Open Access

TPM Vol. 32, No. 2, 2025
ISSN: 1972-6325
https://www.tpmap.org/

# MEASURING THESIS PROCRASTINATION: VALIDATION OF AN INDONESIAN STUDENT SCALE WITH THE RASCH MODEL

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This study aims to develop and validate the Indonesian Thesis Procrastination Scale (ID-TPS) while exploring students' procrastination behavior in thesis completion. ID-TPS was tested on 762 university students (636 females, 126 males) using Rasch Models, particularly the Partial Credit Model (PCM). The analysis results indicate that ID-TPS exhibits high validity and reliability, making it a precise instrument for assessing academic procrastination levels. Of the 32 items developed, 31 were retained, while one item was removed due to outfit MNSQ > 1.5. The scale demonstrates high item and person separation indices, confirming its ability to differentiate procrastination levels among students. These findings contribute to the academic procrastination literature and have the potential to be integrated into academic interventions, such as structured academic support, counseling, and time management workshops, to assist students in overcoming procrastination and completing their studies on time.

Keywords: Thesis Procrastination, Indonesian Student Scale, Rasch Model, Psychometric Validation, Academic Procrastination, ID-TPS, Reliability, Validity

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## INTRODUCTION

Academic procrastination is a common phenomenon among students worldwide, including in Indonesia (Ramadhani et al., 2023; Santyasa et al., 2021; Setiyowati et al., 2020). Procrastination, or the tendency to delay tasks, has become one of the most significant challenges for students in completing academic assignments, particularly theses (Herut & Gorfu, 2024; Rahimi & Hall, 2021). A thesis is a final academic requirement for undergraduate students; however, many struggle to complete it on time (Ädel et al., 2024; Ho et al., 2024; Jusslin & Widlund, 2021; Tafahomi & Chance, 2024). Procrastination is often caused by various psychological and environmental factors that can hinder students' productivity and extend their study duration (Bahl et al., 2024; Ihkamuddin et al., 2024; Nordby et al., 2017; Valente et al., 2024). Therefore, understanding and measuring academic procrastination, especially in the context of thesis completion, is crucial.

In Indonesia, completing a thesis often becomes a heavy burden for students due to various academic and social pressures (Octaberlina et al., 2022; Wulandari et al., 2021). The lack of adequate support can lead to physical and psychological issues, including stress and suicidal ideation, especially amidst high social expectations and the demanding nature of thesis assignments. Students also face academic and psychological challenges such as low self-confidence, fear of making mistakes, and anxiety, exacerbated by cultural and social expectations of academic success (Ermiati et al., 2021; Sulelino et al., 2020). Students feel pressured to complete their thesis with good results but often lack sufficient emotional and academic support to navigate these challenges. According to Quratulain et al. (2024), Shen et al. (2024), and Zhang & Zhang (2023), the thesis guidance system in some universities lacks the flexibility required, leading students to feel hindered in the completion process. These factors contribute to procrastination behavior, further delaying thesis completion.

Although academic procrastination has been extensively studied in various countries, specific tools for measuring procrastination in the thesis completion process in Indonesia remain limited (Rahman,

TPM Vol. 32, No. 2, 2025
ISSN: 1972-6325
https://www.tpmap.org/

2019). Most existing measurement tools are general and not tailored to the context of thesis completion. Therefore, there is a need to develop a measurement tool that can capture the dynamics of academic procrastination experienced by Indonesian students working on their thesis. The development of this procrastination scale is expected to provide a more accurate depiction of procrastination behavior and serve as a foundation for more targeted interventions (Li et al., 2022).

