
MEASURING GRIT: A PSYCHOMETRIC ANALYSIS OF OVIEDO GRIT SCALE AMONG MALAYSIAN EMERGING ADULTS

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Abstract: Grit is a non-cognitive trait linked to various positive outcomes, including improved academic performance and well-being. The Oviedo Grit Scale (EGO) was developed to assess grit within collectivistic cultures. However, further examination of its psychometric properties is needed to expand its applicability, particularly in the Malaysian context. In this study, 240 Malaysian emerging adults completed an online survey that included the Short Grit Scale (Grit-S), EGO, and demographic questions. The study aimed to evaluate the EGO's internal consistency reliability, construct validity, and concurrent validity. Findings from the Exploratory Factor Analysis (EFA) confirmed that the EGO exhibited unidimensionality and high reliability. Furthermore, the EGO demonstrated robust concurrent validity with the Grit-S. This study provides valuable insights into the psychometric properties of the EGO, suggesting that it is potentially a suitable measure of grit for a Malaysian sample. Several limitations and recommendations for future research are also discussed.

Keywords: Grit, Oviedo Grit Scale, Emerging Adults, Exploratory Factor Analysis, Malaysia

INTRODUCTION

In recent years, grit has emerged as a significant predictor of success and well-being across various life domains, particularly concerning the pursuit of long-term goals. Grit has been defined as the combination of perseverance of effort

and consistency of interest, enabling individuals to overcome challenges and work persistently toward their goals (Duckworth et al., 2007). Perseverance of effort refers to an individual's tendency to work toward long-term goals despite setbacks, while consistency of interest reflects the tendency to maintain similar interests or goals over time. This psychological trait may be particularly essential for emerging adults navigating the transition from adolescence to adulthood. This period is typically marked by academic, social, and career-related demands that call for resilience and adaptability (Arnett, 2016). In Malaysia, where achievement and well-being are highly valued, understanding grit among emerging adults can provide valuable insights into how individuals navigate challenges and remain persistent in achieving goals.

Research has associated grit with various positive outcomes, including academic performance and career advancement. Gritty students, for example, exhibit better academic adjustment and academic performance (e.g., Li & Lee, 2020; Siah et al., 2020). They often demonstrate the ability to adapt and persist in the face of changing academic demands. Clear identification of their passions helps enhance their determination to overcome challenges, subsequently leading to greater success. Likewise, gritty employees tend to perform better at work, showing enhanced self-efficacy in goal-setting and decision-making (e.g., Lo & Datu, 2020; Olckers & Koekemoer, 2021). However, some studies suggest that grit alone may not fully account for career success, as other factors—such as luck, networking, and available opportunities—can intertwine with grit in shaping career trajectories (Clark & Plano Clark, 2019). Additionally, individuals who achieve their goals through grit often report enhanced well-being, suggesting a potential link between grit and life satisfaction (Han, 2021).

With the growing interest in grit, researchers have developed various methods for assessing this trait, including observation and self-report measures. Behavioral observation and rating scales, such as the Character Growth Card (CGC), are often used to assess grit in children by gathering feedback from teachers or parents on traits like curiosity, gratitude, and grit (Kirchgasler, 2018). Self-report instruments are typically used to measure grit among adolescents and adults. Among these, the Short Grit Scale (Grit-S) is one of the most widely used. The Grit-S is a brief version of the Original Grit Scale (Grit-O), which assesses the two components of grit—perseverance of effort and consistency of interest—making it a concise assessment. However, some

studies suggest that Grit-S exhibits unstable psychometric properties across different cultural contexts. For instance, a study by Tan and colleagues (2019) recommended removing item 2 due to low factor loading, indicating that minor modifications may enhance its utility in the Malaysian context. Although the Grit-S demonstrated high internal consistency reliability in samples from countries such as Japan (Ellinger et al., 2018), China (Li et al., 2018), and Germany (Schmidt et al., 2017), its reliability in Malaysian samples has raised concerns (e.g., Ibrahim et al., 2023; Tan et al., 2019). Inconsistencies in findings may be due to respondents' comprehension of certain statements.

Additionally, studies report mixed findings regarding the factor structure of Grit-S, identifying either a bifactor model (e.g., Crede et al., 2016) or a two-factor model (e.g., Li & Lee, 2020). Theoretically, scholars continue to debate the dimensionality of grit. For example, Datu, Yuen, and Chen (2017) identified a third component—adaptability to situations—in a collectivistic context, suggesting that individuals from collectivistic cultures are likelier to constantly adapt to situational demands or expectations of others to achieve long-term goals. On the other hand, other studies have suggested a unidimensional view of grit (e.g., Gonzalez et al., 2020; Postigo et al., 2021), noting an overlap between consistency and perseverance, which may support a single-factor model in some cultures.

