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ANALYSIS OF PSYCHOMETRIC PROPERTIES OF CHILD AND ADOLESCENT MINDFULNESS MEASURE (CAMM) AND MINDFUL ATTENTION AWARENESS SCALE FOR ADOLESCENTS (MAAS-A)

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Abstract

This study aims to analyze the psychometric properties of the Child and Adolescent Mindfulness Measure (CAMM) and the Mindfulness Attention Awareness Scale – Adolescents (MAAS-A) which are popularly used to measure the level of mindfulness in adolescents. The method used is a quantitative research method using a comparative descriptive approach. The sample in this study was 44 students of Pasastrian Buddhis Kusalamitra Gunungkidul consisting of 18 male students and 26 female students. Data analysis used is the Cronbach's Alpha reliability test, Exploratory Factor Analysis with the KMO-MSA test, univariate analysis, and t-Test.The results showed that the CAMM reliability coefficient was 0.757, the KMO value was 0.731, the Anti Image Correlation on 10 CAMM items met the valid criteria (>0.5), and the measurement results showed an average score of 19.27 with a standard deviation of 5.70. The MAAS-A reliability coefficient was 0.820, the KMO score was 0.712, the Anti Image Correlation on 14 MAAS-A items met the valid criteria (>0.5), and the MAAS-A measurement results showed an average score of 51.88 with a standard deviation of 10.54. In terms of objectivity and sensitivity, CAMM is more suitable for the population of children and young adolescents, while MAAS-A is more relevant for adolescents who have entered the formal cognitive development stage.
Keywords: Psychometric Properties, Mindfulness, Child and Adolescent Mindfulness Measure, Mindfulness Attention Awareness Scale, Adolescents

Abstrak

Penelitian ini bertujuan untuk menganalisis properti psikometri Child and Adolescent Mindfulness Measure (CAMM) dan Mindfulness Attention Awareness Scale – Adolescents (MAAS-A) yang populer digunakan untuk mengukur tingkat kesadaran penuh pada remaja. Metode yang digunakan adalah metode penelitian kuantitatif dengan menggunakan pendekatan deskriptif komparatif. Sampel dalam penelitian ini sejumlah 44 siswa Pasastrian Buddhis Kusalamitra Gunungkidul yang terdiri dari 18 siswa laki-laki dan 26 siswa perempuan. Analisis data yang digunakan adalah uji reliabilitas Cronbach's Alpha, Exploratory Factor Analysis dengan uji KMO-MSA, analisis univariat, dan t-Test. Hasil penelitian menunjukkan koefisien reliabilitas CAMM sebesar 0,757, nilai KMO sebesar 0,731, Anti Image Correlation pada 10 butir item CAMM memenuhi kriteria valid (>0,5), dan hasil pengukuran menunjukkan rata-rata skor 19,27 dengan standar deviasi 5,70. Koefisien reliabilitas MAAS-A sebesar 0,820, skor KMO sebesar 0,712, Anti Image Correlation pada 14 butir item MAAS-A memenuhi kriteria valid (>0,5), dan hasil pengukuran MAAS-A menunjukkan skor rata-rata 51,88 dengan standar deviasi 10,54. Dilihat dari objektivitas dan sensitivitas, CAMM lebih cocok untuk populasi anak-anak dan remaja muda, sementara MAAS-A lebih relevan untuk remaja yang sudah memasuki tahap perkembangan kognitif formal.
Kata kunci: Properti Psikometri, Mindfulness, Child and Adolescent Mindfulness Measure, Mindfulness Attention Awareness Scale, Remaja

INTRODUCTION

*Mindfulness*is a concept originating from the Buddhist meditation tradition that has evolved into a psychological technique used in the context of mental health and wellness. Simply put, mindfulness can be defined as being fully aware of the present moment experience without judging or reacting to it. Mindfulness is the awareness that occurs when an individual is focused, purposeful, present and has a non-judgmental quality.[1]

*Mindfulness*is not limited to meditative practice, but is also a fundamental way of life for a Buddhist practitioner. Meditation emphasizes religiosity and individual happiness while mindfulness emphasizes awareness and acceptance of each moment. It involves being acutely aware of thoughts, feelings, bodily sensations, and mental processes that occur from moment to moment. The concept of mindfulness is also not the same as relaxation. Whether relaxed or not, mindfulness requires staying aware and thinking clearly.[2]

