

Development and Validation of Grit Scale for Young Adults

Durrya Al Qarni, Afifa Anjum, and Rafia Rafique

University of the Punjab

Grit is a non-cognitive trait that has received a lot of attention since researches highlights its significant importance in the field of education and wellbeing. Despite the advantages of grit in accomplishing goals, it can be dangerous. This research was carried out to shed light on the importance of non-monotonic impact of grit and aimed at developing and validating the grit scale for young adults of age between 16 and 24 years. Study comprised three phases. In Phase-I, set of items were generated using inductive and deductive approach. In Phase-II, exploratory factor analysis was carried out to examine the dimensionality and internal consistency of grit scale on a sample of 218 young adults using varimax rotation. The resulting Eigen values and scree plot provided evidence for the five factor solution with 22 items labeled as under use of perseverance, optimal use of perseverance, over use of perseverance, harmonious passion and obsessive passion. Findings revealed satisfactory alpha coefficients for the measure of grit. In Phase-III, the convergent and divergent validity of the scale was evaluated by correlating scores on the newly developed measure of grit and the measure of positive and negative affect schedule. The findings of the study could be helpful for the counsellors to employ more effective youth development programs for young adults on the basis of optimal level of perseverance and harmonious passion.

Keywords. Under, optimal, overuse of perseverance, harmonious passion, obsessive passion

Over the last few years, there has been an increasing interest in identifying key factors that make individuals successful and flourish specifically in the field of education and life satisfaction compared to others of equal intelligence (Tough, 2012). Besides cognitive ability, talent and intelligence, high achievers demonstrate a variety of non-cognitive attributes such as motivation, commitment, and

Durrya Al Qarni, Afifa Anjum and Rafia Rafique, Institute of Applied Psychology, University of Punjab, Quaid-e-Azam Campus Lahore, Pakistan.

Correspondence concerning this article should be addressed to Durrya Al Qarni, Institute of Applied Psychology, University of Punjab, Quaid-e-Azam Campus Lahore, Pakistan. Email: durryakhalid82@gmail.com

gratitude that help them succeed in their respective domain (Dweck et al., 2014). One of the non-cognitive factors that have gained a lot of attention during the last few years is grit.

The concept of grit has emerged from the field of positive psychology, where it was defined by Duckworth et al. (2007) as trait-level perseverance and passion for long-term goals. Grit is closely related to the concepts of persistence, endurance, motivation, resilience, self-control, and conscientiousness (Duckworth & Quinn, 2009). Grit refers to persistently working hard towards superordinate goal, sustaining effort over long periods of time despite the obstacles and setbacks one might face. Individuals with high grit continue to work hard, tackle obstacles and setbacks in a positive way and do not abandon a goal even when there is no positive feedback. They are very resilient, self-reliant, hardworking and passionate towards achieving long-term goals and have the potential to achieve their purpose in life (Millward et al., 2016).

According to Duckworth et al. (2007), there are two dimensions of grit namely perseverance of effort and passion. Perseverance refers to a character strength that allows individuals to strive for challenging goals in their respective domains (Peterson & Seligman, 2004). Passion is defined as a strong drive to pursue a certain goal that an individual likes and values, while spending a large amount of time and energy performing that activity (Mueller et al., 2017). The measure of grit was developed and validated by Duckworth et al. (2007) consisting of 12 items, which was later revised to 8 items grit scale by Duckworth and Quinn (2009). The purpose of developing this scale was to determine the extent at which individuals put enough effort and maintain interest over years to achieve their goals.

Vallerand et al. (2003) postulated the dualistic model of passion and described two types of passion categorized as harmonious passion and obsessive passion. Harmonious passion emerges when an activity is freely integrated into one's identity and individual performs that activity with a sense of determination and purposefulness. In this type of passion, individuals value their passion; spend a lot of time on the projects of their interest but at the same time able to control their urge to perform it willingly (Vallerand, 2010). Obsessive passion is defined as the increased tendency of an individual to feel obsessively passionate when accomplishing long term goals. In this type of passion, individual cannot control himself to be interested in the task he or she likes rather feel compelled to perform that activity (Vallerand, 2015). Consistent with the dualistic model, it has been found that harmonious passion is positively related with academic achievement and wellbeing while obsessive passion is unrelated

(Vallerand, 2008) and sometimes positively related with maladaptive outcomes (Vallerand et al., 2007).

