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Psychometric Properties of the Prosocial Tendencies Measure- Revised (PTM-R) Among Adolescents in East Java, Indonesia

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ABSTRACT

Objective: The Prosocial Tendencies Measure Revised (PTM-R), developed by Carlo and Randall (2002), is a widely used tool to assess prosocial behaviors across six distinct dimensions, particularly among adolescents in East Java, Indonesia.

Methods and Materials: This study was designed to test the validity of prosocial behavior in adolescents. The study participants were 495. Researchers used confirmatory factor analysis to test the constructs of the Indonesian version of the PTM-R.

Findings: The Indonesian version of the PTM-R demonstrated a good fit for the six proposed dimensions. The results indicated that the Indonesian version of the PTM-R demonstrated a good fit for the six proposed dimensions: Public, Anonymous, Dire, Emotional, Compliant, and Altruism (RMSEA = 0.080, CFI = 0.0.863, TLI = 0.842, and SRMR = 0.062). Reliability analysis showed strong internal consistency with a Cronbach's alpha of 0.92, and Rasch analysis revealed item reliability of 1.00 and person reliability of 0.90.

Conclusion: These findings provide robust evidence for the validity and reliability of the PTM-R as an effective tool for assessing prosocial tendencies among adolescents in Indonesia.

Keywords: Prosocial Behavior, Prosocial Tendency, Adolescents, Validity, Reliability.

Introduction

Humans are inherently social beings who interact with others daily. As social beings, humans depend on interactions with others for emotional and social well-being. With the characteristics of Gen Z, many studies focus on adolescent problems. In fact, in addition to problems that lead to negative attitudes and mental health issues, positive attitudes, such as prosocial, are also important to be studied and researched. Prosocial leads to a willingness to aid without expecting anything in return (Malik, 2024; Morales-Alonso et al., 2024), intended to benefit others.

Prosocial behavior is defined as voluntary actions intended to benefit others, encompassing activities such as helping, sharing, comforting, and cooperating. It is an essential component of human interaction and contributes to the development of social cohesion and trust within communities. The relevance of prosocial behavior extends beyond individual well-being to

encompass societal benefits such as increased social capital, reduced conflict, and enhanced community resilience. Engaging in prosocial behavior has been linked to positive psychological outcomes, including higher self-esteem, reduced stress, and a sense of purpose. Moreover, research indicates that societies with higher levels of prosocial behavior tend to experience greater stability and growth, making the study of such behavior critical for promoting societal well-being (Kızrak & Yeloğlu, 2024; Zhang et al., 2023).

Prosocial behavior as a form of positive behavior is beneficial for establishing harmonious human relationships and contributing to reducing antisocial behavior (Ngai & Xie, 2018), and many adolescents engage in prosocial behavior such as volunteering in sharing, donating, entertaining others, and helping (Mestre et al., 2015). Prosocial behavior occurs across contexts and for different reasons. This behavioral tendency will be positive throughout life and is very important in adolescence (Martínez-Gregorio et al., 2023). In addition, prosocial behavior is also associated with mental health (Carlo et al., 2003; Carlo et al., 2010; Carlo & Randall, 2002), human welfare (Carlo in Mestre et al., 2015; Layous et al., 2012), improved academic outcomes (Gerbino et al., 2018), social adjustment (Flynn et al., 2015; Zuffianò et al., 2014), self-regulation (Simões & Calheiros, 2016), and moral development such as empathy (Caetano et al., 2023).

Adolescence is a significant developmental period marked by rapid changes in physical, cognitive, and social dimensions. This phase of life is crucial as it sets the stage for the formation of adult values, attitudes, and behaviors. Studying prosocial behavior during adolescence is essential as it provides insights into how young people learn to interact positively with others and contribute to society. The development of prosocial behavior during adolescence is associated with numerous benefits, such as higher levels of empathy, improved social skills, and reduced engagement in delinquent activities. Understanding the factors that influence prosocial tendencies can inform programs and interventions aimed at fostering positive youth development (Gerbino et al., 2018). By promoting prosocial behavior, we can help adolescents build resilience, strengthen social bonds, and navigate the challenges of growing up in a complex world.

Apart from the fact that he studies the development of prosocial behavior, Padilla-Walker and Carlo (2014) revealed that it is also necessary to examine different forms of prosocial behavior when viewed from recent research results (Padilla-Walker & Carlo, 2014). Because the amount of evidence presented will significantly influence the development of the theory and the precision of its measurement, ensuring robust data collection and analysis is crucial to establishing validity and reliability. When viewed from the form of measuring prosocial behavior, there are two forms of construction, namely those developed from a multidimensional perspective and a unidimensional perspective (Martínez-Gregorio et al., 2023) or based on global and specific behavior (Carlo & Randall, 2002). However, most previous researchers conceptualized prosocial behavior as a relatively global and homogeneous construct, so all forms of prosocial behavior were considered equal (Mestre et al., 2015).

