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Psychometric Properties of Attitude Towards Motherhood Scale: Measurement of Matrescence in Indonesia

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Abstract

The transition to motherhood—matrescence—is a critical period that is often overlooked. Maternal attitude plays a crucial role in determining whether her psychological development follows an adaptive path or leads to a heightened risk of mental health disorders. This study aims to demonstrate psychometric properties of the adapted and modified AToM scale. The adapted instruments, DAToM, measure maternal attitudes based on their underlying beliefs about motherhood in the matrescence period. The study focused on a specific population of Indonesian first-time mothers whose children were under the age of two, who's in reproductive age range. A total of 405 mothers participated in the study. The findings indicated that the DAToM scale demonstrated good internal consistency ($\alpha = 0.73$) and showed a strong positive correlation with the Edinburgh Postnatal Depression Scale (EPDS). Multi-Group Confirmatory Factor Analysis (MGCFA) demonstrated robust measurement invariance across age and education groups. Based on the analyses, the 10-item DAToM comprising three dimensions, were found to be valid and reliable, meeting acceptable psychometric standards. Although the DAToM scale still holds potential for further refinement, its use in research settings is expected to facilitate deeper exploration into the topic of matrescence among mothers in Indonesia.

Keywords: instrument development, maternal attitude, matrescence.

Abstrak

Masa transisi peran menjadi ibu (matrescence) merupakan periode kritis yang sering terlewatkan. Sikap ibu menjadi faktor yang penting untuk menentukan perkembangan psikologis yang adaptif maupun risiko terhadap gangguan kesehatan mental. Penelitian ini bertujuan untuk mendemonstrasikan sifat psikometrik dari skala AToM yang diadaptasi dan modifikasi. Alat ukur yang sudah diadaptasi, yaitu DAToM, mengukur sikap ibu yang didasarkan oleh keyakinannya terhadap peran ibu pada periode matrescence. Penelitian ini membatasi populasi ibu dengan anak pertama yang berusia di bawah dua tahun. Sebanyak 405 ibu berpartisipasi dalam penelitian ini. Hasil menunjukkan nilai konsistensi internal skala DAToM tergolong baik ($\alpha = 0.73$) serta memiliki korelasi positif yang kuat dengan Edinburgh Postnatal Depression Scale (EPDS). Multi-Group Confirmatory Factor Analysis (MGCFA) menunjukkan invarians pengukuran yang baik lintas kelompok usia dan pendidikan. Berdasarkan hasil analisis, DAToM dengan 10 item terbukti valid dan reliabel dengan nilai psikometrik yang memenuhi standar. Meskipun skala DAToM masih memiliki ruang untuk penyempurnaan, penggunaan skala DAToM dalam lingkup riset diharapkan dapat membuka peluang untuk eksplorasi penelitian lebih lanjut terhadap topik matrescence di Indonesia.

Kata kunci: *matrescence, pengembangan alat ukur, sikap ibu.*

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Introduction

Becoming a mother does not simply begin with the process of childbirth, but rather represents a developmental transition characterized by increasing roles and responsibilities that are gradually internalized by a woman (Mercer, 2004). The process of expanding roles begins with pregnancy, continues through childbirth, and extends to raising children, with the mother facing new challenges at each stage. For example, during pregnancy, mothers experience physical, hormonal, and metabolic changes that cause discomfort (Gaur & Yadav, 2020; Rahmadhani et al., 2023; Suryani & Handayani, 2018). Then, in the postpartum period, mothers face high demands from babies, behavioural and developmental problems in toddlers that trigger maternal stress (Arikan et al., 2019), communicating with adolescents who begin to rebel (Valizadeh et al., 2018), and adapting to new ambivalent relationships after the child reaches adult developmental stages (Lendon et al., 2014). This indicates that becoming a mother is a long, ongoing process.

In psychological terms, the process of becoming a mother is called matrescence. The term matrescence was first coined by anthropologist Raphael (1975). She emphasised a critical transition period, or process, that occurs when a woman becomes a mother: matrescence. According to Raphael, the biological fact of childbirth alone does not automatically transform a woman into a mother. The developmental stage during which a woman moves from the preconception phase, pregnancy and delivery, surrogacy or adoption, to the postnatal phase and beyond is known as matrescence. The duration of matrescence is individual, recurring with each child, and can be said to last a lifetime (Athan, 2024).

Matrescence is a difficult time, especially for new mothers, and can be traumatic or transformative (Sidesinger, 2024). Ideally, matrescence that is navigated well will transform a woman's psyche into that of a mother because she has been engaged with the experiences of pregnancy, childbirth, and child-rearing. The knowledge gained from this experience is transformative and helps women navigate their new role as mothers (Sidesinger, 2024). Conversely, poor matrescence experiences can cause trauma in mothers. Based on data in Indonesia, 28.7% of pregnant women in the third trimester experience anxiety (Puspitasari & Wahyuntari, 2020). The Head of the National Population and Family Planning Agency (BKKBN) reported that 57% of mothers in Indonesia experience baby blues symptoms (BKKBN, 2024). Additionally, the prevalence of depression 6 months postpartum in Indonesia was reported to be 4.0%. More specifically, postpartum depression in urban areas is 5.7%, higher than in rural areas at 2.9% (Putri et al., 2023). The high prevalence is caused by several risk factors. Lack of social support, a history of domestic violence or abuse, a history of mental illness, unintended or unwanted pregnancy, unfavourable life events, high levels of perceived stress, pregnancy difficulties from the past or present, and miscarriage are examples of external risk factors (Puspitasari & Wahyuntari, 2020). Idaiani & Basuki (2012) add complications during labour and delivery of babies with low birth weight as factors. Other factors include sleep deprivation, lack of partner support postpartum, feelings of worthlessness as a parent, and anger toward the baby (Parfitt & Ayers, 2014).