Relationships between grit and other personality traits have been investigated in order to comprehend a deeper understanding of the concept of grit as a conceptual theoretical framework in empirical research. Grit has been found to be correlated to numerous variables including self-control (Duckworth & Gross, 2014), resilience (Karaman et al., 2019), growth mindset (Lee & Jang, 2018) and positive affect (Singh & Jha, 2008). Researchers examining the relationship between grit and personality traits have found positive correlations between grit and four big five dimensions; openness to experience, conscientiousness, agreeableness and extraversion (Duckworth et al., 2012; Ivcevic & Brackett, 2014).

Research into grit has also extended into the domains of education, health and wellbeing. Previous researchers have found positive relations between grit and academic outcomes suggesting that individuals with high levels of grit show greater work engagement, relatively higher retention rate, academic achievement and self-efficacy compared to those with lower levels of grit (Duckworth et al., 2009; Duckworth & Quinn, 2009; Reed & Jeremiah, 2017). In a study conducted by Guerrero-Vaca et al. (2019) revealed that individuals with high level of grit were less likely to engage in negative social risk behaviors including substance abuse and gambling. Other significant findings revealed the negative relationship of grit with depression and the positive relationship with gratitude (Kleiman et al., 2013), overall life satisfaction (Bowman et al., 2015) and happiness (Singh & Jha, 2008). In Pakistan, grit was considered a variable crucial in reducing depression (Majeed et al., 2019), developing second language proficiency among students (Lodhi et al., 2019), enhancing resilience, boosting quality of life (Ayyub et al., 2022) happiness and life satisfaction (Ain et al., 2021; Khan, 2017).

Although grit has gained much attention in the field of education and wellbeing, recent researches has raised serious concerns on the monotonic view of character strengths; perseverance (Grant & Schwartz, 2011). Peterson (2006) proposed a preliminary theoretical framework that identifies the darker sides of character strengths (grit). He suggested that extent to which a person uses extreme sides of strength, either in one side or the other, is an indication of psychological disorders. Grant and Schwartz (2011) reported that strengths in the categories of knowledge, courage, humanity, and justice can transform into negative outcomes when use in excessive amount. These findings are in line with a model of individual differences developed by Niemiec (2014). Model is based on

Aristotle's golden mean concept, which states that traits are either positive or negative on a continuous scale ranging from being overused to underuse of character strength. He defined underuse of character strength as unexpressed strength (perseverance, hope, optimism, and etc.) in a situation that requires certain action, overuse of character strength as overexpressed strength in relation to a specific circumstance and optimal use of character strength as appropriate degree of expression in a given situation. Following model is an illustration of a continuum of strengths usage that describes strength use ranging from under use to overuse with optimal use in middle.

To fill this gap in literature, it has been considered necessary to develop a measure of grit to measure the dark sides of grit based on model of the continuum of quality of strength use (Niemic, 2019). There are many standardized grit measures such as Grit Scale (Duckworth et al., 2007), Academic Grit Scale (Clark & Malecki, 2019), Grit Scale (Sturman & Zappala-Piemme, 2017), Triarchic Model of Grit Scale (Datu et al., 2017). However, these measures have only examined monotonic perspective of grit and defined the grit on two continuum; high perseverance and low perseverance which is a one-way approach to strengths. Moreover, authors did not include the types of passion such as harmonious passion and obsessive passion as most of the researchers revealed the negative association between obsessive passion and flourishing (Donahue et al., 2009; Vallerand et al., 2006). Researchers neglect the possibility that grit (character strength) can be overused so that it can no longer be considered as character strength rather result in obsessive compulsive behaviors (Littman-Ovadia & Freidlin, 2020). Therefore, the present study intended to define and measure the darker sides of grit in the form of under and overuse of perseverance as well as their conventionally counterpart that is optimal use of perseverance along with the description of both types of passion (harmonious passion and obsessive passion).

The present study defined under use of grit as an increased tendency of an individual to not make enough effort to achieve his/her goal. Individuals with under use of perseverance often give up whenever they face trouble achieving their goal (Freidlin et al., 2017). Optimal use of grit represents the balance between the two types of extremes. By using grit at optimal level, one may feel both enthusiastic and tenacious as he or she strives to meet long-term goals while experiencing the setbacks and challenges. Individuals who use their grit at optimal level are more prone to feel harmoniously passionate; hence they find easy to get to a golden mean (Niemic, 2018). The overuse of perseverance and obsessive passion is referred

