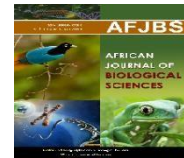


<https://doi.org/10.33472/AFJBS.6.6.2024.510-521>



African Journal of Biological Sciences



Research Paper

Open Access

Validation of grit scale in the Indian context

Vishal Singh¹, Dr. Satish Kumar²

¹Phd Scholar at Lovely Professional University, Phagwara, Punjab, India

²Assistance Professor at Lovely Professional University, Phagwara, Punjab, India

Article History
Volume 6, Issue 6, 2024
Received: 07 Mar 2024
Accepted: 31 Mar 2024
doi: 10.33472/AFJBS.6.6.2024.510-521

Abstract:

This study set out to verify the Grit Scale's applicability in Indian contexts. The Una district of Himachal Pradesh and the Hoshiarpur region of Punjab, India, were the locations of this test. Data was collected from 260 senior secondary students from different schools who were enrolled in diverse streams (humanities, business, and science). PFA and CFA emerged throughout the scale's development of two components. By normalised criteria, the estimates of the different evaluations were all high. In the Indian setting, the tool's dependability was excellent and adequate. This size worked nicely in the Indian setting.

Keywords: Grit, Tool, Reliability, CFA

1. Introduction

In earlier research cognitive factors were given more importance and considered as the main factors for academic success or academic achievement of the students but as non-cognitive factor is also recently researched by many researchers which conclude because non-cognitive elements are just as significant, if not more so for the academic success of the students than that of cognitive factors. Grit is defined as the “perseverance and passion for long-term goals” and states that it involves “working strenuously towards challenged, maintaining effort and interest over years despite failure, adversity, and plateaus in progress” (Wolters & Hussain, 2015).

2. Review of literature

Chiesi and Primi (2010) targeted investigation and compared findings, they found a direct correlation between anxiety and pre-course opinions. and pessimistic mindsets that devalued poor performance. The results also indicated that grit was completely and unmistakably linked

to academic success in maths, whereas there was less of a link with academic success in science.

Von Culin et al. (2018) coordinated an examination utilizing public site and members in Study 1 were the $N = 15,874$ grown-ups who deliberately finished polls on www.authentic happiness.com. This site offers clients free data about brain science exploration and admittance to a wide scope of discretionary self-report polls. While enlisting, members announced their gender and age. For members who finished a poll more than once, we utilized just their first arrangement of reactions. The scales utilized were; the Short Grit Scale by Duckworth and Quinn, 2009, the directions to satisfaction scale by Peterson et al., 2005. Results showed the positive relationship among the association between grit and engagement was mostly fuelled by the grit characteristic of effort, whereas the relationship between grit and joy was primarily fuelled by the grit feature of interest. As such, a direction toward commitment may advance grit by empowering supported exertion over the long haul, though a direction toward pleasure may hinder grit by debilitating supported interests over the long haul.

Virtanen, P. (2019) investigated the fundamental components of self-managed learning in advanced education and to find how learners' contrast in SRL. A total of 5091 learners' reactions were assembled in a few Finnish colleges. In the previous example, 1248 students from eight institutions in Southern Finland completed the IQ Learn stock in their first year of study. Additionally, in June 2010, the college's learner's register provided the reflectively compiled data for Study II, which involved assessing the investigation accomplishments of 229 learners. Through an electronic analysis, data for the first inquiry III was acquired in 2010. 422 students from two Finnish colleges' class instructor and subject educator programmes made up the group. Approximately 30–42% of the learner educator groups responded to the questionnaires. Unlike the next two special investigations, participants in this study were given access to many different questionnaires; responses to three surveys were used in Study III. The Motivated Strategies for Learning Questionnaire was used for estimating SRL. In Study III for estimating learner's instructors' dynamic learning encounters an instrument was utilized. The Professional Competencies Instrument comprising of 40 items was used. The investigations inside the Studies and the second-request factor examinations showed predictable highlights in HE learners' SRL, which was made out of three fundamental parts, for example, Resource the executives' systems, Advanced learning procedures, and Self-efficacy convictions. The learners with a profile Excellent in SRL had high self-viability, were relentless and utilized frequently the board procedures and adaptable progressed cognitive learning techniques. Additionally, despite having high self-efficacy, the learners with the profiles Aiming high with inadequate SRL and Dissonant SRL used fewer administration, self-evaluation, and cognitive learning techniques. They were also less conscientious.

