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Adaptation and psychometric properties of the Multigroup Ethnic Identity Inventory in secondary education

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Abstract. *Introduction.* The research demonstrates that the Multigroup Ethnic Identity Inventory (MEI2) is an effective tool for assessing various aspects of ethnic identification among Indonesian secondary school students from diverse ethnocultural backgrounds. *Aim.* The aim of this study is to examine the impact of ethnic identity on the psychological well-being of secondary school students in Indonesia, utilising the MEI2 questionnaire. *Methodology and research methods.* The study involved 276 secondary school students (60.1% female; 39.9% male). Data were analysed using the SPSS software version 29 and SmartPLS v4. Confirmatory Factor Analysis (CFA) was utilised to evaluate how well the measurement model fits the data. *Results and scientific novelty.* The CFA validated the MEI2, with the goodness-of-fit index indicating that the model was both efficient and appropriate. The Kaiser-Meyer-Olkin (KMO) value was .885. Consistency reliability measured by Cronbach's alpha (α), ranged from .69 to .85, and composite reliability, assessed by McDonald's (ω), ranged from .64 to .83. Discriminant validity was observed with a range from .591 to .696. Consequently, significant positive correlations were identified among the three domains of ethnic identity. *Practical significance.* The study supports the MEI2 as a valid instrument for assessing ethnic identity among Indonesian secondary school students. It also assists educators in recognising and addressing the diverse ethnic identities of students within the context of Indonesian culture.

Keywords: affirmation and belonging, ethnic identity achievement, ethnic belonging, confirmatory factor analysis, ethnicity

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Адаптация и психометрические свойства опросника мультикультурной этнической идентичности в среднем образовании

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Аннотация. Введение. Исследование демонстрирует, что опросник многогрупповой этнической идентичности (MEI2) является полезным инструментом для оценки аспектов этнической идентификации для индонезийских учащихся средних школ из разных этнокультурных слоев. Цель настоящей работы – изучение влияния этнической идентичности на психологическое благополучие учащихся средних школ Индонезии с помощью опросника MEI2. Методология, методы и методики. В исследовании приняли добровольное участие 276 учеников средней школы (60,1 % женщин; 39,9 % мужчин). Результаты были проанализированы с использованием программного обеспечения SPSS версии 29 и SmartPLS v4. Для оценки того, насколько хорошо модель измерения соответствует полученным данным, был использован подтверждающий факторный анализ (CFA). Результаты и научная новизна. CFA подтвердил валидность применения опросника MEI2, продемонстрировав, что модель является как эффективной, так и адекватной. Критерий Кайзера – Майера – Олкина (KMO) составил ,885. Надежность согласованности, измеренная с помощью альфы Кронбаха (α), варьировалась от ,69 до ,85, а совокупная надежность, оцененная с помощью омеги Макдональда (ω), варьировалась от ,64 до ,83. Дискриминантная валидность была подтверждена в диапазоне от ,591 до ,696. Таким образом, в ходе работы были выявлены значительные положительные корреляции между тремя областями этнической идентичности. Практическая значимость. Исследование подтверждает, что опросник MEI2 является надежным инструментом для оценки этнической идентичности среди индонезийских учащихся средней школы, и помогает педагогам в распознавании и учете разнообразных этнических идентичностей студентов в контексте индонезийской культуры.

Ключевые слова: утверждение и принадлежность, достижение этнической идентичности, этническая принадлежность, подтверждающий факторный анализ, этническая группа

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Introduction

Ethnic identity acts as an important protective factor for various ethnic groups and developmental stages throughout adolescence within the context of school education [1, 2, 3]. Moreover, it serves as a crucial determinant of psychological well-being among ethnic minority communities [4, 5]. In particular, a robust ethnic identity is associated with higher self-esteem, positive personal growth, and greater individual competence [6]. Drawing upon P. J. Burke & S. Stryker conceptualisation, identity is understood as a multifaceted construct shaped by diverse orientations, values, and beliefs, ultimately culminating in a commitment to one's ethnicity [7]. On the other hand, social identity theory posits that ego identification, as its core element, is strongly linked to a sense of belonging to a social group, which in turn provides intrinsic value [8]. As a result, J. S. Phinney proposes that ethnic identity gradually develops into a complex, multi-faceted concept, involving key processes such as assessing the importance of one's ethnicity and expressing commitment to their ethnic or cultural group [9]. H. Tajfel defines ethnic identity as an individual's self-perception formed by their awareness of belonging to an ethnic group and the emotional importance they associate with that membership [10].

Ethnicity includes complex categories such as White, Black, Asian Pacific Islander, and Hispanic/Latino, which are closely linked to biological, economic, and sociocultural factors [11, 12]. These factors interact to shape psychological experiences in significant and diverse ways [13, 14, 15, 16]. Genetic traits particular to certain ethnic groups can play a major role in mental health vulnerabilities and stress responses. Additionally, economic disparities, reflected in variations in socioeconomic status and access to education and employment, have a substantial influence on psychological well-being. Sociocultural aspects, such as cultural identity, experiences of discrimination, and culturally specific coping mechanisms, also profoundly affect individual and collective psychological experiences [17]. Ethnic minorities often face systemic discrimination and microaggressions, leading to increased stress, anxiety, and depression. However, cultural strengths like community support and collective resilience can provide psychological protection, helping to mitigate the negative effects of discrimination and economic hardship.