to as the “too much of a good thing effect”. Using strength too much in range in certain circumstances found to have the effect of reducing the strength's favorable attributes while turning it into a negative trait (Kern, 2017). Moreover, individuals who feel obsessively passionate are more prone to persist even at the cost of their wellbeing. Another factor that makes the concept of grit important to study in Pakistani culture is that individual cultural and social background affects the experiences of grit differently (Datu et al., 2017). Hasan et al. (2020) reported that the difference between individualistic and collectivist cultures may affect the structure of grit. However, literature related to the under-optimal-over use of grit is not available in Pakistan and requires extensive and mindful consideration (Mohammad, 2016). Therefore, the present study fills this gap by exploring the experience of under-optimal-over use of grit in a non-western collectivist culture of Pakistan. The finding of this study will help counsellors to increase grit optimally (perseverance & passion) which will boost optimism, life satisfaction and meaning in life in young adults.

Objectives

The objectives of the study were as follows:

1. To develop a self-report measure of grit for young adults.
2. To establish the psychometric properties of the measure of grit for young adults.
3. To explore the gender related differences on grit among young adults.
4. To establish the convergent and divergent validity of self-report measure of grit for young adults.

Method

The present study was conducted in three phases.

Phase 1: Exploring Phenomenology and Generation of an Initial Item Pool

In phase I, items pool was generated for the development of the measure of grit. For this purpose, four steps were followed; in the first step, phenomenology of grit was identified by the means of conceptualization of construct. The construct was conceptualized by the researcher after reviewing the grit theory as well as existing literature on grit (Duckworth et al., 2007). Grit refers to an individual

tendency to feel harmoniously passionate and optimally persistent in achieving long term goals despite the inherent and associated setbacks one might face. In the second step, a pool of items was generated for the development of measure of grit by adopting inductive and deductive approach. For this purpose relevant literature on grit was thoroughly reviewed and semi-structured interviews were conducted in order to identify the phenomenology of grit. In the third steps items were reviewed by experts and finalized before empirical testing. In the fourth step a pilot testing was done to confirm the comprehension level of items for the sample.

Literature Review

The review of indigenous and international literature was done in detail to study the phenomenon of grit. Literature review included previously existing scales as well as researches on grit.

Semi-Structured Interviews with Participants

After reviewing the existing literature, a semi-structured interview guide was prepared in order to gather rich information about the unique characteristics that are present in the individuals who use their perseverance optimally and feel harmoniously passionate when achieving long term goals. Four females and three males were interviewed for the generation of item pool, by following purposive sampling technique. Only participants graduated with first division were recruited for the interview. Their age ranged between 20-27 years. The rationale behind these criteria is to thoroughly understand the personality characteristics of hardworking students, their attitude towards learning, perception of success, challenges they had encountered and strategies to overcome these challenges. Due to the outbreak of the COVID-19 virus, the interviews were held via Google meet. With the permission of respondents, interviews were recorded on a phone for the purpose of item generation. Verbal consent was taken from the participants where they were certain about their confidentiality and willingness to withdraw from interview anytime when they sought. Statements of the participants were analyzed qualitatively and it was found that students with high level of grit were more likely to master the skills, rather than outperforming others. They continue to persevere in the face of adversity, maintaining interest over years despite facing barriers. These individuals were able to strongly define their life goals and persist towards the accomplishment of these goals with the intention of mastering the skills.

Experts' Review of the Items

In the third step, 25 questions obtained from the analysis of the semi structured interview guide and existing literature review were combined together in the form of a list of items. The content of the items was thoroughly reviewed by the researcher and the experts (psychologists) for clarity and fidelity to the relevant construct, language comprehensibility, and redundancy. Moreover, each item was assessed for its suitability to the relevant dimension of grit. This exercise resulted in 22 items (recommended by the experts). The selected items were checked for their wording and language comprehension and few were improved by rephrasing.

Pilot Study

In the fourth step, all the selected 22 statements were pilot tested on 15 students from public and private universities in order to confirm the comprehension level for the sample. All the items were reported to be understandable and clear and no respondent reported any problems therefore, all the items were retained for the final version of the measure.

Phase II: Dimensionality and Internal Consistency of the Grit Scale

In phase II, reliability analysis was performed to assess the internal consistency of the items of grit, exploratory factor analysis was conducted on 218 participants to determine the internal factor structure of the items for the final measure of grit.

Sample

For establishing reliability and factors, sample consisted of 218 participants including Boys ($n = 98$ and Girls ($n = 120$) recruited from both private and public educational institutions. Participant's age ranged from 16-24 years ($M = 20.73$, $SD = 2.0$). The sample size was chosen in accordance with the conception that for factor analysis, subject to item ratio should be at least 10:1 (Nunnally, 1978). The present study included students who are currently studying in colleges or universities i.e. students of intermediate, graduation and post-graduation.