The synthesis of past findings indicates that the Grit-S may not fully capture the nuances of grit as experienced by Malaysian samples, raising concerns about its suitability in non-Western settings. Different cultural values can influence how grit is expressed, suggesting the need for an instrument that aligns more closely with collectivistic perspectives.

Given these considerations, Postigo and colleagues (2021) proposed the Oviedo Grit Scale, also known as Escala Grit de Oviedo (EGO), as an alternative to address some of the limitations found in existing grit measures. The development of EGO began with a broad set of items covering both dimensions of grit, crafted in clear, direct language to ensure comprehensive coverage of the construct. Following an initial review by 25 psychologists, two items deemed unclear were removed. Subsequently, 57 experts in psychometry or psychological evaluation were invited to classify the remaining 48 items into one of two grit dimensions, resulting in the removal of 28 items. The 20-item preliminary instrument underwent pilot testing and

a final set of 10 items was selected using a mixed statistical-substantive strategy. The 10-item EGO has demonstrated its utility in assessing grit across diverse samples, including those from Chile (Postigo et al., 2023), Turkey (Turnalar-Çetinkaya, 2024), and China (Liu et al., 2022). While past studies supported its reliability and validity in diverse populations, there remains a gap in understanding its applicability to Malaysian emerging adults. Examining the psychometric properties of EGO in a Malaysian context could provide valuable insights into its potential as a culturally relevant tool for assessing grit in this population.

Research Objective

The present study examines the psychometric properties of the Oviedo Grit Scale (EGO) among Malaysian emerging adults, including the EGO's factor structure, internal consistency, and concurrent validity with Grit-S. It aims to determine the suitability of the EGO for measuring grit within the Malaysian context.

The findings could deepen our understanding of grit among Malaysian emerging adults and inform the selection of measurement tools for future research.

METHODOLOGY

Research Design

This study examines the psychometric properties of the EGO in a sample of Malaysian emerging adults. Specifically, it aims to assess the internal consistency, factor structure, and concurrent validity of the EGO, evaluating its suitability for measuring grit within the Malaysian context. This study employs a quantitative, cross-sectional design to provide a snapshot analysis of the psychometric properties of the EGO at a single time point. Data were collected through an online survey, allowing researchers to reach out to emerging Malaysian adults without geographical restrictions. This approach also enabled respondents to reflect on and respond to the items at their convenience, potentially reducing response biases.

Respondents

A total of 240 Malaysian emerging adults (181 females, 58 males, and 1 did not specify their gender) participated in the online survey. The sample's age

ranged from 18 to 30 years ($M = 21.10$, $SD = 1.76$), with two respondents who did not report their age. The majority of the respondents identified themselves as Chinese (65.83%), followed by Indians (15.83%), Malays (10%), and other native ethnic groups (7.92%), one respondent did not specify their ethnicity. Among the respondents, 86.67% of them were enrolled in a Bachelor's Degree program, followed by a diploma (11.25%), and professional certification (2.08%) programs. These respondents were selected based on the following inclusion criteria: Malaysian nationality, basic English language proficiency, and no diagnosis of serious illness or disability. These criteria were intended to minimize the possible biases that may be associated with respondents' conditions.

Data Collection Procedure

The data collection procedure began after obtaining ethical approval from the institution. A recruitment advertisement was posted on social media platforms, including Facebook, Instagram, and LinkedIn. Written participant information was provided to all respondents, detailing the purpose of the research, potential risks and benefits, respondents' rights, and confidentiality measures. All respondents completed the questionnaires after providing their informed consent. The survey included three sections: the Short Grit Scale (Grit-S), the Oviedo Grit Scale (EGO), and a demographic section. Although there was no time limit imposed, the online survey took approximately 10 to 15 minutes to complete. Upon completion, respondents were encouraged to share the survey link with individuals who met the inclusion criteria.

Measurements

The English versions of the following scales were used to measure respondents' grit. Respondents also provided demographic information, such as age, gender, ethnicity, and educational level, providing an overview of the sample.

Short Grit Scale (Grit-S)

The 8-item Short Grit Scale (Grit-S) measures an individual's grit through two dimensions, perseverance of effort (e.g., "I am a hard worker") and consistency of interest (e.g., "New ideas and projects sometimes distract me from previous ones") (Duckworth & Quinn, 2009). Respondents indicated the extent to which each item described them using a 5-point Likert scale (1 = *not at all like me* to 5 = *very much like me*). The four items measuring consistency of interest were negatively phrased and were reverse-coded before calculating

the total mean score. Higher mean scores indicate higher levels of grit. In a Malaysian sample, the Grit-S has demonstrated satisfactory internal consistency, with a Cronbach alpha of 0.71 (Wan et al., 2023).

