

Construction and Validation of an Indigenous Grit Scale for Young Adults in Collectivistic Culture

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To construct and validate an indigenous Grit culturally relevant evaluation measure which capture the experiences and unique values of young adults of collectivistic cultures comparable Pakistan. To develop the measure, a population-based sample of young adults ($N = 658$; age range 20-35 years) was accomplished. The study encompassed five phases. Eight semi-structured interviews were conducted in the item-generation phase. Through random sampling, a pilot study ($N = 50$), subsequently, exploratory factor analysis ($N = 200$) to identify dimensionalities, dimensionality confirmed through confirmatory factor analysis ($N = 200$), and a validation phase ($N = 200$). Thematic analysis of interviews developed three major themes with 27-items by expert review; sustained effort and firmness of purpose factors retained 24-items in EFA and confirmed 12 items in CFA. The scale exhibited good convergent and divergent validity and reliability. This indigenous measure helps to assess perseverance with passion to guide therapeutic intervention to achieve long-term goals. This research which focuses on culturally sensitive tool bridges the gap between global and local constructs for future studies.

Keywords. Collectivistic culture, young adults, Grit Scale for Young Adults

Non-cognitive attributes such as perseverance, motivation, and self-regulation have been identified more significant predictors of academic and life achievement (Crede et al., 2017; [Duckworth et al., 2007](#)). Alike, grit, the ability to maintain perseverance of effort and

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consistency of interest to long-term goals has been given significant focus in terms of its ability to predict persistence, engagement and performance outcomes (Duckworth et al., 2007). Although it is well-known that grit has been researched in Western, individualistic circles, its definition and scale might not be able to represent culturally instilled forms of persistence in collectivistic communities such as those in Pakistan, where long-term goal pursuit often depends on the demands of family, social duties, and group values (Markus & Kitayama, 1991). Thus, the purpose of the current research is formulation and validation of an indigenous grit scale among young adults in Pakistan, which displays culturally specific instances of perseverance and unremitting interest, considering collectivistic values and social background.

Grit is a non-cognitive construct that educational researchers have been exploring as a factor that is applicable to academic persistence and long-term achievement. Grit has also been understood to refer to the ability to persevere in the face of effort and persistence in the interest to long-range objectives that individuals view to be significant (Duckworth et al., 2007). There is empirical evidence that grit is linked to academic engagement, persistence, and performance, but its predictive relevance is typically weak and on par with other non-cognitive characteristics (Credé et al., 2017). Most empirical studies about grit, however, have been developed in the Western, individualistic cultural backgrounds, in which long-term objectives are frequently defined as self-selected and self-motivated (Duckworth et al., 2007). The drive to achieve objectives in collectivistic societies can be more conditioned by the family, social commitments, and social values, which could affect the manifestations of perseverance and interest in their pursuit (Markus & Kitayama, 1991; Iyengar & Lepper, 1999). Thus, the idea and quantification of grit as it is constructed in individualistic contexts might not be able to fully reflect culturally ingrained types of persistence and dedication.

It is conceptually related to conscientiousness, which is one of the domains of the Big Five Taxonomy of personality characteristics (Rimfeld et al., 2016), it is like orderliness, perseverance, self-control, and dependability. Grit is debated by some personality theorists to be like conscientiousness. Conceptual similarities notwithstanding, the actual manifestation of Grit in the desire and perseverance lies in none of the conscientiousness attributes. Grit is a trait that is differentiated with conscientiousness in that it has a constant interest with long-term goals. Grit, in its turn, has a philosophical focus on long-, high-order objectives (Acro-Tirado et al., 2018).

Grit is a micro theory of hope that differentiates effort and passion and temperament, drive, and endurance whereby passion means the long-term goals and capacity to survive failure and consistent aspirations. Success and performance are predicted by personality strength. According to [Duckworth et al. \(2007\)](#) the non-cognitive attributes may influence performance and productivity in a variety of life areas. Grit has two lesser aspects; that is perseverance of effort and consistency of interest. Persistence refers to the tendency to continue working regardless of failures, whereas consistency refers to minimal fluctuations of goals and interests ([Duckworth et al., 2007](#)).

Educational research has shown increasing interest in the construct of grit, owing to the assertions that it has relevance in academic and performance outcomes. Empirical evidence has alluded in that grit is a valid precursor of achievement in academic and professional settings, especially in connection with perseverance and achievement of long-range objectives, but its impacts tend to be of a small scale ([Duckworth et al., 2007](#)). Initial theoretical and popular explanations also put forward the possibility that grit could be predictive of other non-traditional factors like talent or intelligence. However, subsequent research has emphasized that grit is to be put in a place where other non-cognitive variables exist rather than being treated as one concept of success ([Credé et al., 2017](#)). Nevertheless, it has been demonstrated that students with a higher grit level are able to be more persistent and active, and this will result into improved learning outcomes. [Borghans et al. \(2008\)](#) discovered that the majority of writers mention this concept as a pattern of thinking, emotions, and actions. Construct validity of Grit relies on persistence of effort and steadiness of interest (a passion to the goals of the long term, which is usually measured by the same instrument and is called passion). It has to have convincing underpinning which transcends the field of mere logic to be successful in the modern age which is defined by the advanced consumers. Such term denotes different qualities and actions, such as motivation, self-control, self-perception, metacognitive strategies, social competencies, creativity, resilience and perseverance.

The other assertion is that grit is the most significant predictor of achievement and performance and highly occurs in high achievers. Proponents of grit refer to two sources, first, professional interviews across various professions and the second is the works of [Galton \(1892\)](#), [Cox \(1926\)](#) and [Howe \(1999\)](#) in his study of accomplishment and genius. All these sources brought out the fact that successful individuals possess work ethic, enthusiasm and determination. Or maybe there was another community (or a far more numerically

significant population) of high perseverance and love that simply failed miserably and disastrously because of an inability to seek help or to switch even when such a course of action was workable or correct.

The connection of modest performance was confirmed by a recent meta-analysis of grit literature (Credé et al., 2017). Grit is more predictive validity compared to IQ, entrance test scores, and bodily fitness. According to Heckman et al. (2006), non-cognitive skills can ensure that non-college graduates do not engage in job hopping, low incomes, substance and drug abuse, and crime (Credé, 2018). Other instances of disappointment and boredom are indicators of leaving one road and picking another but a rough individual sticks at it when it becomes difficult. They are persistent and they view successes as marathons. This made tenacity and character more of a subject of interest to be analyzed empirically by Peterson and Seligman in 2004 in their book, positive psychology (Peterson & Seligman, 2004).