Procedure

Respondents were recruited from different public and private institutions of Lahore. Due to the outbreak of the COVID-19 virus, Grit scale was administered via online form. Respondents were

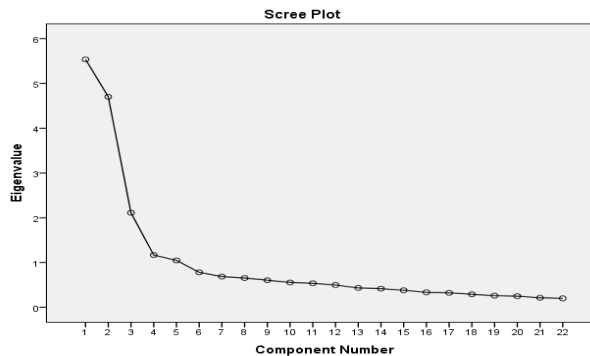
instructed to fill the demographic information sheet first, followed by the questionnaire. They were educated about the purpose of study and their right to leave it at any moment. Furthermore, they were informed that the dataset would only be used for research purpose. Results were interpreted by analysing the data and conclusions were drawn.

Results

Before carrying out EFA, few assumptions were empirically tested to assess the data to be suitable for factor analysis: the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (KMO = .84) (Kaiser, 1970; Kaiser & Rice, 1974) as well as Bartlett's Test of Sphericity ($\chi^2 = 2346.93$ (231), $p < .001$), (Bartlett, 1954). Taken together, values of KMO measure of sampling adequacy and Bartlett's Test of Sphericity ensured that the data matrix collected for present research was appropriate enough to undergo a factor analysis.

Figure 1

Scree Plot Showing Identified Dimensions of the Grit Scale



Scree plot in the [figure 1](#) recommended five factor solutions with the description of several breaks in the curve. As it indicates that the most significant break on the scree plot was between second and third factor which provide evidence for the selection of number of factors.

Exploration of Factor Structure of Grit Scale

An exploratory factor analysis (EFA) was performed in order to determine the factor structure of the grit scale. The EFA was further followed by varimax rotation. This rotation was adopted to identify the shared patterns between items; which item correlate with which factor. The factor loadings of 22 items with their respective dimensions along with the communalities are represented in [Table 1](#).

Table 1
Factor Loading and Communalities of Grit Scale (N=218)

#	Items	F1	F2	F3	F4	F5	h^2
1	18	.74	-.20	.30	-.02	-.05	.69
2	19	.83	-.17	.16	.07	.04	.76
3	20	.74	-.27	.13	-.01	-.01	.61
4	21	.65	-.22	.25	-.07	-.03	.55
5	22	.75	-.17	.32	.02	.12	.72
6	13.	-.28	.72	.00	.20	-.08	.66
7	14	-.27	.73	.05	.05	-.05	.62
8	15	-.21	.70	-.10	-.00	-.14	.58
9	16	-.04	.85	-.08	.00	.04	.73
10	17	-.14	.76	.04	.14	.00	.63
11	9	.23	-.00	.79	.21	-.02	.72
12	10	.27	-.00	.79	.02	-.21	.75
13	11	.23	.02	.83	.08	-.04	.75
14	12	.27	-.07	.80	.12	-.06	.74
15	5	.02	-.01	.06	.78	-.21	.66
16	6	.02	.14	.13	.70	-.29	.62
17	7	.01	.08	-.00	.88	-.09	.79
18	8	-.10	.10	.23	.65	-.22	.55
19	1	.06	.11	-.12	-.17	.75	.63
20	2	-.00	-.09	-.08	-.18	.77	.65
21	3	-.02	-.15	.00	-.31	.67	.58
22	4	.01	-.12	-.11	-.44	.50	.49
Eigen Value		5.5	4.6	2.1	1.1	1.0	
% Variance		25.17	21.37	9.60	5.30	4.76	
Cumulative % Variance		25.17	46.55	56.15	61.46	66.2	

Note. Boldface figures reflect factor loadings above .45.