Prosocial Tendencies Measure Revised (PTM-R) developed by Carlo & Randall (2002) It is a form of multidimensional measurement of social policy, which not only looks at prosocial in one global construct but also in six specific dimensions, namely public, anonymous, dire, emotional, compliant and Altruism. The PTM-R is not designed to characterize all types of prosocial behavior, but the behavioral tendency to engage in six common types of prosocial behavior occurs (Carlo & Randall, 2002).

Public prosocial behaviors are defined as behaviors intended to benefit others carried out in front of others. Anonymous prosocial behavior is defined as the tendency to help others without the knowledge of others. Particularly urgent prosocial behavior refers to helping others in emergencies or crises. Prosocial-emotional behavior is a behavior intended to help others that are carried out in an emotionally provocative situation. Obedient prosocial behavior refers to helping others when asked. Altruism refers to helping others when there is little or no perceived potential to earn direct and explicit rewards for oneself (Carlo & Randall, 2002).

Several studies have examined the psychometric properties of the Prosocial Tendencies Measure Revised (PTM-R), adopted in several countries and developed for middle-aged teenagers and at the university level. The process of translation and adaptation in several cultures that has been carried out shows that it is important to

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study prosocial behavior because it is relevant to the individual and social domains (Caetano et al., 2023). In addition, psychometric evidence supports the six-factor structure of the PTM-R, internal consistency and reliability of the test (Carlo et al., 2003; Carlo et al., 2010).

Although construct, discrimination, and convergent validity tests have been carried out in various countries, including Indonesia, further validity tests are still needed to support psychometric properties because most previously developed ones are still lacking (Mestre et al., 2015). In Indonesia itself, PTM-R adaptation has been carried out a lot; it is just that these studies do not specifically focus on the psychometric properties (Armadhita et al., 2021). Validity testing has previously been carried out by Armadhita et al. (2021), which focuses on school-age children in Bandung (Armadhita et al., 2021). This study was designed to test the psychometric properties of the validity of PTM-R in a sample of adolescents in East Java, Indonesia. While the PTM-R has been widely utilized and validated in various cultural and age groups, there is limited research exploring its psychometric properties in Indonesia, particularly among adolescents in East Java. Indonesia's cultural context, marked by a rich tapestry of ethnicities, religions, and traditions, presents unique factors that could influence the expression and interpretation of prosocial behavior. The collectivist nature of Indonesian society, which emphasizes family and community interconnectedness, may affect how adolescents perceive and engage in prosocial activities compared to Western or other Asian societies. Additionally, existing validation studies may not fully capture the local social norms, values, and practices that shape adolescent behavior. To ensure the PTM-R is both reliable and culturally appropriate, it is essential to validate it within the Indonesian context, specifically focusing on East Java, where cultural and social dynamics can differ significantly from other regions. This step will help establish the tool's applicability, providing a robust instrument for future research and intervention programs.

Although there was an inconsistency in the multidimensional format of the instrument when viewed with explanatory factor analysis (EFA) (Xiao et al., 2019), however, most of the research results using confirmatory factor analysis (CFA) show good results and support the six factors developed (Azimpour et al., 2011; Caetano et al., 2023; Carlo et al., 2010; Costa et al., 2022; Mestre et al., 2015; Rodrigues et al., 2017a, 2017b; Šukys & Šukienė, 2015). Based on previous research, the researcher hypothesized that the validity and reliability of PTM-R are acceptable and support the six dimensions developed based on the confirmatory factor analysis test results. The primary purpose of the current study is to validate the PTM-R among adolescents in East Java, Indonesia. This study aims to assess the reliability, construct validity, and factor structure of the PTM-R to determine its suitability for capturing prosocial tendencies within this demographic. By examining the tool's performance and ensuring its relevance to Indonesian adolescents, the study seeks to bridge the existing gap in the literature. The findings will contribute to a deeper understanding of prosocial behavior in the Indonesian context and will enable future research to use the PTM-R as a reliable measurement tool. Ultimately, this validation will support the development of targeted programs and policies that foster prosocial behavior among youth, contributing to social harmony and positive development in the region.

Methods and Materials

Study Design and Participants

The study participants were 495 adolescents (165 males, 330 females, M age = 15.3, elementary = 4.55) studying at the secondary education level in East Java, Indonesia. Participants were selected using a stratified random sampling method to ensure representation across various socioeconomic backgrounds and geographic locations within East Java. Inclusion criteria required participants to be enrolled in secondary school, aged between 13 and 17 years, and capable of providing informed consent. Adolescents with significant cognitive or developmental impairments, as reported by their schools or guardians, were excluded to ensure the reliability of self-reported data. Furthermore, participants needed to demonstrate basic literacy skills to complete the PTM-R questionnaire effectively. This approach ensured a diverse and representative sample, facilitating robust analysis of the PTM-R's psychometric properties in this context.