The gritty individual does not forsake a particular path when encountering difficulties; rather, they adhere to it. They possess the stamina and approach accomplishments as a marathon. Additional instances of disappointment and indifference serve as indicators to forsake a specific outcome and pursue another path. The scholarly examination of the characteristics of persistence, as well as character in a broader sense, was rekindled in 2004 via the research conducted by Peterson and Seligman in the field of positive psychology (Peterson & Seligman, 2004). A high level of passion is maintained, even though others may suggest that one lacks the potential to achieve anything significant. The individual never permits oneself to be diverted from their aspirations. Conversely, McClelland (1985) stated that "the moderate challenge incentive seems to affect the performance of all people to some degree, regardless of their level of n-achievement" (McClelland, 1985, p. 814). Here n-achievement is the Need for achievement refers to an individual's enduring motivation to accomplish challenging goals, strive for excellence, and demonstrate competence through personal effort (McClelland, 1985). Howe (1999) questioned the notion that exceptional aptitude can lead to significant success without the application of hard effort, asserting that hard work is at least as important as ability. Rather than intellect, temperament may be the most fundamental and profound antecedent distinction (Howe, 1999).

More research and studies in positive psychology are needed to impede the establishment of precise definitions for terms such as traits, qualities, life skills, soft skills, and non-cognitive competencies. These terms are commonly employed interchangeably to describe

factors that influence physical, social, economic, and psychological well-being (Almlund et al., 2011; Borghans et al., 2008; Heckman et al., 2006; Heckman & Kautz, 2012; Mendez & Zamarro, 2018). Furthermore, there is a lack of consensus about the definition of "non-cognitive skills" and the corresponding methods employed for issue measurement (Duckworth & Yeager, 2015; Fernández-Martín et al., 2018).

Conceptual Framework

To understand the expression of the non-cognitive features in collectivistic settings, this study conceptualizes the grit theory (Duckworth et al., 2007) with the principles of cultural psychology (Markus and Kitayama, 1991). Grit is formulated as a multi-dimensional concept that has two fundamental aspects: Perseverance of Effort: The perseverance in order to push through adversities and keep working on the long-term objectives despite the disappointments. Consistency of Interest: The capability to remain focused and enthusiastic about significant long-term purposes in the long run, not shifting the purposes and focus often. These dimensions might not be manifested in individualistic situations as in collectivistic settings. As an example, perseverance can be manifested in terms of accomplishment of family or communal tasks, and consistency can be manifested in terms of correlation of individual ambitions with that of the community (Kim et al., 2006). The framework suggests that contextualized grit is a predictor of academic involvement, persistence and academic success, and is influenced by social and familial norms.

Perseverance of effort refers to the tendency to continue working hard and exert sustained effort toward long-term goals despite obstacles, failures, or difficulties, as measured by self-reported responses on the perseverance dimension of the indigenous grit scale. (Credé et al., 2017; Duckworth et al., 2007). Consistency of interest refers to the stability of an individual's interests and long-term goals over time, characterized by a low tendency to frequently change goals, as measured by self-reported responses on the consistency dimension of the indigenous grit scale (Datu et al., 2015; Duckworth et al., 2007). Indigenous study will address such dimensions of cultural relevance by developing the indigenous grit scale based on the combination of qualitative (focus groups, expert interviews) and quantitative (survey and psychometric validation) approaches. By doing so, the scale can be considered conceptually valid, but empirically reliable and it represents the Pakistani young adult lived experiences, social norms, and values.

Rationale

[Duckworth et al. \(2007\)](#) devised a Grit Scale for the Self-help literature. The participants selected were high school and university students, which restricts the generalizability of the results despite the statistical confirmation of their validity and reliability. [Duckworth et al. \(2007\)](#) emphasized the scale's limitations in this regard, asserting that the responses of all participants are influenced by the socially desirable bias. This is because each individual is required to respond based on the behavior they have exhibited in the past, and the situational factor, which can either facilitate or impede success, needs to be taken into account ([Duckworth & Yeager, 2015](#)). When considering alternative perspectives on the situational variable, it is important to consider that success may be influenced or defined by other factors, such as unique culturally relevant values, individual differences, opportunities for attaining success, and social pressure which young adults experience differently in collectivistic cultures. Existing grit measure predominantly developed in western contexts, this failed to reflect the relational and communal aspects which are central to collectivistic societies, which ultimately necessitate the development of an indigenous framework. This research will further investigate the characteristics and processes of fortitude that motivate an individual to pursue a goal. The current study is unique in collectivistic cultures like Pakistan, as it will be the first time a newly constructed grit scale has been formulated and confirmed to have psychometric value for all young individuals, including non-students, to the best of our current knowledge. The pending argument is, why not just translate the existing and longstanding measure of grit and validate it culturally? several compelling reasons advocate the development of a new scale explicitly tailored to the collectivistic context. Most importantly, the grit scale and other scale variations generated by researchers like Duckworth lacked cultural generalizability and the capacity to capture intrinsic conceptions of grit. Research by [Gritchenko et al. \(2021\)](#) stresses the idea that psychological constructs, like grit, may be expressed in culture-specific manners reflecting local values, social norms, and environmental pressure. When translated literally, there is a possibility that these nuances of context will be missed, and the essence of what grit would mean in a collectivistic culture will never be translated. The second strength is the creation of new measure of grit that would ease incorporation of constructs and dimensions of grit that are culturally appropriate but not reflected in measures. Indicatively, an example of a study by [Hodge et al. \(2020\)](#) emphasizes the contextualization of psychological measures by offering more precise and contextual

measures. Through it, the new scale would tend to be more valid with regard to its connection with the experiences and values of people in such a collectivistic setting. Besides, an indigenizing measure can also foster more ownership and acceptance by the locals who will have a bigger identification with their problems and objectives. Conversation with the community helps develop these insights further and provide an insight into the meaning of those specific circumstances. This was correlated with [Wang et al. \(2018\)](#) that reported the high level of involvement and accuracy of results in the case of culturally adjusted measures.

Method

Sample

The inclusion criteria for constructing the measure were that the targeted population had a specific age group, 20-35 years old, male and female. All the respondents had to be literate young adults with at least secondary school level of education and had sufficient proficiency in English within which the scale was administered. This ensured that all the respondents were able to read, comprehend, and answer the questionnaire independently. The targeted population's willingness would be a priority.

Measures

Newly Developed Indigenous Grit Scale

The newly developed indigenous Grit Scale is a 12-item self-report measure designed in Study 4. It measures two dimensions: sustained effort and firmness of purpose. On the 5-point Likert scale, 1 = *not at all like me*, 2 = *not much like me*, 3 = *neutral*, 4 = *somewhat like me*, 5 = *very much like me*. The Cronbach alpha ($\alpha = .90$) value showed its high reliability.

Grit Scale (Duckworth et al., 2007)

The Grit Scale, devised by [Duckworth in 2007](#), consisted of 12 questions that were measured on a 5-point Likert scale ranging from 1 (*Very much like me*) to 5 (*Not like me at all*). The construct consists of two distinct subscales, consistency of interest and persistence of effort, which measure the latent variable. The scale demonstrated a satisfactory level of dependability in its development, as evidenced by Cronbach's alpha values for constancy of interest ($\alpha = .63$), persistence

of effort ($\alpha = .74$), and overall grit scale ($\alpha = .68$). The thematic grit scale was employed to assess the convergent validity of the study.

