersiapkan diri dengan baik.</i>	<i>Beberapa materi dan ujian pada mata kuliah sering berubah-ubah, sehingga saya tidak dapat mempersiapkannya dengan baik. (In some courses, the materials and exams frequently change, so I cannot prepare for them properly.)</i>	<i>Beberapa materi dan ujian pada mata kuliah sering berubah-ubah, sehingga saya tidak dapat mempersiapkannya dengan baik. (In some courses, the materials and exams frequently change, so I cannot prepare for them properly.)</i>
Studying in groups stress	I often face problems as to how to share work with my classmates when some exercises or reports require group work.	<i>Saya sering menghadapi masalah tentang bagaimana membagi tugas dengan teman sekelas saat beberapa tugas atau laporan membutuhkan kerja kelompok.</i>	<i>Dalam tugas kelompok, saya sulit membagi tanggung jawab. (In group assignments, I find it difficult to divide responsibilities.)</i>	<i>Dalam tugas kelompok, saya sulit membagi tanggung jawab. (In group assignments, I find it difficult to divide responsibilities.)</i>
	When group work is required to complete an exercise or report, I worry that I will not be able to find a suitable group member.	<i>Ketika kerja kelompok diperlukan untuk menyelesaikan tugas atau laporan, saya khawatir tidak dapat menemukan anggota kelompok yang sesuai.</i>	<i>Ketika ada tugas kelompok, saya khawatir tidak dapat menemukan anggota kelompok yang sesuai. (When there is a group assignment, I worry that I will not be able to find suitable group members.)</i>	<i>Ketika ada tugas kelompok, saya khawatir tidak dapat menemukan anggota kelompok yang sesuai. (When there is a group assignment, I worry that I will not be able to find suitable group members.)</i>
	When I give a speech or presentation, I worry that my classmates will laugh at my inability to perform well.	<i>Ketika saya memberikan pidato atau presentasi, saya khawatir teman sekelas saya akan menertawakan ketidakmampuan saya untuk tampil dengan baik.</i>	<i>Ketika memberikan pidato atau presentasi, saya merasa khawatir akan ditertawakan oleh teman sekelas. (When giving a speech or presentation, I worry that I will be laughed at by my classmates.)</i>	<i>Ketika presentasi kuliah, saya merasa khawatir akan ditertawakan oleh teman sekelas. (When giving a presentation, I worry that I will be laughed at by my classmates.)</i>
	Sometimes, the words used by my classmates easily hurt my self-esteem or cause harm.	<i>Terkadang, kata-kata yang digunakan teman sekelas saya dengan mudah melukai harga diri saya atau menyebabkan saya merasa tersakiti.</i>	<i>Terkadang, perkataan yang digunakan teman sekelas dengan mudah melukai harga diri saya atau merasa tersakiti. (Sometimes, the words used by my classmates easily hurt my self-esteem or make me feel hurt.)</i>	<i>Saya mudah tersinggung dengan perkataan teman sekelas. (I am easily offended by what my classmates say.)</i>

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	I feel nervous when I need to make a speech or give a presentation.	<i>Saya merasa gugup ketika harus berbicara di depan umum atau presentasi.</i>	<i>Saya merasa gugup ketika harus berbicara di depan umum atau presentasi. (I feel nervous when I have to speak in public or give a presentation.)</i>	<i>Saya merasa gugup ketika harus berbicara di depan umum atau presentasi. (I feel nervous when I have to speak in public or give a presentation.)</i>
Peer stress	When I want to study on my own, I am often affected by my classmates' chatting.	<i>Ketika saya ingin belajar sendiri, saya sering terganggu oleh obrolan teman sekelas saya.</i>	<i>Ketika ingin belajar sendiri, saya sering terganggu oleh obrolan teman sekelas. (When I want to study on my own, I am often distracted by my classmates' conversations.)</i>	<i>Ketika ingin belajar sendiri, saya sering terganggu oleh obrolan teman sekelas. (When I want to study on my own, I am often distracted by my classmates' conversations.)</i>
	I feel that my classmates are very noisy during class and this influences my class situations.	<i>Saya merasa bahwa teman sekelas saya sangat berisik selama proses perkuliahan, dan hal ini memengaruhi situasi kelas saya.</i>	<i>Saya merasa bahwa teman sekelas sangat berisik selama proses perkuliahan, dan hal ini memengaruhi situasi kelas. (I feel that my classmates are very noisy during lectures, and this affects the classroom environment.)</i>	<i>Saya merasa bahwa teman sekelas sangat berisik selama proses perkuliahan, dan hal ini memengaruhi situasi kelas. (I feel that my classmates are very noisy during lectures, and this affects the classroom environment.)</i>
	I feel that there is open strife and veiled struggles among classmates due to academic performance	<i>Saya merasa ada persaingan terbuka maupun tersembunyi di antara teman sekelas terkait dengan hasil akademik.</i>	<i>Saya merasa ada persaingan terbuka atau tersembunyi di antara teman sekelas terkait hasil akademik. (I feel that there is open or hidden competition among classmates regarding academic performance.)</i>	<i>Saya merasa ada persaingan di antara teman sekelas terkait hasil akademik. (I feel that there is competition among classmates regarding academic performance.)</i>
	I am very worried that my academic results are not as good as those of my classmates are	<i>Saya sangat khawatir bahwa hasil akademik saya tidak sebaik hasil teman-teman sekelas saya.</i>	<i>Saya sangat khawatir bahwa hasil akademik saya tidak sebaik hasil teman-teman sekelas. (I am very worried that my academic performance is not as good as that of my classmates.)</i>	<i>Saya sangat khawatir bahwa hasil akademik saya tidak sebaik hasil teman-teman sekelas. (I am very worried that my academic performance is not as good as that of my classmates.)</i>