The research began by translating the language and adapting it to PTM-R. The translation process is carried out by psychological scientists who understand the

language which is then re-translated to see the compatibility of the language with the item. Translations that are not suitable are revised through a discussion process with psychological scientists who understand prosocial. Furthermore, the researcher conducted a readability test to see the respondents' understanding of the items that had been translated and revised again on items considered inappropriate.

After the instrument was declared appropriate, the researcher collected data by distributing the instrument to junior and senior high school students. Students were asked to rate the extent to which the statements described themselves on a scale 5, ranging from 1 (very unlikely) to 5 (very appropriate). Before filling out the questionnaire, the researcher asked participants to fill out information consent as consent to participate in the study. The researcher also asked participants to fill in demographic data according to the research needs.

Instrument

The instrument used is the Prosocial Tendencies Measure Revised (PTM-R), adapted from Carlo' G.' & Randall' B. A. (2002). PTM-R is designed to measure six different prosocial behaviors, namely Public (4 items), 'Anonymous (5 items), 'Dire (3 items), 'Emotional (5 items), 'Compliant (2 items)' and Altruism (6 items). PTM-R totalled 25 items presented as Likert's with five response options ranging from 1 (very inappropriate) to 5 (very appropriate).

Based on a literature review with a meta-analysis conducted by Xiao et al. (2019) from 32 studies, the Cronbach alpha reliability score ranged from 0.46 to 0.92. In Indonesia itself, PTM-R has been adapted, researched Armadhita et al. (2021) showed a reliability score of 0.3 to 0.72.

Translation and Cultural Adaptation of the PTM-R To ensure the PTM-R was suitable for use in the Indonesian context, a rigorous translation and cultural adaptation process was undertaken. The steps included: Forward Translation: The original English version of the PTM-R was translated into Indonesian by two bilingual experts with backgrounds in psychology and linguistics. This step aimed to maintain the semantic and conceptual equivalence of the items. Expert Review: A panel of cultural and academic experts reviewed the translated version to assess its relevance, clarity, and cultural appropriateness. Adjustments were made to align specific terms or phrases with Indonesian cultural norms and values, ensuring that the items were easily understood by adolescents. Back Translation: The Indonesian version was then translated back into English by an independent bilingual expert who had no prior knowledge of the original PTM-R. This step was performed to verify the accuracy and consistency of the translation. Pilot Testing: The adapted PTM-R was pilot-tested with a small group of Indonesian adolescents (n = 30) to identify any items that were confusing or culturally inappropriate. Feedback from the participants was collected and used to refine the instrument further. Cultural Sensitivity Adjustments: Specific items were rephrased to better reflect the collectivist culture of Indonesia. For instance, examples and scenarios included in the PTM-R were adjusted to incorporate common social settings and practices in Indonesian communities, such as family gatherings or religious events. Final Review and Validation: The final version of the Indonesian PTM-R was reviewed again by the expert panel before being administered in the main study. This ensured that the tool was both linguistically accurate and culturally sensitive.

Data Analysis

The researcher calculated the mean, standard deviation and average of prosocial tendencies in the Indonesian Language version to describe the research participants. Item total correlation, alpha Cronbach It is also calculated to determine the reliability of the measuring instrument. Moreover, Confirmatory Factor Analysis using JASP was conducted to test the previously proposed factor model. Six factors developed by (Carlo and Randall, 2002) become the target model. Researchers used various goodness-of-fit indices. This adjustment goodness index measures how well the proposed model matches the data collected. The Chi-square ($\chi 2$) model is used to measure the magnitude of the difference that occurs in conjunction with the Root Mean Square Error of Approximation (RMSEA), which shows a good match if the RMSEA ≤ 0.06 and a bad match if the RMSEA > 0.1. Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) tests are also performed to measure the model's fit.

The statistical analyses employed in this study were designed to rigorously evaluate the psychometric properties of the PTM-R. The procedures included the

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following: Descriptive Statistics: Mean, standard deviation, and average scores of prosocial tendencies in the Indonesian language version of the PTM-R were calculated to provide a detailed overview of the research participants' tendencies. Item-Total Correlation and Reliability Analysis: The internal consistency of the PTM-R was assessed using item-total correlation and Cronbach's alpha. These metrics were used to determine the reliability of the scale and its subdimensions, ensuring the consistency of responses across items. Confirmatory Factor Analysis (CFA): CFA was conducted using JASP software to test the six-factor structure of the PTM-R, as originally proposed by Carlo and Randall (2002). The six factors served as the target model, and various goodness-of-fit indices were employed to evaluate how well the model matched the collected data. The indices included: Chi-Square ($\chi 2$): Used to measure the magnitude of differences between the observed data and the model. A non-significant $\chi 2$ value indicates a good fit, although this test is sensitive to sample size. Root Mean Square Error of Approximation (RMSEA): Indicates the model's fit based on its residuals. An RMSEA value of ≤ 0.06 represents a good fit, while values > 0.1 indicate a poor fit. Comparative Fit Index (CFI): Measures the fit of the model relative to a null model. Values close to or above 0.95 are considered indicative of a good fit. Tucker-Lewis Index (TLI): Similar to CFI, with values close to or above 0.95 suggesting a well-fitting model. Rasch Analysis: To further validate the scale, Rasch analysis was applied to evaluate the measurement properties of individual items. This method assessed the item difficulty and ensured that the PTM-R items functioned appropriately across.