Pure Procrastination Scale (Steel, 2010)

The Pure Procrastination Scale, developed by Steel in 2010, consisted of 12 items on a 5-point Likert scale (*Not True of Me* = 1 to *True of Me* = 5). The scale showed reasonable reliability in the development process because it was used for divergent validity. The scale seemed highly reliable, with the value of .82 of Cronbach's alpha.

Demographic Information Sheet

The demographic information sheet included age, gender (male/female), family (joint/nuclear), qualification (intermediate/bachelor/masters or MPhil/PhD/others), monthly income, and job (yes/no).

Procedure

At the initial stage of the scale development, a comprehensive and systematic review of the literature was done in the task of identifying the theoretical basis of the indigenous grit scale. Empirical studies, theoretical frameworks, and available measurement tools were incorporated in this review in relation to grit, perseverance, consistency of interest, achievement motivation, non-cognitive capabilities and culturally based persistence. The conceptualization of grit proposed by Duckworth et al. (2007), meta-analytic data on the predictive validity of grit (Crede et al., 2017), and cross-cultural studies indicating the differences in displaying and measuring grit in collectivistic societies were the key sources (Markus & Kitayama, 1991). It was the through literature review that (a) the core dimensions of relevance to grit were identified, (b) the constraint of the present grit scales that had been created in the Western setting, and (c) culturally motivated indicators of perseverance and continued commitment to the goal were extracted in reference to collectivistic societies like Pakistan. The lessons of this process were used to shape the original conceptual framework and inform the production of an item pool that was a manifestation of both personal and socially ingrained instances of grit in young adults. This guide aimed to identify the characteristics that influence an individual's ability to achieve overarching goals. The respondents were briefed on the next

phase of studies including instructions before the questionnaire. The importance of the research undertaken was pointed out, the importance of the need to maintain anonymity and the importance of giving real answers in this briefing. Participants were equipped to withdraw from the interview process if they wished. Verbal consent was acquired. Participants were provided with unlimited time to complete the questionnaire. Upon completion of the questionnaire, all participants expressed gratitude. Participants were granted the option of selecting a feasible interview source for the interview schedule. The sources comprised Zoom meetings, face-to-face interviews, on-call, written, and WhatsApp voice recordings. For the rest of the studies, data was collected through printed and Google forms to reach a larger population from diverse cities in Pakistan.

Study 1: Item Generation

The individual stage of scale development consisted of the item generation with the qualitative method based on the semi-structured interviews. The purpose of this stage was to identify culturally instilled manifestations of grit among young adults in Pakistan and produce products based on the experiences of the participants. Eight young people (four men and four women) aged between 20 and 30 years were picked purposely into the interview phase. The participants were selected based on their participation in long-term academic, career, or personal aspirations and represented a variety of culture and geography in Pakistan. The semi-structured interview guide was constructed based on the existing grit theory ([Duckworth et al., 2007](#)) and cultural views about motivation. The question that the participants were asked in the open-ended forms included: Have you ever experienced change in your interest? Have you ever faced difficulty focusing on your goal? What keeps you constant in your goal? Do you feel discouraged because of challenges you face? What characteristics of yourself, do you consider help you to attain your long-term goal? How do family pressures or social obligations affect your long-term plans? Elaboration was encouraged using probing questions.

Thematic Analysis

The interviews were done as individual interviews with 8 people and were recorded with the consent of the participants and transcribed word to word. Thematic analysis was done to the transcripts following inductive approach. Primary researchers carried out initial coding and is trained in qualitative research methodology and development of psychometric scales. Mismatches in coding were addressed and

resolved by consensus. The difference in interpretation would be discussed until an agreement is achieved, and the themes would be enhanced respectively. Even though the formal statistics of inter-coder reliability were not estimated, this choice was determined by the exploratory character of the qualitative stage, limited size of the interview sample, and the main purpose of generating items instead of testing a theory. Coding process credibility and transparency were also achieved by the application of supervisory review and refinement. To increase the credibility of the analysis, the coding framework, preliminary codes and emergent themes were checked by the research supervisor who is a specialist in psychology and the development of scales. The analysis led to several common themes among them being consistent, perseverance in the face of failure and disappointment, overcoming setbacks and mental stress from society, long-term commitment to the goals, the need to be responsible to family expectations and ability to survive in times of uncertainty. These themes were reviewed concerning theoretical dimensions of grit that existed. Statements that represented these themes were then turned into a preliminary pool of items making sure that they were clear, culturally relevant, and consistent with the constructs of perseverance of effort and consistency of interest. The outcome of this process was an initial item pool that was later narrowed down to a final pool during subsequent stages of the study by expert review and psychometric evaluation.

A set of 54 items were created based on substantial topics. These items were thoroughly evaluated and assessed by six specialists. All six specialists have proven themselves to be in the field of psychological research and scale development had to assess the first item pool. They were the faculty members of universities and researchers in the doctoral level that comprised PhD scholars who are involved in the development of instruments and psychometric research. All specialists were trained in formal research methodology and already worked with scales construction and validation. The construct's item evaluation was centered on crucial factors. Throughout the item generation phase, much emphasis was placed on ensuring the items' correctness, coherence, transparency, reoccurrence, relevance, clarity and representativeness of the construct. After item review, 27 items were found, which appropriately described the concept of Grit. The researcher used a 5-point Likert scale which was as follows: 1 = *not at all like me*, 2 = *not much like me*, 3 = *neutral*, 4 = *somewhat like me*, 5 = *very much like me*.

Results

The item creation method involves transcribing interviews and thematic analysis to examine the material thoroughly. Thematic analysis examines and makes sense of qualitative data, such as interviews, by identifying and categorizing significant topics into overarching themes. Themes and sub-themes were derived from the transcribed interviews. Unrelated items, items having multilingual meaning and did not define the notion of Grit were removed. The remaining pool of 27 elements served as a basis for additional investigations.

Study 2: Pilot Study

A pilot study using sample recruitment procedures on a smaller population was conducted to identify the limitations of the 27 assertions chosen. An accessible sample of 50 young individuals (32 men and 18 females) between the ages of 20 and 35 ($M = 1.16$, $SD = .51$) was approached for the pilot study. The variables of age were coded (i.e. 1 = 20-25 years, 2 = 26-30 years). The average of the age category variable was 1.16 ($SD = 0.51$), which showed that most participants were younger.