J. S. Phinney identifies three essential dimensions related to ethnic groups, which include the distinction of their defining characteristics [17]. These characteristics often encompass shared cultural heritage, collective group experiences, and a sense of social identity. However, individuals within the same ethnic group may differ in how they express and perceive their ethnicity. While some aspects of ethnicity are unique to specific groups or individuals, there are also similarities that transcend all ethnic groups. As J. S. Phinney elucidates, people from any ethnic back-

ground can have a distinct cultural legacy that differs from their current cultural environment, experience differential treatment based on ethnicity, and maintain an identity that highlights their ethnic affiliation [17]. Essentially, understanding the factors that contribute to the development of healthy personalities within such a diverse population is crucial [18]. Individuals distinguish themselves through various factors, with ethnicity often serving as a key classification for managing daily life experiences. The defining characteristic of an ethnic group is the collective recognition among its members of its unique identity and unity [19]. As a result, questions of ethnic group belonging tend to adopt a generalised approach, often overlooking individual perspectives [20].

These objectives highlight the need for tools and measures to assess ethnic identity. Empirical research emphasises the direct link between ethnic identity and important outcome variables, such as coping strategies for prejudice [21, 22, 23], self-esteem [24], and psychological well-being [25]. However, findings differ depending on how ethnic identity is conceptualised and measured [14, 26, 27]. As a result, it is crucial to develop valid and reliable methods for evaluating this construct. Research on ethnic identity has garnered significant attention due to its pivotal role in shaping personal identity and influencing psychological well-being [5]. J. S. Phinney developed the “Multigroup Ethnic Identity Measure (MEIM)”, a 14-item tool designed to assess aspects of ethnic identity, including positive attitudes, sense of belonging, and ethnic behaviours [9]. It measures exploration and commitment to ethnic identity but does not account for unique historical or cultural experiences of specific groups. The MEIM includes subscales for affirmation, achievement, and behaviours. While validated with various ethnic groups in the US and internationally, the majority of validation efforts have focused on US populations [28, 29, 30]. Our current goal is to expand this research by examining a sample from secondary education in Indonesia.

Initially, J. S. Phinney suggested that all items in the MEIM were associated with a single ethnic identity factor [9]. However, later empirical studies revealed a two-factor structure. J. Dandy, K. Durkin, P. McEvoy et al. identified two distinct yet closely related factors: affirmation, belonging, and commitment (consisting of seven items), and exploration (comprising five items) [31]. Notably, even though the MEIM was measured on a two-scale basis in the US sample, J. S. Phinney viewed group membership as a process that evolves over time as individuals explore, understand, and commit to their ethnic group [15]. More recent research has supported the two-dimensional structure of the MEI [32]; although alternative three-factor models have also been proposed [2, 33, 34]. Therefore, it is valuable to examine whether a three-factor model could be relevant in the Indonesian context.

To fill this gap and enhance the content and face validity of the scale, J. S. Phinney developed the “Multigroup Ethnic Identity Measure-Revised (MEIM-R)”. This updated version features two subscales – Exploration (3 items) and Commitment (3 items) – drawn from a subset of the original 12-item MEIM, along with one additional item [15]. Additionally, D. T. Baryy work on developing an ethnic identity

scale for East Asian immigrants highlights the importance of acknowledging the multidimensional nature of ethnic identity and its interaction with social and cultural factors [35]. However, one limitation of D. T. Barry's study is its focus on East Asian immigrants, which may limit the generalisability of the findings to other ethnic groups or non-immigrant populations.

Despite the widespread use of the MEIM-R, "only a limited number of studies have assessed its psychometric properties and measurement invariance to confirm the consistency of the ethnic identity concept across various national and international populations". These findings offer support for an interconnected two-factor construct, encompassing exploration and commitment [36, 37, 38, 39], unfortunately there were contradictory findings in terms of multigroup identity, which is essential for practical comparisons of groups. M. Habibi, M. S. Etesami, M. A. Taghizadeh et al. and P. Musso, U. Moscardino, C. Inguglia reported the presence of MI in a variety of adult European populations and Iranian context, respectively [37, 39]. D. B. Maehler, A. Zabal, K. Hanke found that exploration and commitment were moderately positively associated with life satisfaction for national (German) identification [38], but no such relationship was observed for ethnic identity. They also discovered that after adjusting for behaviours, all but one of the effects of attitudinal ethnic identity became insignificant, indicating that attitudes were not predictive of responder behaviour, even the attitude are important to daily life [40].