Several instruments have been developed to measure academic procrastination, both in general and in the context of thesis completion. The commonly used instruments in previous studies include the Procrastination Assessment Scale-Students (PASS) (Laura & Esther D. Rothblum, 1984), Tuckman Procrastination Scale (ATPS) (Tuckman, 1991), Aitken Procrastination Inventory (API) (Aitken, 1982), Short Form of the Academic Procrastination Scale (APS-S) (Yockey, 2016), General Procrastination Scale (GP) (Lay, 1986), Decisional Procrastination Scale (DP) (Mann et al., 1997), and Adult Inventory of Procrastination (AIP) (McCown et al., 1989). Additionally, the Tel-Aviv Procrastination Inventory (TAP) (Sroloff, 1983) has also been used in various academic contexts. Specifically, to measure procrastination in thesis completion, one of the instruments developed is the Thesis-Writing Procrastination Scale (TW-PS) (Rahman, 2019). However, these instruments remain limited in their application in Indonesia, highlighting the importance of developing and validating the Indonesian Thesis Procrastination Scale (ID-TPS), as presented in this study.

The ID-TPS instrument developed in this study is specifically designed to measure procrastination in thesis completion among Indonesian students. Unlike previous instruments that are more general or oriented toward broader academic contexts, the ID-TPS has been developed with consideration of the unique cultural and academic factors in Indonesia's educational system. By applying Rasch Models, particularly the Partial Credit Model (PCM), the ID-TPS ensures that the measurement scale has high validity and reliability while capturing variations in procrastination levels among students at different stages of thesis completion (Masters, 1982). Thus, the ID-TPS is expected to be a more accurate and relevant tool in supporting research and interventions related to academic procrastination in Indonesia.

This study aims to develop the Indonesian Thesis Procrastination Scale (ID-TPS), which will be pilot-tested on Indonesian students who are in the process of completing their thesis. The use of the Rasch Model in this study is intended to provide a deeper and more accurate psychometric analysis concerning the validity and reliability of the developed scale (Cupani et al., 2020). The Rasch Model was chosen for its ability to measure both item and respondent quality, as well as provide detailed information about item difficulty and respondents' abilities within the measurement scale (Boone, 2016; Boone et al., 2011). Using the WINSTEPS 5.1.5.1 software, this study will identify how accurately the scale measures academic procrastination.

## METHOD

### RESEARCH DESIGN

The Rasch model has been widely applied in measurement and evaluation, particularly in assessing individual characteristics (Hergesell, 2022; Vogel & Engelhard, 2011). There is a collection of Rasch models, each offering significant advantages in various educational and research contexts, particularly in the validation of psychometric instruments (Anselmi et al., 2019; Bacherini et al., 2024; Fagnani et al., 2021; Mills et al., 2022; Sotgiu et al., 2019; Wuang et al., 2009). These models, such as the Partial Credit Model (PCM), Rating Scale Model (RSM), and Andrich Rating Scale Model (ARSM), excel in analyzing the psychometric properties of different instruments, ensuring reliability and validity, and improving measurement accuracy. Moreover, the Rasch models provide detailed feedback, which is highly useful in the learning and teaching process (Areskoug-Josefsson & Rolander, 2020; Colledani et al., 2025; Peeters & Augustine, 2023). Therefore, the use of various Rasch models in this study allows for a more precise and comprehensive analysis of thesis procrastination among Indonesian students.

This study uses a quantitative approach to validate the Indonesian Thesis Procrastination Scale (ID-TPS) by applying the Rasch Model. Specifically, the Partial Credit Model (PCM) is employed because it is suitable for analyzing polytomous items (rating scales) (Masters, 1982). The Rasch Model was selected due to its ability to provide robust psychometric analysis, including item fit analysis, rating scale diagnostics (Andrich thresholds), person and item separation reliability, and unidimensionality assessment using Principal Component Analysis (PCA) of residuals (Smith Jr, 2002). These features ensure that the scale effectively measures thesis procrastination with a high degree of precision.

TPM Vol. 32, No. 2, 2025
ISSN: 1972-6325
https://www.tpmap.org/

To ensure that the response categories in the ID-TPS function optimally, Andrich threshold analysis is conducted to determine whether the thresholds are ordered correctly and aligned with the construct being measured. The Likert scale, with response categories of always, often, sometimes, rarely, and never, serves as a key element in ensuring measurement accuracy. Any threshold misordering may indicate a misalignment between the response categories and the levels of thesis procrastination being assessed (Colledani et al., 2025; Linacre, 2002a).