In research involving adolescents, ethical considerations are crucial to ensure their safety, well-being, and rights are protected. Researchers must obtain consent from parents or guardians, as well as assent from adolescents, to respect their autonomy. The privacy and confidentiality of participants must be strictly maintained, especially when addressing sensitive topics such as mental health or family issues. Psychological and physical risks should be minimized by designing research activities that prioritize participants' comfort and safety. Communication should be tailored to the developmental stage of adolescents to ensure information is easily understood, and they should be free to withdraw from the study at any time without negative consequences. Research protocols must be approved by an ethics committee (IRB) to ensure compliance with ethical standards, including cultural sensitivity. Researchers also have a duty to report any signs of abuse or threats to participants' safety while providing access to support services if needed. By ensuring inclusivity and avoiding exploitation, research can be conducted responsibly and in a way that respects the rights of adolescents.

Findings and Results

Reliability Test

The reliability test is carried out in two ways: testing the Cronbach alpha coefficient and Rasch modelling to see the reliability of the item and its person.

Cronbach's alpha coefficient

Table 2 shows that PTM-R has a Cronbach alpha coefficient of 0.92, where this value is greater than 0.7, meaning that reliability is said to be good. In more detail, based on the testing of each subscale in Table 3, reliability scores were obtained on the Public (0.795), Anonymous (0.848), Dire (0.769), Emotional (0.841), Compliant (0.802), and Altruism (0.805) subscales. The item-rest correlation test results indicated that the items in PTM-R scored between 0.28 and 0.66, demonstrating good differentiation. This suggests that the items are effective in distinguishing between varying levels of the measured construct and can, therefore, be retained for further use.

Rasch Model test for reliability

Meanwhile, through Rasch modeling in Table 4., PTM-R shows an item reliability score of 1.00, which means that the items in PTM-R are categorized as reliable, while the consistency of the answers from the subject is included in the strong category with a score of 0.90.

Confirmatory factor analysis

Confirmatory factor analysis (CFA) was carried out to test the validity of PTM-R. The results of the chi-square test are in Table 5. shows that the factor model does not match the data ($p<0.01$). However, because the chi-square results can be affected by the size of the sample,

the researchers used another alternative to test the model using the Kaiser-Meyer-Olkin Test (KMO). Based on the test results, it is known that the KMO score is 0.907 (>0.01), which shows that the model is in accordance with the data.

The results of the Fit Model test are described in Table 5. It showed a relatively good model match, namely with relatively small errors in estimating, good data variability, and good inter-variable relationships (RMSEA=0.080, CFI=0.863, GFI=0.96, TLI = 0.842, and SRMR=0.062). Factor loading data is also presented to see the contribution of each item to the latent variable (Nada et al., 2022) Based on the factor loading score of each of the six factors of PTM-R described in Table 6, it shows that the factor value is acceptable (> 0.4) (Stevens in Nada et al., 2022), this shows that PTM-R reflects the latent variables of the Public Anonymous, Dire, Emotional, Compliant, Altruist dimension.

The study collected data from adolescents in three stages: pre-test, post-test, and follow-up, across the Emotion-focused therapy, Meta-diagnostic therapy, and control groups. Initially, the researcher explored and elucidated the demographic characteristics of the study. The participants were sorted into three different age groups: 15 to 16 years old, 16 to 17 years old, and 17 to 18 years old. Additionally, they were classified based on gender into boys and girls. The results of the Kruskal-Wallis H test indicated no significant difference among the groups regarding demographic variables (P>0.05). The researcher also analyzed the mean and standard deviation of the research variables within the research groups as shown in Table 1.

Table 1

Distribution of Research Participants

No.	Ages	Sex	Number	Percentage
1	14 years old	Female	21	4,2
		Male	54	10,9
2	15 years old	Female	116	23,4
		Male	217	43,8
3	16 years old	Female	15	3,0
		Male	39	7,9
4	17 years old	Female	8	1,6
		Male	19	3,8
5	18 years old	Female	5	1,0
		Male	1	0,2
		Total	495	100

The data in Table 1: Distribution of Research Participants shows the demographic breakdown of participants by age, sex, number, and percentage within a total sample of 495 individuals. The largest age group is 15 years old, with 116 females (23.4%) and 217 males (43.8%), making up a combined 67.2% of the total participants. The second-largest group is 14 years old, contributing 15.1% to the total, with 21 females (4.2%) and 54 males (10.9%). In contrast, the older age groups (16, 17, and 18 years old) have fewer participants, with their combined contribution being 17.5%. Males consistently outnumber females across all age groups, with the most significant gender gap observed among 15-year-olds.