Meanwhile, one internal risk factor is attitude toward the maternal role. Attitude is defined as a psychological inclination that manifests itself by assigning a certain level of favorability or unfavourability to particular entities (Eagly & Chaiken, 2007). This concept distinguishes between 'attitude' as an internal tendency and 'behaviour' as the expression of evaluative responses. Negative maternal attitudes are closely linked to increased levels of stress, anxiety, and depressive symptoms during pregnancy and the postpartum period. This negative—or dysfunctional—attitude reflects a tendency to evaluate maternal experiences, such as pregnancy and child-rearing, with reluctance that can increase vulnerability and worsen psychological distress, thus contributing to the development of mood and anxiety disorders (Miller et al., 2024).

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Anxiety during pregnancy will have a negative impact on the fetus (Puspitasari & Wahyuntari, 2020). On the other hand, the matrescence period is a very vulnerable time for women who are unprepared to face feelings of loss of identity or erosion of identity, which can make it easier for children to enter a woman's identity (Laney et al., 2015). Managing negative—or dysfunctional—maternal attitudes is an important factor in reducing the risk of postpartum depression (Miller et al., 2024), suicide, attachment problems, and family tension (Maxwell & Leat, 2023).

To address problems with attitudes toward the transition to motherhood, psychological measurement tools are needed to identify these issues. Using valid, reliable instruments appropriate for the population to identify women at risk of mood disorders should be standard practice to improve the long-term well-being of mothers and babies (Biaggi et al., 2016; Maxwell & Leat, 2023). This emphasises the importance of adapting maternal attitude instruments that are appropriate to the local language and culture. Furthermore, the existence of adapted instruments will also encourage further research on attitudes toward the maternal role transition during the matrescence period in Indonesia

Many instruments have been developed to measure attitudes toward the maternal role (Kumar et al., 1984; Madar, 2013; Ruble et al., 2011), but they are not tailored to women in the matrescence period. Therefore, Maxwell & Leat (2022) conducted a construct synthesis to measure Becoming A Mother, or matrescence, based on Mercer's (1981) theoretical framework and the stages in Becoming A Mother (Mercer, 2004). The study formulated seven matrescence constructs: confidence as a mother, self-esteem as a mother, commitment to the maternal role, flexibility in the maternal role, maternal identity and/or sense of identity loss, attitudes toward child-rearing, and maternal role stress. Follow-up research (Maxwell & Leat, 2023) identified two instruments that measure these seven constructs: the Maternal Attitude Questionnaire (MAQ) by Warner et al. (1997) and the Maternal Role Identity Scale (MRIS).

Meanwhile, researchers found that the maternal role attitude instrument most widely used in current research and already adapted into three languages—Portuguese (Costa et al., 2018), Korean (Hae-mi & Su-Kyoung, 2019), and Turkish (Meterelliyoz et al., 2023)—is the Attitude Towards Motherhood Scale (AToM) by Sockol et al. (2014). In a systematic literature review comparing the quality of instruments that measure expectations toward the maternal role (Best et al., 2023), AToM was assessed as having fairly good instrument quality and potential for use in research. In addition to strong psychometric properties, the AToM scale is relevant to a broad population. This scale can be used by women who are preparing for pregnancy, are pregnant, are postpartum, or who already have several children (Sockol et al., 2014). However, for matrescence measurement, AToM measures only six of the seven matrescence constructs (Maxwell & Leat, 2023). Therefore, this study extends the existing AToM framework by incorporating the 'flexibility in the maternal role' construct derived from matrescence. The DAToM thus represents an adapted version of the AToM, designed to more comprehensively assess dysfunctional maternal attitudes in the matrescence context.

Traumatic experiences in matrescence lead to negative maternal attitudes and mood disorders (Sidesinger, 2024). Therefore, they contribute negatively to children's emotional development (Lee et al., 2017). Having maternal attitude screening tools for women who are in the matrescence period, especially those with risk factors, can prevent anxiety and depression during pregnancy and postpartum. Preventive interventions can promote more positive maternal attitudes (Baumgardner et al., 2022). This research aims to adapt and modify the Attitude Towards Motherhood Scale (AToM), an instrument that measures maternal attitudes during matrescence, and demonstrate its psychometric properties. Particularly, this research addresses its novelty in two ways. First, it modifies an existing maternal attitude measurement tool with proven psychometric quality to make it more relevant to matrescence and its construct. Second, items are made with contexts appropriate to the Indonesian language and culture, as it is important for research to be adapted to the local sociocultural context. The findings are expected to provide an instrument for measuring maternal attitudes in the matrescence context, thereby encouraging further research on mothers in the matrescence period in Indonesia.

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Methods

Instruments

The Dysfunctional Attitude Towards Motherhood Scale (DAToM) is the final instrument the author adapted. The items were derived from the Attitude Towards Motherhood Scale (AToM; Sockol et al., 2014) and the Maternal Attitude Questionnaire (MAQ; Warner et al., 1997). Edinburgh Postnatal Depression Scale (EPDS) would be used to test validation.