Reraki et al. (2015) examined 334 undergraduate college students at Turkey's Agri Ibrahim Cecen University and Dumlupınar University who were enrolled in the Faculty of Education to find the relationship between academic motivation, academic accomplishment, and grit. This evaluation also looked at the intervening portion of grit. The investigative team was assembled by practical sampling. The trainees' ages ranged from 19 to 25, with 21.2 being considered a normal age of sufficient knowledge. In addition, 145 pupils are seniors, 148 scholars are younger, and 41 learners are sophomores. However, 183 of the members are women and 151 are males. The Short Grit Scale and the Scholarly Inspiration Scale-AMS were the scales used.

The correlation between tenacity and academic success was evident from the results. Academic motivation and success are strongly correlated, according to the results of the hierarchical regression analysis. However, when academic motivation and coarseness were coupled in the relapse assessment, the importance of the association between academic motivation and academic success reduced. In spite of this, there was a substantial correlation between academic success and academic motivation but only partially evident. Thus, it is possible to argue that grit helps to clarify the relationship between academic accomplishment and academic motivation.

Rojas (2015) took two samples of 187 undergraduate students in order to investigate the relationship between tenacity, inventiveness, academic motivation, and academic success. As part of a larger information assortment study, members completed a survey that included segment data and Likert-scale responses on these two measures. Sex, identity, and grades were the segment data, while the 12-item Grit Scale was the size of interest. The primary test was administered at a few unique locations in ten states, with the majority of the test takers coming from a state-funded university in California. The following sample was obtained from one exploratory foundation in the South Eastern United States and essentially included Hispanic, European American, Black, Asian, and mixed individuals with the excess rates posting "other" or not providing data and was basically of European American descent. Black students in the momentum study shown much higher levels of grit than other students. The majority of previous studies on grit have focused on instances that are predominantly White, and grit has not been thoroughly examined among populations that are racially and socially diverse. A review of Black scholars enrolled in transcendentally White organisations provides one startling unusual case: even after adjusting for secondary school GPA, and educational goals, grit was discovered to indicate better ratings among Black learners.

Dalton Niamh (2016) examined the relationship between grit and stress attitude. Participants in this assessment included a comfort test of people drew nearer and enrolled through a connect to an online overview which was posted and reposted on the long-range interpersonal communication site Face book, making a compounding phenomenon. Support was deliberate and unknown, and educated assent was gotten from all members by enlightening them on the data page, which allowed them to consent to participate after they tapped on the next page, completed, and submitted the review. Individuals under the age of eighteen were not allowed to participate in the overview. Any member who clicked while under the age of eighteen was directed to the last page, and their information was not allowed to be explored. A total of 136 participants were included in the study. The majority of members were 49 years of age or younger, with over half of all members falling between the 30-39 age range. Three measures were used: the Maximisation Scale, the Stress Mindset Measure-General, and the 12-item Grit Scale. There would be a huge positive relationship between a stress is-improving mindset and a wonderful style of decision making. It was anticipated that mindset mentality and expansion would fundamentally foresee grit. Huge negative connection between undeniable degrees of grit and a satisfying style of decision-making stress mindset and expansion fundamentally anticipate grit.

O'Neal et al. (2016) used cross-sectional, blended techniques to look into the grade point average, tension, grit, and sadness of 84 Latina/o original understudy who did not live in Maryland. Twenty-one non-residents and twenty-six locals were interviewed qualitatively. Our

last pool of review respondents comprised of 264 people from Maryland school/college. The 10-thing Perceived Stress Scale utilizes a 5-guide scale toward survey how regularly members experience pressure, Depression was evaluated by means of the Patient Health Questionnaire–9 melancholy scale utilizing a 4-point scale asking how frequently they encountered nine depression symptoms inside the most recent fourteen days. Grit was analysed with the eight-thing Short Grit Scale. Strangely, there was a huge fundamental impact showing that non-residents were bound to have higher GPAs than residents. Migrant status was likewise a critical arbitrator of the connection among grit and depression. Funny enough, grit was linked to lower levels of despair. Nevertheless, there was a more substantial relationship between grit and depression in non-residents compared to residents, with depression being greater in non-residents at lower grit levels. Migration status did not show to be a significant mediator of the relationship between grit and GPA or stress and GPA.