As shown in [Table 1](#), all the 22 items were found to have factor loading more than .45 (ranging from .88 to .50) on the five factor solution. Therefore the standard for an item to be considered a significant contribution to the factor was met. Eigen value for factor 1 was 5.5 whereas the Eigen value for factor 2, 3, 4 and 5 were 4.6, 2.1, 1.1, and 1.0 respectively. As presented in the table, no item was loaded above .45 on more than one factor. Therefore the standard for an item to be loaded on a single factor was also met ([Worthington & Whittaker, 2006](#)). Moreover, items' communalities ranged between .79 and .55, with an average communality of .67 falls above [Costello and Osborne \(2005\)](#) recommended benchmark of .40. Given such high factor loading, this five factor solution yielded the most interpretable solution. Therefore, the five factor structure of Grit Scale was retained for the final measure of grit.

Interpretation and Naming of the Factors

Interpretation and naming of subscales of grit scale was based on rotated component coefficients. Contradictory to the previously measures of grit, this newly measure of grit generated items based on the literature of the western and eastern perspectives. Previous indigenous researches into the validation of the measure of grit are limited in the sense that researchers did not consider the concept of overuse of perseverance and obsessive passion while examining the relationship between the measure of grit and other variables (Arif et al., 2021; Iqbal et al., 2023). This research fills the gap by incorporating the concept of under-optimal-over use of grit within the structure of grit. The present study yielded five factors. Five items that were loaded on the first factor reflected the tendency of an individual to feel obsessively passionate when accomplishing long term goal. It was labeled as obsessive passion. The second factor was conceptualized as harmonious passion. It was consisted of 5 items characterized by the tendency of an individual to feel harmoniously passionate despite the setbacks one might face. Four items loading on the third factor reflected the individual tendency to persist even when cost surpass the benefits. It was conceptualized as over use of perseverance. The fourth factor consisted of four items dealing with the individual ability to persist optimally when confronting with challenges. It was conceptualized as optimal use of perseverance. Four items loading on the fifth factor reflected the individual tendency to become disinterested in the goals that takes more than a few months to complete. It was conceptualized as under use of perseverance. Moreover, to examine the item to scale correlation among selected items Pearson product moment correlation analysis was performed. It was found that all the selected 22 items significantly correlate with their respective scale total ranged from .743 to .869.

Table 2
Descriptive Statistics and Alpha Coefficients of the Grit Scale (N=218)

Subscales	α	Range		M	SD	Skew
		Min	Max			
Under use of Perseverance	.74	4-19	4-20	9.33	3.69	.90
Optimal use of Perseverance	.81	4-20	4-20	15.54	4.01	-.94
Over use of Perseverance	.88	4-20	4-20	12.56	5.17	-.06
Harmonious Passion	.85	5-25	5-25	17.76	5.21	-.60
Obsessive Passion	.87	5-25	5-25	15.27	6.23	-.17

As shown in Table 2, all the factors of grit scale were found to be internally consistent.

Table 3
Inter-Correlation Among the Subscales of Grit Scale (N=218)

Subscales	1	2	3	4	5
1. Under Use of Perseverance	-	-.592**	-.232**	-.181**	.028
2. Optimal Use of Perseverance		-	.266**	.217**	-.003
3. Over Use of Perseverance			-	-.083	.540**
4. Harmonious Passion				-	-.456**
5. Obsessive Passion					-

* $p < .05$, ** $p < .01$.

As shown in Table 3, all the subscales of grit were found to be statistically significant in expected direction. However the correlation of obsessive passion with optimal and underuse of perseverance was not significant implying that these subscales are almost orthogonal in nature.

Table 4
Gender Differences on the Subscales of Grit (N = 218)

Subscales	Men (n = 98)		Women (n = 120)		t	p	Cohen's d
	M	SD	M	SD			
Under use of perseverance	9.76	4.2	9.00	3.09	1.51	.13	.20
Optimal use of Perseverance	15.02	4.2	15.95	3.78	1.7	.08	.23
Over use of perseverance	11.26	5.3	13.59	4.78	3.3	.00	.45
Harmonious Passion	17.84	4.8	17.77	5.43	.21	.83	.01
Obsessive Passion	13.15	5.9	16.96	5.92	4.7	.00	.66

Note. * $p < .05$; $df = 216$.

As shown in Table 4, results revealed that the women obtained high score on over use of perseverance and obsessive passion when compared to men.

Phase III: Establishing the Construct validity of Measure of Grit

One of the aims of scale development is to assess the construct validity of a reliable measure (Kahn, 2006). Construct validity is defined as the degree to which a scale precisely measures the same construct it was intended to measure. As recommended by Campbell and Fiske (1959), it is of essential importance to evaluate the convergent validity as well as divergent validity of a measure when establishing its construct validity. Convergent reliability refers to the degree to which two measures of the same trait correlates with

another. Divergent validity refers to the degree to which two measures of the different trait contradict with each other. For this purpose the correlation of the grit scale with positive and negative affect schedule was computed. The reason to examine the relationship between grit and positive and negative affect schedule was that the individuals who are passionate and work hard to achieve their goals are more prone to experience high level of positive affect (Singh & Jha, 2008; Strayhorn, 2014). However, the individuals who often give up when confronting with obstacles experience high level of negative affect.

