

PSYCHOMETRIC CHARACTERISTICS OF THE INTERGROUP ANXIETY SCALE AMONG INTERNATIONAL STUDENTS IN INDONESIA

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ABSTRACT

When someone perceives significant differences in others, they may feel anxious about the potential for negative interactions or undesirable outcomes that may arise from such interactions. This is referred to as intergroup anxiety. It is important to research the validity and reliability of the intergroup anxiety scale for international students in Indonesia because intergroup anxiety affects various psychological variables in them. One of the most commonly used instruments to measure intergroup anxiety is the Intergroup Anxiety Scale (IAS) by Walter G. Stephan and Cookie White Stephan, developed since 1985. This study aims to evaluate the psychometric properties of the IAS in the context of international students in Indonesia. From the analysis of 100 collected data points, the results show that the IAS used in this study meets the criteria for content validity, construct validity, and reliability. The results indicate that the IAS meets four Goodness of Fit criteria, with RMSEA = 0.079, SRMR = 0.074, NFI = 0.90, and CFI = 0.95. Furthermore, the reliability of the IAS was evaluated with an Average Variance Extracted (AVE) value of 0.57. The overall Composite Reliability (CR) value reached 0.93. Therefore, it can be concluded that the IAS is a valid and reliable tool for measuring self-construal among international students in Indonesia.

KEYWORDS Intergroup Anxiety, Psychometrics, Validity, Reliability



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INTRODUCTION

Simek & Stewart (2024) concluded that despite intensive efforts to attract international students since the 1970s, the number of international student enrollments in Indonesia has stagnated or even declined, especially due to the impact of

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the COVID-19 pandemic. A recent study on exchange students in Indonesia estimates the number of international students as a small percentage of the total student population at leading universities, highlighting the challenges in increasing Indonesia's appeal as a global study destination. This reflects a paradox where, despite Indonesia's strategic goals for higher education internationalization, public acceptance remains suboptimal. The discrepancy between strategic goals and on-the-ground reality underscores the importance of studying international students in Indonesia to identify root problems and suitable alternative solutions.

One intense discussion regarding international students in Indonesia revolves around the various challenges they face while living, interacting, and fulfilling academic responsibilities. Various studies have concluded that international students in Indonesia encounter diverse and complex challenges. For instance, according to Widiasih & Ermiami (2020), they often struggle to adapt to a new environment that differs in language, culture, academics, and support facilities. These challenges also include living independently, immigration status, and increased academic burdens. Additionally, research by Ermiami et al. (2021) shows that international students also face academic difficulties, particularly in writing theses and receiving adequate supervisory support. This is related to social difficulties, such as building friendships with local Indonesian students, as found by Gayatri & Andhini (2016). Factors like language proficiency differences and different communication styles can hinder effective social interactions.

The difficulty for international students in forming friendships with local residents is not only encountered in Indonesia but also in various other countries. A study in Australia concluded that although the number of international students on Australian university campuses has increased, interactions or contact between domestic Australian students and international students, mainly from Asia, tend to be low (Mak et al., 2014). This phenomenon reflects similar patterns in other English-speaking countries, such as the United States, the United Kingdom, and New Zealand, where friendships between domestic and international students with different cultural and linguistic backgrounds are often rare (Williams & Johnson, 2011; Harrison & Peacock, 2010; Ward et al., 2005). These findings indicate that the difficulty in building relationships between culturally different groups is not limited to the Indonesian context but is also a global issue in international higher education environments.

Intergroup Anxiety

One psychological challenge faced by international students in social interactions is intergroup anxiety. International students in Indonesia face intergroup anxiety with various psychological challenges. They often feel uncomfortable and anxious when interacting with members of the local group who have different cultures, languages, and social norms. These differences can trigger stereotypes, prejudices, and uncertainty in communication and social interactions, resulting in high anxiety levels. Stephan and Stephan (1985) explain that intergroup anxiety largely stems from anticipating negative consequences that may arise for oneself when interacting with other groups. Key factors that can trigger intergroup anxiety include a lack of

previous contact with outgroups, significant status differences, and a higher number of outgroup members compared to ingroup members.