The item quality in the ID-TPS is evaluated using infit and outfit mean-square (MNSQ) statistics, which measure the extent to which each item conforms to the expectations of the Rasch Model. Items with an outfit MNSQ value above 1.5 may indicate several possibilities, such as items that do not fit the model due to unclear formulation or difficulty in understanding by respondents, as well as items that measure a different construct, which could signal issues of multidimensionality within the scale (Linacre, 2002b). Beyond traditional methods such as Cronbach's alpha, this study employs Rasch-based reliability indicators, which provide a more comprehensive approach to assessing measurement consistency. Rasch-based reliability measures have been found to outperform Cronbach's alpha and KR20, particularly in evaluating the stability and internal consistency of the instrument (Smith Jr, 2001; Sotgiu et al., 2019). The reliability analysis in this study includes person reliability, which examines how well the scale distinguishes individuals based on their levels of thesis procrastination, and item reliability, which evaluates the stability of the item hierarchy within the scale, ensuring that the structure remains consistent across different populations.

The validity of the ID-TPS was assessed using the Rasch Wright person-item map, which compares the locations of persons and items along the latent variable being measured. This evaluation aims to identify potential measurement gaps, particularly in cases where individuals do not have items that correspond to their level of thesis procrastination, which may indicate insufficient item coverage (Smith Jr, 2001; B. Wright & Stone, 1999).

Additionally, this study evaluates item strata, which represent the number of statistically distinct levels of item difficulty that can be distinguished by respondents. If fewer than two difficulty levels are identified, interpreting the latent variable being measured becomes more challenging, which may affect measurement accuracy (B. Wright & Stone, 1999). In addition to ensuring instrument validity, the Rasch model provides more precise estimations of missing data patterns by analyzing individual response trends (Sofyan et al., 2024). This enhances measurement reliability (Aminah et al., 2023; Rangka et al., 2023) and allows for a more in-depth evaluation of item quality, ensuring that each item accurately represents the intended construct.

By integrating these methodological refinements and referencing foundational works such as Linacre (2002), Masters (1982), Rasch (1960), Smith Jr (2001), and B. Wright & Stone (1999), this study ensures methodological rigor in scale validation. Furthermore, this research contributes to a deeper understanding of academic procrastination in the context of thesis completion and can support the development of data-driven intervention strategies to help students overcome academic challenges.

## PROCEDURE

The Indonesian Thesis Procrastination Scale (ID-TPS) was initially developed by the authors, based on Tuckman's (1991) procrastination theory, which comprises three key indicators: (1) the tendency to delay tasks that should be completed, (2) the preference for engaging in enjoyable activities when facing difficulties or discomfort in completing tasks, and (3) the tendency to attribute procrastination to external factors. Based on these indicators, 32 items were formulated for the scale.

The scale development process consisted of the following steps:

1. Defining the content domain and measurement variables by ensuring a clear conceptual definition to guarantee the scale's measurability (Direkvand-Moghadam, 2016).
2. Constructing and reviewing items with the involvement of two experts and representative users independently to ensure linguistic and cultural appropriateness of the scale (Song & Kim, 2023).
3. Developing instrument items based on the identified indicators to ensure that each item accurately represents the theoretical aspects being measured.
4. Conducting content validation with experts to confirm that the items fully capture the relevant aspects of the construct being measured (Diniz et al., 2019; Lee et al., 2013).

TPM Vol. 32, No. 2, 2025
ISSN: 1972-6325
https://www.tpmap.org/

5. Conducting construct validation using factor analysis to assess whether the developed items measure the intended dimension. In this revision of the ID-TPS, we emphasize that factor analysis within the Rasch Model is performed using Principal Component Analysis (PCA) of residuals to evaluate the unidimensionality of the scale, as recommended by Latvala et al. (2004) and Smith Jr (2002).
6. Assessing internal consistency using Cronbach's alpha, as well as Rasch-based person separation reliability and item separation reliability, to evaluate the scale's measurement consistency and stability.