Overall, these findings highlight the need for ongoing psychometric evaluation of the MEI2, particularly within secondary student populations. This is vital in secondary education due to the intricate process of identity development during adolescence. As adolescents experience substantial developmental changes, it is essential to ensure that the assessment tool captures the complexities of ethnic identity. According to A. Bandura theory, adolescents' beliefs in their ability to understand and navigate their ethnic identity can impact their involvement in this process [41]. Robustness testing allows for adjustments to account for developmental factors, ensuring the MEI2's validity across diverse student populations. This continuous evaluation reinforces its importance in shaping educational policies and interventions focused on fostering cultural inclusivity and supporting positive identity development among secondary students.

Building on these foundational insights, the primary goal of this study was to assess the psychometric properties of the MEI2 in Indonesian secondary schools among students from various ethnic backgrounds. Particularly, we formulated the following research questions in this study: (1) Is the MEI2 questionnaire's valid and reliable in a sample of secondary education?; (2) Does the MEI2 questionnaire's meet the model fit criteria?; (3) What is the relationship between three scale of the MEI2 to provide identity among student in secondary education? This approach enhances our understanding of ethnic identity, its influence on psychological well-being, and its role within educational settings. Additionally, it contributes to the broader field of cross-cultural research on ethnic identity assessment and provides practical applications for educational settings.

Literature Review

1. *Affirmation and Belonging*

Affirmation and belonging are crucial components of ethnic identity development, significantly contributing to psychological well-being and social integration, particularly within diverse populations. The Affirmation and Belonging scale measures an individual's sense of group membership and their attitudes towards their own group [42]. According to J. S. Phinney's research, individuals who feel a strong connection to their ethnic group generally exhibit higher self-esteem and greater life satisfaction [43]. This sense of belonging serves as a protective factor against the negative impacts of societal marginalisation. T. Yip, G. C. Gee, D. T. Takeuchi found that ethnic affirmation helps alleviate the stress associated with discrimination, demonstrating its protective effects [44]. Additionally, belonging provides a social support network that is vital for emotional and practical aid, enhancing social skills and cultural competencies, as highlighted by A. J. Umaña-Taylor, S. M. Quintana, R. M. Lee et al. [45].

Furthermore, receiving positive reinforcement from one's ethnic group contributes to the formation of a strong and positive self-identity. M. D. Jones & R. V. Galiliher noted that adolescents, who receive affirmation from their ethnic community, are more likely to develop a robust ethnic identity, fostering a sense of cultural continuity and pride in their heritage [46]. Additionally, affirmation is crucial for academic and professional growth, as K. O. Cokley & C. Chapman showed that students who feel recognised in their ethnic identity tend to be more motivated and achieve higher academic performance [47]. Moreover, individuals' who are confidence in their ethnic identity tend to embrace and respect diversity, which helps promote cross-cultural understanding, tolerance, and the development of a cohesive multicultural society [48].

It is widely recognised that developing intercultural communicative competence helps individuals adapt to new environments, promoting a sense of confidence and ease [49]. Self-affirmation exercises often involve individuals writing about their significant personal values. While not directly targeting feelings of belonging, these exercises contribute to reducing the negative impact of stressful experiences on outcomes like academic performance and sensitivity to potentially upsetting health information [50]. C. R. Critcher's & D. Dunning's research highlights that a central component of standard self-affirmation exercises involves recalling memories of close personal relationships [51]. Consequently, affirmation practices focused specifically on themes of belonging (known as affirmation and belonging) may offer greater benefits in overcoming challenges compared to traditional affirmation exercises, as they more explicitly emphasise social connections. For instance, A. H. Hales, E. D. Wesselmann, K. D. Williams investigated whether affirmation and belonging could improve outcomes for vulnerable individuals more effectively than standard affirmation instructions [52]. This focus on social connections, which are crucial for overcoming adversity and enhancing well-being, can be particularly advantageous in educational contexts.

2. *Ethnic Identity Achievement*

Ethnic identity refers to an individual's sense of self, where they connect with an ethnic group and adopt its cultural identity, values, beliefs, and traditions [53]. J. S. Phinney defines ethnic identity as a fundamental, enduring aspect of one's overall identity, which involves a sense of belonging to an ethnic group along with the associated emotions and viewpoints related to that affiliation [17]. Ethnic identity plays a vital role in shaping an individual's self-concept, including their connection to an ethnic group and its cultural elements. It is significant in influencing feelings of belonging, self-esteem, and well-being. Additionally, this concept is closely related to ethnicity [5], social interactions, and one's position or status within those interactions [54], contributing to the development of minority youth [55], as well as to identification, beliefs, participation, and emotions [56]. Developmental research indicates that early to middle adolescence (approximately ages 10 to 16) is a crucial period for the development of ethnic identity [57]. Studies by S. A. Blozis & R. Villarreal [36] and A. S. Brittian, S. Y. Kim, B. E. Armenta et al. [58] emphasise that ethnic identity, as a cultural resource, plays both a protective role (e.g. against discrimination and prejudice associated with minority status) and a promotional (e.g. related to higher self-esteem, better academic achievement, and mental health) role in youth's development". However, most of this research has been conducted in Western contexts, with limited studies focusing on ethnic identity within Indonesian samples.