Lee and Sohn (2017) took a sample of 235 scholars taking a study in progress at a school in Seoul, South Korea using a brain research class. For course credit, they participated in the investigation. Of them, 135 were female, Eleven of the 107 men did not specify their gender. The average age was twenty-nine. We calculated grit using the Grit-O's Korean version. Things are scaled differently depending on the field for intentional practice. Using techniques that are indistinguishable from one another, we produced seven items that reflect the characteristics and concept of purposeful practice. The Big Five personality traits—extraversion, agreeableness, conscientiousness, openness to experience, and neuroticism—can be measured we utilized 50-thing International Personality Item Pool. We evaluated profession arrangement conduct utilizing the 18-thing. Grit had significant positive correlations with conscientiousness, major-career relatedness, and career preparedness. With the exception of neuroticism, major-career relatedness, and agreeableness, deliberate practice was strongly correlated with all categories; conscientiousness alone shown a strong correlation with GPA.

Sharkey et al. (2017) investigated on Midwestern college learners' by means of an online study framework wherein learners could decide to try out quite a few a few accessible investigations all through the whole scholarly year. Among a sample of 589 scholars, 120 scholars announced having a constant ailment of some kind (e.g., asthma, provocative inside illness, type-1diabetes). Learners agreed to the investigation and rounded out all surveys on the web. All members who finished measures were remunerated with course credit, a necessity of numerous college classes. Consequences of our investigation show that grit had a huge direct impact on depressive symptoms and anxious symptoms to such an extent that higher grit was related with lower self-detailed symptom-mato-logy. Grit additionally had a critical direct impact on EWB with the end goal that more significant levels of grit were identified with more elevated levels of EWB. Grit additionally had a huge direct impact on II and IU to such an extent that higher grit was straightforwardly connected with lower II and IU.

Huang (2015) answered the exam questions using information from the 2012 Programme for International Student Assessment U.S. The information has three main sections: 1) student achievement in science, maths, and reading; 2) learner foundations, including home language, sex, mobility status, and socioeconomic and cultural background; and 3) school characteristics, including size, location, student environment, teacher affirmation, and initiative. In the last case, 4,978 fifteen-year-old children were selected at random from 162 schools. The schools were chosen by weighing their sizes based on a unique

evaluation method. I used the special proof number sent to the school to merge the two informational layouts. I looked at the data from the US edition of the Programme for International Student Assessment using two-level hierarchical linear models and ANOVA. Based on the findings, researchers who rated their own persistence as high would probably do better than those who rate their persistence as low. A longer period of time spent studying in school was associated with greater achievement. Either way, kids from high-SES households tended to be more persistent in their academic endeavours and to put in more effort. Thus, unless their schools offered them more classes and learning opportunities, learning time and tenacity were unlikely to reduce the SES barrier to achievement for the majority of low-SES children.

Pack (2015) used testing techniques to identify common patterns that cut through and across the differences between people with different levels of grit and resilience. Selection comprised twelve members of the association, three of whom had high, three of whom had medium-high, three of whom had medium-low, and three of whom had low scores for coarseness and flexibility. The examination's use of most extreme variety examining provided a vivid depiction of persons with diverse grit and resilience traits succeeding in the workplace. The perspectives of about 12 representatives of prospering in a Fortune 500 company were the focus of a subjective contextual investigation. These delegates' grit and resilience had recently been measured using a 10-item grit test and a 14-item Adversity Quotient Profile. By analysing meeting minutes, concept maps, and a positioning exercise, the analyst was able to identify the fundamental elements of a Fortune 500 company's success. Positive relationships, family and peer support, a sense of commitment and certainty, shared excitement, and time for oneself and other people are some of the constituents.

Al-Mutawah and Fateel (2018) investigated the relationships between grit and the accomplishment of math and science, as well as between math achievement and attitude towards math and, finally, scientific achievement and attitude towards science. The "Grit questionnaire" was modified and limited to a total of 646 students who chose to participate in optional schooling. After modifications, the "Attitudes towards mathematics" survey was completed by 349 elective students. A modified version of the "Attitude towards science" questionnaire was sent to 297 additional school learners. As was said in the previous information test, attitude was positively correlated with maths and science achievement, indicating that a learner's attitude towards maths and science is essential to their success in these areas.