Notably, participation decreases as age increases, with the smallest group being 18 years old, accounting for only 1.2% of the total sample (5 females and 1 male). This skewed age and gender distribution suggests that the findings may heavily reflect the perspectives and characteristics of younger adolescents, particularly 15-year-olds. This uneven representation should be considered in interpreting the results, especially if age and gender play a critical role in the research outcomes.

Table 2

Alpha Cronbach Reliability Test

	Cronbach's α

Point estimate	0.920
95% CI lower bound	0.909
95% CI upper bound	0.929
Rasch Model	
Person Reliability	0.90
Item Reliability	1.00

Table 2: Alpha Cronbach Reliability Test presents the reliability analysis of the research instrument, indicating its internal consistency and dependability. The point estimate for Cronbach's α is 0.920, which is considered excellent, showing that the instrument's items are highly correlated and effectively measure the intended construct. The 95% confidence interval (CI) for Cronbach's α, ranging from 0.909 to 0.929, confirms that this estimate is precise and trustworthy, indicating minimal variability in the reliability of the instrument across different samples.

The Rasch Model results further support the reliability of the instrument, with Person Reliability at 0.90, signifying high consistency in participant responses, and Item Reliability at 1.00, which is a perfect score. This indicates that the items used are extremely reliable for distinguishing between different levels of ability or difficulty. Collectively, these findings confirm that the research instrument is both robust and suitable for data collection, providing confidence in the accuracy and consistency of the results obtained from its application.

Table 3

Reliability estimate

Subscale	Items	Item-rest correlation	Cronbach's Alpha of Subscales
Public	Item A1	0.421	0.795
	Item A2	0.522	
	Item A3	0.288	
	Item A4	0.287	
Anonymous	Item B1	0.606	0.848
	Item B2	0.653	
	Item B3	0.576	
	Item B4	0.639	
	Item B5	0.608	
Dire	Item C1	0.583	0.769
	Item C2	0.555	
	Item C3	0.615	
Emotional	Item D1	0.585	
	Item D2	0.499	
	Item D3	0.692	0.841
	Item D4	0.615	
	Item D5	0.652	
Compliant	Item E1	0.665	0.802
	Item E2	0.612	
Altruism	Item F1	0.616	0.805
	Item F2	0.667	
	Item F3	0.564	
	Item F4	0.562	
	Item F5	0.618	
	Item F6	0.324	

Table 3: Reliability Estimate provides detailed information on the reliability of different subscales within the research instrument, including item-rest correlations and Cronbach's Alpha values for each subscale. The item-rest correlation for each item indicates how strongly each item correlates with the total score of the subscale, with higher values suggesting better item reliability. For example, the Public subscale shows item-rest correlations ranging from 0.287 to 0.522, with the highest correlation for Item A2 (0.522),

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while the Cronbach's Alpha for this subscale is 0.795, indicating good internal consistency.

The other subscales demonstrate varying degrees of item reliability and overall subscale consistency. For instance, the Anonymous subscale has item-rest correlations from 0.576 to 0.653 and a high Cronbach's Alpha of 0.848, showing strong reliability. The Emotional subscale also performs well, with item-rest correlations from 0.499 to 0.692 and a Cronbach's Alpha of 0.841, highlighting good consistency among items. Conversely, the Altruism subscale shows a range of item-rest correlations from 0.324 to 0.667, with a Cronbach's Alpha of 0.805, indicating acceptable reliability despite the lowest item-rest correlation for Item F6 (0.324). These results demonstrate that most subscales have good to excellent reliability, making them suitable for further analysis and research purposes.

Table 4

KMO, Barlett's Test & Chi-square test

Kaiser-Meyer-Olkin Test	Chi-square test		
	X^2	Df	p
0.907	1075.215	260	<.001

Table 4: KMO, Bartlett's Test & Chi-square Test presents the results of tests assessing the suitability of the data for factor analysis. The Kaiser-Meyer-Olkin (KMO) Test value is 0.907, which is considered excellent and indicates that the data is appropriate for factor analysis, as it suggests high sampling adequacy. The Chi-square test result shows a X^2 value of 1075.215 with 260 degrees of freedom (df) and a p-value less than 0.001, which is highly significant. This indicates that the correlation matrix is not an identity matrix, confirming that there are significant relationships among the variables and supporting the appropriateness of proceeding with factor analysis.

Table 5

PTM-R Model Fit Scores

	RMSEA	CFI	TLI (NNFI)	GFI	ACVI	SRMR
N = 495	0.080	0.863	0.842	0.963	2.536	0.062

Table 5: PTM-R Model Fit Scores provides the model fit indices for the research model applied to a sample of 495 participants. The RMSEA (Root Mean Square Error of Approximation) value is 0.080, which is within the acceptable range (typically ≤ 0.08), suggesting a good fit. The CFI (Comparative Fit Index) and TLI (Tucker-Lewis Index) values are 0.863 and 0.842, respectively, indicating an adequate model fit, although values closer to 1 are preferred for optimal fit. The GFI (Goodness of Fit Index) is 0.963, demonstrating a strong fit as it is close to 1. The ACVI (Average Covariance of the Variables Index) score is 2.536, which is less commonly used but can provide additional context on the model's fit. Finally, the SRMR (Standardized Root Mean Square Residual) value of 0.062 is below the recommended threshold of 0.08, indicating a good model fit. These results collectively suggest that the PTM-R model fits the data well, with most indices meeting or exceeding conventional standards for a good fit.