The Attitude Towards Motherhood Scale (AToM) is the key instrument to be adapted in this study. The AToM consists of 3 dimensions: Beliefs related to others' judgments, Beliefs related to maternal responsibility, and Beliefs related to maternal role idealisation. Each dimension includes 4 items, such as "If I make a mistake, people will think I am a bad mother", "Good mothers always put their baby's needs first", and "Negative feelings towards my baby are wrong", respectively. Responses are rated on a 6-point Likert scale from 0 to 5, with a higher total score indicating a high level of motherhood-related cognitive distortions. The AtoM has demonstrated good internal consistency, with a reported reliability coefficient of 0.86 (Sockol et al., 2014). The Maternal Attitude Questionnaire (MAQ) is the second instrument to be adapted for this study. Developed by Warner et al. (1997), the MAQ consists of 14 self-report items that assess maternal attitudes across three domains: expectations of motherhood, expectations of the self as a mother, and role conflict. In the present study, only the role conflict dimension was utilised to complement the matrescence construct of 'flexibility in the maternal role'. Responses are rated on a 4-point Likert scale, scored 0–0–1–2. For example, the favourable item "I have resented not having enough time for myself since having my baby" scored 2 when respondents indicate "strongly agree" and scored 0 when they indicate "strongly disagree." The MAQ has demonstrated good internal consistency, with a reported reliability coefficient of 0.84 (Warner et al., 1997).

Edinburgh Postnatal Depression Scale (EPDS) consists of 10 self-report items for screening postpartum depression. Positive items such as "I have felt sad or miserable" receive a score of 3 if answered "Very Often" and 0 if answered "Almost Never". Meanwhile, negative items such as "I have been more optimistic and cheerful in viewing things I experience" receive a score of 0 if answered "Very Often" and 3 if answered "Almost Never". Sensitivity and specificity tests are good with values of 86% and 76%. This scale contains brief questions that can be completed within five minutes (Cox et al., 1987). In this study, the Cronbach's Alpha value for EPDS was 0.90.

Procedures

The adaptation procedures in this study followed the International Test Commission (2017) guidelines. The first stage involved identifying existing instruments that assess the matrescence constructs. AToM emerged as the strongest candidate, demonstrating sound psychometric properties and cross-linguistic adaptation into three languages (Best et al., 2023), while covering six of the seven matrescence constructs (Maxwell & Leat, 2023). The only construct AToM omits is flexibility in the maternal role. In contrast, the Maternal Attitude Questionnaire (MAQ) is among the few instruments that capture all seven constructs. To address AToM's content gap, we incorporated the MAQ, specifically the role conflict dimension as a proxy for flexibility in the maternal role, thereby expanding content coverage and relevance for mothers across the matrescence period.

After selecting the instruments, the researchers sought permission from the AToM and MAQ developers to adapt both measures. We then translated AToM and MAQ from English into Indonesian (Bahasa Indonesia). The translations were reconciled and synthesised to reduce irrelevant linguistic

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differences and ensure cultural suitability for the Indonesian population. This version of DAToM was reviewed by experts to ensure linguistic clarity and psychological and cultural appropriateness.

Next, we backtranslated the Indonesian version of DAToM into English to verify that the instructions and item content retained equivalent meaning. We also adjusted the scoring and response formats to place AToM and MAQ on a common metric suitable for computing a composite score. This modification, merging two instruments, followed Kroenke et al.'s (2016) procedure. DAToM uses a six-point rating scale administered via Google Forms, a format familiar to most populations and participants could complete the questionnaire at their preferred time and location. We conducted a small pilot test with two respondents to assess readability and clarity, corrected typographical errors, and refined the Google Forms layout accordingly.

This research has obtained ethical approval issued by Universitas Tarumanagara No. 158-TIM/KEPTM/3698/FPsi-UNTAR/XI/2024. Participants completed questionnaires distributed through social media platforms, including Instagram, WhatsApp, and Facebook, as well as a motherhood community. After the data collection, we then conducted statistical analyses to evaluate whether these modifications preserved the intended measurement of maternal attitudes. Items exhibiting substantial misfit or non-invariance will be considered for removal (Teresi et al., 2012).

Participants

Participants were Indonesian citizens (WNI) who are female, have only one child aged 0 to 24 months, are aged 18 to 40 years, and have at least a high school education or equivalent. The first child criterion limits the scope of maternal criteria. Age restrictions are based on the early adult developmental period, which is the reproductive period. Meanwhile, the educational level criterion is required to limit the scope of socioeconomic status to ensure respondents have sufficient understanding to complete the questionnaire.

A total of 612 participants completed this questionnaire. Using Microsoft Excel, ninety-one of them failed to answer the attention check items correctly and/or met exclusion criteria (pregnant, over 40 years of age, or not Indonesian citizens) so they were excluded, leaving 521 participants. The researchers then screened the data for validity using IBM Statistical Package for the Social Sciences (SPSS) version 29.0 to assess internal consistency with a split-half approach. This was done to exclude participants who answered the questionnaire inconsistently. One hundred sixteen of them were excluded for being considered inconsistent (odd Z-score × even Z-score < -.05). Data analysis was conducted based on data from participants who met the inclusion criteria, totalling 405 participants. The demographic data are presented in Table 1.

Table 1. Demographic Data of Participants

Sociodemographic		N	%	*Cumulative Percent*
Age	18 – 30	332	82.0	82.0
	31 – 40	73	18	100.0
Domicile	Bali	4	1.0	1.0
	Banten	5	1.2	2.2
	Bekasi	30	7.4	9.6
	Bogor	32	7.9	17.5
	Depok	13	3.2	20.7
	DI Yogyakarta	17	4.2	24.9
	Diaspora	2	0.5	25.4
	Jakarta	72	17.8	43.2
	Jawa	133	32.8	76.0
	Kalimantan	24	5.9	82.0

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Sociodemographic		N	%	*Cumulative Percent*
	Kep. Riau	4	1.0	83.0
	Nusa Tenggara Barat	3	0.7	83.7
	Riau	5	1.2	84.9
	Sulawesi	5	1.2	86.2
	Sumatera	19	4.7	90.9
	Tangerang	22	5.4	96.3
	Tangerang Selatan	15	3.7	100.0
Education Level	SMA – D3	231	57.0	57.0
	D4/S1 – S2	174	33.0	100.0
Pregnancy Planning	Planned without special treatment	242	59.8	59.8
	Planned with special treatment	33	8.1	67.9
	Not planned	130	32.1	100.0
Pregnancy Complications	Yes	63	15.6	15.6
	No	342	84.4	100.0
Childbirth Complications	Yes	61	15.1	15.1
	No	344	84.9	100.0
Child Age	0 – 6 months	121	29.9	29.9
	7 – 12 months	103	25.4	55.3
	13 – 24 months	181	44.7	100.0
Child Developmental Problems	Yes	150	37.0	37.0
	No	255	63.0	100.0

Sources: Personal Data (2025).

