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Construct Validation of Grit

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Abstract

Grit is understood as trait-level perseverance and passion for long-term goals. This is very influential trait in getting success in life thatencompasses two dimensions: Consistency of Interest and Perseverance of Effort. Previous studies have also found that grit is conceptual by related with resilience, hardiness and conscientiousness. It is necessary to validate the concept of grit and study its factor structure across diverse cultures. The present research aimed to explore the construct validation of Grit in Indian context. The sample comprised of 150 adult participants (aged 18–40 years). The Grit Scale, Resilience Scale, Hardiness Scale and NEO Conscientiousness subscaleswere administered on all the respondents and scored as per the instructions given in manual. The data had been analyzed using appropriate statistical analysis.

Keyword: grit, resilience, hardiness, conscientiousness

Introduction

Positive psychology has begun to foster change adolescence's life by directing to promote healthy results. Life is a very challenging task, having more difficulties, hurdles, and struggle in achieving the goals and happiness among human beings. Some people achieve easily, some left and abandon the hope but some people achieve their goal at any cost. Despite of difficulties achieving the goal depends upon the positive attitude that relies on positive psychology.Recent research evidences in psychology highlight the importance and relevance of non-cognitive traits rather than intelligence for success not only in school but in all spheres of life (Borghans, Duckworth, Heckman & Ter Weel, 2008; Moffitt, Arseneault, Belsky, Dickson, Hancox, Harrington, & Sears, 2011). Further, researches have shown that non-cognitive traits are more approachable compared to cognitive ability (Cunha & Heckman, 2009).

The concept of Grit is not new; Aristotle in his writing refers to it as virtues, ideals of persistence and tenacity. In nineteenth century, Galton (1892) wrote: "the most eminent individuals in society are typically blessed with talent, zeal and a capacity for hard labour". Cox (1926) studied 300 geniuses and identified some common traits like perseverance, tenacity and doggedness. Duckworth has defines grit as "sticking with things over long time until you master them." She developed the Grit Scale having sound psychometric properties (Duckworth, Peterson, Matthews & Kelly, 2007).

Rimfeld (2016) challenged this and said that NEO-FFI is the best predictor of success in education as compared to grit, but in the form of a separate creation, grit is a unique aspect of personality that also give the extra contribution in success. After this, Crede, Tynan, and Harms(2016) defined that persistence of efforts is correlated very strongly with conscientiousness that create the trust in the field of life after controlling this trait of personality and summed up the statistics of 88 independent samples and over 66,000 persons; one component of Grit (perseverance of efforts) shows the difference to getting success.

In previous studies found that grit predicts academic achievement, commitment,physical exercise(Reed et al. 2012; Eskreis-Winkler et al. 2014), meaning in life and well-being (Kleiman et al. 2013; Von Culin et al. 2014).Grit is positively correlated with resilience and spirituality, perseverance of efforts, deliberate practice, interests, achievement, conscientiousness and self-control;Sense of mastery and resilience (Gamel, 2014); self-efficacy, psychological flexibility (Gilson, Dix & Lochbaum, 2016); development of perseverance and healthy mentality achievement effort, duties and self-discipline have also been positively associated with grit. Better emotion regulation and personality skillswere determined by grit (Ivcevic& Brackett, 2014). Unlike grit, there are many psychological constructs (resilience, hardiness and conscientiousness) which play important role in our life.The present research aimed to explore the factor structure of Grit in Indian context;by implying two subscales of grit to ensure whether these are quite separate measures or not.The present correlational research was conducted in order to validate theconstruct of grit.

Objective of the study

The present study was done to test the construct validation of grit among adults.

Methodology

Sample:A non-random sample of 150 adults, both male and females, belonging to age group of 18-40 years were selected on the basis of availability from Rohtak, Jind and Karnal districts of Haryana.

Measures:

Grit Scale [GS; Duckworth, Peterson, Matthews & Kelly (2007)]:GS has been used to assess the level of grit of individual through 12 items. It has two distinct factors namely passion and effort. Response category for each statement is based on 5-point likert's scale ranging from 1 to 5 and vice-versa because positive (1, 4, 6, 9, 10, 12) and negative (2, 3, 5, 7, 8, 11) items are included. GS has good internal consistency (Alpha coefficient=0.84). Both factors showed sufficient internal stability and were firmly interactive ($r = 0.59$, $p < .001$).