Table 6

Factor Loading Confirmatory Factor Analysis

Factor	Item/ indicator	Estimate	Std. Est. (all)	Information
Public	Item A1	1.101	0.800	Accepted
	Item A2	1.015	0.796	Accepted
	Item A3	0.696	0.601	Accepted
	Item A4	0.618	0.562	Accepted

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Anonymous	Item B1	0.625	0.603	Accepted
	Item B2	0.782	0.792	Accepted
	Item B3	0.873	0.770	Accepted
	Item B4	0.908	0.803	Accepted
	Item B5	0.792	0.693	Accepted
Dire	Item C1	0.824	0.734	Accepted
	Item C2	0.861	0.710	Accepted
	Item C3	0.804	0.730	Accepted
Emotional	Item D1	0.872	0.718	Accepted
	Item D2	0.806	0.658	Accepted
	Item D3	0.865	0.793	Accepted
	Item D4	0.884	0.744	Accepted
	Item D5	0.703	0.670	Accepted
Compliant	Item E1	0.845	0.867	Accepted
	Item E2	0.738	0.773	Accepted
Altruism	Item F1	0.698	0.753	Accepted
	Item F2	0.810	0.812	Accepted
	Item F3	0.605	0.646	Accepted
	Item F4	0.681	0.599	Accepted
	Item F5	0.702	0.685	Accepted
	Item F6	0.513	0.404	Recommended removal

Table 6: Factor Loading Confirmatory Factor Analysis details the results of the confirmatory factor analysis (CFA) for the research model, displaying the factor loadings for each item/indicator and their standardized estimates. The Estimate values represent the strength of the relationship between each item and its corresponding factor, while the Standardized Estimate (Std. Est.) provides a normalized value that allows for comparison across items and factors. Items with standardized estimates above 0.5 are generally considered acceptable, indicating that they contribute well to their respective factors. For instance, items in the Public and Emotional subscales have standardized estimates ranging from 0.562 to 0.800, showing that they align well with their factors.

Most items across subscales like Anonymous, Dire, Emotional, and Compliant were accepted based on their factor loadings, meeting or exceeding the acceptable threshold. However, Item F6 in the Altruism subscale, with a standardized estimate of 0.404, falls below the recommended level and is suggested for removal. This indicates that Item F6 does not contribute sufficiently to the Altruism factor and may be reconsidered in future analysis or excluded to improve the model's reliability and fit.

Discussion and Conclusion

This study was conducted to test the psychometric properties of PTM-R developed by Carlo & Randall (2002) in adolescents in East Java, Indonesia, aged 13 to 16 years (Carlo & Randall, 2002). Researchers used CFA to test the validity of the construct and Cronbach's alpha to test the reliability of the instrument. The findings of this study show that based on the analysis of confirmatory factors, the *Prosocial Tendencies Measure Revised* (PTM-R) of the Indonesian Language version is considered to support the proposed theoretical constructs, namely public, emotional, dire, anonymous, Altruism, and compliant. These results support the evidence that prosocial behavior is a multidimensional construct (Carlo et al., 2010; Carlo & Randall, 2002))

A more detailed analysis of why certain dimensions of the PTM-R (Prosocial Tendencies Measure-Revised) may have shown weaker fits in the Indonesian context involves examining the potential cultural factors that could influence adolescents' responses to specific items on the scale. Cultural norms, values, and expectations play a significant role in shaping prosocial behavior, and they can affect how adolescents interpret and respond to survey items. For example, in some cultures, collectivist values emphasize community and family over individual actions, which might impact how items related to helping others are understood or prioritized. In contrast, cultures with more individualistic orientations may respond differently to items that measure personal benefit or self-focused prosocial behavior. In the Indonesian context, where strong communal ties and a deep sense of social responsibility are prevalent, certain items on the PTM-R that emphasize individual-oriented prosocial behavior (such as personal gain or recognition) might not resonate as strongly with adolescents. This can lead to weaker factor fits, as these items may not align

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well with the cultural interpretation of prosocial behavior. Moreover, religious and traditional beliefs, which are significant in Indonesia, could influence how certain dimensions are perceived and answered. For instance, prosocial behaviors associated with religious duty or cultural traditions might be more prominent or interpreted differently than those related to secular or impersonal acts of kindness.