P. Gummadam, L. D. Pittman, M. Ioffe noted that ethnic identity can be assessed through different methods and is a crucial element of a person's sense of belonging and self-esteem [24]. Identity achievement represents the ideal outcome of the identity development process, while identity diffusion reflects uncertainty about one's societal role and a diminished sense of self-worth, often resulting from an inability to resolve identity challenges [9]. Additionally, Ethnic Identity Achievement specifically measures how individuals perceive their success in relation to their ethnic background and how they view their ethnic identity as a whole [59]. Furthermore, M. Verkuyten & P. Brug emphasised that ethnic identity achievement involves individuals developing a strong sense of self as a member of their ethnic or racial community, coupled with a deep understanding and acceptance of their ethnicity or race [60]. This suggests that individuals who have successfully formed a solid ethnic identity have a clear and positive recognition of their ethnic heritage. Additionally, the emotional dimension of ethnic identity, which reflects how individuals feel about their group membership, can significantly influence their overall well-being.

3. *Ethnic Belonging*

Belonging to an ethnic group signifies a positive connection with one's ethnic community, whereas ethnic identity achievement entails the active exploration and understanding of one's ethnic background. Participation in ethnic activities indicates involvement in cultural traditions, and attitudes towards members of other ethnic groups are shaped by one's orientation toward those groups [9, 61].

S. Ting-Toomey, K. K. Yee-Jung, R. B. Shapiro described ethnic belonging as the integration of ethnic customs and values with other identity forms [62], highlighting a sense of attachment, pride, and a positive connection to one's ethnic or cultural heritage [63]. Ethnic Belonging emphasises a deep connection to one's ethnic group, while ethnic identity achievement focuses on gaining knowledge about one's ethnic heritage. In addition, engaging in ethnic practices and adopting a specific attitude toward other groups are essential components in understanding one's ethnic identity [61].

Moreover, J. S. Phinney explained that ethnic belonging reflects how strongly individuals feel connected to and comfortable with their ethnic group members [9]. This sense of belonging is a crucial aspect of ethnic identity and plays a significant role in shaping overall well-being [63]. In contrast to ethnic identity achievement, which centers on gaining knowledge about one's ethnic background, and ethnic practices, which involve participating in cultural activities, ethnic belonging focuses specifically on the personal bond with one's ethnic group [64]. It is also linked to attitudes toward other ethnic groups, known as other-group orientation, which relates to how individuals perceive and feel about people from different ethnic backgrounds [65].

In terms of student behaviour and attitudes, those with a strong sense of ethnic belonging tend to engage more actively in cultural and ethnic activities, driven by their attachment to their community's traditions. This engagement not only strengthens their connection to their cultural heritage but also builds stronger social networks within their ethnic group. Additionally, students who feel a strong ethnic connection often experience better psychological outcomes, including higher self-esteem and lower levels of anxiety and depression. A solid ethnic identity provides a stable sense of self and a supportive network, which can help buffer against the negative effects of stress and discrimination. Furthermore, ethnic belonging can contribute to academic success. Students who feel deeply connected to their ethnic community often receive support from their peers and family, motivating them to excel academically and pursue their educational aspirations.

Methods

1. Participants

The participants in this study were secondary school students ($N = 276$) from various public and private schools in Indonesia. These students were selected from schools accredited with an "A" rating, both in urban and rural areas. The selection process involved randomly choosing classes from each grade level. The specific sample included 166 girls (60.1%; $M_{age} = 13.04$; $SD = .79$) and 110 boys (39.9%; $M_{age} = 12.85$; $SD = .87$). Participants were aged between 11 and 15 years ($M_{age} = 12.96$; $SD = .83$) and were randomly selected from over ten schools in urban and rural districts in Lampung province. The study received approval from the Institutional Review Board of the Doctoral School of Education at the University of Szeged, Hungary (Approval Number: 6/2023), and all participants electronically signed an

informed consent form. The sample included students from various ethnocultural backgrounds, including Javanese, Lampung, Batak, and Sundanese, based on their responses to a demographic questionnaire. Both private and public schools were included in the study, reflecting the structure of Indonesian secondary education system, which consists of both types of schools. Public schools typically serve larger student populations from a broader range of socioeconomic backgrounds and follow a standardised curriculum, while private schools often offer smaller classes, more resources, and diverse teaching methods due to their independence. Including both school types provided a more comprehensive view of the educational landscape, capturing a range of teaching practices, resources, and perspectives that may influence students' ethnic identity and academic experiences. Table 1 presents the demographics of the participants.