Results

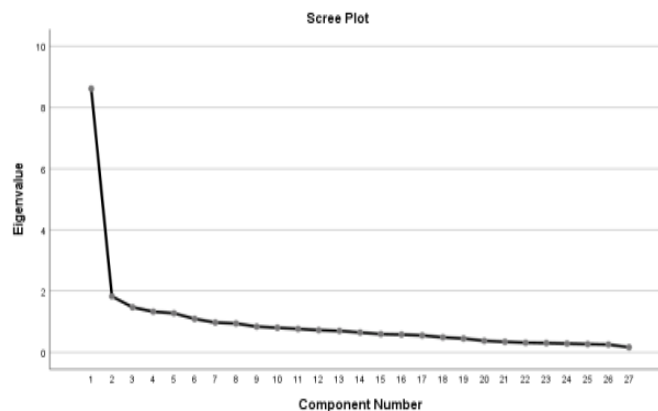
To determine the level of clarity and understanding of the items, a pilot study was carried out. By giving the chosen item to a significant sample of the population, some of the items were rephrased to improve clarity and cultural relevance after the feedback of the participants. The data were collected and analyzed using SPSS version 25. Reliability analysis was conducted to evaluate the internal consistency, which yielded a Cronbach's alpha value of $\alpha = .90$, indicating the scale's high level of dependability. A comprehensive analysis was conducted on all the item pool statistics consisting of 27 items. Items having inter item correlation below .3 were considered weak and subjected to further evaluation. Those items are 10r, 4r, and 3r (10, 4, and 3 are the number of items and 'r' stands for reversed items) with inter item correlation -.03, .13, and 0.11, respectively. Despite inadequate item-total statistics, all items were included in the measure's final version. This pilot project aims to explore methods for implementing the newly constructed questionnaire among a larger population.

Study 3: Exploratory Factor Analysis

An Exploratory Factor Analysis (EFA) was conducted using SPSS on 27 items retained in the pilot study to explore and determine their internal factor structures. A sample of 200 participants, consisting of 124 men and 76 females, aged between 20 and 35 years ($M = 1.32$, $SD = .55$), was recruited for the exploratory factor analysis (EFA). The sample size was selected based on the principle that, for factor analysis, the ratio of subjects to items should be at least 10:1, as suggested by [Nunnally \(1978\)](#).

Certain assumptions must be empirically verified to assess if the data is suitable for Exploratory Factor Analysis (EFA). The [Kaiser-Meyer-Olkin \(KMO\)](#) test assessed sample adequacy with a value of .88. Bartlett's Test of Sphericity was also reliable, with Cronbach's alpha coefficient of .90 and an estimated chi-square value of 2152.67 (351 degrees of freedom) and a p-value of less than .001. KMO and Bartlett's Test of Sphericity showed that the study's data was eligible for factor analysis.

Figure 1: *Scree Plot Identified Dimensions of the Indigenous Grit Scale*



Scree plot [Figure 1](#) recommends three factors that best identify and explain the dimensions, describing several breaks in the plot curve. The most significant break can be seen between the first and second factors until the third factor, which is evident in the selection of factors.

The principal component matrix was used in exploratory factor analysis (EFA) to identify the intrinsic factor structures of the indigenous scale grit. Subsequently, Varimax rotation was performed.

This rotation aimed to discern the common patterns among items and ascertain the correlation between items and factors.

Table 1: *Exploratory Factor Analysis of the Indigenous Scale (N = 200)*

Sr. #	Item #	Factor Loadings		
		1	2	3
1	1	.49	.05	.26
2	2	.44	.09	.33
3	7	.61	.32	.49
4	8	.64	.02	.43
5	9	.71	.10	.54
6	14	.59	.23	.52
7	19	.66	.28	.55
8	20	.57	.44	.45
9	21	.73	.16	.35
10	22	.50	.49	.27
11	23	.67	.15	.44
12	24	.71	.32	.41
13	25	.65	.08	.59
14	26	.73	.03	.26
15	27	.57	.13	.12
16	3	.07	.73	.07
17	4	.12	.69	.07
18	10	.05	.59	.07
19	5	.45	.10	.49
20	6	.27	.31	.32
21	11	.42	.17	.69
22	12	.19	-.09	.59
23	13	.43	-.02	.68
24	15	.55	.32	.61
25	16	.38	.24	.75
26	17	.35	.28	.65
27	18	.45	.30	.66
Eigenvalue		8.61	1.80	1.50
% Variance		31.90	6.78	5.45
Cumulative % Variance		31.90	38.68	45.13

Table 1 displays the factor loadings of 27 items, their corresponding dimensions, and their commonalities. Factor analysis revealed the presence of several loadings and cross-loading. Given that each item assesses an identical notion, we examined the inter-correlation among all items. When designing the structure, several issues were considered, including the capacity to adapt to different construction methods, the significant importance of cross and multiple loadings, and the clear representation of conceptual ideas. According

to the assumption, an item contributes considerably to the factor if its loading is more than .45. Table 1 displays the factor loadings of all 27 elements, which range from .75 to .32 in the three-factor solution. In order to meet the requirement for a factor to have a loading greater than .45, item 2 from factor 1 and item 6 from factor 3 had loadings of .44 and .32, respectively. These loadings were carefully considered and closely observed. According to the table, no item was loaded with more than one component. Thus, the criterion for an item loaded on a single factor was also satisfied (Worthington & Whittaker, 2006). Due to the significant component loading, this three-factor approach produced the most comprehensible outcome, highest loading, and is thus preserved as the final measure of Grit.

Interpretation and Naming of the Factors

The coefficient of the rotation component facilitates the identification and labeling of subscales within the grit scale. In contrast to the previously established metrics of Grit, this indigenous metric was created using materials derived from the literature from both Western and Eastern perspectives. The recent research on developing and validating the grit measure has primarily focused on excessive reliance on perseverance and obsessive passion (Arif et al., 2021; Iqbal et al., 2023). However, previous research has yet to explore the potential influence of other factors on the trait of Grit in Pakistan. This indigenous study aims to address this knowledge gap by including any newly identified factor of the attribute known as Grit.

Table 2: *Item to Total Correlation of Grit Scale (N = 200)*

Sr #	Item #	<i>r</i>
1	1	.38**
2	2	.39**
3	3	.19
4	4	.22
5	5	.47**
6	6	.33**
7	7	.63**
8	8	.55**
9	9	.65**
10	10	.17
11	11	.55**
12	12	.31**
13	13	.52**

Continued...

Sr #	Item #	<i>r</i>
14	14	.59**
15	15	.63**
16	16	.57**
17	17	.51**
18	18	.59**
19	19	.66**
20	20	.59**
21	21	.58**
22	22	.49**
23	23	.58**
24	24	.63**
25	25	.63**
26	26	.52**
27	27	.38**

Table 2 shows the item-total correlation of 27 items of the newly developed Indigenous grit scale showed a factor: cognitive flexibility consisting of three items (3, 4, 10), value less than .30, $p < .001$ a weak factor loadings and low item-total correlation, the cognitive flexibility factor was excluded, which would affect the findings of the advanced study for further analysis. Thus, 24 out of 27 items were kept for further research.