Sample

For establishing validity, sample consisted of 148 participants (Boys = 61, Girls = 87). Sample used in this phase was a subset of the sample recruited for phase 2. Participant's age ranged from 16-24 years ($M = 20.7$, $SD = 2.18$).

Measures

Following tools were used for the purpose of validation of measure of grit.

Demographic Information Sheet. Demographic information sheet consisted of information including age, gender (male/female), family type (joint/ nuclear), and monthly income, year in college / university, level of education, any part time (yes/ no) and study hours per week etc.

Grit Scale. The Grit Scale is a 22 item self-report measure that was designed during phase 1 of this study. The measure of Grit assesses two dimension namely perseverance of effort and passion. The 22 items of measure of grit were analyzed using principle component analysis followed by the varimax rotation. Respondents use a 5 point likert type scale on which 1 represent *strongly disagree* and 5 represents *strongly agree*. The five subscales of the measure of grit were labeled as; under use of perseverance (item 1, 2, 3 & 4), optimal use of perseverance (item 5, 6, 7 & 8), over use of perseverance (item 9, 10, 11 & 12), harmonious passion (13, 14, 15, 16, & 17) and obsessive passion (18, 19, 20, 21 & 22). The cronbach alpha values for the under use of perseverance, optimal use of perseverance, over use of perseverance, harmonious passion and obsessive passion are .74, .81, .88, .85, and .87 respectively.

Positive and Negative Affect Schedule Short Form (Thompson, 2007). Positive and negative affect was assessed by using the 10 item Positive and Negative Affect Schedule, Short Form (I-PANAS-SF).

This scale was designed to assess one's ability to feel positive and negative emotions. It has two subscales namely Positive Affect and Negative Affect. Positive affect and negative affect were measured by five items separately. Participants were requested to indicate how often they feel emotions such as hostile, ashamed, alert and determined on a measure where one indicated "Very slightly or not at all" and five indicated "Extremely". In this study, Cronbach alpha value for positive affect and negative affect were .84 and .85 respectively.

Procedure

The procedure was followed same as already mentioned in phase II of the study.

Results

For convergent validity, it was expected that the two subscales of grit (optimal use of perseverance & harmonious passion) would be positively associated with positive affect and the rest of three subscales of grit (under use of perseverance, over use of perseverance and obsessive passion) would be positively associated with negative affect.

Table 5

Correlation of Grit with Positive and Negative Affect (N=148)

Subscales	Positive Affect	Negative Affect
Under use of Perseverance	-.51 **	.42 **
Optimal use of Perseverance	.63 **	-.44 **
Over use of perseverance	.10	.20*
Harmonious Passion	.35 **	-.48 **
Obsessive passion	-.15	.40 **

Note. * $p < .05$, ** $p < .01$.

In sub-scales of grit as shown in the Table 5, optimal use of perseverance was positively correlated with positive affect ($r = .63$, $p < .01$) whereas, an inverse relationship was found for negative effect with harmonious passion ($r = -.48$, $p < .01$) and optimal use of perseverance ($r = -.44$, $p < .01$). Obsessive passion, under use of perseverance and over use of perseverance has shown a positive significant relationship with negative affect ranged from ($r = .20$, $p < .05$ for over use of perseverance to under use of perseverance $r = .42$, $p < .01$) whereas an inverse relationship was found between under use of perseverance and positive affect ($r = -.51$, $p < .01$).

Discussion

The present study was designed to develop and validate the self-report measure of grit. It contributes to a better understanding of the role of under-optimal-overuse of grit for young adults and provides unique insights that have not been explored in this detail before. Previous measures of grit developed by [Duckworth and Quinn \(2009\)](#) have only examined monotonic perspective of grit which is a one-way approach to strengths and author didn't describe the types of passion (harmonious & obsessive passion). Therefore, this study extends the on-going debates on grit and shifts its focus from a positive personality trait to a more multifaceted one.