Based on existing research, it can be concluded that intergroup anxiety is a common experience often felt by individuals before interacting with people from different cultures (Stephan, 2014). This anxiety then increases cognitive biases and motivational and negative emotional reactions. Additionally, intergroup anxiety reduces evaluations of outgroup members; therefore, high levels of intergroup anxiety correlate with low levels of contact with outgroup members (Stephan & Stephan, 1985). Many studies show that intergroup anxiety correlates with negative attitudes toward outgroups and negative emotions such as fear and anger (Stephan, 2014). Hence, it is not surprising that intergroup anxiety is associated with low-quality intercultural relationships (Greenland & Brown, 1999).

Factors causing intergroup anxiety can stem from several aspects. One is the uncertainty of interaction between different groups, where individuals may feel uncertain or anxious about how they will be accepted or valued by members of another group. This can be reinforced by cultural differences, different social norms, and stereotypes and prejudices that group members may hold about other groups. According to Tajfel and Turner (1979), "Intergroup anxiety arises when there is a perception that another group may threaten our own group's identity or values."

Moreover, factors such as previous negative experiences in intergroup interactions, like discrimination or unfair treatment, can also trigger intergroup anxiety. When someone experiences or witnesses harmful treatment toward their group, it can reinforce feelings of fear or worry when interacting with other groups. In this context, Stephan and Stephan (1985) show that "Negative experiences such as discrimination or stigmatization can increase intergroup anxiety levels because they activate discomfort or fear related to intergroup interactions." Therefore, a deep understanding of these factors can help manage and reduce intergroup anxiety among different individuals and groups.

Intergroup anxiety can have significant implications for international students. Some key implications include:

1. **Barriers to Active Participation:** International students experiencing intergroup anxiety may feel reluctant to actively participate in campus activities such as class discussions, social events, or study groups. This anxiety can limit their participation and hinder valuable social and academic experiences.
2. **Social Isolation:** Intergroup anxiety can cause international students to feel isolated and struggle to form close social relationships with peers and local faculty members. This can lead to feelings of loneliness and discomfort in an unfamiliar environment.
3. **Emotional Stress:** Constantly facing intergroup anxiety can lead to emotional stress and tension among international students. Ongoing anxiety can affect their mental well-being and academic performance.

Intergroup Anxiety Scale

Measuring intergroup anxiety is crucial in social and psychological contexts as it provides a deep understanding of anxiety levels in intergroup interactions, identifies the contributing factors, and aids in developing effective intervention

strategies. With valid data, we can understand the extent to which anxiety affects individuals' behavior, emotions, and perceptions toward other groups and design educational programs or social campaigns aimed at promoting understanding, appreciation, and cooperation between groups, thus creating a more inclusive and harmonious social environment.

Several instruments have been developed to measure intergroup anxiety among international students. Below are two commonly used instruments in research in this field:

1. **The Intergroup Anxiety Scale (IAS):** This instrument was developed by Stephan and Stephan (1985) to measure the level of intergroup anxiety. The IAS has several statements that respondents must rate based on the level of anxiety they feel when interacting with people from different ethnic or cultural groups. This scale evaluates the cognitive, affective, and behavioral aspects of intergroup anxiety. The statements in the IAS often relate to feelings of worry, discomfort, or hesitation when interacting with members of another group.
2. **The Foreigner Talk Anxiety Scale (FTAS):** FTAS is an instrument developed by Young (1991) to measure the anxiety of speaking for foreigners in the context of a foreign language. This instrument can be adapted to measure intergroup anxiety among international students in social and academic situations. FTAS assesses feelings of anxiety and insecurity when speaking with members of the majority or local group, which can be a barrier to smooth communication and engagement in social interactions.

The Intergroup Anxiety Scale is the most extensively used scale to measure intergroup anxiety and is one of the first scales developed for this variable (Hosek & Rubinsky, 2020). Built by Stephan & Stephan (1985), this instrument consists of 10 items where respondents report the extent to which they experience feelings and emotions during intergroup interactions. Using a Likert model, participants' perceptions are measured using affective terms including: anxious, comfortable (reverse-coded), worried, at ease (reverse-coded), awkward, confident (reverse-coded), apprehensive, and worried (Stephan, 2014; Stephan & Stephan, 1985).