Most participants (82.0%) were aged 18–30 years. Participants' domiciles were mostly distributed across Java province (32.8%) and urban areas, namely Jakarta (17.8%) and Bogor (7.9%). All participants at least had high school education or equivalent, so they can be considered to have good comprehension abilities. Risk factors related to postpartum depression were recorded in this study. About 32.1% of pregnancies were unplanned, 15.6% had complications during pregnancy, and 15.1% during delivery. This means that, in general, participants had low external risk factors for postpartum depression.

Descriptive statistics in Table 2 show there is a positive relationship between maternal age and education level and child age, as well as a negative relationship with pregnancy complications, growth and development problems, and depression. This means that increasing maternal age is associated with decreasing child growth and development problems and depression experienced. There is a negative relationship between education level and pregnancy planning and child age. This shows that higher education levels are associated with a tendency to plan pregnancies. There is a positive relationship between pregnancy complications and delivery complications. The negative relationship between child age and child growth and development problems indicates that as child age increases, child growth and development problems decrease.

Additionally, the negative relationship between maternal dysfunctional attitudes and child growth and development problems indicates that higher maternal dysfunctional attitudes are associated with more child growth and development problems. Similarly, the negative relationship between growth and development problems and depression indicates that higher depression scores are associated with the presence of child growth and development problems.

Table 2. Descriptive Statistics and Correlation between Variables Research

Variable	*M*	*SD*	*1*	*2*	3	4	5	6	7	8	9
1. Age	1.90	.79	–								
2. Educational Level	1.99	1.05	.22**	–							

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Variable	*M*	*SD*	*1*	*2*	3	4	5	6	7	8	9
3. Pregnancy Planning	1.72	.92	.01	-.15**	–						
4. Pregnancy Complications	1.84	.36	-.16**	.00	-.02	–					
5. Childbirth Complications	1.85	.36	-.07	.02	.01	.41**	–				
6. Child Age	2.15	.85	.19**	-.14**	.05	-.07	.01	–			
7. Child Developmental Problems	1.63	.48	-.11*	.09	-.06	.07	-.12*	-.38**	–		
8. Maternal Attitude	3.61	.72	-.04	-.05	.05	-.03	-.14**	.09	-.25**	(.73)	
9. Postpartum Depression	1.24	.71	-.11*	-.05	.00	-.01	-.08	-.01	-.22**	.68**	(.90)

Note. *Correlation significant at level 0.05 (2-tailed). **Correlation significant at level 0.01 (2-tailed). Age: 1=18-24 years, 2=26-30 years, 3=31-35 years, 4=36-40 years. Education: 1=SMA/SMK/MA, 2=D1/D2/D3, 3=S1, 4=S2. Planning pregnancy: 1=Planned without program, 2=Planned with program, 3=not planned. Complications pregnancy: 1=Yes, 2=No. Complications delivery/childbirth: 1=Yes, 2=No. Child age: 1=0-6 months, 2=6-12 months, 3=13-24 months. Child developmental problem: 1=Yes, 2=No. Internal consistency (coefficient α) is reported along the diagonal in parentheses.

Sources: Personal Data

Data Analysis

Factor Analysis was conducted using Jeffreys's Amazing Statistics Program (JASP) version 0.19.3 to ensure the dimensions of each item and to see how well the theoretical model being tested performed. Measurement invariance across groups (Age & Education) was using the lavaan package in R. Subsequent analysis used the Statistical Package for the Social Sciences (SPSS) version 29.0 program. Reliability testing was performed by calculating Cronbach's Alpha values to determine the internal consistency of the Dysfunctional Attitude Towards Motherhood Scale (DAToM). Additionally, item-total correlations were calculated to assess each item's correlation with the total DAToM score. Hypothesis testing used correlation analysis to assess the DAToM's criterion validity. This study tested concurrent validity by assessing the relationship between the DAToM and EPDS. Correlation analysis was performed using the Spearman method because the data were not normally distributed.

Results

Item Adaptation and Modification

The Attitude Towards Motherhood Scale (Sockol et al., 2014) and the Maternal Attitude Questionnaire, specifically the role conflict dimension (Warner et al., 1997), were adapted and modified into the Dysfunctional Attitude Towards Motherhood Scale (DAToM). Although no widely used protocol exists for merging two instruments into a single measure, similar composite strategies are well established elsewhere. For example, Kroenke et al. (2016) developed the PHQ-ADS by combining the Patient Health Questionnaire (PHQ-9) with the Anxiety-Depression Scale (ADS-7) into a single composite and then establishing its reliability and validity.