Oviedo Grit Scale (EGO)

Likewise, the 10-item Oviedo Grit Scale (EGO) measures an individual's grit through a single dimension (e.g., "Although the results seem far off, I persist in the task"). Respondents indicated their level of agreement with each item using a 5-point Likert scale (1 = *totally disagree* to 5 = *totally agree*). As all items were phrased positively, the total mean score was computed by summing the item scores. Higher scores indicate higher levels of grit. The EGO demonstrated excellent internal consistency, with a Cronbach alpha of 0.94 (Postigo et al., 2021).

Statistical Analysis

Data collected from the online survey were analyzed using IBM SPSS Statistics (Version 26). Descriptive statistics, including means, standard deviations, and percentages, were calculated to summarize demographic and study variables. The distributions of both EGO and Grit-S scores were to be examined using the Kolmogorov-Smirnov test, recommended for samples with more than 50 respondents. A p-value greater than 0.05 would indicate that the data are normally distributed (Mishra et al., 2019). Examining the data distribution is essential for determining the appropriate correlation analysis method to assess concurrent validity.

An exploratory factor analysis (EFA) was conducted to explore the factor structure of the EGO scale, providing insights into its construct validity. The EFA was executed using Principal Component Factor Analysis as the extraction method and Oblique Promax rotation, as the EGO items were anticipated to exhibit conceptual interrelations (Osborne, 2015). Factors were retained based on eigenvalues greater than 1 and visual inspection of the scree plot.

The internal consistency reliability for EGO and Grit-S scales was assessed using Cronbach's alpha method, with a threshold of 0.70 indicating good reliability (Ursachi et al., 2015). Cronbach's alpha coefficient would evaluate how well the items collectively measure their intended construct (Tavakol & Dennick, 2011).

Finally, the concurrent validity of the EGO scale was examined by correlating the EGO scores with the Grit-S scores. Spearman's rank-order correlation would be used if the data violated the assumption of normality, while Pearson's correlation would be applied otherwise.

RESULTS

Respondents reported an average score of 2.97 ($SD = 0.54$) on the Grit-S and an average score of 3.64 ($SD = 0.70$) on the EGO. These findings provide an overview of the central tendency and variability for each scale within this sample. The discrepancy in mean scores suggests that respondents generally rated themselves higher on the EGO compared to the Grit-S. This difference may be partly due to the negatively phrased items on the Grit-S, which can sometimes affect responses.

The normality of the EGO and Grit-S scores was assessed using the Kolmogorov-Smirnov test, as recommended for samples larger than 50 participants (Mishra et al., 2019). For the EGO scores, the Kolmogorov-Smirnov test indicated a violation of normality ($D(240) = 0.14, p < 0.001$). Similarly, the Grit-S scores also deviated from a normal distribution ($D(242) = 0.08, p = 0.002$). These findings suggest that the non-parametric statistical method—Spearman's rank-order correlation was appropriate for further analyses.

To investigate the factor structure of the 10-item EGO, an exploratory factor analysis (EFA) was conducted using Principal Component Factor Analysis estimation and Promax rotation, allowing for correlations among factors. However, in cases where uncorrelated factors were found, this method yielded results similar to orthogonal rotation (Costello & Osborne, 2005). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.92, exceeding the recommended threshold of 0.70 (Lloret, Ferreres, Hernandez, & Tomas, 2017). Barlett's test of sphericity was statistically significant, $\chi^2 (45) = 1172.48, p < 0.001$, supporting that the data were suitable for factor analysis. A single-factor solution emerged, explaining 54.15% of the total variance. All factor loadings were higher than 0.40, supporting the unidimensionality of the EGO (see Table 1).

Table 1: Summary of Factor Loadings by Principal Component Factor Analysis Estimation for the 10-item Oviedo Grit Scale (EGO)

No.	Item	Factor Loadings
1	When I set myself an objective, I continue until I achieve it.	0.79
2	I do what I set out to do.	0.76
3	I am consistent in my interests.	0.59
4	I am clear about my objectives.	0.69
5	Even though the results seem far off, I persist in the task.	0.70
6	I work hard every day to get closer to my goals.	0.79
7	When I have a project in mind I do everything possible to get it done.	0.74
8	I spend as much time and energy as I can on reaching my goals.	0.75
9	If I set myself something to do, I will work on it until I achieve it.	0.81
10	I finish what I start.	0.71

Cronbach's Alpha was calculated for both EGO and Grit-S, assessing the internal consistency reliability of the scales. In this study, the EGO scale demonstrated excellent internal consistency, with a Cronbach's Alpha of 0.90. In contrast, Grit-S showed a lower reliability with a Cronbach's Alpha of 0.65. The findings suggest that the EGO scale is more consistent in measuring its underlying construct compared to Grit-S.