Table 3: *Final Factors Variance with Items of Grit (N = 200)*

No.	Subscales	Item No.	Variance	α
1	Sustained Effort	1, 2, 7, 8, 9, 14, 19, 20, 21, 22, 23, 24, 25, 26, 27	96.94%	.89
2	Firmness of Purpose	5, 6, 11, 12, 13, 15, 16, 17, 18	39.81%	.80

Table 3 illustrates the variance and significant alpha values retained by the two factors after omitting a factor that have weak factor loading and inter-item correlation.

Scoring of Grit Scale

Like other personality traits; grit instruments, a higher score indicates a greater level of grit and vice versa in an individual. As per no negative items, no reverse scoring was reported. The total score of the newly developed instrument of grit ranges from 12-lowest grit level to 60-highest grit level. Since the newly developed indigenous

grit scale did not have normative values yet a level of classification was based on an equal-interval scale to group scores into low, moderate, high level and very high level. It is a method that breaks the overall potential score range into equal-spaced types and should be used when there is a need to have a preliminary interpretation of new psychometric measures.

Interpretation of Scores

Interpretations of scores follows as Low Grit as individuals who fall within the score range of 12-24 would be in low grit and struggle with sustained efforts and firmness of purpose. Moderate Grit as those individuals with moderate grit score range of 25-36, display some firmness towards their goal but find it challenging to sustain their efforts over time. High Grit: Individuals who have high grit, score 37-48, show a strong propensity to pursue goals with passion and determination. Very High Grit: Individuals in this range 49-60, exhibit exceptional levels of perseverance, sustained efforts with firmness of purpose and commitment to their long-term commitments.

Table 4: *Inter-Correlation Among Subscales and Total Grit Scale (N = 200)*

Factors	<i>M</i>	<i>SD</i>	1	2	3
1. Sustained effort	58.95	9.85	-	.71**	.86**
2. Firmness of purpose	33.66	6.31		-	.89**
3. Total-GS	92.61	15.01			-

Table 4 shows a substantial, significant correlation in the expected direction between the total grit scale and its subscales.

Study 4: Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was used to confirm two retained factors. Twenty-four items were generated in EFA, and CFA examined those retained items via AMOS. For CFA data, 200 young people aged 20-35 were recruited to fill out the newly designed grit questionnaire (2 factors having 24 items) extracted from the EFA.

Results

In CFA, four structures emerged to get the final basic, and the model fit structure supported the two factors. Two subscales, Sustained Effort and Firmness of Purpose were first-order latent

factors that loaded on a second-order latent factor called Grit. Structural equation models were run with AMOS version 6.0 using the maximum likelihood method.

Figure 2: *Structure Model of 24 Items Grit Scale*

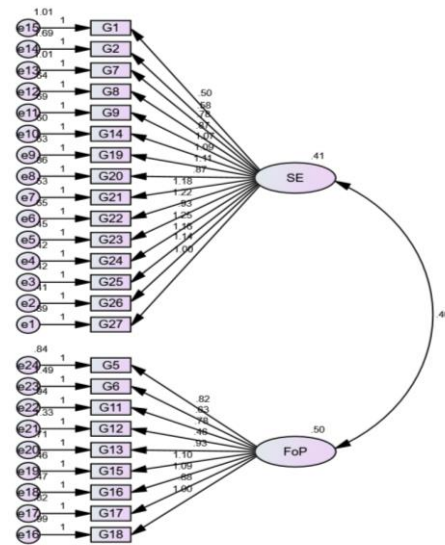


Figure 3: *Structure Model of 20 Items Grit Scale*

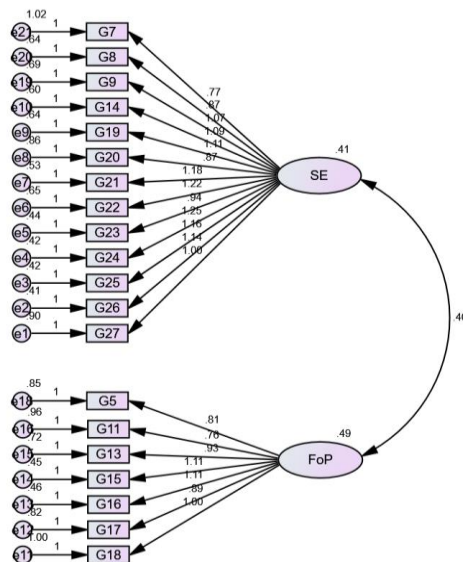


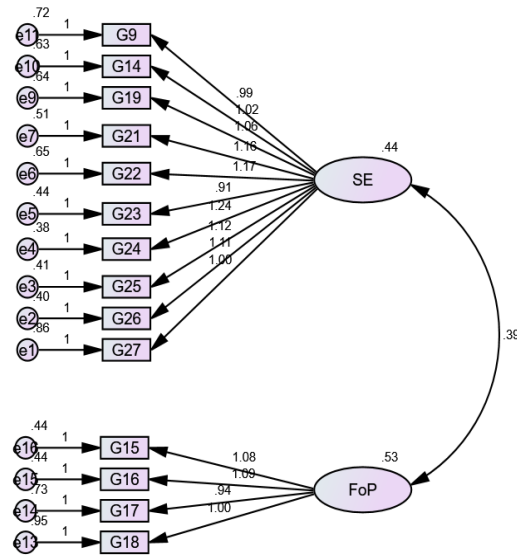
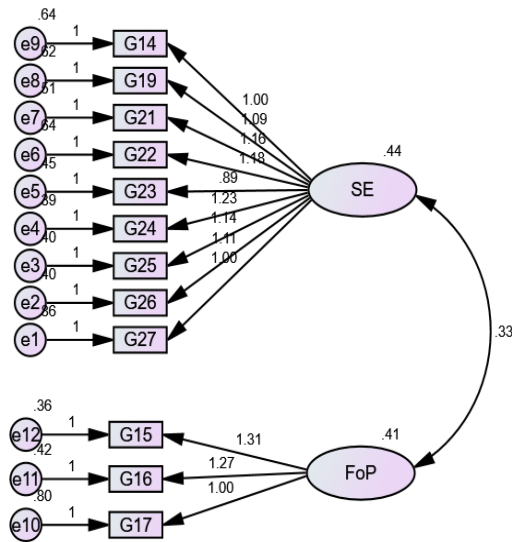
Figure 4: *Structure Model of 14 Items Grit Scale*Figure 5: *Final Structure Model of 12 Items Grit Scale*

Figure 2 shows the first structure model of the 24-item scale emerged in CFA. The explored values of Chi-square were 553.20 ($p = .001$) with chi-square/df = 2.20, $GFI = .82$, and $CFI = .84$.