*Mindfulness*provides many positive impacts in shaping individual character. Good mental health is associated with an individual's ability and tendency to accept experiences as they are. Mindfulness is closely related to emotional intelligence[3] A person with a high tendency of mindfulness will realize that their feelings and thoughts are only temporary. Thus, they do not think too much about it. Individuals with high mindfulness tend to accept themselves as they are and are not attached to their self-esteem so that individuals are able to control their emotional reactions and have good self-regulation.[4]

Mindfulness techniques developed without reference to religion and were more focused on western science and clinical approaches. Mindfulness was also developed into a medical and mental health intervention. Mindfulness interventions are growing rapidly and are associated with a decrease in psychological and medical disorders in patients, but mindfulness assessments have received little attention. Researchers and practitioners are beginning to realize that assessments are needed to measure and prove the effects of interventions.[5]

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[1] Jon Kabat-Zinn, *Mindfulness for Beginners* (Canada: Sounds True Inc., 2012).

[2] Miles Thompson and Jeremy Gauntlett-Gilbert, "Mindfulness with Children and Adolescents: Effective Clinical Application," *Clinical Child Psychology and Psychiatry* 13, no. 3 (2008): 395–407, https://doi.org/10.1177/1359104508090603.

[3] J. David Creswell, "Mindfulness Interventions," *Annual Review of Psychology*, 2017, 491–516, https://doi.org/10.1146/annurev-psych-042716-051139; Ruth A Baer, Emily L B Lykins, and Jessica R Peters, "Mindfulness and Self-Compassion as Predictors of Psychological Wellbeing in Long-Term Meditators and Matched Nonmeditators," *The Journal of Positive Psychology* 73, no. 3 (2012): 230–38.

[4] Fabrizio Didonna, *Clinical Handbook of Mindfulness* (New York: Springer, 2009); Scott R. Bishop et al., "Mindfulness: A Proposed Operational Definition," *Clinical Psychology: Science and Practice* 11, no. 3 (2004): 230–41, https://doi.org/10.1093/clipsy/bph077.

[5] Baer, Lykins, and Peters, "Mindfulness and Self-Compassion as Predictors of Psychological Wellbeing in Long-Term Meditators and Matched Nonmeditators"; Sebastian Sauer et al., "Assessment of Mindfulness: Review on State of the Art," *Mindfulness* 4, no. 1 (2013): 3–17, https://doi.org/10.1007/s12671-012-0122-5.

PsychometricsMindfulnesshas been widely developed by psychologists to measure the level of full attention in a person. Goodman has identified seven measurement instrumentsMindfulnessnamely CAMM (*Child and Adolescent Mindfulness Measure*), MAAS-A (*Mindful Attention Awareness Scale for Adolescents*), MAAS-C (*Mindful Attention Awareness Scale for Children*), CHIME-A (*Comprehensive Inventory of Mindfulness Experiences-Adolescents*), MTASA (*Mindful Thinking & Action Scale for Adolescents*), MSPTA (*Mindfulness Scale for Pre-Teens, Teens, and Adults*), MICA (*Mindfulness Inventory for Children and Adolescents*), MAAS (*Mindful Attention Awareness Scale*), KIMS (*Kentucky Inventory of Mindfulness Skills*), and FFMQ (*Five Facet Mindfulness Questionnaire*).[6]

The Child and Adolescent Mindfulness Measure (CAMM) is one of the few tools available to measure mindfulness in children and adolescents, including awareness of the present moment and a non-judgmental, non-avoidant attitude toward thoughts and feelings. The CAMM is a 10-item scale, applicable to children and adolescents aged 10 to 17 years and has been validated and used in children and adolescents in many countries, such as the Netherlands.[7], Australia[8], Spain[9], Italy[10], Canada[11], Türkiye[12], Chile[13], France[14], Iran[15], Greece[16], and China[17].

[6] Matthew S. Goodman, Laila A. Madni, and Randye J. Semple, "Measuring Mindfulness in Youth: Review of Current Assessments, Challenges, and Future Directions," *Mindfulness* 8, no. 6 (2017): 1409–20, https://doi.org/10.1007/s12671-017-0719-9.