Both existing instruments underwent item modification. For example, the item "if I make a mistake, people will think I am a bad mother" (in AToM), becomes a statement "others consider me to be a good/bad mother" (in DAToM). Additionally, the response type used in the items was also modified. From a likert scale format to respond, "I feel quite upset because I don't have time for myself since having a baby" (in MAQ), to a rating scale with two poles that are different from each item to

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complete the sentence (sentence completion format). For example, instead of asking the level of agreement with the statement "I am able to make time for myself while caring for my baby", items in DAToM ask participants to choose the level of able/unable in the sentence "I am ... to make time for myself while caring for my baby". Furthermore, the DAToM scale has a score range of 1 to 6, with different poles, adjusting to the statement items. For example, 1 means "able" while 6 means "unable".

Homogeneity Evidence: Construct Validation

The first psychometric property tested was construct validity. The construct validity (homogeneity evidence) was tested using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) with a maximum likelihood approach. For more in-depth analysis, Multi-group Confirmatory Factor Analysis (MGCFA) is used to compare age and educational background using the three-factor model. This analysis aimed to evaluate the number of dimensions present in the Dysfunctional Attitude Towards Motherhood (DAToM) scale and evaluate the items.

The Kaiser-Meyer-Olkin (KMO) value was 0.774, and Bartlett's Test of Sphericity was significant ($p < 0.001$). These results indicate correlations among the items and a sufficient sample size for factor analysis. Assuming that there are correlations between dimensions, EFA was conducted using the Principal Axis Factoring (PAF) method with oblique rotation (promax). The analysis revealed a three-factor structure with a different item composition compared to the original instrument (AToM). During the item selection process, four items were eliminated. We removed items 6, 11, and 12 because their factor loadings were below 0.40, and we discarded item 4 because it loaded highly on a factor that was not substantively relevant.

After obtaining the three-factor model with 11 items, the analysis proceeded with CFA using the maximum likelihood approach to assess goodness of fit for the revised item set. Given the relatively small number of items, the researcher employed a first-order multidimensional approach to maintain estimation stability and ensure model parsimony. The CFA results showed that the DAToM, with three dimensions (maternal inefficacy beliefs, maternal disloyalty beliefs, and maternal inflexibility) and 11 items, met the criteria for a good model fit (χ^2 (41) = 80.709, $p < .001$, CFI = 0.972, TLI = 0.963, RMSEA = 0.049, 90% CI [0.033, 0.065], SRMR = 0.053).

Following the structure of variable test with CFA, measurement invariance was tested across different groups (age and education). Collected data were recoded into binary categories based on theoretical considerations. Age was dichotomised into two categories (Lower Age: 18-30 years, n=332; Higher Age: 31-40 years, n=73), reflecting differences in parenting readiness (Murray & Arnett, 2019) and maternal identity (Mills et al., 2011). Education was dichotomised between vocational and university levels (Lower Education: SMA-D3, n=231; Higher Education: S1-S2, n=174), capturing parenting knowledge acquisition and maternal role challenge responses (Bornstein & Bradley, 2014; Waylen & Stewart- Brown, 2010).

Initial multi-group CFA indicated that Item 9 had factor loadings below the acceptable threshold (< 0.40), suggesting it contributed little to the latent construct in the multi-group model. The item was therefore removed to enhance model stability. The refined 10-item model was subsequently re-evaluated using hierarchical invariance testing. The results showed non-significant chi-square differences ($p > 0.05$), indicating model fit across configural, metric, and scalar levels based on established criteria and supporting measurement invariance across age and education groups.

Establishing configural, metric, and scalar invariance indicates that the latent structure, factor loadings, and item intercepts are comparable across age and education groups. Scalar invariance suggests no substantial intercept-related bias in the tested model, supporting the validity of latent mean comparisons. Collectively, these findings demonstrate that the refined 10-item model exhibits robust measurement stability across demographic strata, justifying its use in comparative analyses.

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Table 3. Measurement Invariance Across Age and Education Groups

Group	Model	*df*	AIC	BIC	χ^2	$\Delta\chi^2$	*Δdf*	*p*
Age		.79	–					
	Configural	64	12933.989	13198.245	106.053			
	Metric	71	12923.627	13159.856	109.691	3.108	7.000	0.875
	Scalar	78	12918.513	13126.715	118.578	8.778	7.000	0.269
Education								
	Configural	64	13054.915	13319.171	114.418			
	Metric	71	13045.529	13281.758	119.032	4.298	7.000	0.745
	Scalar	78	13040.314	13248.516	127.817	9.248	7.000	0.235

Sources: Personal Data

Reliability Testing

This section tested internal consistency reliability. Reliability testing was conducted by performing item-total score correlation analysis. The reliability test results (Table 4) showed an overall Cronbach's alpha of 0.734 for DAToM. The maternal inefficacy dimension had a value of 0.815, maternal disloyalty beliefs had a value of 0.619, and maternal inflexibility had a value of 0.788. DAToM Scale, with 10 items, had correlation values ranging from 0.350 to 0.739, indicating that all twelve items across the three dimensions made a sufficient contribution to the total score. The analysis then proceeded to hypothesis testing.