The values of GFI and CFI of this first-factor structure do not represent a good fit model. To gain a model fit structure, in [Figure 3](#), CFA structure model 2 was gained by removing items 1, 2, and 6 (i.e., Factor 1 item 1 = .30, item 2 = .35; Factor 2 item 6 = .27) as they showed weak factor loadings in CFA structure model 1.

Structure factor model 2 showed the assigned significant Chi-square = 424.104, ($p = .001$) value, with chi-square/df = 2.509, GFI = .82, and CFI = .86. Structure models' GFI and CFI values are not .90 or above which does not demonstrate a good fit model which urged us to run CFA for a good fit structure.

In [Figure 4](#), Items 5, 11, and 13 from Factor 2, having loadings respectively of .53, .48, .61, and item 20 from Factor 1 = .51, were removed from the structure model 3 as they showed low factor loadings as compared to other items in factors from structure model 2. Structure model 3 illustrated the values: Chi-square = 205.836 ($p = .001$), chi-square/df = 2.708, CFI = .90, and GFI = .87, which do not demonstrate the model fitness.

As proved in [Figure 5](#), items having weak factor loadings, including 2, 7, 8, 9, and 20 items from factor 1 and 5, 6, 11, 12, 13, and 18 items from factor 2 were excluded to get the best model fit with the values of GFI and CFI .90 or above. There was retention and elimination of items based on a set of statistical criteria (factor loading, cross-loadings and item-total correlations) and a theoretical relevance to the construct. Although the factor loading of Item 18 was high, it was dropped because it had a significant cross-loading and conceptual overlap with Item 17 and thus, this was redundant. The reason why item 17 was kept was that it was better representative of the intended construct and it had cleaner loading pattern. In Model 4, item 9 was dropped because its factor loading is satisfactory but the correlation with its residual is high and the model does not fit. Conversely, even though the loading of Item 23 was also slightly lower, it was kept since it enhanced model fit and reflected a highly significant area of content of the factor. Items were removed or retained in the model refinement process using both statistical and theoretical measures. Besides factor loadings, cross-loadings, residual correlations, modification indices, and conceptual relevancy were also examined. Even those that had a high factor loadings were dropped in favor of those with low factor loadings, though items with slightly lower factor loadings were also included, provided they were theoretically important and helped in contributing a better-fitting and more interpretable model. This structure factor model 4 fits with values of Chi-square = 124.029 ($p = .001$), chi-square/df = 2.34, GFI = .90, and CFI = .94. Though the chi-square test was significant,

that will be the case in large samples, and that does not always mean that the model does not fit. Chi-square is very sensitive to the sample size, which is likely to reject the model when the fit is sufficient. So, relative fit indices were taken into consideration. It was a good fit because the ratio of chi-square and degree of freedom (chi-square/ $df = 2.34$) was good. The Comparative Fit Index (CFI = .94) and Goodness-of-Fit Index (GFI = .90) also demonstrated a good to adequate fit of the model. The value of RMSEA (.082) was reasonable to represent the error of approximation, which is acceptable in a complex model of measurement and when the instruments are new (Browne & Cudeck, 1993; Hu & Bentler, 1999; Kline, 2016). So, the total 12 items were retained and 12 were excluded because of low and weak factor loadings in CFA from a total four structure factor model. This study confirms two factors having 12 items for the further validity study.

Table 5: *Summary of Model Fit Indices (N = 200)*

Models	Chi-square (sig.)	df	Chi sq/ df	RMR	GFI	CFI	RMSEA
1	553	251	2.20	.07	.82	.84	.07
2	424	169	2.51	.07	.82	.86	.08
3	205	76	2.71	.06	.87	.90	.09
4	124	53	2.34	.05	.90	.94	.08

Study 5: Construct Validity

Establishing the convergent validity of a reliable measure was one of the objectives of scale development. A scale's construct validity is how well it measures its intended concept. Campbell and Fiske (1959) advocate assessing a measure's convergent and divergent validity for determining construct validity. The degree to which two trait measurements correlate is called convergent validity. Divergent validity assesses how much two measurements disagree. For this, the newly constructed grit scale correlated with Angela Duckworth's scale (2007) and pure procrastination scales. The revised grit measure's positive relationship with Duckworth's (2007) 14-item scale was assessed for convergent validity. The Pure Procrastination scale (Steel, 2010) and the new overall grit measure were expected to correlate negatively for discriminant validity. Data from 50 young adults aged 20-35 were separately gathered when the indigenous scale was completely constructed to establish convergent and divergent validity.

Results

Convergent validity was tested concerning the newly invented Index of Indigenous Grit and the existing Grit Scale by Duckworth et al. (2007).

Findings show a correlation of $r = .44$ ($p < .001$) between newly developed Grit Scale and Grit Scale (Duckworth et al., 2007) suggests strong convergent validity. The Indigenous Grit Scale had high alpha reliability and manageable variability. A good level of ranging (range .22 to .60) notified among the total grit scale, its subscales with the already developed Grit Scale (Duckworth et al., 2007).

Divergent validity was assessed by the Pure Procrastination Scale (Steel, 2010), and we conjectured that newly developed indigenous grit negatively correlated with Pure Procrastination Scale. The results revealed a significant and inverse relationship ($r = -.12$, $p < .00$) between the newly developed total grit scale and pure procrastination scale (Steel, 2010), suggesting solid divergent validity; Actually, the convergent validity was very well-founded with the divergent one as both were supported by their pair. This led to confirmation of the strong construct validity of the study. Research literature suggests that divergent validity is an important factor because scores can be related to other theoretical constructs but sound evidence that the measure is distinct from other (unique) qualitatively different constructs must also exist. This study indicates that higher levels of grit could result in lower levels of procrastination and thus strengthen the construct validity of the scale for application across various contexts.

Table 6: *Psychometric Properties of Grit Scale (N = 200)*

Scales	<i>M</i>	<i>SD</i>	Range	<i>a</i>
1. Sustained effort	36.93	6.90	9-45	.89
2. Firmness of purpose	11.93	2.62	3-15	.77
3. Total-GS	48.85	8.81	12-60	.91

The psychometric properties of the grit scale in Table 8 displayed a high-reliability score (.91) of the newly developed Indigenous grit scale. Additionally, the subscales measuring the firmness of purpose and sustained effort demonstrated satisfactory validity ratings of .77 and .89, respectively.

Discussion

The study aimed to assess the personality trait of Grit in the collectivistic culture of Pakistan since it would provide a more effective local assessment of persistence and enthusiasm for long-term goals at the trait level. This indigenous measure provides a more exact and accurate assessment of the amount of perseverance and determination. It addresses a significant literature gap by reflecting lived experiences and the socio-cultural values in a collectivistic culture like Pakistan.