[7] Esther I. de Bruin, Bonne J.H. Zijlstra, and Susan M. Bögels, "The Meaning of Mindfulness in Children and Adolescents: Further Validation of the Child and Adolescent Mindfulness Measure (CAMM) in Two Independent Samples from The Netherlands," *Mindfulness* 5, no. 4 (2013): 422–30, https://doi.org/10.1007/s12671-013-0196-8.

[8] Amina K. Kuby, Neil McLean, and Karina Allen, "Validation of the Child and Adolescent Mindfulness Measure (CAMM) with Non-Clinical Adolescents," *Mindfulness* 6, no. 6 (2015): 1448–55, https://doi.org/10.1007/s12671-015-0418-3.

[9] Ferran Viñas et al., "Assessing Mindfulness on a Sample of Catalan-Speaking Spanish Adolescents: Validation of the Catalan Version of the Child and Adolescent Mindfulness Measure," *The Spanish Journal of Psychology* 18 (2015): E46, https://doi.org/10.1017/sjp.2015.48.

[10] Francesca Chiesi et al., "Using Item Response Theory to Explore the Psychometric Properties of the Italian Version of the Child and Adolescent Mindfulness Measure (CAMM)," *Mindfulness* 8, no. 2 (2017): 351–60, https://doi.org/10.1007/s12671-016-0604-y.

[11] Jacinthe Dion et al., "Validation of the French Version of the Child and Adolescent Mindfulness Measure (CAMM) Among Samples of French and Indigenous Youth," *Mindfulness* 9, no. 2 (2018): 645–53, https://doi.org/10.1007/s12671-017-0807-x.

[12] Zeynep Aydin Sünbül, "Psychometric Evaluation of Child and Adolescent Mindfulness Measure (CAMM) with Turkish Sample," *International Journal of Education and Psychological Research (IJEPR)* 7, no. 2 (2018): 56–59.

[13] Carlos García-Rubio et al., "Validation of the Spanish Version of the Child and Adolescent Mindfulness Measure (CAMM) with Samples of Spanish and Chilean Children and Adolescents," *Mindfulness* 10, no. 8 (2019): 1502–17, https://doi.org/10.1007/s12671-019-01108-8.

[14] B. Roux et al., "A French Validation of the Child and Adolescent Mindfulness Measure (CAMM)," *Revue Europeenne de Psychologie Appliquee* 69, no. 3 (2019): 83–89, https://doi.org/10.1016/j.erap.2019.06.001.

[15] Hamid Mohsenabadi et al., "Psychometric Properties of the Child and Adolescent Mindfulness Measure: A Psychological Measure of Mindfulness in Youth," *Iranian Journal of Psychiatry and Behavioral Sciences* 14, no. 1 (2020), https://doi.org/10.5812/ijpbs.79986.

The MAAS (Mindful Attention Awareness Scale) is one of the most widely used mindfulness questionnaires worldwide. The development of the MAAS was completed with the assistance of highly trained Buddhist mindfulness experts. MAAS researchers consider mindfulness to be a quality of attention and define the concept as "a state of receptive attention informed by awareness of present moment experience, simply observing what is happening."[18] In the MAAS, mindfulness is considered a unidimensional construct, distinct from the five facets of mindfulness described in the Five Facet Mindfulness Questionnaire.[19]

Research that examines the mental condition of children and adolescents is urgently needed today. The condition of the young generation in Indonesia in the current era of digital disruption shows that mental health is the most important part that must be maintained so that it does not become fragile and easily influenced by negative things that can harm oneself and even endanger others. For this reason, research on mindfulness is very important to do. Measuring instruments for the level of awareness and attention in adolescents must be truly valid and reliable in measuring mindfulness in order to produce an accurate diagnosis of psychological conditions so that analysis of the psychometric properties of mindfulness is very important to study. Therefore, researchers want to conduct a comparative analysis of the psychometric properties of CAMM (Child and Adolescent Mindfulness Measure) and MAAS-A (Mindful Attention Awareness Scale for Adolescents).

RESEARCH METHODS

This study uses a quantitative method with a comparative descriptive research type. The population of the subjects of this study were students of the Kusalamitra Wonosari Buddhist Pasastrian, Gunung Kidul, Yogyakarta. The sample in this study was taken using a purposive sampling technique based on the criteria of the adolescent age group (10-18 years) as many as 46 students. The collection of research data was carried out using the Child and Adolescent Mindfulness Measure (CAMM) questionnaire and the Mindful Attention Awareness Scale for Adolescents (MAAS-A) which had been translated by the researcher into Indonesian. Child and

[16] Artemis Theofanous et al., "Gender, Age, and Time Invariance of the Child and Adolescent Mindfulness Measure (CAMM) and Psychometric Properties in Three Greek-Speaking Youth Samples," *Mindfulness* 11, no. 5 (2020): 1298–1307, https://doi.org/10.1007/s12671-020-01350-5.