Table 1

Participant demographics for this study

Demographic characteristics		Frequency	Percentage (%)
Gender	Female	166	60.1
	Male	110	39.9
School category	Private	187	67.8
	Public	89	32.2
Place of residence	City	159	57.6
	District	117	42.4
Ethnicity	Batak	21	7.6
	Java	175	63.4
	Lampung	47	17.0
	Sunda	33	12.0
Religion	Budhist	8	2.9
	Catholic	9	3.3
	Hindu	6	2.2
	Moslem	231	83.7
	Protestant	22	8.0

2. Instrument

The MEI2 was developed by J. S. Phinney [9] and O. Kouli & A. G. Papaioanou [61] and we developed some questions as well. The development of questions or items by researchers is because that we need to assess and understand various aspects of ethnic identity and its impact on psychological adjustment, academic achievement, and the holistic formation of ethnic identity among individuals. The 21-item questionnaire is divided into three subscales: Affirmation and Belonging (5 items), Ethnic Identity Achievement (7 items), and Ethnic Belonging (9 items). Each item is rated on a 5-point scale, with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The instrument was translated from English to Indo-

nesian by experts to ensure accuracy. These subscales were chosen due to their relevance in understanding the complexities of ethnic identity within secondary education. Our literature review highlights their importance in shaping students' academic and socio-cultural experiences [61]. By focusing on these subscales, the study provides a more detailed examination of ethnic identity dynamics in the research context, offering greater clarity in the revised introduction and enhancing the transparency of the research design.

3. Data Analysis

The data from the questionnaire were analysed using SPSS version 29 and Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS v4. Confirmatory Factor Analysis (CFA) was conducted to assess the measurement model fit [66]. After the CFA, several fit indices were used to evaluate the model adequacy, including the chi-square test, comparative fit index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), Standardised Root Mean Square Residual (SRMR), and Kaiser-Meyer-Olkin (KMO) index to evaluate the model's adequacy [67]. The chi-square statistic, degrees of freedom and p-value were reported numerically. To assess the overall reliability of the research, Cronbach's alpha and composite reliability were calculated after the CFA. Specifically, internal consistency reliabilities (Cronbach's alpha) and composite reliabilities (McDonald's coefficient omega, [68]) were computed to evaluate the dependability of the results, with values above .70 considered acceptable, as recommended by A. Habók & A. Magyar [69].

Subsequently, construct validity and discriminant validity tests were conducted to evaluate the construct validity of the measurement model. When evaluating the convergence of the theoretical model, it is important to examine the relationships between its components. A construct was considered valid if the sum of all its items exceeded .70. Additionally, construct reliability (CR) must be above .70, and the Average Variance Extracted (AVE) had to exceed .50, although lower AVE values could be accepted if CR exceeded .60 [70]. For discriminant validity, the HTMT (Heterotrait-Monotrait ratio) criterion was applied, with a cutoff value of .90 considered acceptable [67].

Results

1. CFA

CFA was utilised to validate the latent factors in the measurement model, ensuring that all latent factors performed effectively and satisfied the Goodness-of-Fit (GoF) indices. A CFA diagram was constructed (see Figure 1) using the pattern matrix builder plugin [71]. In the diagram, latent variables were represented as circles, observable variables as rectangles, and measurement errors as small circles. The KMO value was .885, and items with loading factors below .40 were excluded following standard practice as recommended by B. G. Tabachnick, L. S. Fidell, J. B. Ull-

man [72]. Any items below this threshold were removed according to the .40 cut-off guideline established by social science researchers [49, 73].

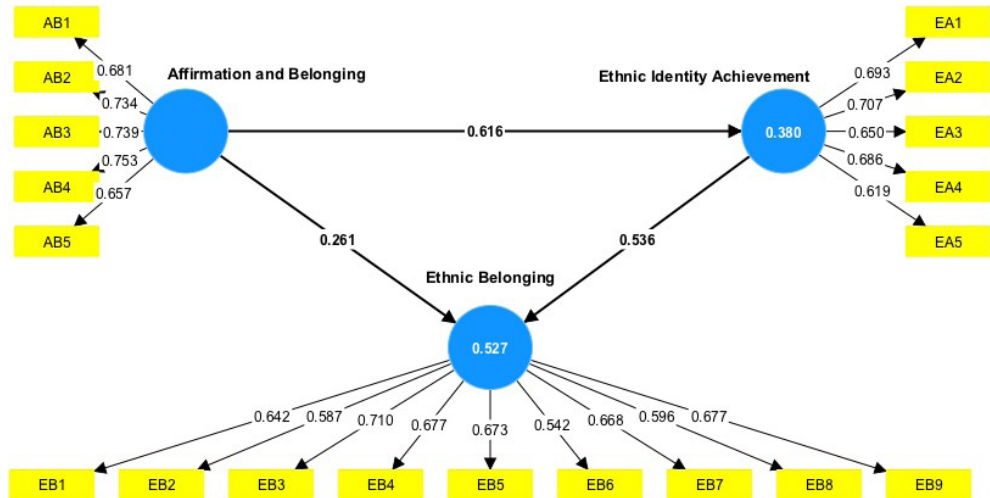


Fig. 1. CFA graph for MEI2

To improve model fit, we examined the modification indices and covariance for items with values greater than 5 within the same factor, making adjustments to enhance reliability. After these changes, the model fit improved with the following indices: $\chi^2 = 227.671$, $df = 149$, $p < .001$, CFI = .978, TLI = .975, RMSEA = .044, and SRMR = .075. Table 2 provides the modified loading factors.