The research consisted of five investigations conducted collectively to generate this indigenous construct. Study 1 examined the process of generating items using inductive and deductive approaches. The item creation was rooted in the grit theory and the idea of the quality of strength continuum, as [Niemiec proposed \(2019\)](#). During this stage, 52 items were produced and subjected to thorough evaluation by experts. As a result, 27 items were identified that showed a very strong level of reliability ($\alpha = .90$) in the scale during pilot study 2. These 27 objects accurately and specifically express and represent the concept of Grit. Study 3 examined the dimensionality of the scale and internal factor structures using exploratory factor analysis. The analysis revealed three dimensions with a total of 27 items. The eigenvalues and scree plots indicated that the final grit measure should contain three factors. The 27 items of this native scale also demonstrated a relatively substantial internal consistency.

The first component characterizes the inclination to persistently strive in any situation when pursuing a long-term objective. It was conceptualized as a continuous and deliberate exertion of mental faculties. Regardless of the conditions, individuals who consistently make continuous attempts are likely to have high self-efficacy. Niemiec (2019) emphasizes the crucial importance of maintaining persistent effort. His findings indicate that individuals exert considerable effort in pursuing their long-term objectives despite encountering barriers and disappointments. However, in the context of Pakistan, a society that values collectivism, the influence of parents is often regarded with uncertainty. Children hold their parents in high regard and unquestioningly accept their judgments. They persist in the emerging sector without recognizing the achievability of the objectives frequently established by parents. Therefore, if someone needs to put in more effort, trying to achieve objectives that are impossible to obtain might have a negative impact on their overall well-being.

Each person has a distinct ability and passion for a certain subject. Typically, children comply with their parents' wishes and endure difficulties pursuing their chosen field, negatively impacting their self-efficacy. Several studies have shown this phenomenon (Bibi et al., 2020; Schwartz & Scharpe, 2006; Zahra & Saleem, 2021). The second component characterizes the inclination to adapt to difficult situations while pursuing a long-term objective. Cognitive flexibility was conceptualized as an intellectual process. This study challenges the inclusion of cognitive flexibility as a factor initially identified in the EFA. However, it was ultimately excluded from the analysis due to its low and weak correlation with other items and the need for supporting evidence in the existing literature on the determinants of Grit (Duckworth et al., 2007; Duckworth & Quinn, 2009).

The third component characterizes the inclination to remain stable and resolute in achieving a long-term objective. It was conceptualized as a resolute determination. As a result, this native scale consisted of 24 items divided into two dimensions: persistent effort and firmness of purpose. Only items with factor loadings larger than .30 were kept. The study conducted by Duckworth et al. (2007) provides strong evidence for Grit, which refers to the enduring tenacity and enthusiasm for long-term goals. The scale created by Duckworth and Quinn in 2009 identified two elements that assess the amount of Grit as a personality trait: consistency of interest and persistence of effort (Duckworth & Quinn, 2009). Surprisingly, the findings of this study did not align with the hypothesis that cognitive flexibility, a factor believed to play a greater role in determining the amount of Grit, would have an impact.

Study 4 was conducted to confirm the factors determined in EFA over and over with Confirmatory Factor Analysis. Items with weak and lower factor loadings (less than .40) were eliminated to determine the final model's fitness. The final version of this indigenous scale retained a total of 12 items. In Study 5, construct validity was established by employing convergent and divergent validity. The study showed a highly favorable association with convergent validity. A highly negative association was evident, demonstrating the scale's divergent validity. The study confirmed that this indigenous grit scale exhibited strong construct validity.

The importance of developing the indigenous measure highlights the unique interplay of communal values and perseverance captured in collectivistic societies which is overlooked in Western-centric measurements. This measure opens the avenues for exploring the constructs cross-cultural variation with the advances of psychometrics research in collectivistic contexts.

Limitations and Future Recommendations

This research may be seen through the prism of a number of limitations. The sample was not random and was only taken to specific areas of Pakistan and only among young adults, which can limit the extrapolation of the findings to the rest of the population with different educational, socioeconomic, or regional orientations. Moreover, the data were all collected using self-report, prone to social desirability and response bias especially in collectivistic cultures where perseverance and responsibility are upheld by society. The study also lacks the cross-sectional design, which does not allow reaching conclusions concerning the stability of grit with time or its causal connection with academic and life outcomes. In addition, the categories used to classify scores of grit were classified by equal-interval intervals as opposed to their counterparts of percentiles where the data were classified by percentiles, thus considered provisional until the normative data are determined using broader and more representative samples. The qualitative sample applied in the item generation was not very large and, therefore, it might not have represented the spectrum of the culturally specific manifestations of grit in the scale. Lastly, the scale was created and validated in one linguistic and cultural setting so its relevance to other language groups and collectivistic cultures is yet to be established in the future.

The indigenous grit scale should also be tested on a larger, more heterogeneous, and nationally representative scale to increase its external validity in the future studies in various regions, social classes, and levels of education in Pakistan. It is suggested that the longitudinal studies may be conducted to investigate the consistency of grit with time and its predictive success with the academic, professional, and life outcomes. In order to enhance the significance of the scores, future research ought to utilize the normative data and percentile-based cut-off levels instead of depending on the equal-interval classification. Further qualitative studies, including participants of various cultural, linguistic, and socioeconomic backgrounds, are also invited to narrow the range of items and make sure that the culturally specific manifestation of perseverance and long-term commitment are captured in all possible ways. Lastly, cross-cultural validation experiments are required to test the use of the scale in other cultures with collectivistic societies and assess indigenous and Western-based grit measures.

Implications

This indigenous measure will greatly assist counselors, school psychologists, and clinical psychologists in predicting an individual's perseverance accurately in relevance to collectivistic culture. It will also enable them to develop therapeutic plans and interventions for clients who lack resilience and face difficulties maintaining focus and achieving their goals due to a low-level origin. The measure can be undertaken voluntarily for personal growth, self-enhancement, and cultivating one's self-efficacy to overcome obstacles in pursuit of their ultimate objective effectively. This indigenous grit tool serves as a foundation for understanding its manifestation in collectivistic settings, which ultimately contributes to the broader literature on cultural psychology.

Conclusion

The indigenous scale Grit was developed and confirmed to be accurate in the collectivistic culture for young people. The study determined that individuals may achieve long-term objectives by demonstrating resolute determination and consistent efforts. The scale, based on collectivistic culture, has noteworthy psychometric standards and construct validity in both dimensions, confirming its correctness for future investigations. It bridges the gap between local realities and global constructs by highlighting the importance of grounding psychological constructs in lived experiences of individuals within their cultural contexts.