The present study was conducted in three phases. In first phase, 22 items were generated by adopting inductive and deductive approach. The grit theory and the model of the continuum of quality of strength use ([Niemiec, 2019](#)) provided the conceptual foundation for the generation of items. In phase II, an exploratory factor analysis was performed on the 218 participants to determine the internal factor structure of the generated items. The resulting eigenvalues and scree plot recommended five factor solutions for the final measure of grit. The 22 item grit scale was also found to have a high internal consistency as all the subscales of the measure of grit exhibited a high internal consistency ranging from .74 to .88.

The first factor reflected the tendency of an individual to feel obsessively passionate when accomplishing long term goal. It was conceptualized as obsessive passion. The second factor was conceptualized as harmonious passion. It was consisted of 5 items characterized by the tendency of an individual to feel harmoniously passionate despite the setbacks one might face. The present study contradicts with the previous measures of grit in a sense that the previous measures did not describe the types of passion ([Clark & Malecki, 2019](#); [Duckworth et al., 2007](#)). The present study developed these factors based on dualistic model of passion given by [Vallerand et al. \(2003\)](#) who described two types of passion; harmonious passion and obsessive passion. [Philippe et al. \(2009\)](#) strengthened this idea and suggested that being harmoniously and obsessively passionate about any long term goals may have both positive and negative effects on one's quality of life. Researchers studying the distinct effects of both types of passion revealed that individuals with harmonious passion are able to balance their interest with daily life activities and are more likely to experience positive emotions, enhanced concentration ([Forest et al., 2011](#)) and flow ([Vallerand et al., 2003](#)). On the contrary individuals with obsessive passion find difficult to control their urge

when pursuing their goal and are more likely to experience negative emotions (Vallerand et al., 2006) and aggression (Donahue et al., 2009).

Four items loading on the third factor reflected the individual tendency to persist even when cost surpass the benefits. It was conceptualized as over use of perseverance. Current measures of grit (Clark & Malecki, 2019; Datu et al., 2017; Duckworth et al., 2007) are only focusing on the positive sides of grit (perseverance of effort & passion) while neglecting any potential negative effects. However, recent researchers raised serious concerns about this one sided view of grit (Credé et al., 2017; Lucas et al., 2015). Therefore, this research takes a first step and manifests the potential downsides of high levels of grit. This factor gets supported from the model of Continuum of Optimal Use of character Strengths presented by Niemiec (2019) which states that traits are either positive or negative on a continuous scale ranging from being overuse to underuse. Schwartz and Scharpe (2006) suggested that character strengths such as perseverance may have both positive and negative extremes, offering better understanding of the role that overuse of perseverance serves in psychopathology. Littman-Ovadia, and Freidlin (2020) conducted a research on character strengths revealed that over use of perseverance might result in obsessive compulsive behaviors. Rashid (2015) described symptoms of major DSM psychological disorders in terms of excess or lack of character strengths. He reframed the under use of perseverance of effort symptoms as slackness and laziness and over use of perseverance symptoms as obsessiveness, fixation, pursuit of unattainable goals.

Pakistan is a collectivist culture, where individuals have significant pressure on their lives from the people around them especially their parents. Children hold their parents in an esteem position and accept their decisions unquestionably (Bibi et al., 2020; Zahra & Salem, 2021). In most cases, children assent to their parent's wish and struggle in the chosen domain at the cost of their long-term interests and desires. They continue to persevere in the new field without even realizing that the goal set by their parents is not attainable as every individual has a unique aptitude and interest in a specific field. This individual attempt to reach unattainable goals may affect his/her wellbeing, just as it can occur in case of insufficient effort (Schwartz & Scharpe, 2006). This finding is significant for researchers in collectivist cultures as it provides initial evidence for these theoretical prepositions by examining the darker sides of grit in detail. The fourth and fifth factor named as optimal use of perseverance and under use of perseverance. These two factors get support from the

continuum of optimal Use of character strengths given by Niemiec (2019) that highlights the importance of under-optimal-over use of perseverance of effort. Niemiec (2019) described that individuals who use perseverance optimally put enough effort to achieve their goals even in the face of obstacles and setbacks. They consider demanding tasks as a challenge and remain determined no matter how long it takes to get accomplished. However, individuals who underuse perseverance often give up whenever they face trouble understanding task (Schwartz & Scharpe, 2006). Littman-Ovadia and Freidlin (2020) supported this model and reported that individuals who use their strengths optimally are more prone to experience life satisfaction and flourishing. On the contrary under use of strength is positively related with depression (Freidlin et al., 2017). Thus, all of these subscales are indigenously designed with the goal of measuring under-optimal-over use of grit among young adults.