Research Objectives

Given the need for measuring intergroup anxiety, this study aims to evaluate the psychometric properties of the Intergroup Anxiety Scale (IAS; Stephan & Stephan, 1985) in the context of international students in Indonesia. The research was conducted by distributing this scale to international students studying in Indonesia, attending various higher education institutions primarily in Surakarta, Yogyakarta, and Semarang.

RESEARCH METHOD

Participants

This study was conducted at several universities in Indonesia. The research population consisted of international students currently pursuing education at various universities in Indonesia. The characteristics of the subjects included

international students, both undergraduate and postgraduate, who were willing to participate in the study and complete the questionnaire in full. The sampling technique used in this research was snowball sampling. Snowball sampling is a non-probability sampling method where initial respondents refer others who have similar characteristics of interest (Leighton et al., 2021; Marcus et al., 2017). Using snowball sampling, 100 international students from various universities in Indonesia were found and agreed to participate in this study.

Research Instrument

The Intergroup Anxiety Scale (IAS) consists of ten items designed to evaluate how individuals interpret their emotional responses when interacting with outgroup members in ambiguous situations (Hopkins & Shook, 2017). The scale asks participants if they feel confident, awkward, self-conscious, happy, accepted, confident, annoyed, impatient, defensive, suspicious, and cautious when interacting with members of another group. Typically, the response scale ranges from 1 (not at all) to 10 (very much), with higher scores indicating higher levels of anxiety (Stephan, 2014; Stephan & Stephan, 1985). Another version uses a 1 to 5-point response scale (Ortiz & Harwood, 2007). Before use, the IAS was adapted to the Indonesian culture. The adaptation steps followed the International Test Commission's (2016) Test Adaptation Guidelines, described as follows:

- **Pre-condition:** In this stage, the researcher sought permission via email from the original creators of the measurement tool. The original format of the scale was taken from the journal article "Intergroup Anxiety" by Walter G. Stephan and Cookie White Stephan, published in the Journal of Social Issues in 1985.
- **Test development:** There was no translation process in this study since the IAS was used in its original English language form. The researcher only modified the response options from a Likert scale of 1 to 10 to a Likert scale of 1 to 5, as used in previous research (Ortiz & Harwood, 2007).
- **Review:** Three expert reviewers were appointed. These experts held Ph.D. degrees in psychology, specializing in social psychology, educational and developmental psychology, and expertise in psychological measurement, which is highly relevant to understanding acculturative stress among international students in Indonesia. The researchers provided a brief explanation of the IAS along with the original scale to the three experts, accompanied by a cover letter. The cover letter explained the reasons for their selection as experts and confirmed their willingness to participate. The experts were asked to evaluate the scale's validity by completing an assessment form. The aspects evaluated included relevance, importance, and clarity using a Likert scale from 1 to 4. A score of 1 indicated very irrelevant, unimportant, and unclear, while a score of 4 indicated very relevant, very important, and very clear.
- **Pre-final:** In this phase, a pilot study was conducted involving 10 international students from different countries studying at various universities in Indonesia. To allow international students to provide feedback on the items, the researchers prepared the measurement instrument with a column for

comments. Additionally, the researchers asked the international students about their understanding of each item. Generally, the international students stated that the items were clear, easy to understand, and relevant to their life situations in Indonesia.

Data Analysis Techniques

The data analysis in this study included tests of validity and reliability. The validity used in this study was content validity and construct validity. The content validity of the Intergroup Anxiety Scale (IAS) was measured using the Content Validity Index (CVI). CVI evaluates the content validity of an instrument by assessing its structure, clarity, and consistency with the target audience (Jansen et al., 2021; Stelmach et al., 2021). The CVI value is calculated for each item on the scale (I-CVI) and for the entire scale (S-CVI) (Shrotryia & Dhanda, 2019). Construct validity was measured with convergent validity and discriminant validity. Convergent validity was measured with Factor Loading (FL), Confirmatory Factor Analysis (CFA), Average Variance Extracted (AVE), and Composite Reliability (CR). Discriminant validity was tested by comparing the square root values of the Average Variance Extracted (AVE) of each construct variable with the correlation values between construct variables. The values of Average Variance Extracted (AVE) and Composite Reliability (CR) were then used to determine the reliability of the instrument. The research data were analyzed using the LISREL (Linear Structural Relationships) program.