Table 4. Item-Total Coefficient Correlation

Dimention	No.	Items	*Item-total correlation*
Perceived Maternal Inefficacy	1.	*Orang lain menganggap saya adalah seorang ibu yang (buruk/baik)*	0.739
	2.	*Orang lain memandang saya (baik/buruk) dalam mengasuh anak.*	0.562
	3.	*Orang lain menganggap saya (tidak dapat/dapat) merawat bayi dengan baik.*	0.729
Perceived Maternal Disloyalty (Maternal Disloyalty Beliefs)	5.	*Saya (tidak harus/harus) selalu bersama bayi saya.*	0.468
	7.	*Saya (bukanlah/adalah) satu-satunya orang yang dapat menjaga bayi saya secara aman.*	0.416
	8.	*Saya (tidak selalu/selalu) mengutamakan kebutuhan bayi saya, di atas kepentingan lain.*	0.429
	10.	*Saya (tidak bersalah/merasa bersalah) atas berbagai perasaan negatif (sedih, marah, kecewa, dll.) yang saya rasakan terhadap bayi saya*	0.350
Perceived Maternal Inflexibility (Maternal Inflexibility Beliefs)	13.	*Saya (mampu/tidak mampu) meluangkan waktu bagi diri sendiri demi mengurus bayi.*	0.500
	14.	*Kehidupan sehari-hari saya (tidak menjadi lebih sulit/menjadi banyak konflik) semenjak memiliki bayi.*	0.686
	15.	*Semenjak saya memiliki bayi, dan harus mengurusnya; hidup saya (tetap berjalan seperti biasa/menjadi berat)*	0.717

Sources: Personal Data

Criterion Validation (Concurrent Evidence)

The researcher assessed the psychometric properties of criterion validation (concurrent evidence) by calculating the correlation between DAToM scores and EPDS scores. Since the data were not normally distributed, the correlation method used was the non-parametric statistic, Spearman's rank-order correlation (ρ). It was found that the 10 items of the DAToM had a strong correlation coefficient of $r = 0.664$ with a significance level of < 0.001 (Table 5) (Cohen, 1992). This indicates a significant positive relationship between DAToM scores and EPDS scores. In other words, the magnitude of the

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total correlation represents a large effect size in behavioural research, providing strong concurrent validity evidence.

Furthermore, all three DAToM dimensions exhibited statistically significant positive correlations with EPDS scores ($p < .001$), although with varying magnitudes. The strongest effect size was observed for the third dimension of DAToM ($r = .632$), followed by the first dimension of DAToM with medium effect size ($r = .489$), while the second dimension of DAToM showed a small yet statistically significant effect size ($r = .129$).

Table 5. Spearman Correlation Between Dysfunctional Attitude Towards Motherhood Scale (DAToM) and Edinburgh Postnatal Depression Scale (EPDS)

	DAToM (1)		DAToM (2)		DAToM (3)		DAToM Total	
	r	P	*r*	P	*r*	P	*r*	P
EPDS	0.489**	< 0.001	0.129**	< 0.001	0.632**	< 0.001	0.664**	< 0.001

Note. **Correlation significant at the 0.01 level (2-tailed). DAToM: Dysfunctional Attitude Towards Motherhood Scale. EPDS: Edinburgh Postnatal Depression Scale.

Sources: Personal Data

Discussion

This can be a very important modifiable risk factor to address when reducing the likelihood of postpartum depression, suicidal ideation, attachment issues, and family conflict (Maxwell & Leat, 2023; Miller et al., 2024). To measure these attitudes during the transition to motherhood in a culturally appropriate way, it is necessary to use tools and instruments that capture these tendencies. This study adapted and modified the Attitude Towards Motherhood Scale (AToM; Sockol et al., 2014) into the Dysfunctional Attitude Towards Motherhood Scale (DAToM) and tested its psychometric properties among first-time mothers in Indonesia. The results suggest that the DAToM has acceptable construct validity, good to acceptable internal consistency, high concurrent validity, and measurement invariance across age and education groups. However, several results warrant consideration in the context of existing theoretical and empirical work.

Bandwidth–Fidelity Trade-off: Factor Structure

The exploratory factor analysis resulted in a three-factor solution which accounted for 45.8% of the total variance. This is a fairly low variance explained compared to the original AToM (64%; Sockol et al., 2014) and its Turkish version (68.93%; Meterelliyoz et al., 2023), especially for social science research where a solution accounting around 60% of the total variance—and in some cases even less—is considered satisfactory for applied psychological measures (Hair et al., 2019). This discrepancy can be explained by the bandwidth–fidelity dilemma in psychological measurement (Cronbach & Gleser, 1957; Salgado, 2017): scales with more widely distributed content domains tend to have lower item communality. To allow flexibility, the DAToM was intentionally expanded beyond the original AToM framework by incorporating the flexibility construct from the Maternal Attitude Questionnaire (MAQ; Warner et al., 1997); that is, it could increase both content bandwidth and shared variance. This explanation is supported by the instrument adaptation literature, as most adaptations have been found to explain less variance than the original instruments, due to construct expansion (e.g., Kroenke et al., 2016).

However, a different and more important interpretation should be considered. Additionally, lower variance accounted for could reflect a lack of representation of the construct being measured or redundant items, not purposive bandwidth expansion (Reise et al., 2000). In particular, removing four items (low factor loadings < 0.40 and substantive irrelevance) suggests that not all aspects of the maternal attitude construct can be directly adapted to the Indonesian matrescence context. The poorly loaded item 6 (*"Saya merasa bayi saya sangat istimewa dan membuat urusan tugas/tanggung jawab lainnya menjadi..."*)

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possibly blended maternal idealisation with practical role conflict, as is not possible for Indonesian mothers in conceptualisation. This is in contrast to Western samples, where idealization and responsibility seem more psychometrically separable (Sockol et al., 2014). Therefore, the bandwidth–fidelity argument is a just-in-time excuse, and less explained variance also indicates the need for further item refinement of the DAToM construct to achieve more common variance without loss of breadth of content.