	I feel that I am not able to adjust and schedule the time between academic and social activities effectively.	<i>Saya merasa tidak mampu mengatur dan menyeimbangkan waktu antara aktivitas akademik dan sosial secara efektif.</i>	<i>Saya merasa tidak mampu mengatur waktu antara aktivitas akademik dan sosial secara efektif. (I feel unable to manage my time effectively between academic and social activities.)</i>	<i>Saya merasa tidak mampu mengatur waktu antara aktivitas akademik dan sosial secara efektif. (I feel unable to manage my time effectively between academic and social activities.)</i>
	I feel that it is very difficult for me to find a balance between my academic and social activities.	<i>Saya merasa sangat sulit untuk menyeimbangkan aktivitas akademik dan sosial saya.</i>	<i>Saya merasa sangat sulit untuk menyeimbangkan aktivitas akademik dan sosial. (I find it very difficult to balance academic and social activities.)</i>	<i>Saya merasa sangat sulit untuk menyeimbangkan aktivitas akademik dan sosial. (I find it very difficult to balance academic and social activities.)</i>
	I feel that the social activities and student association affect my academic work	<i>Saya merasa bahwa aktivitas sosial dan organisasi mahasiswa memengaruhi pekerjaan akademik saya</i>	<i>Saya merasa aktivitas sosial atau organisasi memengaruhi aktivitas akademik. (I feel that social or organizational activities affect my academic activities.)</i>	<i>Saya merasa aktivitas sosial dan organisasi mengganggu aktivitas akademik. (I feel that social or organizational activities disrupt my academic activities.)</i>
Self-inflicted stress	I feel that my learning level is not as good as that of my classmates.	<i>Saya merasa bahwa tingkat pembelajaran saya tidak sebaik teman sekelas saya.</i>	<i>Saya merasa bahwa tingkat pembelajaran saya tidak sebaik teman sekelas. (I feel that my learning ability is not as good as that of my classmates.)</i>	<i>Saya merasa bahwa tingkat pembelajaran saya tidak sebaik teman sekelas. (I feel that my learning ability is not as good as that of my classmates.)</i>
	I feel that I have so many courses that I am out of breath.	<i>Saya merasa bahwa saya memiliki begitu banyak mata kuliah hingga membuat saya kewalahan.</i>	<i>Saya merasa memiliki banyak mata kuliah hingga membuat kewalahan. (I feel that I have too many courses, which makes me overwhelmed.)</i>	<i>Saya merasa memiliki banyak mata kuliah hingga membuat kewalahan. (I feel that I have too many courses, which makes me overwhelmed.)</i>
	I feel that I have no interest in some subjects or academics.	<i>Saya merasa tidak tertarik terhadap beberapa mata kuliah atau bidang akademik tertentu.</i>	<i>Saya merasa tidak tertarik terhadap beberapa mata kuliah atau bidang akademik tertentu. (I feel uninterested in some courses or certain academic fields.)</i>	<i>Saya merasa tidak tertarik terhadap beberapa mata kuliah atau bidang akademik tertentu. (I feel uninterested in some courses or certain academic fields.)</i>

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I feel that after I entered university, my performance was not as good as I had expected.	<i>Saya merasa bahwa setelah saya masuk universitas, kinerja saya tidak sebaik yang saya harapkan.</i>	<i>Setelah masuk universitas, akademik saya tidak sebaik yang diharapkan. (After entering university, my academic performance is not as good as expected.)</i>	<i>Setelah masuk universitas, akademik saya tidak sebaik yang diharapkan. (After entering university, my academic performance is not as good as expected.)</i>
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Based on the Table 1, this study uses the Academic Stress Inventory measurement tool from the results of Expert Judgment 2, which has been adapted to the cultural context. The use of Expert Judgment 2 is based on the consideration that this stage represents a further review process of the instrument that had been revised according to the critiques and suggestions from Expert Judgment 1, thereby representing a more refined form of the instrument that is ready to be tested empirically. The expert judgment in this study was conducted qualitatively with the aim of examining the conceptual appropriateness and psychological meaning of each item. The assessment was not carried out in the form of numerical scoring, and therefore did not produce an Aiken’s V coefficient.