RESULT AND DISCUSSION

Content Validity

In psychometrics, content validity refers to how well the elements of an assessment instrument relate to and reflect the targeted concept for a specific assessment purpose (Almanasreh et al., 2019; Vetter & Cubbin, 2019; Zapata-Ospina & García-Valencia, 2022). This study used the Content Validity Index (CVI) obtained from three expert reviewers. The validation scale for experts was an ordinal scale from 1 to 4: 1 (not relevant), 2 (less relevant), 3 (somewhat relevant), and 4 (very relevant) (Yusoff, 2019). An acceptable CVI value is 1.00 when the number of experts involved is three (Polit et al., 2007; Polit & Beck, 2006). The I-CVI and S-CVI results are presented in Table 1.

Table 1. Summary of CVI Scores for IAS

Component	I-CVI	S-CVI
Relevancy	1.00	1.00
Importance	1.00	1.00
Clarity	1.00	1.00

Note: The Content Validity Index (CVI) is calculated for 10 items (I-CVI) and the total scale (S-CVI). The ratings from three experts were converted to a dichotomous scale of 0 and 1. Scores 1 and 2 were on the dichotomous scale 0, while scores 3 and 4 were on the dichotomous scale 1.

The results listed in Table 1 indicate that the CVI value for the 10 items of the IAS is 1.00, as all expert reviewers gave ratings of 3 and 4 for all statements in the IAS. The S-CVI value for this scale is also 1.00. This indicates that each item of the IAS and the content of the entire scale are relevant to the context of international students at universities in Indonesia. A scale with excellent content validity should have an I-CVI of 0.78 or higher and an S-CVI of 0.90 or higher (Polit & Beck, 2006; Rodrigues et al., 2017). Therefore, it can be said that the IAS in this study is a scale with excellent content validity.

Goodness of Fit

The Confirmatory Factor Analysis (CFA) test evaluates the fit of the measurement model using Goodness of Fit values. The measurement model fit test involves comparing benchmark statistics such as Chi-squared (χ^2) or Chi-square probability (P), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Normed Fit Index (NFI), Comparative Fit Index (CFI), and Goodness of Fit Indices (GFI). The criteria for concluding that the measurement model is adequate or meets Goodness of Fit criteria are Chi-squared (χ^2) \leq Chi-squared table or Chi-squared probability \geq 0.05; RMSEA \leq 0.08; SRMR \leq 0.10; NFI \geq 0.90; CFI \geq 0.90; GFI \geq 0.90. Construct variables or dimensions must meet at least 4 out of 6 Goodness of Fit model criteria (Ghozali, 2014; Hair et al., 2014). The fit test results for the CFA IAS model show that the model fits well. Below is a table containing the Goodness of Fit values for the IAS scale.

Table 2. CFA IAS Model Fit Test Results

Model	P-value (χ^2)	RMS EA	SR MR	C FI	N FI	G FI
Scale IAS	0.00	0.079	0.07 4	0. 95	0. 90	0. 86

Based on the conformity value of the CFA model above, it is known that the IAS scale CFA model has a good model fit criteria value. There are 4 criteria that are met from 6 criteria, namely RMSEA value below 0.08 (0.079); SRMR is below 0.10 (0.074); NFI (0.90) and CFI (0.95) values are more than equal to 0.90. So that the IAS scale CFA model is a fit model. The fit model means that the IAS scale model / form that is compiled is in accordance with existing data (empirical data).

Lower values for RMSEA and SRMR, as well as higher values for NFI, CFI, and GFI, signify better conformance. It has been suggested that RMSEA values of less than 0.05 are good, values between 0.05 and 0.08 are acceptable, values between 0.08 and 0.1 are marginal, and values over 0.1 are poor (Kim et al., 2016). While NFI and CFI values above 0.90 indicate an acceptable level of conformity. Similarly, a GFI value close to 1.00 indicates a better level of fit. These metrics are commonly used to assess the suitability of structural equation models and regression models (Ozkok et al., 2019; Rodrigues et al., 2017).