Dimension Reconceptualisation: From Beliefs to Perceptions

The DAToM differs from AToM in three significant ways: Dimension Naming, Item Distribution, and Response Format. Whereas AToM assesses beliefs about others' judgment, maternal idealisation, and maternal responsibility, DAToM assesses perceived maternal inefficacy, disloyalty, and inflexibility. This "linguistic change" is more than just a word choice. This focus on perception aligns with current theories, which suggest that belief formation combines sensory-perceptual information and emotional attribution (Seitz et al., 2022). In the Indonesian context, where family life is densely relational and collectivist, a mother's self-evaluation is not always an internalised belief but more often a reflection of social evaluation and others' perceptions (Mulder, 2005). This aligns with studies showing that in interdependent cultures, self-cognitions are more strongly associated with relational perception than with autonomous self-schema (Markus & Kitayama, 1991). However, broader cross-cultural evidence suggests this dichotomy does not always hold consistency across cultures (Vignoles et al., 2016).

The internal consistency of the scale and the adequacy of the α value were evaluated (0.619)

The overall DAToM showed good internal consistency (α = 0.73), whereas the maternal inflexibility and maternal inefficacy domains showed good internal consistency (α = 0.788 and α = 0.815, respectively). The maternal disloyalty beliefs dimension, however, had an α of 0.619, which was below the "rule of thumb" of 0.70 (Chin, 1998; Nunnally & Bernstein, 1994). This is not unusual: In short scales with few items, Cronbach's alpha is strongly affected by test length—often deflated even when item quality is adequate—and dimensions with three to four items may yield high item-total correlation coefficients while still having low alpha (McNeish, 2018). In this case, the item-total correlation for this dimension (0.350 to 0.468) was within a reasonable range, indicating that items contributed to the total score.

However, this constraint needs to be tackled forthrightly. Under strict psychometric standards, α < 0.70 is considered undesirable (DeVellis, 2016), and some researchers argue that coefficients below this level do not support the scale's utility for individual assessment (Streiner, 2003). Others argue that values ranging from 0.60 to 0.70 may be acceptable for research screening measures, especially brief measures used in time-limited settings, supported by other evidence of validity (Taber, 2018; Harms, 2017). In the present study, the latter viewpoint is taken because the purpose of the DAToM was to serve as a research screening tool and there was significant evidence of concurrent validity. Nonetheless, we recognise that subsequent versions could improve the degree of disloyalty through item augmentation and/or replacement to enhance item homogeneity while maintaining item brevity.

Theoretical Integration: Beck's Model in Cultural Context

The correlation between DAToM scores and depressive symptoms fits into Beck's cognitive model, but recent research has questioned the generalizability of this model. Beck's model is specific to a Western, educated, industrialised, rich, and democratic (WEIRD) context, in which independent self-construals, autonomous agency, and an internal locus of control are emphasised (Henrich et al., 2010; Markus & Kitayama, 1991). Items of DAToM that represent the judgments of others or out-of-choice sacrifices on one's part may represent culturally normative schemas of relationship rather than individual pathological schemas

Here, cultural differences introduce competing hypotheses. Cross-cultural studies indicate that cognitive vulnerability models are also predictive in other cultures, with negative self-referent cognitions

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predicting depression even in collectivist cultures (Anderson, 1999). Conversely, cross-cultural clinical evidence suggests that psychological distress is not always experienced or expressed the same way across cultures — Chinese patients with depression, for instance, have been found to report more somatic and fewer explicitly psychological symptoms than North American patients (Ryder et al., 2008). This raises the possibility that, in more relationally oriented settings such as Indonesia, distress tied to the maternal role may also be shaped by relational concerns, such as maintaining family harmony, rather than by autonomous self-evaluation alone — an extension beyond what Ryder et al. (2008) directly tested, but consistent with the broader pattern their findings suggest.

The DAToM's focus on perceived inefficacy and inflexibility may thus resonate with culturally specific stressors, such as conflicted parenting styles and parenting demands that differ from those traditionally held by the extended family care system, which are not completely theorised by Beck's original model.

We do not want to imply that this cultural difference is rigid. Distressing cultural experiences for a particular construct – such as feeling judged by others or feeling unable to prioritise self-care – may be referred to in cultures different from the one in which DAToM was created. The question to be explored is which aspect of dysfunctional maternal attitudes (fear of social judgment) or cognitive distortion (all-or-nothing thinking related to maternal competence) is more important in contributing to distress in Indonesian mothers. There may be direct clinical implications: Behaviours that focus on autonomous cognitive restructuring may be less effective than those involving relational harmony and family role negotiation in this population.

Interpretation of the Strong EPDS correlation (concurrent validity)

The correlation between DAToM and EPDS score ($r = 0.664$; $p < .001$) is stronger than correlations reported in previous AToM research ($r = 0.40–0.47$; Meterelliyoz et al., 2023; Sockol & Battle, 2015). This is a confirmation of Beck's (1967) cognitive model of depression, which suggests that a vulnerable emotional response to depression can be triggered by the presence of maladaptive cognitive schemas. The DAToM seems to be a representation of dysfunctional schemas that are strongly linked to depressive symptoms during matrescence, specific to the domain.

But this correlation is sufficiently large to merit close examination. A correlation this high suggests construct overlap or method variance rather than true concurrent validity. Both instruments are based on self-report and both measure negative psychological states during the perinatal period. One cause may be the mood congruence effect (Blaney, 1986; F. F. Chen, 2007): depressed mothers may be reporting more negatively on their maternal attitudes because of their current mood, which would enhance the observed association. This interpretation is supported by research showing that state-dependent responding may overestimate correlations between cognitive and affective measures in postpartum samples (O'Hara & McCabe, 2013).

The higher correlation, however, could reflect a true construct refinement or simply the greater similarity between the two batteries. The DAToM differs from the original AToM in that it uses a sentence-completion format with semantically anchored poles (baik/buruk, dapat/tidak dapat). This format could minimise acquiescence bias and promote more criterion-related processing of maternal experiences in real time, leading to greater validity. A cross-sectional design cannot examine competing interpretations, methodological inflation versus construct refinement. Longitudinal studies should be conducted to test for predictive validity of DAToM scores for changes in EPDS scores over time, to provide further evidence for predictive validity beyond the transient mood states.