This structured process ensures that the ID-TPS is a psychometrically sound instrument for assessing thesis procrastination among Indonesian students.

## PARTICIPANTS

This study involved 762 university students from various islands in Indonesia, including Bali, Java, Kalimantan, Papua, Sulawesi, and Sumatra, representing both public and private universities. Participants were invited to participate via WhatsApp messages, which provided a detailed explanation of the study's purpose and significance, ensuring that they understood their potential contributions to academic research. To facilitate participation, the recruitment process ensured that respondents could access and complete the survey via smartphones, and the survey was optimized for mobile devices to enhance accessibility. Additionally, it was emphasized that participation was voluntary, with no coercion or pressure, allowing respondents to engage freely and comfortably. The instrument was tested on 762 students (636 females and 126 males) to collect data on academic procrastination and ensure the validity and reliability of the scale.

Confidentiality of all personal information was strictly maintained in accordance with ethical research standards. The demographic composition of the respondents reflects diverse geographical backgrounds, with representation from students in both public and private universities across Indonesia's major islands. This diversity provides a broad and in-depth perspective on student procrastination behavior, ensuring that the findings are comprehensive and applicable to various academic settings. Table 1 presents the detailed demographic characteristics of the participants, which play a crucial role in ensuring that the study results accurately reflect the heterogeneous nature of Indonesia's student population.

DEMOGRAPHICS

Table 1: Respondent Demographics (N=762)

| *Respondent Category* | N | *Percentage* |
|---|---|---|
| ***Gender*** | | |
| **Male** | 126 | 16,54 |
| **Female** | 636 | 83,46 |
| ***Age*** | | |
| ***20 – 21 years*** | 283 | 37,14 |
| **22 – 26 years** | 479 | 62,86 |
| ***Region*** | | |
| ***Bali island*** | 5 | 0,66 |
| ***Java Island*** | 104 | 13,65 |
| ***Kalimantan island*** | 14 | 1,84 |
| ***Papua Island*** | 3 | 0,39 |
| ***Sulawesi island*** | 26 | 3,41 |
| ***Sumatra island*** | 610 | 80,05 |
| ***University*** | | |
| ***Country*** | 458 | 60,10 |
| ***Private*** | 304 | 39,90 |

*Source: Data processed from research data collection.*

## DATA COLLECTION TOOLS

This scale was developed based on Tuckman's (1991) academic procrastination framework, which identifies three key behavioral tendencies: postponing tasks that should be completed, engaging in more enjoyable activities when faced with difficulties or discomfort in completing tasks, and attributing

TPM Vol. 32, No. 2, 2025
ISSN: 1972-6325
https://www.tpmap.org/

delays to external factors rather than personal responsibility. The scale utilizes a Likert-type response format with five categories: always, often, sometimes, rarely, and never. To ensure optimal functionality, the scale was evaluated using Andrich thresholds in the Rasch analysis, confirming that the response categories are progressively ordered and effectively capture different levels of procrastination.

## DATA ANALYSIS

This study uses the PCM, which is a Rasch model for polytomous items. The Rasch model was chosen for its ability to provide reliability estimates, separation indices, test information function analysis, and structural validation of the scale through Principal Component Analysis (PCA) of residuals (Masters, 1982; Rasch, 1960; Smith Jr, 2002). This model allows for accurate evaluation of respondent and item fit, as well as item difficulty levels, thereby enhancing the reliability and validity of the measurement (Khine, 2020; Leung et al., 2014). As a powerful psychometric analysis tool, Rasch Models provide detailed estimates related to reliability, separation indices, and test information functions, while ensuring that the assumption of unidimensionality is tested through PCA of residuals (Smith Jr, 2002). The PCM allows for item analysis with multiple rating categories, which enriches the depth of measurement. The use of Rasch Models is highly beneficial in understanding the accuracy of measurement at various levels of latent traits, making it an essential tool for the validation and analysis of instruments across various disciplines (Golia, 2011).