Construct Validity

There are several methods for measuring construct validity, including convergent validity and discriminant validity (Budiastuti & Bandur, 2018). Convergent validity is how high a construct measured formatively correlates with other alternative measurements of the same construct (Cheah et al., 2018; Ferreira et al., 2021). While discriminant validity refers to the ability of a test to distinguish between various traits or groups of different traits (Ferreira et al., 2021). In validity measurements, the FL value must be at least above 0.50. However, FL values above 0.40 are still acceptable if the number of subjects used in the study reaches more than 200. In addition, according to Hair et al. (2014), the standard for AVE scores is greater than 0.05 with CR scores exceeding 0.70. The following table mentions the results of the validity and reliability test from the *Intergroup Anxiety Scale* (IAS).

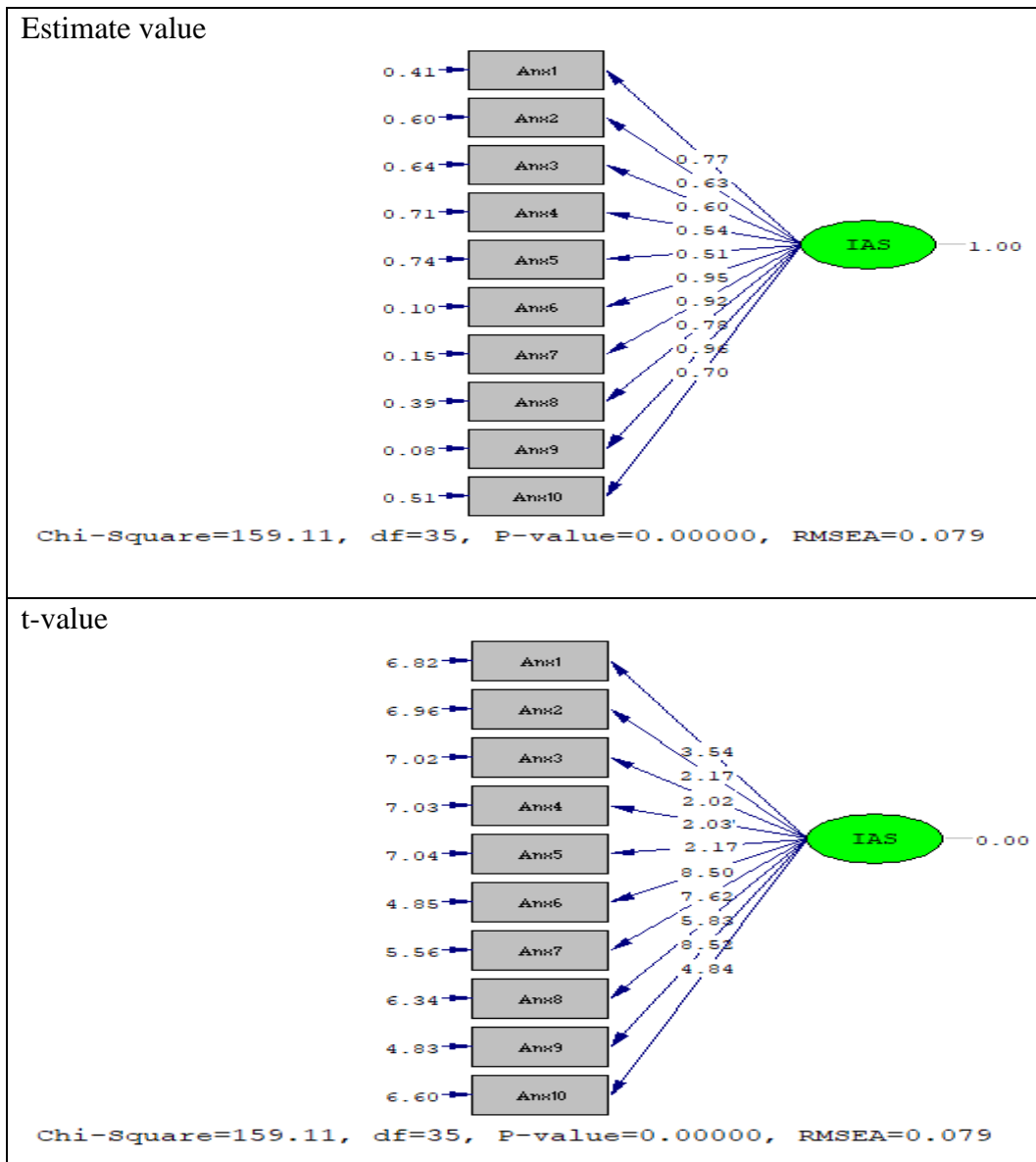
Table 3. CFA Method Validity and Reliability Test Results for IAS Scale