References

- Almlund, M., Duckworth, A. L., Heckman, J., & Kautz, T. (2011). Personality psychology and economics. In *Handbook of the Economics of Education*, (Vol. 4, pp. 1-181). Elsevier. <https://doi.org/10.1016/B978-0-444-53444-6.00001-8>
- Arco-Tirado, J. L., Fernández-Martín, F. D., & Hoyle, R. H. (2018). Development and validation of a Spanish version of the Grit-S scale. *Frontiers in Psychology*, 9, 96. <https://doi.org/10.3389/fpsyg.2018.00096>
- Arif, H., Khan, M. U., & Abbas, Q. (2021). Grit and its related factors in undergraduate students. *Pakistan Journal of Clinical Psychology*, 20(2). <http://www.pjcpku.com/index.php/pjcp/article/view/141>
- Bartlett, M. S. (1954). A note on the multiplying factors for various χ^2 approximations. *Journal of the Royal Statistical Society*, 296-298. <https://www.jstor.org/stable/2984057>

- Bibi, A., Saleem, A., Khalid, M. A., & Shafique, N. (2020). Emotional intelligence and aggression among university students of Pakistan: A correlational study. *Journal of Aggression, Maltreatment & Trauma*, 29(10), 1189-1203. <https://doi.org/10.1080/10926771.2019.1709592>
- Borghans, L., Duckworth, A. L., Heckman, J. J., & Ter Weel, B. (2008). The economics and psychology of personality traits. *Journal of Human Resources*, 43(4), 972-1059. <https://doi.org/10.3368/jhr.43.4.972>
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.). *Testing structural equation models*, (pp. 136-162). Sage Publications.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological bulletin*, 56(2), 81. <https://doi.org/10.1037/h0046016>
- Cox, C. (1926). *The early mental traits of three hundred geniuses*. Vol. II of Genetic studies of genius, Terman, L.M. [https://doi.org/javascript:void\(0\)](https://doi.org/javascript:void(0))
- Credé, M. (2018). What shall we do about Grit? A critical review of what we know and what we don't know. *Educational Researcher*, 47(9), 606-611. <https://doi.org/10.3102/0013189X18801322>
- Credé, M., Tynan, M. C., & Harms, P. D. (2017). Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology*, 113(3), 492-511. <https://doi.org/10.1037/pspp0000102>
- Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the Short Grit Scale (GRIT-S). *Journal of Personality Assessment*, 91(2), 166-174. <https://doi.org/10.1080/00223890802634290>
- Duckworth, A. L., & Yeager, D. S. (2015). Measurement matters: Assessing personal qualities other than cognitive ability for educational purposes. *Educational researcher*, 44(4), 237-251. <https://doi.org/10.3102/0013189X15584327>
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087-1101. <https://doi.org/10.1080/00223890802634290>
- Fernández-Martín, F. D., Arco-Tirado, J. L., & Soriano-Ruiz, M. (2018). Perseverance and passion for achieving long-term goals: Transcultural adaptation and validation of the Grit-S scale. *International Journal of Social Psychology*, 33(3), 620-649. <https://doi.org/10.1080/02134748.2018.1482060>
- Galton, F. (1892). *Hereditary Genius: An inquiry into its laws and consequences*. London: Macmillan and Co.
- Gritchenko, K., Baryshnikova, N., & Ahl, J. (2021). Cross-cultural perspectives on grit: A comparative analysis. *Journal of Cross-Cultural Psychology*, 52(7), 631-648.
- Heckman, J. J., & Kautz, T. (2012). Hard evidence on soft skills. *Labor Economics*, 19(4), 451-464. <https://doi.org/10.3386/w18121>

- Heckman, J. J., Stixrud, J., & Urzua, S. (2006). Cognitive and noncognitive abilities affect labor market outcomes and social behavior. *Journal of Labor Economics*, 24(3), 411-482. <https://doi.org/10.3386/w12006>
- Hodge, K., Danish, S. J., & Wright, P. M. (2020). Cultural adaptation of psychological measures: Insights from the field. *Cultural Diversity and Ethnic Minority Psychology*, 26(2), 151-159.
- Howe, M. J. A. (1999). *Genius explained*. New York: Cambridge University Press. <https://doi.org/10.15614/ijpp.v9i01.11766>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55. <https://doi.org/10.1080/10705519909540118>
- Iqbal, F., Iqbal, F., & Humayun, G. K. (2023). Examining the factor structure of Short Grit Scale (8 items) among university students in a collectivist society-Pakistan. *Voyage Journal of Educational Studies*, 3(1), 96-112. <https://doi.org/10.58622/vjes.v3i1.33>
- Iyengar, S. S., & Lepper, M. R. (1999). *Rethinking the value of choice: A cultural perspective on intrinsic motivation*. *Journal of Personality and Social Psychology*, 76(3), 349-366. <https://doi.org/10.1037/0022-3514.76.3.349>
- Kaiser, H. F., & Rice, J. (1974). Little jiffy, mark IV. *Educational and Psychological Measurement*, 34(1), 111-117. <https://doi.org/10.1177/001316447403400115>
- Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford Press.
- Markus, H. R., & Kitayama, S. (1991). *Culture and the self: Implications for cognition, emotion, and motivation*. *Psychological Review*, 98(2), 224-253. <https://doi.org/10.1037/0033-295X.98.2.224>
- McClelland, D. C. (1985). How motives, skills, and values determine what people do. *American Psychologist*, 40(7), 812-825.
- Mendez, I., & Zamarro, G. (2018). The intergenerational transmission of noncognitive skills and their effect on education and employment outcomes. *Journal of Population Economics*, 31, 521-560. <https://doi.org/10.2139/ssrn.2628783>
- Niemiec, R. M. (2019). Finding the golden mean: The overuse, underuse, and optimal use of character strengths. *Counselling Psychology Quarterly*, 32(3-4), 453-471.
- Nunnally, J. C. (1978). An overview of psychological measurement. *Clinical Diagnosis of Mental Disorders: A handbook*, 97-146.
- Peterson, C., & Seligman, M. E. P. (2004). Character strengths and virtues: A handbook and classification. *American Psychological Association*, 25.
- Rimfeld, K., Kovas, Y., Dale, P. S., & Plomin, R. (2016). True Grit and Genetics: Predicting academic achievement from personality. *Journal of*

- Personality and Social Psychology*, 111(5), 780. <https://doi.org/10.1037/pspp0000089>
- Schwartz, B., & Sharpe, K. E. (2006). Practical wisdom: Aristotle meets positive psychology. *Journal of Happiness Studies*, 7, 377-395.
- Steel, P. (2010). Pure procrastination scale. *Personality and Individual Differences*. <https://doi.org/10.1037/t10499-000>
- Wang, K., Ma, J., & Zhang, Q. (2018). Culturally adapted interventions and their impact on participant engagement: A systematic review. *Psychology of Sport and Exercise*, 39, 113-125.
- Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: Content analysis and recommendations for best practices. *The Counseling Psychologist*, 34(6), 806-838. <https://doi.org/10.1177/0011000006288127>
- Zahra, S. T., & Saleem, S. (2021). The development of a family cohesion scale: A preliminary validation. *FWU Journal of Social Sciences*, 15(1), 120-131.

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