Discussion

Researchers do not need to report all model fit indices to demonstrate that a model is fit (Halim et al., 2019). Therefore, this study used several fit indices to assess model fit, namely RMSEA (Root Mean Square Error of Approximation), CFI (Comparative Fit Index), and TLI (Tucker-Lewis Index).

In this study, the researcher tested validity through CFA using 34 items of the Academic Stress Inventory scale, which consists of seven dimensions: test stress, result stress, studying in group stress, teacher stress, peer stress, self-inflicted stress, and time management stress. The CFA results indicated that the model was not fit, with RMSEA = 0.079, CFI = 0.763, and TLI = 0.738.

Therefore, the researcher modified the model by freeing items that were correlated with other items (Muniarsih, 2013). As a result, a fit model was obtained with RMSEA = 0.04, while the CFI = 0.943 and TLI = 0.931 values were considered close to the acceptable fit criteria.

Table 2 Academic Stress Inventory (ASI) scale model fit index

Index	Model Fit Index	Model Index	Model Evaluation
RMSEA Coeff.	< 0.08	0.040	Fit criteria
CFI	> 0.95	0.943	Close to fit
TLI	> 0.95	0.931	Close to fit

The next step is to report the validity test results for each academic stress inventory item. The validity of an item is determined by the t-value for the item’s factor loading coefficient. If the t-value is >1.96, the item is considered valid, and if the t-value is >1.96, the item is considered invalid (Hartono & Muchtar, 2018).

Table 3 Results of the validity test of the Academic Stress Inventory (ASI) scale items

No. Item	Loading Factor	Std. Error	t-value	Description
Item 1	0.573	0.045	12.823	VALID
Item 2	0.584	0.046	12.630	VALID
Item 3	0.549	0.045	12.178	VALID
Item 4	0.545	0.040	13.541	VALID
Item 5	0.715	0.034	20.908	VALID
Item 6	0.473	0.043	11.061	VALID
Item 7	0.651	0.037	17.764	VALID
Item 8	0.710	0.035	20.271	VALID
Item 9	0.258	0.049	5.228	VALID
Item 10	0.515	0.044	11.725	VALID
Item 11	0.419	0.047	8.917	VALID
Item 12	0.534	0.044	12.074	VALID
Item 13	0.571	0.043	13.237	VALID
Item 14	0.571	0.041	13.864	VALID
Item 15	0.564	0.045	12.601	VALID
Item 16	0.550	0.043	12.897	VALID
Item 17	0.508	0.050	10.204	VALID
Item 18	0.699	0.039	18.044	VALID
Item 19	0.535	0.041	13.156	VALID
Item 20	0.582	0.041	14.117	VALID
Item 21	0.758	0.035	21.797	VALID
Item 22	0.628	0.035	17.820	VALID
Item 23	0.609	0.040	15.342	VALID
Item 24	0.490	0.047	10.398	VALID
Item 25	0.397	0.053	7.527	VALID
Item 26	0.555	0.044	12.541	VALID
Item 27	0.641	0.043	15.050	VALID
Item 28	0.882	0.019	45.685	VALID
Item 29	0.883	0.019	45.829	VALID
Item 30	0.530	0.037	14.204	VALID
Item 31	0.653	0.035	18.639	VALID
Item 32	0.614	0.038	16.224	VALID
Item 33	0.550	0.039	14.199	VALID
Item 34	0.700	0.030	23.010	VALID

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Based on the Table 3, it is known that the t-values for all items are greater than 1.96, which indicates that they are valid in measuring the academic stress variable consisting of seven dimensions: test stress, result stress, studying in group stress, teacher stress, peer stress, self-inflicted stress, and time management stress.

4. CONCLUSION

The results of the study indicate that the 34 items in the Academic Stress Inventory scale measure a single construct, namely Academic Stress Inventory as defined. To achieve a fit model, the scale required one modification, as all items were considered valid.

Based on the results of the CFA analysis of the Academic Stress Inventory, it can be concluded that this instrument is appropriate for measuring academic stress among university students. The adapted Academic Stress Inventory scale is recommended to be tested with research participants across different age ranges and not limited solely to university students. Therefore, the adapted Academic Stress Inventory scale may be applied to diverse populations.

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