Table 2

Loading scores items

Variables	Item code	Questions	Loading factor
Affirmation and Belonging	AB1	I am happy that I am a member of the group I belong to.	.681
	AB2	I have a strong sense of belonging to my own ethnic group.	.734
	AB3	I have a lot of pride in my ethnic group and its accomplishments.	.739
	AB4	I feel a strong attachment towards my own ethnic group.	.753
	AB5	I feel good about my culture or ethnic background.	.657
Ethnic Belonging	EA1	I have spent time trying to find out more about my own ethnic group, such as its history, traditions, and customs.	.693
	EA2	I have a clear sense of my ethnic background and what it means for me.	.707
	EA3	I think a lot about how my life will be affected by my ethnic group membership.	.650
	EA4	I understand pretty well what my ethnic group membership means to me, in term of how to relate to my own group and other groups.	.686
	EA5	In order to learn more about my ethnic background, I have often talked to other people about my ethnic group.	.619

Variables	Item code	Questions	Loading factor
Ethnic Identity Achievement	EB1	I like keeping the traditions of the heritage of my ethnic group.	.642
	EB2	The values of my ethnic groups determine my life.	.587
	EB3	In general, belonging to my ethnic group is an important part of my self-image.	.710
	EB4	The values of my ethnic groups are important for my judgment about what I have to do.	.677
	EB5	The cultural traditions of my ethnic group absolutely express me.	.673
	EB6	I know about being traditional fabric cloth, such as Tapis Lampung.	.542
	EB7	I know about being Tapis Lampung motif, such as Jung Sarat motif, Mountain Motif, Flora and Fauna motif, Pucuk Rebung motif.	.668
	EB8	I know about the process of making Tapis Lampung	.596
	EB9	I know the values of Tapis Lampung, such as economy, cultur, story.	.677

2. Reliability

Evaluating the internal consistency and reliability of each subscale was an essential step, as outlined in Table 3. The reliability coefficients for the three subscales ranged from .64 to .85, suggesting that each subscale exhibited acceptable reliability. Reliability was assessed using both Cronbach’s alpha (Crb α) and composite reliability (ω), with both methods employed to provide a comprehensive assessment.

Table 3

Internal consistency and composite reliability

Estimate	McDonald’s ω	Cronbach’s α
Affirmation and Belonging	.76	.76
Ethnic Identity Achievement	.64	.69
Ethnic Belonging	.83	.85

Table 3 provides the internal consistency and composite reliability estimates for three subscales. For the Affirmation and Belonging subscale, both McDonald’s omega (ω) and Cronbach’s alpha (α) value at .76, indicating strong reliability. The Ethnic Identity Achievement subscale shows moderate reliability, with a composite reliability of .64 and a Cronbach’s alpha of .69. The Ethnic Belonging subscale demonstrates, on the other hand, demonstrates the highest reliability, with McDonald’s ω at .83 and Cronbach’s α at .85. These values collectively assess the reliability of the subscales in measuring their respective constructs.

3. Convergent Validity

The use of convergent validity allowed for the assessment of the relationships between different variables within a single construct of the instrument. Convergent validity is confirmed when the variables that constitute a factor show significant correlations with each other. To ensure the validity of this study, both CR and AVE were calculated, as presented in Table 4.

Table 4

Convergent validity measurement

Factors	CR	AVE
Affirmation and Belonging	.76	.39
Ethnic Identity Achievement	.70	.32
Ethnic Belonging	.82	.33

Table 4 displays the convergent validity measurements for the three factors. The Affirmation and Belonging factor has a CR of .76 and an AVE of .39. The Ethnic Identity Achievement factor shows a CR of .70 and an AVE of .32. The Ethnic Belonging factor has a CR of .82 and an AVE of .33. These values indicate the degree of correlation among the variables within each factor and their contribution to the overall construct [70, 74], offering insights into the validity of the measurements.

4. Discriminant Validity

The discriminant validity test results were analysed to verify whether the latent factors are distinct from each other [75]. The Fornell-Larcker criterion was utilised for this purpose [76], as presented in Table 5. The findings, with values ranging from .591 to .696, confirm that values below .90 are considered adequate for demonstrating discriminant validity [76, 77]. Additionally, the correlations between the variables were assessed through the path coefficients.

Table 5

Fornell-Larcker criterion for three-factors

	AB	EB	EA
AB	.714	-	
EB	.591	.644	-
EA	.616	.696	.672

Note: AB – Affirmation and Belonging; EA – Ethnic Identity Achievement; EB – Ethnic Belonging. Significant at $p < .01$.

Table 6 reveals a significant positive relationship between AB and EB, with a standardised path coefficient of $\beta = .261$ and a $p < .001$. Additionally, positive correlations were also observed between AB and EA, as well as between EA and EB, with path coefficients of $\beta = .611$ ($p < .001$) and $\beta = .536$ ($p < .001$), respectively. The total direct effect among the three variables was found to be $\beta = .330$ and $p < .001$.