[17] Xin Chen et al., "The Psychometric Properties and Cutoff Score of the Child and Adolescent Mindfulness Measure (CAMM) in Chinese Primary School Students," *Children* 9, no. 4 (2022), https://doi.org/10.3390/children9040499.

[18] Kirk Warren Brown and Richard M Ryan, "The Benefits of Being Present : Mindfulness and Its Role in Psychological Well-Being," *Journal of Personality and Social Psychology* 84, no. 4 (2003): 822–48, https://doi.org/10.1037/0022-3514.84.4.822; Kirk Warren Brown, Richard M Ryan, and J David Creswell, "Mindfulness: Theoretical Foundations and Evidence for Its Salutary Effects," *Psychological Inquiry* 18, no. 4 (2007): 211–37.

[19] Baer, Lykins, and Peters, "Mindfulness and Self-Compassion as Predictors of Psychological Wellbeing in Long-Term Meditators and Matched Nonmeditators."

Adolescent Mindfulness Measure (CAMM) consists of 10 statement items with answer choices using a scale of 0-4, with categories never (0), rarely (1), sometimes (2), often (3), and always (4), but in scoring is done in reverse never = 4, rarely = 3, sometimes = 2, often = 1, and always = 0. Mindful Attention Awareness Scale for Adolescents (MAAS-A) has 15 items with a scale of 1-6, namely almost always (1), very often (2), somewhat often (3), somewhat rarely (4), very rarely (5), and almost never (6). Data analysis used is Cronbach's Alpha reliability test, Exploratory Factor Analysis with KMO-MSA test, univariate analysis, and t-Test.

RESULTS AND DISCUSSION

CAMM and MAAS-A Item Analysis

The original CAMM and MAAS-A instruments use English so in this studyadapted into Indonesian. Therefore, an analysis of item suitability between the Indonesian version and the original version is required. The level of item suitability is assessed by linguists and mindfulness experts. Aspects of item suitability include Conceptual Equivalence, Linguistic Equivalence, Cultural Equivalence, Clarity, Semantic Equivalence, Scale Equivalence, Contextual Equivalence, and Comprehension Equivalence.

Table 1. Psychometric Item Suitability Analysis

Aspect	CAMM	MAAS-A
Conceptual Equivalence	4.7	4.6
Linguistic Equivalence	4.7	4.6
Cultural Equivalence	5	4.8
Clarity	4.2	4.2
Semantic Equivalence	4.8	4.8
Scale Equivalence	5	4.4
Contextual Equivalence	4.2	4.2

The results of the item analysis show that all items of the CAMM and MAAS-A instruments adapted into Indonesian have fulfilled the seven aspects of translation so that they are declared appropriate and can be used.

Construct Validity of CAMM and MAAS-A

Construct validity inpsychometricsis the extent to which an instrument ortoolmeasure actually measures the construct or theoretical concept to be measured. The method used to test construct validity is Exploratory Factor Analysis (EFA). The items in the psychometric instrument are tested for validity by measuring the Measure of Sampling Adequacy value through the Kaiser Mayer Oikin (KMO) Test. The KMO value must be ≥ 0.60 to be declared feasible while the Anti-

Image Correlation value on the item must be ≥ 0.50 to be declared valid. The following are the results of the KMO test and the Anti-Image Correlation value on the CAMM and MAAS-A psychometrics.

Table 2. KMO and Bartlett's Test - CAMM

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.731
Bartlett's Test of Sphericity	Approx. Chi-Square	106,461
	df	45
	Sig.	.000

Table 3.KMO and Bartlett's Test – MAAS-A

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.712
Bartlett's Test of Sphericity	Approx. Chi-Square	278,085
	df	91
	Sig.	.000

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy value on the CAMM psychometrics showed a score of 0.731 (greater than 0.600) so that factor analysis can be continued. Likewise with the KMO results on the MAAS-A psychometrics which showed a score of 0.712. The Anti Image Correlation value on each psychometric item meets the criteria, which is >0.500 so that all items on the CAMM and MAAS-A psychometrics are declared valid.