Chen et al. (2018) took a sample of 200 and 72 college scholars of spring semester 2015. One hundred and 58 scholars came from a college of the United States and 114 scholars came from a college in China. Among the American scholars, 69% were females. All the American scholars finished the surveys on the web. All the Chinese scholars finished similar questionnaires on the web and no examination credit was given for their support. The two gatherings of members finished the questionnaires in a solitary meeting. The Short Grit Scale was utilized to evaluate grit since it has improved psychometric properties contrasted with the first Grit Scale. The Achievement Goal Questionnaire-Revised was utilized to gauge scholars' achievement goal. Results showed that, however emphatically connected, the two parts of grit anticipated the achievement goal in totally different manners. In particular, consistency of interest adversely anticipated performance-avoidance goals, though constancy of exertion

decidedly anticipated each of the four-achievement goal (for example dominance approach, execution approach, authority aversion, and execution evasion objectives).

Hernandez, Munoz-Villena, and Gomez-Lopez () accessed perceived Stress Scale to evaluate the view of pressure, it has been used the change for Spanish people that contain fourteen items. Multidimensional Perfectionism Scale was used the variety for Spanish people to evaluate the compulsiveness variable. Socio: An impromptu questionnaire constructed around physical activity and demographics. This is a self-administered configuration survey that examiners created using the WHO IPAQ procedures. It has four mandatory components. 45 women and 82 men made up the medium-high income household level of the subjects. The findings show that markers of varied compulsiveness and maladaptive perfectionism indicators about work with or restrict the perspective on pressure control significantly differ with increased AF recurrence. Research on these factors is thus necessary to prepare licences and create programmes that teach young people how to effectively modify situations that they see as unsavoury. The outcomes show that the higher the recurrence of AF, there is huge contrasts in markers of versatile compulsiveness (individual requests and association) and pointers of maladaptive hair splitting (parental assumptions and dread of committing errors) in regards to work with or limit the perception of stress control. To put it plainly, research on such factors permits preparing and configuration programs for adolescents to realize how to adapt circumstances deciphered as unpleasant in a powerful manner.

Vela, Sparrow, Wittenberg and Rodriguez (2018) explored to find the impact of character strength, meaning of family on vocation choice self-efficacy. The Short Grit Scale measures learners' determination and energy for long stretch goals. The Curiosity and Exploration Inventory used to measure individual's levels of interest. The Life Orientation Test measures individuals' cheerfulness. The Gratitude Questionnaire used to measure individuals' penchant to feel appreciation. The Pan-Hispanic Familism Scale measures one's perspective on the meaning of family. The CDSE Scale-SF measures learners' CDSE. The Mexican American individuals' school were chosen HSI in the southern space of the United States. We used purposive looking at with school courses to ensure Mexican American learners were associated with the model. The HSI had an enrolment of around 7,000 student and graduate scholars. A total of 127(52 men, 75 women) learners who were chosen at the HSI gave data. Of the individuals, 72self-recognized as Latina/o or Hispanic, 40 portrayed themselves as Mexican American, and 15 exhibited a Mexican ethnic character. This examination recommends that as grit and interest increase, the level of CDSE increases. This is one of the chief investigations to include how grit and premium are unequivocally related to Mexican American learners' CDSE.

Methodology

3.1 Participants

The participants of this research were the students of senior secondary level (N = 260). The sample was consisted of students from all streams that are science (medical and non-medical), commerce and arts. The study was delimited in Hoshiarpur district, Punjab, India *and Una region of Himachal, India*. The data was collected by purposive sampling technique.