The data analysis was conducted using WINSTEPS software (Linacre, 2021) version 5.1.5.1, where ideal model fit was evaluated using infit and outfit Mean Square (MNSQ) values, within the recommended range of 0.5 to 1.5 (B. Wright & Linacre, 1994). To ensure measurement quality, item fit and person fit indices were examined individually.

The reliability of this scale was assessed using Rasch-based reliability indices, namely person separation reliability and item separation reliability, which are considered superior to classical methods such as Cronbach's alpha and KR-20 in evaluating internal consistency (Smith Jr, 2001; Sotgiu et al., 2019). The three main aspects of reliability evaluation included:

1. Item reliability – assesses the stability of the item difficulty hierarchy.
2. Person reliability – evaluates the scale's ability to differentiate individuals based on their thesis procrastination levels.
3. Item strata – determines the number of statistically distinct levels of item difficulty recognized by respondents (B. Wright & Stone, 1999).

The results of the reliability and separation index analyses are presented in Table 2, illustrating the scale's consistency and precision in measuring thesis procrastination among students. Additionally, Table 3 reports the results of Principal Component Analysis (PCA) of residuals, which was conducted to examine unidimensionality and evaluate the threshold ordering in the Likert scale. Based on the Wright map, the findings indicate limitations in capturing the highest levels of procrastination, highlighting the need for further refinement of the scale to enhance its coverage at extreme procrastination levels. By integrating these psychometric approaches, this study reinforces prior findings that Rasch analysis provides a more comprehensive understanding of validity and reliability in psychometric measurement.

## RESULTS

Table 2: Reliability and Separation Indices (N = 762)

| Estimation | Measure |
|---|---|
| Items reliability | 0.99 |
| Person reliability | 0.90 |
| Cronbach alpha (KR-20) person raw score "test" reliability | 0.94 |
| Item separation index | 10.30 |
| Person separation index | 2.98 |
| Item Strata | 14.06 |
| Person Strata | 4.31 |

Based on the Rasch analysis results presented in Table 2, the instrument used demonstrates excellent reliability.

TPM Vol. 32, No. 2, 2025
ISSN: 1972-6325
https://www.tpmap.org/

- Item reliability is recorded at 0.99, indicating high stability in the item difficulty hierarchy, ensuring that the order of items remains consistent across different samples.
- Respondent reliability has a value of 0.90, indicating that the variability in respondent scores largely reflects true differences in thesis procrastination levels rather than random fluctuations.
- Cronbach's alpha (KR-20) for overall test reliability is 0.94, indicating that the scale has high internal consistency with minimal measurement error.

Additionally, the item separation index of 10.30 shows that the instrument is able to differentiate various item difficulty levels very effectively, meaning that more than ten difficulty levels can be statistically identified. Meanwhile, the respondent separation index of 2.98 indicates that the scale can differentiate at least three groups of respondents based on their levels of procrastination. However, as this index is near the 3.0 threshold, the measurement of the highest levels of procrastination may still need to be improved in future scale development (Wright & Stone, 1999).

The item strata is recorded at 14.06, indicating that the instrument is able to differentiate a wide range of item difficulty levels effectively, covering a significant number of difficulty levels that can be statistically identified. The person strata is recorded at 4.31. This person strata index demonstrates the instrument's ability to differentiate groups of respondents with varying levels of procrastination effectively. With a value of 4.31, the instrument can differentiate more than four groups of respondents based on true differences in their levels of procrastination.

Overall, these results affirm that the instrument has very high measurement quality, both in terms of reliability and its ability to distinguish between different levels of item difficulty and respondents' procrastination levels. These findings support the effectiveness of the Rasch Model in validating psychometric instruments and demonstrate that this scale can be used with high confidence in academic research related to thesis procrastination.