Reliability of CAMM and MAAS-A

Reliability indicates the extent to which the measurement results using a particular instrument can be trusted or produce the same results if repeated under the same conditions. If an instrument is not reliable, then the results cannot be used for accurate decision making, even if its validity is high. The measurement of the reliability of CAMM and MAAS-A psychometrics was carried out using the Cronbach's Alpha technique. The Cronbach's Alpha test on CAMM obtained a score of 0.757 while the MAAS-A obtained a score of 0.820. This shows that both psychometrics are reliable.

CAMM Measurement Results

The CAMM instrument consists of 10 statement items that ask respondents to reflect on their daily experiences related to mindfulness, such as attention to thoughts, emotions, and behaviors. The results of measuring the level of mindfulness using CAMM are shown in Table 6, Table 7, and Table 8.

Table 6. Respondents' Mindfulness Level Based on CAMM Results

Category	Range	Frequency
Very high	32 - 40	2
Tall	24 - 31	11
Normal	16 - 23	18
Low	8 - 15	13
Very Low	0 – 7	0
Total		44

Table 7. Respondents' Mindfulness Level Based on Age

Age	N	Max.	Min.	Mean	Category
15 years	11	26	12	18.27	Normal
16 years	13	26	8	19.92	Normal
17 years	13	32	11	19.00	Normal
18 years	3	33	10	22.33	Normal
19 years old	4	20	18	18.50	Normal

Table 8. Respondents' Mindfulness Level Based on Gender

Gender	N	Max.	Min.	Mean	Category
Man	18	26	8	19.94	Normal
Woman	26	33	10	18.81	Normal

Most respondents have a mindfulness level in the range of 16-23 or normal category. In this case, respondents tend to be able to pay attention and realize what is being felt, done, or faced well but sometimes still careless and unable to control feelings of annoyance or negative thoughts.The highest mindfulness score was in respondents aged 18 years (22.33). The highest scoreobtainedin female respondents (33) while the highest average was obtained in male respondents (19.94).

MAAS-A Measurement Results

MAAS-Aisan adaptation of the MAAS scale originally designed for adults. The scale consists of 14 items that measure the extent to which a person automatically performs everyday activities without being aware of the experience. Respondents are asked to rate statements on a 6-point Likert scale, from 1 (almost always) to 6 (almost never).The results of measuring the level of mindfulness using MAAS-A are shown in table 9, table 10, and table 11.

Table 9. Respondents' Mindfulness Level Based on MAAS-A Results

Category	Range	Frequency
Very high	71-84	1
Tall	57-70	16
Normal	43-56	18
Low	29-42	8
Very Low	14-28	1
Total		44

Most respondents have a mindfulness level in the range of 43-56 or normal category. In this case, respondents tend to be able to focus on the present moment, pay serious attention, and remember well. However, there are times when respondents easily forget something and are slow to realize the feelings or actions they are experiencing.

Table 10. Respondents' Mindfulness Level Based on Age

Age	N	Max.	Min.	Mean	Category
15 years	11	68	27	51.11	Normal
16 years	13	68	42	56.85	Normal
17 years	13	75	33	50.00	Normal
18 years	3	50	38	45.33	Normal
19 years old	4	60	37	51.50	Normal

Table 11. Respondents' Mindfulness Level Based on Gender

Gender	N	Max.	Min.	Mean	Category
Man	18	68	37	53.87	Normal
Woman	26	75	27	50.11	Normal

The highest mindfulness score was in respondents aged 16 years (56.85). The highest score was obtained by female respondents (75) while the highest average was obtained by male respondents (53.87).

CAMM and MAAS-A Difference Test

The difference test was conducted using the Paired Sample t-Test technique.

Table 12. Paired Sample t-Test Results

Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
			Lower	Upper			
32,614	9.145	1,379	29,833	35,394	23,655	43	.000

Table 13. Paired Samples Correlations Results

		N	Correlation	Sig.
Pair 1	MAAS-A & CAMM	44	.515	.000

Table 12 shows the sig. (2-tailed) value of 0.000, which means that there is a significant difference between the results of CAMM and MAAS-A. Table 13 shows that there is a significant correlation between CAMM and MAAS-A as evidenced by the sig value <0.05. It can be concluded that the two psychometrics produce different mindfulness scores but are still related to each other.