Regarding subscales with lower reliability scores, it is important to analyze which specific dimensions exhibited these scores and the potential reasons behind them. If, for example, subscales related to "altruism" or "cooperation" had lower reliability, this could indicate that the items within these subscales were not as consistently understood or endorsed by participants as other items. In the Indonesian context, these behaviors might be influenced by group dynamics and expectations that are not adequately captured by the scale's wording or structure. Additionally, the variability in response patterns could point to discrepancies in how adolescents interpret the meaning of helping or cooperative actions in different social settings. The impact of lower reliability subscales on the PTM-R's use in Indonesia could be significant. If a subscale demonstrates low reliability, it may not provide a robust measure of that particular dimension of prosocial behavior, leading to challenges in accurately assessing that aspect. This could limit the tool's effectiveness in research or practical applications, such as educational programs aimed at fostering specific prosocial skills. To improve the PTM-R's application in Indonesia, adaptations may be needed to better align the language, examples, and items with the cultural context. This could involve revising items to reflect the collectivist nature of Indonesian society or integrating culturally relevant scenarios that adolescents are more likely to relate to. Ensuring that subscales demonstrate high reliability across different cultural settings would enhance the tool's validity and applicability, making it a more effective instrument for assessing prosocial behavior among high school students in Indonesia.

The results of the Fit Model test show an acceptable model fit, RMSEA=0.080, CFI=0.863, GFI=0.96, TLI = 0.842, and SRMR = 0.062. From the results of the analysis, it is also known that the loading factor is greater than 0.3 for each instrument item that builds public, emotional, dire, anonymous, Altruism, and compliant indicators. However, based on Hair et al. (2010), when the score is above 0.5 out of 25 items, there is 1 item with a score below 0.5, namely item F6 (altruism domain), which indicates that the item has a weak relationship, so the researcher recommends that it be deleted. This result is also in line with the results of the previous PTM-R adaptation, where the factor loading of all items in adolescent and adult subjects is included in the acceptable category except for two items of altruism dimension, which are below 0.5.

The correlation of each dimension with the item is also acceptable and significant, with an internal consistency of Cronbach alpha of 0.76 to 0.84. This score supports the results of previous studies that have been conducted (Armadhita et al., 2021; Azimpour et al., 2011; Carlo et al., 2010; Carlo & Randall, 2002; Costa et al., 2022; Mestre et al., 2015; Rodrigues et al., 2017a, 2017b; Šukys & Šukienė, 2015). However, it is different from the results of the study by Armadhita et al. (2021), which tends to show low-reliability scores in the child's subjects, which is likely to be influenced by age and a lack of understanding of the item's intent (Armadhita et al., 2021).

The findings from this study support the notion that prosocial behavior is complex and multifaceted, aligning with psychological theories that view prosocial behavior as comprising different dimensions or types, such as helping, sharing, cooperating, and empathic concern. For instance, Eisenberg's theory of prosocial development posits that prosocial behavior evolves in complexity as children grow, moving from simple acts of sharing to more complex and empathically driven behaviors. The PTM-R's structure, which measures different types of prosocial tendencies, is consistent with this developmental perspective, providing a nuanced approach to assessing these behaviors in adolescents. The study's findings demonstrate that adolescents in East Java engage in various prosocial behaviors, supporting the idea that these behaviors can be distinguished and measured independently, as proposed by Eisenberg and other developmental psychologists. Moreover, the multidimensional nature of the PTM-R offers a comprehensive way to understand how prosocial behavior manifests differently across individuals, which is consistent with theories of social learning and social cognitive theory by Bandura. These theories emphasize the role of modeling, reinforcement, and observational learning in the development of

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prosocial behaviors. The PTM-R's subscales, which include items on helping, sharing, and cooperation, can be seen as measuring different learned or modeled responses to social situations. By capturing these different aspects, the PTM-R adds depth to the understanding of how adolescents learn and exhibit prosocial behaviors within their social environments.

In the context of cross-cultural research, the PTM-R's multidimensional approach is particularly valuable because it allows for comparisons across different cultures and settings. Prosocial behavior is influenced by cultural values and norms, and theories such as Hofstede's cultural dimensions theory suggest that collectivist cultures, like that of Indonesia, emphasize community and interdependence, which might affect how adolescents respond to items measuring various types of prosocial behavior. The study's findings suggest that while certain dimensions of prosocial behavior (e.g., helping and sharing) are highly endorsed, others might be influenced by cultural norms or social expectations. This aligns with cultural psychology theories that argue that individual behavior is shaped by the broader cultural context. It would be valuable to discuss how these findings might align with or challenge existing theories of cross-cultural prosocial behavior, contributing to a deeper understanding of the role that culture plays in shaping adolescent social tendencies. The results could also prompt a reevaluation of how prosocial behavior is operationalized across different contexts. For example, theories that emphasize the role of contextual and situational factors in prosocial behavior (e.g., the theory of planned behavior by Ajzen) might benefit from incorporating multidimensional assessments like the PTM-R to better capture how adolescents respond in various social and cultural situations. This broader approach could enhance theoretical models by integrating situational influences and individual predispositions.