3.2 Instrument (Grit Scale)

The objective of the current study was to validate the Grit Scale developed by Duckworth, Peterson, Matthews and Kelly, 2007 in Indian context. This scale consisted of twelve items given in the table 1.

| S. No. | Items |
|--------|--|
| 1. | I have overcome setbacks to beat an important challenge. |
| 2. | New ideas and projects sometimes distract me from previous ones. |
| 3. | My interests change from year to year. |
| 4. | Setbacks don't discourage me. |
| 5. | I have been passionate with a certain idea or project for a short time but later lost interest. |
| 6. | I am a hard worker. |
| 7. | I often set a goal but later choose to follow a different one. |
| 8. | I have difficulty maintaining my focus on projects that take more than a few months to complete. |
| 9. | I finish whatever I begin. |
| 10. | I have achieved a goal that took years of work. |
| 11. | I become interested in new recreation every few months. |
| 12. | I am diligent attentive. |

Table 1; Items of Grit Scale

The participants had given their responses on five-point Likert Scale that is 1- Not like me, 2- Mostly like me, and 3- Very much like me at all, 4- Not much like me, 5- Somewhat like

Procedure

Consent from the administrator of the institution was taken through email. After getting permission from the administrator of the institution, the questionnaires were distributed among the students. The understudies were informed of the purpose of the visit. The subjects were clearly provided instructions on how to fill out the replies, and their participation in gathering social media information was much appreciated and sought for. It took the understudies fifteen to twenty minutes to complete the survey, which they then sent back to the researcher.

4 Results

4.1 Reliability analysis

The degree to which an estimate of a variable yields a consistent and complete answer is known as reliability (Robinson 2010). Repetition is another aspect of reliability. A scale is considered dependable, for instance, if the results of several measurements taken under the same circumstances show the same pattern (Moser & Kelton, 1985). If the test assesses the same concept and the test items are connected to each other, a high level of internal consistency will exist (Carmines & Zeller, 1979). Generally speaking, the Cronbach Alpha coefficient is used to calculate dependability. The "Likert scales" are the ideal fit for it. The coefficient with the best fit for a scale is .70. Four reliability levels have been suggested by Hinton et al. [20]: a) "magnificent reliability" (0.90 or greater), b) "high reliability" (0.70-0.90), and c) "moderate reliability" (0.50-0.70) and d)

“bad reliability” (0.50 and below) (Hinton et al., 2004). In this study, the value of Cronbach’s alpha was found to be 0.816.

(table2). The value of the reliability coefficient was very much acceptable.

| | |
|------------------|--------------|
| Cronbach's Alpha | No. Of Items |
| .816 | 12 |

Table 2; Value of Cronbach’s Alpha for Grit Scale

4.2 Factor analysis

On the other hand, the value for “Bartlett’s Test of Sphericity” (P value) need to be smaller than .001. This number determines how close important relationships are between the variables. In the current study its value is less than .001 (table 3) and it was acceptable. To understand the degree of variance accounted by the factors, we should have to look at the Eigen-value.

KMO and Bartlett's Test

| | | |
|-------------------------------|--------------------|---------|
| Kaiser-Meyer-Olkin Measure | Sampling Adequacy. | .827 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1.677E3 |
| | Df | 66 |
| | Sig. | .000 |

Table 3; Values of “KMO” and “Bartlett’s Test of Sphericity” for Grit Scale

Total Variance Explained

| Component | Initial Eigen values | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|-----------|----------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.104 | 34.197 | 34.197 | 4.104 | 34.197 | 34.197 | 3.918 | 32.654 | 32.654 |
| 2 | 3.590 | 29.921 | 64.118 | 3.590 | 29.921 | 64.118 | 3.776 | 31.464 | 64.118 |
| 3 | .655 | 5.456 | 69.574 | | | | | | |
| 4 | .620 | 5.169 | 74.744 | | | | | | |
| 5 | .582 | 4.854 | 79.597 | | | | | | |
| 6 | .520 | 4.331 | 83.928 | | | | | | |
| 7 | .441 | 3.672 | 87.600 | | | | | | |
| 8 | .418 | 3.486 | 91.086 | | | | | | |
| 9 | .375 | 3.122 | 94.209 | | | | | | |
| 10 | .331 | 2.758 | 96.966 | | | | | | |
| 11 | .195 | 1.627 | 98.594 | | | | | | |
| 12 | .169 | 1.406 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