However, another tension arises here, as this rethinking also implies an entirely different approach to the subject. The DAToM may mistake the content of the dimensions for metacognitive judgment, which can mask the disambiguation between mothers' beliefs and others' beliefs. This distinction carries empirical implications: empirical research on postpartum distress has shown that the

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perceived social judgment (meta-beliefs) and personal maternal beliefs may have differential predictive validity for depression and anxiety (Sockol & Battle, 2015). The next step in research should thus investigate whether the dimensions of DAToM independently predict psychological outcomes or reflect more general dysfunctional attitudes.

The Case of Item 9: Measurement Invariance

Achievement levels are comparable across age and education groups, demonstrating the DAToM's utility for comparative research. The deletion of Item 9 ("*Saya [merasa/tidak merasa] kecewa dengan peran baru saya sebagai ibu*") however, requires further examination because of the cross-group misfit. This item was designed to reflect the increased understanding within Western parenting studies of a moment that is now viewed as normative, rather than pathological, called maternal ambivalence (Piotrowski et al., 2023). Its performance varies across groups, suggesting cultural and educational censorship of dissatisfaction with motherhood in Indonesia.

This is because the evidence is contradictory. Recent research shows quantitative and clinical relevance of parental regret across various subpopulations, including those with strong pronatalist cultural norms (Piotrowski et al., 2023). Perhaps Item 9 is a misfit because it was not well constructed, not because it was suppressed in the culture. Ethnographic accounts of Indonesian motherhood, on the other hand, highlight cultural values that place a high premium on *ikhlas*, or acceptance with sincerity, and emotional self-giving, which can make disappointment be viewed as socially undesirable, especially for older and more educated mothers who are under higher expectations of embodying idealised motherhood. The MGCFA results support this interpretation, since the meaning of Item 9 varied; however, this remains an open question. The 10-item version is recommended for comparative research because it has been metrically equivalent. Item 9 may still have clinical utility in contexts for individual assessment where subtle exploration of ambivalence may be therapeutically warranted.

Problems and Future Directions

The present findings are limited in the following ways. First, causal inferences about the direction of the relationship between dysfunctional maternal attitudes and depressive symptoms cannot be made because of the cross-sectional design of the current study. Second, in the context of online recruitment via social media, only mothers from urban areas with a certain level of digital literacy may have been recruited, which could reduce generalizability to mothers in rural areas or with lower levels of literacy. Third, the correlation between the DAToM and the EPDS was high which is helpful for the concurrent validity of the DAToM but can also be explained by the fact that both instruments are self-report assessments. Fourth, the $\alpha = 0.619$ for the maternal disloyalty dimension is somewhat low for a brief research screen, but is not quite optimal and requires item-level revision.

Longitudinal studies are suggested for future research, to provide evidence of prediction and temporal precedence. In addition, Differential Item Functioning (DIF) analyses would be conducted by parity status, pregnancy trimester and ethnic groups in Indonesia to further understand the cultural transportability of the scale. As suggested in the conclusion, expanding validation to pregnant and multiparous mothers remains crucial. Lastly, including a comparison of DAToM scores with behavioural outcomes (such as maternal sensitivity and infant attachment), in addition to self-reported distress, would strengthen the nomological network of maternal attitudes associated with dysfunction during the matrescence period.

Conclusion

The Dysfunctional Attitude Towards Motherhood Scale (DAToM) is a promising instrument for future use, but it remains preliminary and measures maternal attitudes during the matrescence period in Indonesia. The present results show that the 10-item, three-dimensional model has reasonable construct validity, acceptable-to-good internal consistency for two of the three dimensions, and a high level of concurrent validity with the Edinburgh Postnatal Depression Scale (EPDS), as well as scalar

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measurement invariance across age and education groups. These properties support using the scale as a research screening tool to assess cognitive vulnerability among Indonesian first-time mothers.

However, several caveats limit these conclusions. The factor solution accounted for only a moderate 45.8% of the variance, and the maternal disloyalty beliefs dimension was slightly below the conventional reliability level ($\alpha = 0.619$), indicating a need to refine the items. Although the high correlations between DAToM and EPDS scores support concurrent validity, this may partly reflect shared self-report methodology and mood-congruent responding; therefore, longitudinal and multimethod studies should be conducted to separate trait-like cognitive schemas from state-dependent affective responding. In addition, the cognitive conceptualisation framework used in the scale, as based on Beck's cognitive model, needs further critical examination in the Islamic culture of Indonesia, which is relational and collectivist, in which there is a possibility that dysfunctional maternal attitudes are not separated from the behavioural patterns of family norms and role expectations.

The 10-item DAToM is therefore best used as a short screening tool for research and preliminary clinical triage, and not as a definitive diagnostic tool. Its application is hoped to contribute to broader research on matrescence among Indonesian mothers. However, caution is needed when interpreting the scores and considering the sociocultural context. Future studies should include pregnant and multiparous mothers, use behavioural measures (such as maternal sensitivity and infant attachment) to further strengthen the nomological network, and perform Differential Item Functioning (DIF) analyses in ethnic and parity subgroups. These will be crucial for assessing the potential of the DAToM as a valuable tool for preventing psychopathology during the transition to motherhood and becoming a culturally adapted research tool.

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Conflict of Interest

The authors declare that there is no conflict of interest.

Authors Contribution

YAI proposed the research theme, conducted data analysis, and wrote the manuscript. FIRD reviewed and edited the manuscript. PTYSS collected the data and reviewed the manuscript.

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