Table 6

Post-hoc minimum sample size

Correlation	Path coefficients	p
AB → EB	.261	< .001
AB → EA	.616	< .001
EA → EB	.536	< .001
EB → EA → EB	.330	< .001

5. Student Performance

Figure 2 provides a detailed analysis of students' scores on three ethnic identity variables – Ethnic Identity Achievement, Ethnic Belonging, and Affirmation and Belonging – across four Indonesian ethnic groups (Batak, Java, Lampung, and Sunda), distinguished by gender. Ethnic Identity Achievement scores range between 13 and 24, with Batak females achieving the highest median (about 19) and Sunda males the lowest one (about 17). Ethnic Belonging scores are generally higher, between 24 and 44, with the Java group showing the broadest range and highest median (approximately 35–36 for both genders). Affirmation and Belonging scores are similar to Ethnic Belonging but slightly elevated, spanning approximately 26 to 44, with Java students again having the highest median (around 37). Gender differences are subtle yet noticeable, with females often scoring marginally higher, particularly among Batak students. The Java ethnic group displays the widest score distribution across variables, indicating greater variability in ethnic identity perceptions within this group. These violin plots effectively highlight the subtle variations in ethnic identity dimensions among Indonesian students, illustrating the complex role of ethnicity and gender in shaping these identity aspects.

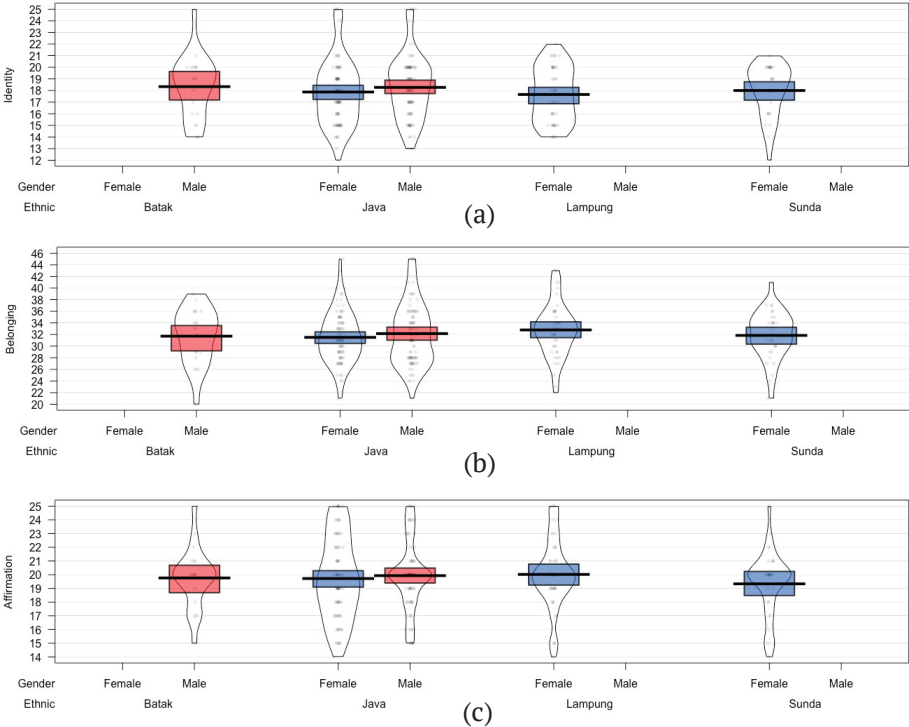


Fig. 2. Students' performance on ethnic identity variables

Note: (a) Students' performance on Ethnic Identity Achievement variable; (b) Students' performance on Ethnic Belonging variable; (c) Students' performance on Affirmation and Belonging variable.

Discussion

Our study represents a pioneering advancement in examining the psychometric properties of the MEI2 scale among a diverse sample of Indonesian secondary school students. Following prior research findings [37, 78, 79], we identified three distinct factors relevant in the Indonesian context: CFA, reliability assessments using Cronbach's alpha and McDonald's omega, and validity based on CR and AVE, as well as discriminant validity. Moreover, the results of our investigation validated MEI2 for the three commitment subscales. Overall, it was concluded that the scale demonstrated reliability and validity across all genders and among secondary students. Our study serves a significant purpose, because ethnic identity is essential for positive youth development and engagement [5, 80]. By verifying the MEI2 reliability and validity within Indonesia, we provide educators and researchers with a valuable tool for understanding and supporting students' ethnic identity development. Such insights can inform inclusive and equitable educational approaches in multicultural settings [81]. Additionally, this study emphasises the importance of culturally responsive psychometric instruments for accurately assessing ethnic identity across diverse cultural contexts, thus contributing to the global discourse on youth development and educational psychology [82].