Model CFA				
Scale	Item	Loading Factor	Average Variance Extracted (AVE)	Composite Reliabilias (CR)
IAS scale	Anx1	0.77	0.57	0.93
	Anx2	0.63		
	Anx3	0.60		
	Anx4	0.54		
	Anx5	0.51		
	Anx6	0.95		
	Anx7	0.92		
	Anx8	0.78		
	Anx9	0.96		
	Anx10	0.70		

Instrument validity testing is carried out by comparing the loading factor value with the minimum criterion of 0.50. Based on the table above, it is known that the CFA IAS model has a *loading factor* of more than 0.50. So it can be concluded that these statement items already meet the criteria of convergent validity in measuring the construct (factor variable) of the IAS scale. This is also reinforced by the *Average Variance Extracted* (AVE) value of 0.57 which means that the value is greater than 0.50. Furthermore, the IAS instrument is unidimensional, so no discriminant validity test is carried out.

Below is an image showing the estimate and t-value results of the CFA model for the IAS scale.

Figure 1. CFA Model for IAS Scale: Estimates & t-value



The estimates in Figure 1 show the factor loading values from the constructs (green circles) to the statement items (grey boxes). The t-values explain the effect of the reflective relationship coefficients from the IAS scale constructs to the statement items. All t-values above indicate significant relationship effects as the t-values are greater than the t-table (1.96).

Reliability

In this stage, reliability assessment is conducted to evaluate the reliability of indicator variables, dimensions, or constructs (factors). The statistical tests used in this reliability assessment involve the Average Variance Extracted (AVE) and Composite Reliability (CR) values. If $AVE \geq 0.50$ and $CR \geq 0.60$, it can be concluded that the indicator variable, dimension, or factor (construct) has an adequate

level of reliability (Ghozali, 2014; Hair et al., 2014). The following table summarizes the reliability test results for the Intergroup Anxiety Scale (IAS):

Table 4. Summary of CR and AVE Test Results for IAS

Construct	<i>Average Extracted (AVE)</i>	<i>Variance</i>	Composite Reliabilitas (CR)	Keterangan
<i>Intergroup Anxiety</i>	0.57		0.93	Reliabel

Referring to the reliability test results of the CFA model for the IAS, it can be concluded that the 10 items reliably measure and explain the intergroup anxiety variable. The FL values range from 0.51 to 0.96. Additionally, the AVE value exceeds 0.50, at 0.57. Overall, the CR value reaches 0.93 for this scale.

Discussion

This study aimed to evaluate the psychometric characteristics of the Intergroup Anxiety Scale (IAS) used for international students in Indonesia. The results of the content validity index presented in Table 1 show that the IAS, used to measure intergroup anxiety levels among international students from various countries studying in Indonesia, demonstrates good content validity. The I-CVI and S-CVI scores for this scale reached 1.00, indicating a very high level of validity (Guilford & Fruchter, 1978; Polit & Beck, 2006; Rodrigues et al., 2017). Therefore, it can be concluded that this scale effectively captures the concept of acculturative stress experienced by international students in Indonesia accurately.

The CFA model of the IAS scale showed good fit criteria based on the evaluation in this study. Out of the six criteria examined, four were met: RMSEA less than 0.08 (0.079), SRMR less than 0.10 (0.074), and NFI and CFI equal to or greater than 0.90 (NFI = 0.90, CFI = 0.95). Thus, it can be concluded that the CFA model of the IAS scale fits the empirical data. RMSEA values less than 0.05 are considered good, between 0.05 and 0.08 are acceptable, between 0.08 and 0.1 are marginal, while values above 0.1 are considered poor (Kim et al., 2016). NFI and CFI values above 0.90 indicate an acceptable level of fit, while GFI values approaching 1.00 indicate better fit (Ozkok et al., 2019).