Discussion

CAMM Psychometric Analysis

The first important finding in the analysis of CAMM psychometric properties in this study is the reliability produced through the Cronbach's Alpha test shows a coefficient of 0.757. When compared to the reliability test by Greco et al. which shows a coefficient of 0.81, then this result is not too far apart.[20] The results of previous research also show the Cronbach's Alpha CAMM coefficient in the range of 0.71 - 0.86.[21] CAMM psychometrics has been proven to be reliable for use and has been adapted into various languages to measure the level of mindfulness in adolescents.

[20] Laurie A. Greco, Ruth A. Baer, and Gregory T. Smith, "Assessing Mindfulness in Children and Adolescents: Development and Validation of the Child and Adolescent Mindfulness Measure (CAMM)," *Psychological Assessment* 23, no. 3 (2011): 606–14, https://doi.org/10.1037/a0022819.

[21] Chiesi et al., "Using Item Response Theory to Explore the Psychometric Properties of the Italian Version of the Child and Adolescent Mindfulness Measure (CAMM)"; Dion et al., "Validation of the French Version of the Child and Adolescent Mindfulness Measure (CAMM) Among Samples of French and Indigenous Youth"; de Bruin, Zijlstra, and Bögels, "The Meaning of Mindfulness in Children and Adolescents: Further Validation of the Child and Adolescent Mindfulness Measure (CAMM) in Two Independent Samples from The Netherlands."

The second important finding is the validity produced through EFA in this study showed a KMO value of 0.731 and 10 statement items used in the CAMM instrument were declared valid so that it could be continued to analyze the results without having to remove invalid items. The same results were also obtained in previous studies that also used CAMM to measure mindfulness in children and adolescents.[22]

The third important finding is that the results obtained through the use of CAMM showed an average score of 19.27 with a standard deviation of 5.70. This result is not much different from the initial research by Greco et al in the development of CAMM which produced an average of 22.73 with a standard deviation of 7.33.[23] Different from the research of Kuby et al. which produced an average score of 14.97 but with a standard deviation of 7.19.[24] Meanwhile, Roux et al produced an average of 23.03 with a standard deviation of 7.30, almost exactly the same as the research by Greco et al.[25] The differences in the average and standard deviation produced in this study are certainly caused by the differences in the number of samples. The average CAMM test was conducted on a large sample of more than 200 respondents.[26]

The fourth important finding in this study is that there is a difference in mindfulness scores between male and female samples where the scores in the male sample are higher than the female sample. This finding is supported by Roux's research which states that mindfulness scores tend to be stable when viewed from an age range but experience significant differences when viewed from gender differences.[27] The results of the study also indicate the possibility that the mindfulness scores of male adolescents will increase with age until the late adolescence phase. In contrast, the mindfulness scores of female adolescents tend to decrease. Several studies also support this finding (Cunha & Paiva, 2012; de Bruin et al, 2014; Robinson et al, 2014).

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[22] Chiesi et al., "Using Item Response Theory to Explore the Psychometric Properties of the Italian Version of the Child and Adolescent Mindfulness Measure (CAMM)"; Dion et al., "Validation of the French Version of the Child and Adolescent Mindfulness Measure (CAMM) Among Samples of French and Indigenous Youth"; de Bruin, Zijlstra, and Bögels, "The Meaning of Mindfulness in Children and Adolescents: Further Validation of the Child and Adolescent Mindfulness Measure (CAMM) in Two Independent Samples from The Netherlands"; Wenita Cyntia Savitri and Ratih Arruum Listiyandini, "Mindfulness Dan Kesejahteraan Psikologis Pada Remaja," *Psikohumaniora: Jurnal Penelitian Psikologi* 2, no. 1 (2017): 43, https://doi.org/10.21580/pjpp.v2i1.1323; Mohsenabadi et al., "Psychometric Properties of the Child and Adolescent Mindfulness Measure: A Psychological Measure of Mindfulness in Youth"; Kuby, McLean, and Allen, "Validation of the Child and Adolescent Mindfulness Measure (CAMM) with Non-Clinical Adolescents."

[23] Greco, Baer, and Smith, "Assessing Mindfulness in Children and Adolescents: Development and Validation of the Child and Adolescent Mindfulness Measure (CAMM)."