In this study, the MEI2 questionnaire was adapted and validated for a sample of Indonesian secondary school students using CFA. The aim was to connect theoretical concepts with practical development. Following the CFA, it was determined that a three-factor model was most appropriate. However, two items under Ethnic Identity Achievement – namely, “I am not very clear about the role of my ethnicity in my life” and “I have not spent much time learning about the culture and history of my ethnic group”. These components were excluded due to their loading factors being below .50. Low loadings can weaken measurement accuracy and add unnecessary variation, potentially reducing reliability. Removing these items improved the questionnaire internal consistency and construct validity. This practice is supported by previous research conducted by R. E. Roberts, J. S. Phinney, L. C. Masse et al. [83]. In their validation on the MEIM, they concluded that items with low loadings were recommended for removal to better capture the construct of ethnic identity. Similarly, general principles of psychometric evaluation, as discussed by B. O. Olatunji, N. L. Williams, D. F. Tolin et al. [84], emphasise that eliminating poorly performing items leads to a more accurate and interpretable measure. This refinement ensures that the MEI2 questionnaire provides a robust assessment of ethnic identity among Indonesian secondary school students, offering more reliable and valid data for both research and practical applications. Additionally, construct validity of the MEI2 was further confirmed through moderate but statistically significant correlations between overall and subscale scores with indicators of subjective well-being, such as positive affect, negative affect, and life satisfaction. These correlations aligned with expected patterns, reinforcing findings from earlier studies and supporting the instrument validity [9, 38, 85, 86, 87].

Our research established the reliability of an MEI2-representative scale in Indonesian, taking into account the financial considerations. Nevertheless, it is crucial to renewed assessment of the evaluation measurement properties of existing constructs, given that the scale may be used across diverse groups. The sample under consideration could display a variety of structural characteristics and strategic classifications, contingent upon the results of additional studies. Structural characteristics vary across samples to different extents, shaped by cultural, socio-economic, and contextual influences.

In psychological research, establishing the cross-cultural validity of instruments like the MEI2 is essential. Ethnic identity is a complex construct that can manifest differently in various cultural contexts [88, 89]. For instance, J. S. Phinney's model of ethnic identity formation emphasises the role of socio-cultural environments in shaping ethnic identity [9]. This model supports the need for ongoing validation to ensure the instrument accuracy in different settings. Measurement invariance, as highlighted by W. Meredith, which is key to verifying that the instrument operates comparably across groups [90]. Without this, comparisons across groups may be invalid, leading to erroneous conclusions. Additionally, G. W. Cheung & R. B. Rensvold further underscored the assessing measurement invariance to ensure dependable cross-cultural research findings [91]. Earlier studies, such as J. S. Phinney's & A. D. Ong's review of ethnic identity, discuss the evolving nature of ethnic identity and the necessity for flexible tools [15]. They argue that instruments should be culturalve to capture the essence of ethnic identity accurately, which calls for ongoing efforts to refine and adapt the MEI2, ensuring its continued relevance and precision.

The research findings on ethnic identity variables among Indonesian students illustrate complex patterns across different ethnic groups and between genders. Javanese students tend to score higher and exhibit a broader range in the Ethnic Belonging and Affirmation and Belonging subscales, suggesting a strong sense of ethnic identity. Minor gender differences – typically with females scoring slightly higher – align with prior studies on gender roles in ethnic identity development [45]. The relatively lower and more varied scores in Ethnic Identity Achievement subscales suggest this area of identity may still be forming in adolescents, consistent with longitudinal research on ethnic identity progression [57]. These findings support J. S. Phinney's concept of ethnic identity as a universal construct with unique cultural expressions [9], underscoring the nuanced nature of ethnic identity development within multicultural contexts like Indonesia. This reinforces the need for culturally aware methods to understand and promote positive ethnic identity among diverse student groups, as highlighted by J. S. Phinney's & A. D. Ong in their exploration of cultural influences on identity formation [15].

Conclusion

In conclusion, this study demonstrates that the MEI2 is a useful tool for assessing aspects of ethnic identification among Indonesian secondary students from

varied ethnocultural backgrounds. Currently, only comparisons of MEI2 commitment ratings are reliably valid, while comparisons of exploration scores should be approached with caution. Consequently, further research on this widely used measure is recommended. Our study investigated the MEI2's reliability, convergent validity, discriminant validity, and factor structure. Overall, our findings confirm that the MEI2 is a dependable instrument with strong psychometric properties, making it suitable for broader application within the Indonesian setting. Additionally, by focusing on a limited definition of ethnicity grounded in language, our study contributes to multicultural research and enriches the literature on ethnic identity. It is anticipated that this work will encourage future studies assessing the MEI2 and similar measures among various and less-studied ethnic groups.

Limitations and Future Research

The majority of participants in this study were recruited through internet social networking websites and other social media services. This approach limited the sample to individuals, who had the resources, interest, and education necessary to use the Internet. Since the study did not include a category for achievement, we were unable to assess the extent to which participants' ethnic identity was linked to learning outcomes. However, considering that ethnic identity evolves gradually throughout adolescence and young adulthood through processes of exploration and commitment, it is difficult to predict its development with certainty [37]. Due to the small sample size in this study, we recommend that researchers exercise caution when applying the MEI2 to larger populations in Indonesia. This is especially important in light of the fact that gender was not found to be a significant mediator in our research. Importantly, J. S. Phinney has affirmed that the 6-item MEIM-R version effectively captures the core elements of ethnic identity [15]. Future studies could focus on examining the psychometric properties of the 6-item MEIM-R in the Indonesian context, potentially leading to a more accessible version of the tool.

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