Table 4; Percentage of variance and cumulative percentage for Grit Scale

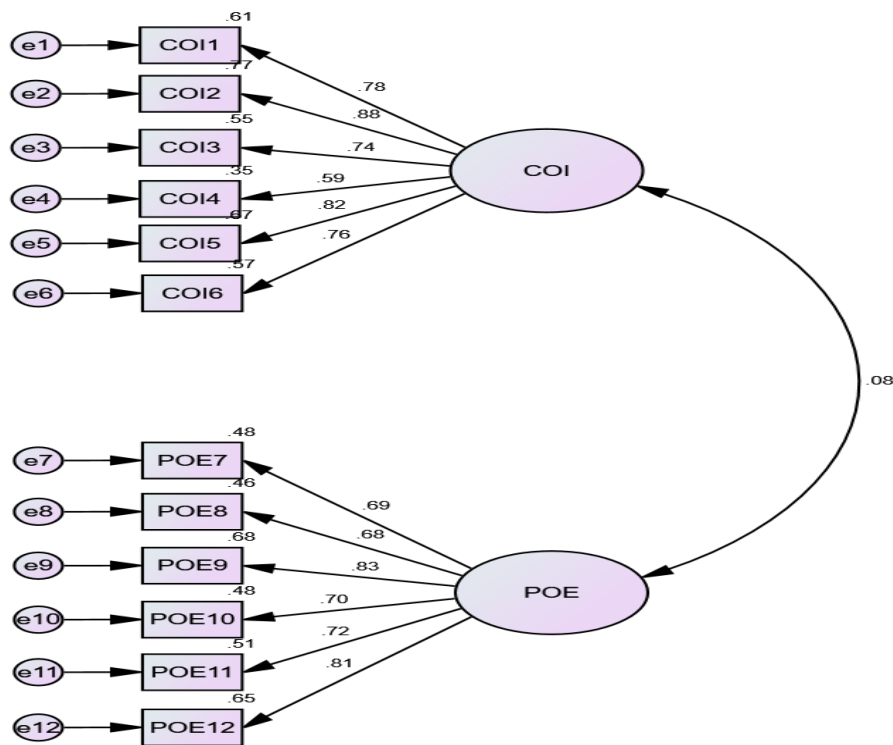
From the component matrix (table 5), it was evident that all the 12 items of the scale were loaded in two factors. The value of factor loading for each item was very high and acceptable (table 5).

Component Matrix

| | Component | |
|-------|-----------|------|
| | 1 | 2 |
| COI1 | .829 | |
| COI2 | .882 | |
| COI3 | .795 | |
| COI4 | .679 | |
| COI5 | .844 | |
| COI6 | .796 | |
| POE7 | | .754 |
| POE8 | | .753 |
| POE9 | | .837 |
| POE10 | | .760 |
| POE11 | | .783 |
| POE12 | | .829 |

Table 5; Component extraction of four items of Grit scale by principal component analysis

4.3 Confirmatory Factor analysis



The fitness estimates of the model are as follows.

| “Measure” | P value | “CMIN/DF” | “RMSEA” | “RFI” | “IFI” | “TLI” | “CFI” |
|------------------|------------------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Benchmark | > 0.05 | < 3 | <0.08 | >0.90 | >0.90 | >0.90 | >0.90 |
| Result | .816 | 1.30 | .034 | .950 | .991 | .988 | .991 |

Table 6; fitness estimates for Grit Scale

Table 6 made it clear that every estimate of model fitness was reasonable and good. The following values are reported: "CMIN" is less than 3 (1.30), "RMSEA" is less than .08 (.034), "RFI" is more than .90 (.950), "IFI" is greater than .9 (.991), "TLI" is greater than .9 (.988), and also greater than .9 (.991). Each of these approximations demonstrated that the existing model was sound and appropriate.

5 Discussion

The aim of this research was to adapt the Grit Scale (Duckworth, Peterson, Matthews and Kelly, 2007) in Indian context. The results of the research were very much acceptable. Reliability analysis, factor analysis and confirmatory analysis gave the awesome results. The reason this research was necessary in the first place was because, students are lacking of concentration as they are distracting due to more use of social media as a result there is lack of determination and passion, which is the basic needs for success. The students need have to develop grit like character strength that is essential for the success as it develops perseverance and passion in them for long-term goals. So as to make Indian students successful in academics,

there is an urgent need to develop grit among the Indian students. So, there is a great need of an instrument to measure the degree of grit.