All items in the IAS scale showed FL values equal to or greater than 0.50, indicating that these items collectively have convergent validity to measure the components of the IAS scale. This finding is supported by the AVE values in this study, which show that at least 50% of the variance of the measured construct can be explained by the items in the scale. FL describes the strength and direction of the relationship between the latent variable and the indicators it measures, while AVE measures how well the construct is represented by the measured indicators (Tavakol & Wetzel, 2020). These values are used to assess the convergent validity of a measurement tool, with higher values indicating that the tool effectively represents the intended construct (Ab Hamid et al., 2017; Cheung et al., 2023). In this context, the IAS effectively and accurately measures intergroup anxiety among international students in Indonesia.

Previously, the Intergroup Anxiety Scale has been shown to have significant predictive ability in projecting levels of prejudice and has a positive relationship with perceptions of symbolic threat, realistic threat, and negative stereotypes (Hopkins & Shook, 2017; Stephan, 2014). The convergent validity of this scale is also proven to be good, as evidenced by strong correlations with feeling thermometer items towards Muslims and Arabs on a 0–100 score range, with scores above 50 indicating positive evaluations and scores below 50 indicating negative evaluations (Converse & Presser, 1986), indicators of Islamophobia (Lee et al., 2009), and the Intergroup Anxiety Toward Muslims Scale (IATMS) (Hopkins & Shook, 2017). Furthermore, this scale also positively correlates with IATMS, confirming its validity as a reliable measurement tool for depicting intergroup anxiety.

The analysis results also show that the IAS used among international students in Indonesia meets the reliability criteria. When assessing reliability, Average Variance Extracted (AVE) and Composite Reliability (CR) values are important indicators. AVE describes how much variance in a construct can be explained by the items measuring that construct, while CR measures the internal consistency of the items within a construct (Haji-Othman & Yusuff, 2022). This study's results align with other research by Hosek & Rubinsky (2020), concluding that the Intergroup Anxiety Scale overall has a high level of reliability. Initially, Cronbach's alpha for the 10-item intergroup anxiety scale developed by Stephan & Stephan (1985) was $\alpha = 0.86$, indicating strong internal consistency. Factor analysis results showed that the scale loads onto a single factor (Stephan et al., 1999), reinforcing its validity. However, the scale's reliability over six months appeared to decrease, with $\alpha = 0.49$ (Binder et al., 2009). Nonetheless, other studies found high reliability in measuring anxiety in specific contexts, such as anxiety related to contact with gay people and black people with $\alpha = 0.89$ (Ortiz & Harwood, 2007), and anxiety towards Muslims with $\alpha = 0.91$ (Hopkins & Shook, 2017). This suggests that the reliability of the scale may be influenced by the context or population tested.

CONCLUSION

The study on the Psychometric Characteristics of the Intergroup Anxiety Scale among International Students in Indonesia highlights the stagnation or decline in the number of international students in Indonesia, particularly due to the COVID-19 pandemic. International students face various challenges, such as cultural adaptation, language barriers, and academic pressures, which affect the quality of their social interactions. One of the primary psychological issues they encounter is intergroup anxiety, which arises when they interact with local groups that differ in terms of culture and social norms.

This study utilized the Intergroup Anxiety Scale (IAS) developed by Stephan and Stephan (1985) to measure the level of intergroup anxiety among international students in Indonesia. The findings indicate that the IAS has excellent content validity, with a Content Validity Index (CVI) score of 1.00 for all items. The Confirmatory Factor Analysis (CFA) model also demonstrated good model fit, meeting four out of six Goodness of Fit criteria.

In terms of construct validity, all items on the IAS showed factor loading values that met the criteria, and the Average Variance Extracted (AVE) value of

0.57 indicated that more than 50% of the construct variance could be explained by the items in the scale. The scale also met reliability criteria with a Composite Reliability (CR) value of 0.93.

Overall, this study concludes that the IAS is a valid and reliable tool for measuring intergroup anxiety among international students in Indonesia. It can help in identifying and addressing anxiety issues, thereby promoting a more inclusive and harmonious social environment.

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