Theoretically, the KMO score of the model is said to be in accordance with empirical data. The researchers used the KMO score to see the model fit because the chi-square is highly dependent on the sample size, where the number of samples will lead to a mismatched score. From the tests that have been carried out, it can be concluded that the factor model proposed in the study can be used to explain the variability of empirical data. The study's limitations should indeed be thoroughly addressed in the Discussion to provide a balanced view of the findings and their broader applicability. While this research demonstrates the PTM-R (Prosocial Tendencies Measure-Revised) as a suitable tool for assessing prosocial behavior among high school students in East Java, there are several limitations to consider. Firstly, the sample was limited to adolescents in East Java, which raises questions about the generalizability of the findings to other regions of Indonesia. Indonesia is highly diverse, with significant cultural, ethnic, and socioeconomic differences across its provinces. The attitudes, behaviors, and responses of adolescents in East Java may not reflect those of students from other regions, such as Jakarta, Sumatra, or Sulawesi. Future studies should include samples from a wider range of locations to determine whether the PTM-R maintains its reliability and validity across the country's diverse adolescent populations.

Secondly, potential biases in the sampling method should be acknowledged. For example, if the sample was drawn from specific schools or regions that may not fully represent the broader population of high school students in East Java, this could affect the results. Discussing these biases and how they may influence the findings would provide transparency and allow readers to better understand the study's limitations. Additionally, while the PTM-R demonstrated high reliability and construct validity in this study, it is essential to acknowledge the inherent limitations of the tool itself. The PTM-R may not capture all aspects of prosocial behavior or may have items that are less applicable to certain cultural contexts. The instrument's focus on certain dimensions, such as helping, sharing, and cooperating, might not encompass other relevant forms of prosocial behavior, such as those that are more nuanced or specific to Indonesian cultural practices. Discussing these limitations can help set realistic expectations for the use of the PTM-R in different settings and encourage future adaptations to address any gaps. In conclusion, while the study provides strong evidence for the PTM-R's suitability for assessing prosocial behavior in high school students in East Java, acknowledging the limitations related to regional representativeness, potential sampling biases, and the tool's applicability in different contexts is essential. Future research should aim to include more diverse and representative samples, address potential biases, and explore adaptations of the PTM-R to ensure its continued

relevance and reliability across various adolescent populations and regions.

Finally, while the findings support the multidimensionality of prosocial behavior, they also suggest areas where the PTM-R could be further refined to better align with cultural nuances. For example, the subscales with weaker fits might highlight dimensions of prosocial behavior that are less culturally salient or understood differently by adolescents in Indonesia. This points to the need for cross-cultural validation studies and adaptations to ensure that the PTM-R accurately reflects the complexities of prosocial behavior across different settings. In conclusion, the study's findings contribute to existing theories by reinforcing the multidimensional nature of prosocial behavior, supporting developmental, social learning, and cultural psychology perspectives. They highlight the value of using multidimensional tools like the PTM-R for understanding adolescent prosocial behavior and suggest avenues for future research, including cross-cultural validation and refinement of the tool to better capture context-specific behaviors.

This study shows that the PTM-R (Prosocial Tendencies Measure-Revised) is a relatively suitable tool for assessing the prosocial behavior of high school students. This conclusion is based on two main aspects. First, the high reliability coefficient indicates that the PTM-R has strong internal consistency. This means that the tool provides stable and dependable results when used repeatedly or with different groups of high school students. The high reliability reinforces that the PTM-R can be trusted for assessing prosocial behavior across various contexts and populations. Second, the construct validation of the PTM-R supports that the tool is effective in measuring what it is intended to—prosocial behavior. The factors identified in the scale (such as helping, sharing, cooperating, etc.) align with theoretical expectations and empirical data regarding prosocial actions. This validation process demonstrates that the elements within the PTM-R are consistent with established psychological and behavioral theories of prosocial behavior, strengthening its use as an assessment instrument for high school students. These findings indicate that the PTM-R can be confidently used in research and practical applications aimed at understanding and promoting prosocial behavior among high school students, aiding educators and researchers in assessing and fostering positive social behaviors in this age group.

Additionally, examining the relationship between the PTM-R and other psychological or behavioral variables, such as academic performance, mental health, or peer relationships, would enrich the understanding of the scale's practical implications. This could reveal potential mediators or moderators that impact prosocial behavior and help educators and policymakers design comprehensive programs to foster these traits. Finally, future research should consider exploring adaptations of the PTM-R to include more context-specific items that reflect the unique social and cultural practices of different populations. Including scenarios that resonate more closely with the experiences of adolescents from varied backgrounds would enhance the relevance of the scale and improve the reliability of the subscales. In summary, while this study establishes the PTM-R as a robust tool for assessing prosocial behavior among high school students, further research should focus on adapting the instrument for diverse adolescent groups, exploring its longitudinal stability, examining its relationships with other variables, and tailoring items to reflect specific cultural contexts. These efforts would expand the scale's utility and ensure it remains an effective assessment tool in different educational and social settings.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this study.

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