Resilience Scale[RS; Wagnild& Young (1993)]:This questionnaire was originally developed by Wagnild and Young (1993) to measure resilience level of an individual through 25 items with 7-point likert's scale. The test-reliably reliability is found in between 0.67 to 0.84, which is respectable and suggests consistency and RS concurrent validity over time.

Hardiness Scale [HS; Kobasa (1984)]:The Hardiness Scale consists of 12 'positively' and 'negatively" items with four-point Likert Scale ranging from 0-3 to covering the important dimensions of hardiness as "commitment", "control", and "challenge". Reliability estimates of internal consistency are in 0.90s for total hardiness scores. Thus the score ranges from '-18 to 18' (Kobasa, 1984).

Conscientiousness Scale [CS; Costa & McCrae (1992)]:CS is the subscale of Revised NEO Personality Inventorydeveloped by Costa and McCrae. Conscientiousness scale has six facets and each facet has 8 items so overall 48 items were included of conscientiousness scale. It has 5-points for scaling. The scale hasits internal consistency(Alpha = 0.68 to 0.86) and temporal stability are 0.86 to 0.90(Robins, Fraley, Roberts, &Trzesniewski, 2001).

Procedure

To meet the objectives of the present research work, participants were contacted individually or in a small group and were informed about the purpose of the study. After establishing the rapport with the participant(s), those who gave their written consent were further provided with the standardized instructions verbally for each questionnaire or scale. When the participants were comfortable and ready for testing, set of all measures were given to them along with the demographic and consent form. All the participants were asked to answer each and every item without leaving any statement. Though there was no time limit but requested to give response rapidly and honestly. At the end the session was terminated with the vote of thanks for their cooperation.

Statistical Analyses

To accomplish the objective of the present investigation data reduction technique of factor analysis was applied for the validation of grit construct.

Results and Discussion

To achieve the objectiveof construct validation of grit with resilience, hardiness and conscientiousnessfactor analysis was employed.Harmonious to the main objective of the research diverse concepts related to grit were selected from the literature of differential individual psychology such as hardiness (control, commitment and challenge), resilience (personal competence, acceptance of self and life), and six facets of Conscientiousness namely, Competence, Order, Dutifulness, Achievement Striving, Self Discipline and Deliberation. Data reduction method through SPSS package was used. The data was found adequate (0.818) according to KMO test and Bartlett test with chi square values being 445.985, which was significant and suggested to be fit for multivariate analysis.

Table 1

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.818
Bartlett's Test of Sphericity Approx. Chi-Square	445.985
df	78
Sig.	0.000

Principal Component analysis of the correlation matrix extracted four factors having Eigen value greater than unity (i.e. 1.00) explaining a total of 58.68% variance. The criterion provided four latent roots with eigen values greater than 1.00 accordingly. To obtain the simple structure of the factors the columns were rotated with varimax rotation and Kaiser Normalization technique. According of the criteria of sample size and the factors loadings above .45 for the sample of 150were considered

as significant for interpretation (Hair, Black, Babin& Anderson, 2014).The range of all the variables from 0.49 to 0.79, so all the 13 selected variables were relevant.

Table 2

Varimax rotated component matrix (N=150) as shown in the factor analysis of all variables with significant loadings only.

Variables	Factors			
	I	II	III	IV
Consistency of Interest		.52		
Perseverance of Effort				.53
Personal Competence			.64	
Acceptance of Self and Life			.80	
Control				.82
Commitment		.80		
Challenge	.68			
Competence		.67		
Order		.61		
Dutifulness	.63			
Achievement Striving	.74			
Self-Discipline	.58			
Deliberation	.58			
Eigen Value	**2.50**	**2.36**	**1.48**	**1.28**
Percentage of Variance	**19.26**	**18.15**	**11.38**	**9.89**
Cumulative Percentage	**19.26**	**37.41**	**48.80**	**58.68**
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization, a. Rotation converged in 6 iterations.				

For ease of interpretation, table with loading values of each factor has been explained further.

Table 3

Sorted factor loadings on Factors extracted from varimax rotated factor matrix.