[24] Kuby, McLean, and Allen, "Validation of the Child and Adolescent Mindfulness Measure (CAMM) with Non-Clinical Adolescents."

[25] Roux et al., "A French Validation of the Child and Adolescent Mindfulness Measure (CAMM)."

[26] Chen et al., "The Psychometric Properties and Cutoff Score of the Child and Adolescent Mindfulness Measure (CAMM) in Chinese Primary School Students"; Kuby, McLean, and Allen, "Validation of the Child and Adolescent Mindfulness Measure (CAMM) with Non-Clinical Adolescents"; Roux et al., "A French Validation of the Child and Adolescent Mindfulness Measure (CAMM)."

[27] Roux et al., "A French Validation of the Child and Adolescent Mindfulness Measure (CAMM)."

Psychometric Analysis of MAAS-A

The first important finding in the analysis of the psychometric properties of the MAAS-A in this study is the reliability produced through the Cronbach's Alpha test showing a coefficient of 0.820. This result is exactly the same as the research of Brown et al. as the developer of the MAAS-A which showed a Cronbach's Alpha coefficient of 0.820.[28] De Bruin et al.'s research also showed exactly the same reliability coefficient.[29] This shows that the MAAS-A has excellent consistency in measuring the level of mindfulness of adolescents with varying sample sizes.

The second important finding in this study is the validity of the instrument analyzed through EFA showed a KMO score of 0.712. The fourteen items in the MAAS-A psychometrics were declared valid and because they were able to measure mindfulness indicators accurately. The KMO score was quite low when compared to the results of de Bruin et al.'s study which showed a KMO score of 0.91.[30] This is because the sample size used in the study was very large, namely 717 people aged 11-17 years.

The third important finding is related to the results of the MAAS-A measurements. The measurements in this study sample showed an average score of 51.88 with a standard deviation of 10.54. The resulting standard deviation is almost the same as the results of Hansen et al.'s study which showed a standard deviation value of the MAAS-A measurements in 202 adolescents of 11.22.[31] De Bruin also showed almost the same standard deviation, which was 11.09.[32] The quite different average score results between this study and other studies may be due to the small sample size.

The fourth important finding in this study is the result of the comparison between the average mindfulness scores of male samples which are higher compared to the mindfulness scores of female samples. This is also supported by the results of Brown et al.'s study which stated that the MAAS-A scores in men were slightly higher than in women and there was no significant difference in scores for age range or even ethnicity.[33] On the other hand, de Bruin stated that there

[28] Kirk Warren Brown et al., "Assessing Adolescent Mindfulness: Validation of an Adapted Mindful Attention Awareness Scale in Adolescent Normative and Psychiatric Populations," *Psychological Assessment* 23, no. 4 (2011): 1023–33, https://doi.org/10.1037/a0021338.

[29] Esther I. de Bruin et al., "The Mindful Attention Awareness Scale for Adolescents (MAAS-A): Psychometric Properties in a Dutch Sample," *Mindfulness* 2, no. 3 (2011): 201–11, https://doi.org/10.1007/s12671-011-0061-6.

[30] de Bruin et al.

[31] Erling Hansen et al., "Measuring Mindfulness: Pilot Studies with the Swedish Versions of the Mindful Attention Awareness Scale and the Kentucky Inventory of Mindfulness Skills," *Cognitive Behaviour Therapy* 38, no. 1 (2009): 2–15, https://doi.org/10.1080/16506070802383230.

[32] de Bruin et al., "The Mindful Attention Awareness Scale for Adolescents (MAAS-A): Psychometric Properties in a Dutch Sample."

[33] Brown et al., "Assessing Adolescent Mindfulness: Validation of an Adapted Mindful Attention Awareness Scale in Adolescent Normative and Psychiatric Populations."

was no significant difference between the MAAS-A scores of males and females.[34] Black et al.'s research on Chinese ethnic samples showed no significant difference in MAAS-A scores between the two genders.[35]

Comparison of Psychometric Properties of CAMM and MAAS-A

In terms of structure, the CAMM is a 10-item one-dimensional measure designed to assess holistic aspects of mindfulness, such as acceptance of experience without judgment. Meanwhile, the MAAS-A is also a 14-item one-dimensional measure, but it places more emphasis on aspects of mindfulness, specifically the ability to remain aware of present-moment experiences without distraction. Therefore, the CAMM tends to have a broader scope than the MAAS-A, which focuses more specifically on one aspect of mindfulness.