Table 3: Standardized Residual Variance

| | *Observed* | *Expected* | |
|---|---|---|---|
| Total raw variance in observations | 100.0% | | 100.0% |
| Raw variance explained by measures | 40.4% | | 40.9% |
| Raw variance explained by persons | 16.9% | | 17.1% |
| Raw variance explained by item | 23.4% | | 23.7% |
| Raw unexplained variance (total) | 59.6% | 100.0% | 59.1% |
| Unexplained variance in 1st contrast | 6.7% | 11.3% | |
| Unexplained variance in 2nd contrast | 6.4% | 10.7% | |
| Unexplained variance in 3rd contrast | 3.7% | 6.1% | |
| Unexplained variance in 4th contrast | 2.6% | 4.4% | |
| Unexplained variance in 5th contrast | 2.5% | 4.2% | |

Table 3. Standardized Residual Variance indicates that the ID-TPS instrument effectively explains data variance in measuring thesis procrastination. The total observed and expected variance is 100%, confirming that all data have been analyzed without information loss. The variance explained by the measures is 40.4%, closely matching the expected value of 40.9%, suggesting that the Rasch Model consistently accounts for most of the variance related to thesis procrastination levels. Additionally, the variance explained by respondent differences is 16.9%, slightly below the expected 17.1%, yet still within an acceptable range. The variance explained by items is 23.4%, nearly aligning with the expected 23.7%, indicating that the scale's item structure remains stable in measuring latent procrastination characteristics.

The unexplained variance by the Rasch Model is 59.6%, slightly exceeding the expected 59.1%, but still within an acceptable range for psychometric models. To further assess the presence of additional dimensions not captured by the primary model, an analysis of contrasts in residuals was conducted. The first contrast records the highest value at 6.7%, corresponding to about 2 items, which is quite small, indicating that there is no substantial secondary dimension. Overall, these results confirm that the Rasch Model performs well in explaining data variance, ensuring that the ID-TPS instrument is valid and reliable in assessing thesis procrastination levels among students.

Additionally, Table 3 reports the results of Principal Component Analysis (PCA) of residuals, which was conducted to examine unidimensionality. The findings indicate limitations in capturing the highest levels of procrastination, highlighting the need for further refinement of the scale to enhance its coverage at extreme procrastination levels.

TPM Vol. 32, No. 2, 2025
ISSN: 1972-6325
https://www.tpmap.org/



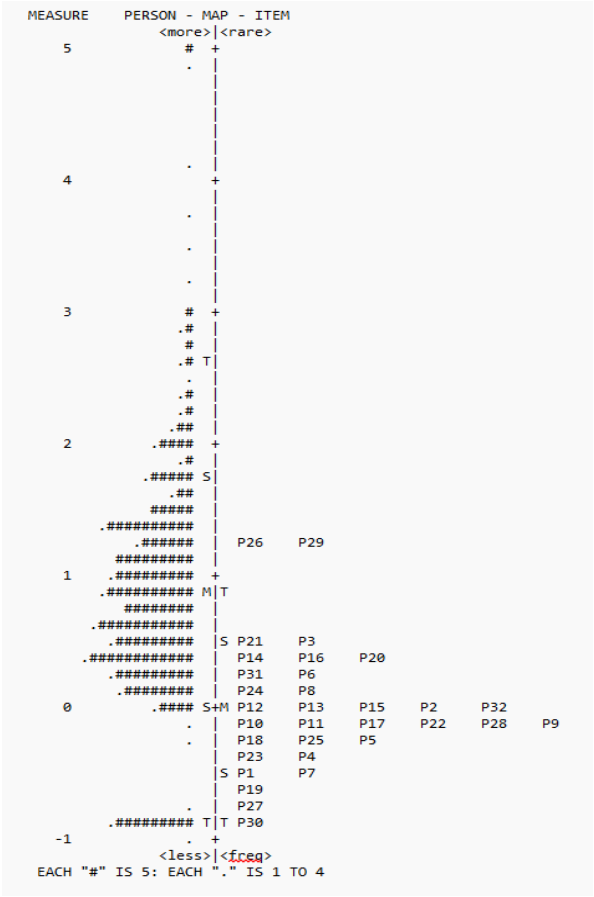


Figure 1
Rasch Wright Person-Item Map for ID-TPS (N = 762)

