

RESEARCH ARTICLE

Grit as a Mediator between Core Self-evaluations and Mental Health Complaints: The Moderating Role of Workload

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Abstract

The present study focuses on the possible mediating effect of the grit concept in the relationship between core self-evaluations and mental health complaints. It also examines the moderating role of workload in the relationship between core self-evaluations and grit. The data was collected online from a convenience sample of 224 employees (55.4% females) and analyzed with PROCESS macro. The results brought support to the moderated mediation model in which grit partially mediates the relationship between core self-evaluation and mental health complaints, and workload moderates the relationship between core self-evaluation and grit. Overall, our results emphasize the positive impact of core self-evaluations and grit on health complaints while highlighting the boost effect of workload.

Keywords

grit, core self-evaluations, workload, mental health complaints

Introduction

Maintaining good mental health is essential for people to lead healthy and productive lives. In 2018, on average, one in nine adults (11%) in EU countries had symptoms of psychological distress, and in 2017 there were 11 suicides per 100,000 inhabitants (OECD/European Union, 2020). In addition to the negative impact on individuals, poor mental health also has a negative impact on organizations (Kessler et al., 2009). For example, several studies have found significant annual losses in human capital costs and productivity associated with poor mental health (e.g., 36 billion dollars; Kessler

et al., 2009, 11.8 billion Australian dollars; Lee et al., 2017).

Employees with high levels of personal resources (e.g., core self-evaluations) are more confident, energetic, and better equipped to face challenges and recover quickly from work demands (Desrumaux et al., 2015). These employees are also associated with sustainable individual and organizational performance, such as greater customer satisfaction and loyalty, productivity, safety, and overall profitability, as well as reduced turnover and absenteeism (Spreitzer & Porath, 2012; Harter, Schmidt & Hayes, 2002). According to the Conservation of Resources theory (COR, Hobfoll, 2001), personal

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resources are essential for promoting well-being and buffering against stressors. Both core self-evaluation and grit can be considered personal resources, and numerous studies have shown that these concepts are associated with several aspects of well-being in most studies (e.g., McKee-Ryan, Song, Wanberg, & Kinicki, 2005; Muenks, Wigfield, Yang, & O'Neal, 2017). At the same time, some studies suggest a positive link between the components of core self-evaluations and grit. Studies that indicate the direction of the relationship between grit and parts of CSE show that these components predict grit (e.g., locus of control and self-efficacy). Grit is a relatively new concept in the literature; therefore, the literature on the antecedents of grit is still young, and much more research is needed to uncover how grit can be developed (Van Zyl, Olckers, & van der Vaart, 2021, p. 175). Also, no studies have verified the possible mediation of the concept of grit in the relationship between core self-evaluations and mental and/or physical health. The Job Demands-Resources (JD-R) theory (Bakker & Demerouti, 2017) postulates that high job demands (e.g., workload) may exhaust employees' resources and lead to energy depletion and health problems. Also, the extension of the original JD-R model has included employees' personal resources (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007), and subsequent studies have shown that positive self-evaluations (including self-efficacy and self-esteem) or locus of control can mitigate the negative impact of job demands and, at the same time, have a positive relationship with work engagement and performance. Thus, we expect the workload to play a significant moderating role in this model.

This paper aimed to test the mediating role of grit in the relationship between core self-evaluations and mental health complaints. In this paper, mental health complaints are operationalized as a component of well-being, although well-being has a broader scope. The article also examines the moderating effect of workload on the relationship between core self-evaluations and grit.

Theoretical framework

Core self-evaluations (CSE) is defined as a high-order personality, including four personality traits: locus of control, general self-efficacy, self-esteem, and neuroticism/emotional stability, which involves an individual's baseline evaluation of his ability and value (Xiao, Wu, Ye, & Wang, 2014; Barać, Đurić, Đorđević, & Petrović, 2018). Self-esteem describes individuals' beliefs about their own worth and competence (Judge, Locke, & Durham, 1997). Self-efficacy represents one's belief about one's ability to deal with life's challenges (Bandura, 1997). Locus of control can be defined as an individual's feelings of control over their own life; locus is internal if the individual feels that he can generally control his outcomes (Rotter, 1966). Emotional stability, finally, pertains to a person's tendency to feel calm and secure (Chang, Ferris, Johnson, Rosen, & Tan, 2012). Thus, people with a high level of CSE evaluate themselves in a consistently positive manner in different situations and consider themselves capable, worthy people who have control over their own lives (Judge, Van Vianen & De Pater, 2004). CSE components are fundamental to individuals' self-appraisals of their worth and capabilities and have been conceptualized and supported as essential to individuals' psychological and physical well-being (McKee-Ryan et al., 2005).