Factor I	Loadings	Factor II	Loadings
Achievement Striving	.74	Commitment	.80
Challenge	.68	Competence	.67
Dutifulness	.63	Order	.61
Self-Discipline	.58	Consistency of Interest	.52
Deliberation	.58		
Factor III	**Loadings**	**Factor IV**	**Loadings**
Personal Competence	.80	Control	.82
Acceptance of Self and Life	.64	Perseverance of Effort	.53

This first factor explains almost 19.26% of variance of the total variance and has an eigen value of 2.50. This factor loads significantly on five variables: one variable of Hardiness (challenge) and four variables of conscientiousness (Deliberation, Self Discipline, Dutifulness, and Achievement Striving).Achievement Striving has highest factor loadings of 0.74, followed by Challenge with 0.68. The other variables which load significantly on this factor are Dutifulness (0.63), Self Discipline (0.58) and Deliberation (0.58), all having positive. The findings reveal that the facet of Hardiness, namely Challenge and facets of Conscientiousness (Deliberation, Self Discipline, Dutifulness, and Achievement Striving) are positively correlated with each other and make a different construct of personality. Previous researches have also shown that hardiness is strongly associated with conscientiousness(Zhang, 2011).According to these findings, it is now established that a person who is high on conscientiousness trait of personality will do challengeful tasks and strive for long term goals. On the basis of these findings, it can be said that people with high conscientiousness would be deliberative, disciplined, punctual, competent, dutiful, orderly, work-alcoholic and achievement oriented.

The second factor explains almost 18.15% of variance of the total variance and has an eigen value of 2.36. This factor loads significantly with four variables: two sub-variables of Conscientiousness (competence and order), one sub-variable of Hardiness (commitment) and one sub-variable of Grit (consistency of interest). Commitment has high factor loadings of 0.85 with followed by Competence with 0.67. The other variables which load significantly on this factor are Order (0.61) and Consistency of Interest (0.52), both are positive one. The findings reveal that the facet of Hardiness, namely commitment, facets of Conscientiousness (Competence and Order) and factor of Grit (Consistency of Interest) are positively correlated with each other. The factor is also a major significant factor and found the unique results in Indian context. Results revealed that hardiness (commitment), grit (consistency of interest) and conscientiousness (Competence and Order) loadings are positive. It is estimated that those persons who score high on hardiness trait would be higher on consistency of interest of grit's facet.Previous studies have also shown the similar results that grit and conscientiousness are associated (Duckworth, Peterson, Christopher, Matthews, Michael, Kelly & Dennis, 2007).

Third factor explains almost 11.38% variance of the total variance and has an eigen value of 1.48. This factor loads significantly on two variables: Acceptance of Self and Life and Personal Competence. The maximum loadings on Acceptance of Self and Life (0.80), are followed by Personal Competence with 0.64. The findings reveal that the facet of Resilience, namely Acceptance of Self and Life and Personal Competence are positively correlated to each other and confirmed the construct of resilience, and it reveals that Resilience is a different construct of personality from Grit, Hardiness and Conscientiousness. Results reveal and suggest that resilience is an independent construct. Resilience is bouncing back in which a person conquers significant calamities, usually adversity and challenging situation in life. The findings are supported by Hardeman and Heilbrun (2016) who also conducted a research and reported that grit and resilience constituted separate factors.

Fourth principal component of analysis accounts for 9.89% variance of total amounts of variance with 1.28 eigen value. This factor loads significantly on two variables: factor of Hardiness, namely

Control and factor of Grit, namely Perseverance of Effort. The maximum loadings on this factoris of Control (0.82), followed by Perseverance of Effort with 0.53. The findings revealed that sub-variable of Hardiness, namely Control and factor of Grit, namely Perseverance of Effort is positively correlated with each other. Previous researches are in line with present research that grit and hardiness are correlated to one another (Lovering, Heaton, Banderet, Neises, Andrews&Cohen, 2017).

Implications of the study

The result of the study found that grit as a construct is different from Resilience; two came out to be distinct and independent factors in Indian context.Consistency of interests (a component of Grit) and Commitment (a component of Hardiness) along with two facets of Conscientiousness (Competence and Order) loaded on the same factor and Perseverance of effort (a component of Grit) and Control (a component of Hardiness) loaded on another factor in Indian culture. The findings of the present study points towards the need to study Grit in culture specific context and further highlights the need for developing a culture specific tool for measurement of grit in Indian population.

Limitations of the study

- All the measures of Grit, Resilience, Hardiness and conscientiousness were in English. So, the respondents who were fluent in English were included in present study. But majority of the Indian population is Hindi speaking.
- The present study was based on self-reported data which could be inherently susceptible to biases.

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