A Spearman's rank-order correlation was conducted to examine the relationship between EGO and Grit-S scores. The findings revealed a significant positive correlation, $rs(238) = 0.58, p < 0.001$, indicating that higher EGO scores were moderately associated with higher Grit-S scores. It also indicates a high concurrent validity (Dancey & Reidy, 2007). The positive correlation supports the idea that these scales may capture distinct yet overlapping aspects of this broader psychological trait.

DISCUSSION

The Oviedo Grit Scale (EGO) was developed to assess grit more accurately within collectivistic cultures. This study examines its internal consistency reliability, construct validity, and concurrent validity among Malaysian emerging adults, providing a basis for its suitability compared to the Short-Grit Scale (Grit-S). The findings demonstrated that the EGO exhibited higher internal consistency ($\alpha = 0.90$), robust construct validity based on the exploratory factor analysis, and a statistically significant positive correlation with Grit-S scores, supporting its potential as a reliable measure of grit in this population. While the Grit-S showed lower internal consistency ($\alpha = 0.65$), it was included as a comparator due to its established use in prior studies and its relevance as a general measure of grit.

Consistent with past research, the EGO demonstrated a unidimensional structure within the Malaysian sample (e.g., Gonzalez et al., 2020; Postigo et al., 2020). This finding may be shaped by the cultural context of the predominantly Chinese Malaysian participants, as differences in cultural backgrounds are known to influence the structure of grit (Hasan et al., 2020). In Chinese culture, which emphasizes collectivistic values, grit may be interpreted as a singular, cohesive trait rather than two distinct components—perseverance and consistency. These traits might be closely intertwined, reflecting a holistic pursuit of goals rather than separate, distinct dimensions (Li et al., 2023). While these findings provide insights into grit within this subgroup, caution should be taken in generalizing to other Malaysian ethnic groups or collectivistic cultures more broadly. The unidimensional structure identified in this study may reflect the specific cultural context of Chinese Malaysians, providing a potentially more accurate assessment of grit for this population.

Secondly, the EGO demonstrated higher internal consistency reliability than the Grit-S, indicating its robustness as a measurement tool for grit among Malaysian emerging adults. A one-way ANOVA was conducted to examine whether the EGO scores varied across ethnic groups within this demographic. The finding of this additional analysis showed no significant differences in EGO scores across ethnic groups within the sample ($F(11, 227) = 0.84, p = 0.61$), suggesting that the scale provides consistent measurements across these groups. While these findings support the EGO's reliability among Malaysian emerging adults, this study's sample sizes for certain ethnic groups were

relatively small, limiting further analyses such as subgroup reliability. Future research should replicate these findings in larger samples and extend the investigation to other age groups and cultural subpopulations within Malaysia. This would help establish the generalizability and broader applicability of the EGO scale in measuring grit.

Furthermore, Spearman's rank-order correlation showed that EGO scores and Grit-S scores are significantly correlated, indicating that these scales are related constructs. This suggests that both scales capture core aspects of grit, despite differences in their factor structures and reliability. While both scales effectively measure the grit construct, the differences in dimensionality and reliability indicate that the EGO may serve as a more robust and culturally relevant measurement tool for this population.

These findings provide valuable insights into the study of grit, especially in Malaysia. They highlight the importance of cultural adaptation in psychological measurement, suggesting that tools developed in Western contexts may benefit from modifications or culturally compatible alternatives when used in different cultural settings. Future research should continue to examine grit through a culturally sensitive lens. Additionally, future research could examine the stability of the EGO over time and compare its applicability across different demographic groups.

Although our findings offer valuable contributions to research and practical implications, this study is not without its limitations. First, the cross-sectional design provides a snapshot of grit at a single point in time, which limits our ability to examine the stability of the grit construct over time. Future longitudinal research could offer insights into how grit may develop during this life stage. Second, given Malaysia's cultural diversity, our sample was predominantly Chinese, which may not fully represent the experiences of all ethnic groups within Malaysia. Different cultural values across these groups could potentially influence their perceptions and expressions of grit. Future studies could further explore how grit is conceptualized within each ethnic group to enhance cultural sensitivity and confirm the underlying factor structure across different ethnic groups.

CONCLUSION

In summary, this study provides evidence supporting the potential applicability of the Oviedo Grit Scale (EGO) among Malaysian emerging adults. Findings indicate that individuals in this population are more likely to perceive grit as a unidimensional construct, where perseverance and consistency are less distinct. Additionally, the EGO demonstrated stronger reliability compared to the Grit-S, highlighting the importance of examining the grit construct using a culturally sensitive lens. Lastly, the concurrent validity results suggest that the EGO may serve as a promising alternative for measuring grit within the Malaysian context.

Informed Consent Statement

Respondents granted their consent to this study before completing the online survey.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper and agree to this publication.

Ethics Statement

This study was done in compliance with the ethical guidelines approved by the Institutional Review Board.

Author Contributions

[This section has been intentionally removed for peer review purposes.]

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

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