In terms of validity, the CAMM showed strong relationships with psychological variables such as negative emotions, well-being, and emotion regulation, indicating that this tool is relevant for evaluating the impact of mindfulness on emotional and behavioral aspects. In contrast, the MAAS-A tends to be more valid for measuring specific aspects of mindfulness, such as the relationship between mindfulness and academic achievement or concentration. This makes the MAAS-A more suitable for contexts that require the measurement of attention as a primary aspect of mindfulness.

The reliability of both instruments is also quite good, but the approaches are different. The CAMM often has higher reliability in younger populations because its questions are simple and relevant to children's everyday experiences. The MAAS-A, on the other hand, shows strong reliability in older adolescents, mainly because its items require more mature abstract understanding. This means that the CAMM is more appropriate for children and young adolescents, while the MAAS-A is more relevant for adolescents who have entered the formal cognitive development stage.

In practice, the choice between the CAMM and the MAAS-A often depends on the purpose of the measurement. The CAMM is better used to evaluate overall mindfulness-based interventions in children or younger adolescents. In contrast, the MAAS-A is appropriate for studies that focus more on how mindfulness and awareness affect specific functions such as academics or attention regulation. The combination of the two can also provide a more comprehensive picture of mindfulness in adolescents, depending on the needs and context of the study or intervention.

[34] de Bruin et al., "The Mindful Attention Awareness Scale for Adolescents (MAAS-A): Psychometric Properties in a Dutch Sample."

[35] David S. Black et al., "Psychometric Assessment of the Mindful Attention Awareness Scale (MAAS) Among Chinese Adolescents," *Assessment* 19, no. 1 (2012): 42–52, https://doi.org/10.1177/1073191111415365.

In terms of objectivity, both the CAMM and the MAAS-A are designed as self-report instruments, which rely on subjective responses from respondents. However, the CAMM tends to be more objective in the context of measuring mindfulness in general, because its items are simpler, clearer, and do not require overly abstract interpretation. In contrast, the MAAS-A, while still self-report, often requires more in-depth reflection on the experience of mindfulness, which can be influenced by the individual's reflective ability, especially in younger adolescents. As a result, the MAAS-A may be more susceptible to interpretation bias than the CAMM.

In terms of sensitivity, the CAMM has the advantage of detecting small changes in mindfulness related to children and adolescents' emotions, behaviors, and everyday experiences. This is because the items in the CAMM cover aspects of self-acceptance and relating to immediate emotional experiences, which are highly relevant to this population. The MAAS-A, on the other hand, is more sensitive to measuring specific dimensions of mindfulness, such as the ability to stay focused on the present moment. Therefore, the MAAS-A is better suited to measuring mindfulness in contexts involving changes in aspects of attention and concentration.

In addition, the objectivity and sensitivity of the CAMM tend to be higher for children and young adolescent populations because its language is simpler and more relevant to their daily lives. In contrast, the MAAS-A has better sensitivity for older adolescents because its item complexity is more appropriate for their cognitive level. This difference makes the CAMM more suitable for use in general mindfulness intervention programs, while the MAAS-A is more appropriate for studies that require measuring mindfulness in a specific context, such as education or task performance.

Overall, the CAMM was superior in sensitivity for changes in general emotional well-being and more objective for younger age groups. The MAAS-A, meanwhile, offered greater sensitivity in detecting mindfulness in specific activities, but was less objective for individuals who may have difficulty understanding or reflecting on the concept of mindfulness in greater depth. The choice of measurement should be tailored to the context, age, and purpose of the research or intervention being conducted.

CONCLUSION

This study successfully analyzed the comparison of the psychometric properties of CAMM (Child and Adolescent Mindfulness Measure) and MAAS-A (Mindful Attention Awareness Scale-Adolescents). Although both have similar purposes, their psychometric properties have several important differences that affect their application in research and clinical practice. Structurally, CAMM consists of 10 items using a Likert scale of 0-4 while MAAS-A consists of 14 items with a Likert scale of 1-6. In terms of validity, both are declared valid but the

reliability level of MAAS-A is superior to CAMM. CAMM is better used to evaluate mindfulness-based interventions as a whole in children or younger adolescents. In contrast, MAAS-A is suitable for research that is more focused on how mindfulness and awareness affect specific functions such as academics or attention regulation.

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