Though CSE is considered trait-like and resistant to change, Debusscher, Hofmans, and De Fruyt (2017) argued that CSE could be conceptualized as a person-related resource. Related to grit, current evidence suggests that it is a personal quality developed through mindsets, skills, and enabling environments (Duckworth, 2016). Grit has been defined as passion and persistence in achieving long-term goals (Duckworth, Peterson, Matthews & Kelly, 2007). Based on Duckworth et al. (2007), gritty is far more essential and critical to achieving long-term goals than innate talents or intelligence. These authors began conceptualizing this concept by interviewing high achievers in academia, journalism, medicine, law, banking, and painting. Even though some aspects of motivation varied by field of activity (e.g., artists described their desire to "do things" and athletes said they

were "driven to compete"), the same trends were observed: high performers talked about the importance of returning to the same goals rather than changing direction and starting another activity; also discussed the need to work diligently despite setbacks and delays, doing "whatever it takes" to continue toward the desired goal. Based on these interviews, Duckworth et al. (2007) developed a questionnaire for further research on goal attainment. The questionnaire items are clustered into two related factors indicating the tendency to remain loyal to the same goals over time (i.e., passion for long-term goals) and the propensity to diligently devote effort toward goals even in the face of setbacks (i.e., perseverance for long-term goals).

Goals are mental representations of future states that guide behavior with or without our awareness (Austin & Vancouver, 1996; Klein, Cooper, & Monahan, 2013). Most goals demonstrate a hierarchical structure, whereby the lower-order goal is a means to the end of its higher-order goal (Carver & Scheier, 1982). The higher goal is the individual's compass, which provides direction and meaning to all lower-order goals in the hierarchy (Barrick, Mount, & Li, 2013; Höchli, Brügger, & Messner, 2018). The higher goals for which gritty individuals sustain their passion for years derive from their deepest interests and values (Barrick et al., 2013). According to the grit review by Schimschal, Visentin, Kornhaber, and Cleary (2021), there is mixed support for the two-factor structure of the grit concept. Still, despite this debate, studies have found that passion and perseverance are essential for achieving goals. Also, recent studies have shown the importance of grit in the success of companies (Dugan, Hochstein, Rouziou, & Britton, 2019; Mueller, Wolfe, & Syed, 2017).

CSE and mental health complaints

The COR theory supports the relationship between CSE and health complaints (Hobfoll, 2001). According to this theory, people with a large set of personal resources are more likely to gain other resources. People who experience resource gains report greater health

and well-being and are more possible to invest in additional resources (Ten Brummelhuis & Bakker, 2012). At the same time, the decrease in resources leads to a decline in health and well-being. In the present article, mental health complaints are an indicator of well-being, even though well-being encompasses a wide range of factors.

Several studies directly or indirectly support the link between CSE and mental or physical health. McKee-Ryan et al. (2005) established in their meta-analysis a strong relation between CSE and the physical and mental health of unemployed people, the connection being stronger between CSE and mental health. The same relationship was obtained by Vîrgă and Rusu (2018) in their study on the unemployed. Zhang and Zhao (2009) showed a negative and significant relationship between CSE and mental health symptoms among college students. The same association was later confirmed by Xiang et al. (2019). The meta-analysis by Chang et al. (2012) demonstrated a negative relationship between CSE and burnout. Thus, based on these arguments, we can formulate the following hypothesis:

Hypothesis 1: Core self-evaluations are negatively related to mental health complaints.

CSE and grit

CSE is a higher-order construct encompassing positive self-views, including self-esteem, self-efficacy, locus of control, and neuroticism/emotional stability (Judge, 2009). Previous studies have indicated the intense association grit has with self-efficacy (Muenks et al., 2017), self-esteem (Weisskirch, 2016; Dugan et al., 2019), emotional stability (Eskreis-Winkler et al. al., 2014; Blalock, Young, & Kleiman, 2015) and locus of control (Çelik & Sarçam, 2018;). Therefore, we expect a significant relationship between CSE and grit based on COR theory. People who experience resource gains report more health and well-being and "are better able to invest in additional resources" (Ten Brummelhuis & Bakker, 2012, p. 535). In this context, we can formulate the following hypothesis:

Hypothesis 2: Core self-evaluations are positively related to grit.

Grit and mental health complaints

The links between grit and physical and/or mental health have been extensively researched. Some recent studies do not support an association between grit and specific aspects of well-being, arguing that grit is not a significant predictor of depression and does not directly increase life satisfaction (Vela, Lerma, & Ikononopoulos, 2017; Jin & Kim, 2017). However, most studies have indicated a strong association between grit and several aspects of well-being, suggesting that individuals with high levels of grit have an increased likelihood of achieving higher levels of well-being (Muenks et al., 2017; Goodman, Disabato, Kashdan & Kauffman, 2018; Sharkey et al., 2017; Kannangara et al., 2018). Moreover, it also reduced anxiety sensitivity among US young adults (Moshier et al., 2016). Based on previous arguments, we can formulate the following hypothesis:

Hypothesis 3: Grit is negatively related to mental health complaints.