6 Conclusion

This instrument needs to experience the further examinations in various societies and diverse age bunches in India in various populaces and distinctive scholarly settings. Such equipment is extremely needed at the senior auxiliary level since the learning environment in schools affects how well students do academically. We now understand that, in terms of career, the twelfth grade is the most important for students. In this way, a positive school climate is necessary to enhance students' instructional performance. For senior optional level understudies, we should thus have this kind of tool so that the school climate can be assessed and necessary steps may be implemented.

REFERENCE

- Al-Mutawah, M. A., & Fateel, M. J. (2018). Students' Achievement in Math and Science: How Grit and Attitudes Influence?. *International Education Studies*, 11(2), 97.
- Carmines, E. G., & Zeller, R. A. (1979). Reliability and validity assessment (Vol. 17). Sage publications.
- Chiesi, F., & Primi, C. (2010). COGNITIVE AND NON-COGNITIVE FACTORS RELATED TO STUDENTS' STATISTICS ACHIEVEMENT. *Statistics Education Research Journal*, 9(1), 6-26.
- Chen, C., Ye, S., & Hangen, E. (2018). Predicting achievement goals in the East and West: the role of grit among American and Chinese university students. *Educational Psychology*, 1-18.
- Dalton, N. (2016). Psychological skills linked to success: examining the correlation between grit, stress mindset and decision making.
- Hernández, J. G., Muñoz-Villena, A. J., & Gómez-López, M. (2018). Stress Regulation, Physical Activity, and Perseverance in Spanish Teenagers with Perfectionist Trends. *Sustainability*, 10(5), 1-10.
- Hinton, P. R., Brownlow, C., McMurray, I. & Cozens, B. (2004). SPSS explained, East Sussex, England, Routledge Inc.
- Huang, H. (2015). Can students themselves narrow the socioeconomic-status-based achievement gap through their own persistence and learning time?. *education policy analysis archives*, 23, 108.
- Lee, S., & Sohn, Y. W. (2017). Effects of grit on academic achievement and career-related attitudes of college students in Korea. *Social Behavior and Personality: an international journal*, 45(10), 1629-1642.
- Moser, C. A., & Kalton, G. (1985). Survey methods in social investigation Aldershot. UK: Gower.

- O'Neal, C. R., Espino, M. M., Goldthrite, A., Morin, M. F., Weston, L., Hernandez, P., & Fuhrmann, A. (2016). Grit under duress: Stress, strengths, and academic success among non-citizen and citizen Latina/o first-generation college students. *Hispanic Journal of Behavioral Sciences*, 38(4), 446-466.
- Pack, A. (2018). Thriving in a Fortune 500 Company: A Case Study of Grit, Resilience, and Employee Perceptions.
- Reraki, M., Celik, I., & Saricam, H. (2015). Grit as a mediator of the relationship between motivation and academic achievement. *Ozean Journal of Social Science*, 8(1), 19-32.
- Robinson, J. (2010). Triandis' theory of interpersonal behaviour in understanding software piracy behaviour in the South African context (Doctoral dissertation, University of the Witwatersrand).
- Rojas, J. P. (2015). The relationships among creativity, grit, academic motivation, and academic success in college students.
- Sharkey, C. M., Bakula, D. M., Baraldi, A. N., Perez, M. N., Suorsa, K. I., Chaney, J. M., & Mullins, L. L. (2017). Grit, illness-related distress, and psychosocial outcomes in college students with a chronic medical condition: a path analysis. *Journal of pediatric psychology*, 43(5), 552-560.
- Vela, J. C., Sparrow, G. S., Whittenberg, J. F., & Rodriguez, B. (2018). The Role of Character Strengths and Importance of Family on Mexican American College Students' Career Decision Self-Efficacy. *Journal of Employment Counseling*, 55(1), 16-26.
- Virtanen, P. (2019). Self-Regulated Learning in Higher Education: Basic Dimensions, Individual Differences, and Relationship with Academic Achievement. *Helsinki Studies in Education*.
- Von Culin, K. R., Tsukayama, E., & Duckworth, A. L. (2014). Unpacking grit: Motivational correlates of perseverance and passion for long-term goals. *The Journal of Positive Psychology*, 9(4), 306-312.
- Wolters, C. A., & Hussain, M. (2015). Investigating grit and its relations with college students' self-regulated learning and academic achievement. *Metacognition and Learning*, 10(3), 293-311.