Figure 1 The vertical axis of the graph represents the logit scale, which shows the respondents' procrastination levels and the item difficulty levels. The difficulty levels of items are clearly visualized; for instance, item 29 is positioned at the top of the graph with a logit value of 1.25, indicating that it is one of the most difficult items and is endorsed only by respondents with high procrastination levels. Conversely, item 30 is positioned at the bottom with a logit value of -0.84, signifying that it is the easiest item to endorse.

The Wright map effectively illustrates the alignment between students' procrastination levels and item difficulty. Respondents with higher levels of procrastination are expected to agree with both easier and more difficult items, while those with lower levels of procrastination are only expected to agree with the easier items. This indicates that the instrument may require further refinement to enhance its ability to measure the highest levels of procrastination.

The ID-TPS scale, consisting of 32 items, was developed to explore the factors influencing students' procrastination in thesis completion. After psychometric analysis, 31 items were retained, while one item was eliminated for not meeting the psychometric criteria with an outfit MNSQ value > 1.5 (Boone & Staver, 2020). Additionally, in the Rasch analysis, the scale was evaluated using Andrich thresholds to ensure that the response categories function optimally and are ordered progressively according to the levels of procrastination being measured. Based on this evaluation, the results show that the Andrich thresholds are correctly ordered, confirming that the response categories follow the appropriate sequence corresponding to the levels of procrastination.

## DISCUSSION

This study successfully developed the Indonesian Thesis Procrastination Scale (ID-TPS) using Rasch Models (Boone, 2016; Boone & Staver, 2020; Rasch, 1960), which has proven to be an effective methodology for psychometric data analysis. The high validity and reliability of the scale indicate its

TPM Vol. 32, No. 2, 2025
ISSN: 1972-6325
https://www.tpmap.org/

effectiveness in measuring academic procrastination in thesis completion. One of the key strengths of Rasch Models lies in their ability to evaluate item quality individually and compare the locations of respondents and items on the latent variable, leading to more accurate estimations of students' procrastination behavior (Annoni & Charron, 2019; Boone et al., 2011; Neumann et al., 2011).

The large values of item reliability (0.99) and person reliability (0.90) suggest that the measures of respondent procrastination obtained with the ID-TPS are reliable and the hierarchy of item difficulty is reproducible. With an item strata of 14.06, the instrument effectively distinguishes between various item difficulty levels. A person strata of 4.31 indicates the instrument's ability to differentiate more than four groups of respondents based on their levels of procrastination. This scale can distinguish between students with varying levels of procrastination and identify item difficulty levels with high precision (Wright & Linacre, 1994; Wright & Stone, 1999). This level of accuracy is crucial in identifying the specific intervention needs for students experiencing academic procrastination (Compton et al., 2012).

The application of this scale in academic settings can assist educators and counselors in identifying students at high risk of procrastination. Targeted interventions, such as personalized counseling, time management workshops (Burrus et al., 2017; Trentepohl et al., 2022), structured academic support (Sibley et al., 2020), and motivation enhancement programs (Gaspard, 2023), can be implemented to help students manage their time effectively, complete tasks progressively, and increase intrinsic motivation. These strategies could accelerate thesis completion, enhance educational efficiency, and mitigate the negative consequences of procrastination, including stress and academic underperformance (Manrique-Millones et al., 2019).

Previous literature has linked academic procrastination with anxiety (Setiyowati et al., 2020), perfectionism (Chen et al., 2022; Xie et al., 2018), and poor time management (Mony et al., 2023). The strong psychometric properties of ID-TPS enable researchers to accurately measure procrastination levels and analyze its impact on academic performance, contributing to the growing body of research on procrastination and educational interventions (Tahta et al., 2024).