After determining the reliability of scale, construct validity (convergent validity as well as divergent validity) of grit scale was also determined by evaluating its association with positive and negative affect schedule (Phase III). Results revealed that individual who feel harmoniously passionate and use perseverance optimally are more prone to experience higher positive affect. However, the individuals who often given up when confronting with challenges report high level of negative affect. This finding is consistent with the previous researches conducted by Singh and Jha (2008) who found the positive correlation between grit and positive affect. Positive emotions such as perseverance helps the individuals to exhibit greater interest towards their long-term goals while developing social and intellectual resources (Strayhorn, 2014). On the contrary, negative affect provide a foundation from which adults often lost passion and give up in their goal pursuit.

The relationship of over use of perseverance and obsessive passion with positive and negative affect is unexplored yet as the previous researches have looked only at the monotonic version of grit, which is a unidirectional approach to perseverance and passion. Results revealed that obsessive passion and over use of perseverance were positively related with negative affect implying that the individuals who feel obsessively passionate and overuse their perseverance continue striving for challenging pursuits even at the cost of their wellbeing. And at the same time if these individuals are not able to achieve their goal, they start feeling stress which in turn contributes to the negative emotions (Littman-Ovadia & Freidlin, 2020). On the other hand, the relationship of positive effect with obsessive passion and over use of perseverance was not significant.

This finding can be explained by the fact that the negative and positive emotions scores are not certainly correlated with each other noting that the presence of negative emotions does not fully exterminate the chances of experiencing positive emotions (Schmukle et al., 2002).

In the current research, gender differences on the measure of grit were also examined. Results revealed that the women when compared to men are more prone to feel obsessively passionate and show non-productive perseverance even at the cost of their wellbeing. However, it was determined that the under use of perseverance, harmonious passion and optimal use of perseverance which were subscales of grit showed no significant differences in terms of gender. This is not an unexpected finding as majority of the data was recruited from medical colleges. It is understood that the student who are enrolled in medical colleges have to put enough effort when perusing their goal regardless of their gender. Finding of this study supported earlier researches who reported no gender differences (Batres, 2011; Duckworth et al., 2007). However, previous researches that have used grit scale did not incorporate the concept of over use of perseverance and obsessive passion. Since, this is the first study in Pakistani culture that have examined the differences in overuse of perseverance and obsessive passion in terms of gender, future researches need further exploration to generalize the finding of this study.

Conclusion

The purpose of this study was to develop awareness regarding character strengths (grit) and how to optimally use them in order to boost individual resilience and flourishing. Evidently, 22 item measure of grit is a highly reliable and validate tool for young adults of age between 16 and 24 years to assess one's ability to feel harmoniously passionate and optimally persistent in achieving long term goals despite the difficulties. The newly developed measure of grit retains the major aspects of under-optimal-over use of perseverance along with the both dimensions of passion and meets all the psychometric standards.

Limitations and Suggestions

Like other researches this study also had some limitations. Firstly, the sample size may not represent the whole young adult's population as only young adults who were enrolled in colleges/universities were incorporated. It is recommended to include other occupations such as employees and teachers; this will also beneficial

to increase the validity of results. This study was undertaken during the outbreak of coronavirus pandemic. In this situation, adults were already more prone to experience stress as well as causing anxiety and despair (World Health Organization, 2020). This may be the source of the large number of adults recruited in this study to adapt overuse of perseverance and obsessive passion. For the present research, subjective self-reported measures were employed. Therefore, a more objective psychological assessment of adults would be more beneficial in terms of levels of grit. Also, due to the nature of study design (cross-sectional) causation claims cannot be established. This study used quantitative research method for studying the relationship between studied variables. Future researches can be carried out by using longitudinal or experimental research design as it bring more interesting facts about multi foci nature of constructs while establishing the causal inferences.

Implications

The results of this study are significant because they helped in validating the model of a continuum of grit by revealing that character strength (grit) can transform into negative outcomes when use in excessive amount. This approach distinguishes strengths-based usage from under and overuse. Optimal grit usage is associated with positive affect while the extreme forms of grit usage either in both directions are associated with negative affect. The findings of this study may be utilized to establish the strength-based therapies/ interventions that can be beneficial for increasing positive emotions in students. The goal of these therapies should be refined from an increased utilization of grit to a focus on optimum utilization of grit. In these interventions, awareness regarding the continuum of grit usage should be provided to the students in order to foster a more varied knowledge of optimal use of perseverance and harmonious passion. Students flourishing and, hence, their resistance to stress improves when they understand how to maximize their grit at optimal level.

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