Given its high validity and reliability, ID-TPS has great potential for integration into higher education systems as a routine monitoring tool and an early intervention mechanism for academic procrastination. Educational institutions could incorporate this scale into regular psychological assessments to reduce procrastination prevalence and improve students' success in completing their theses on time. Beyond academic research, ID-TPS also serves as an effective intervention tool for improving students' academic success at the tertiary level. Additionally, factors such as social support, mental health, and institutional policies should be considered in further intervention development to ensure a more comprehensive and effective approach to addressing academic procrastination.

This study has some limitations, particularly the gender imbalance in the sample, which was predominantly female. Future research should include a more balanced gender representation to improve the generalizability of the findings. While Rasch analysis provides strong validation for the scale's psychometric properties, additional validations in diverse populations and further psychometric analyses, such as test-retest reliability and predictive validity, would enhance the scale's applicability. Moreover, longitudinal studies are recommended to examine changes in students' procrastination behavior over time and evaluate the long-term effectiveness of interventions. Such studies could provide deeper insights into the most effective strategies for reducing academic procrastination.

Overall, the ID-TPS developed in this study emerges as a promising tool for academic and counseling applications to address student procrastination. Validation and refinement through Rasch Models not only enhance its reliability and validity but also ensure that the scale serves as a critical instrument in designing tailored educational programs and interventions. Future research and broader application of this scale in various cultural and educational contexts will contribute significantly to the understanding and mitigation of academic procrastination on a global scale.

## CONCLUSION

The Rasch analysis of the Indonesian Thesis Procrastination Scale (ID-TPS) demonstrates that the scale possesses high measurement quality, with strong item and respondent reliability and a robust ability to distinguish varying levels of student procrastination and item difficulty. These findings confirm that ID-TPS is a valid and reliable instrument for assessing academic procrastination in the context of thesis completion. Furthermore, this study reaffirms the effectiveness of Rasch Models in psychometric data analysis, particularly in scale validation. Integrating this scale into higher education systems offers

TPM Vol. 32, No. 2, 2025
ISSN: 1972-6325
https://www.tpmap.org/

significant benefits for educators and counselors in identifying students at high risk of procrastination. As a result, targeted interventions, such as personalized counseling, time management workshops, structured academic support, and motivation enhancement programs, can be implemented. Utilizing this scale may enhance thesis completion efficiency, reduce academic stress, and improve overall academic performance. However, this study has limitations, particularly the sample composition, which is predominantly female, potentially limiting the generalizability of the findings. Future research should include a more gender-balanced sample to strengthen external validity. Additionally, longitudinal studies are recommended to assess the long-term effectiveness of interventions aimed at reducing academic procrastination. Overall, the development and validation of ID-TPS using Rasch Models provide a strong foundation for academic and counseling interventions targeting procrastination. This scale not only advances academic research but also has practical implications for higher education, with the potential to help students overcome academic barriers and achieve greater academic success.

## FUNDINGS

The authors gratefully acknowledge the support provided by the Indonesian Education Scholarship (Beasiswa Pendidikan Indonesia – BPI), with ID Numbers: 202209090859 and 202327091163, funded and managed by the Center for Higher Education Funding and Assessment (Pusat Pendanaan dan Penilaian Pendidikan Tinggi – PPAPT) and the Ministry of Higher Education, Science, and Technology of the Republic of Indonesia (Lembaga Pengelola Dana Pendidikan – LPDP).

## ACKNOWLEDGEMENTS

Indonesian Education Scholarship (BPI) ID Number: 202209090859 and 202327091163, Center for Higher Education Funding and Assessment (PPAPT) and Ministry of Higher Education, Science, and Technology of Republic Indonesia (LPDP)

## CONFLICT OF INTEREST

The Authors Declare No Conflict of Interest in This Paper

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