Previous research has shown that personality and well-being can manifest through reciprocal relationships (Soto, 2013). Some studies have shown a link between components of CSE and grit and indicate the direction of the relationship has found that locus of control and self-efficacy predict grit (e.g., Dugan et al., 2019). Also, the literature shows that positive affect is an antecedent of grit (Schimschal et al., 2021). According to Chang et al. (2012), employees with high levels of CSE have a strong sensitivity to positive information and show a higher level of approach motivation, which in turn stimulates employees to experience higher levels of PA (being defined as "positive emotions and the experience of feeling happy"; De Neve & Oswald, 2012, p. 19954).

Emphasizing these aspects, but also the relationships mentioned above between CSE and health complaints, CSE and grit, and respective grit and health complaints, we can formulate the following hypothesis:

Hypothesis 4: Grit mediates the relationship between core self-evaluations and mental health complaints.

One of the reference theoretical models in research on well-being and motivation at work is the JD-R model, developed by Bakker & Demerouti (2017). According to this theory, through a process of deterioration of an employee's health, job demands are the best predictors of burnout. The job demands that have received the most attention in the literature are related to the tasks and functions of a job and refer in particular to workload (Cooper et al., 2016; Purohit & Vasava, 2017). Workload can be understood from its quantitative perspective, referring to the perception of an excessive amount of work about the time available for it, and its qualitative dimension, which refers to the quality and complexity of the work to be performed (Parasuraman & Purohit, 2000)

The recent extension of the original JD-R model also included employees' personal resources (Xanthopoulou et al., 2007). Studies have shown that positive self-evaluations (which include self-efficacy and self-esteem) or locus of control over the situation are positively related to job engagement and performance (Bakker & Demerouti, 2017). Also, gritty individuals show greater resilience and determination in threatening contexts (Maddi, Matthews, Kelly, Villarreal, & White, 2012). Based on the aspects mentioned above, we can formulate the following hypothesis:

Hypothesis 5: The relationship between core self-evaluations and grit is stronger for employees with a high workload on the job.

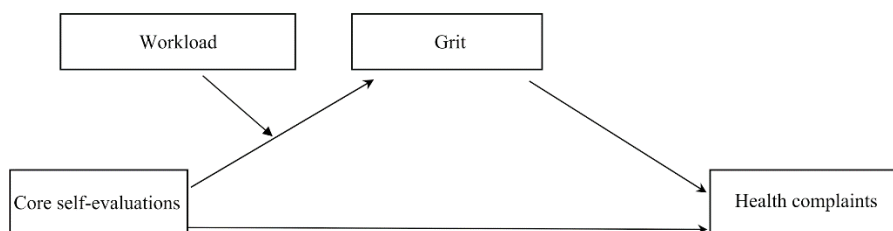


Figure 1. The theoretical model

Methodology

Study design

The design of this study is cross-sectional, with the data being collected through an online questionnaire within a set time frame in 2022 and further analyzed statistically.

Participants and procedure

Participants were recruited with the help of HR department representatives from different organizations and using social media platforms (e.g., Facebook and LinkedIn). Based on the announcement about the research sent to various organizations, interested employees were self-selected for the study. An online questionnaire was created for data collection through the QuestionPro platform. Participants employed for at least three months within an organization were eligible. A convenience sample was used. Thus, 224 people aged between 23 and 64 ($M = 44.97$, $SD = 10.85$) voluntarily participated in this study. The sample comprised 55.4% female participants and 44.6% males.

Measures

CSE was measured using the Core Self-Evaluation Scale developed by Judge et al. (2003). This scale measures core self-evaluations as a single construct and does not include subscales for its components (self-efficacy, self-esteem, locus of control, and neuroticism). Each of the twelve items was scored on a Likert scale from 1 to 5 (1 = *strongly disagree*, 5 = *strongly agree*). The scale's internal consistency was good, with Cronbach's alpha coefficient being .84.

Mental health complaints were assessed with the Romanian translation of the MHI-5 screening test by Berwick et al. (1991) (Vîrgă & Iliescu, 2017). It comprises five items (e.g., "During the past month, how often have you felt down and sad?") rated on a 6-point Likert scale (1 = *never*, 6 = *always*). A high score indicated poor mental health. The scale's internal consistency was good, with Cronbach's alpha coefficient being .77.

Grit was measured with the short scale developed by Duckworth and Quinn (2009). The scale consists of eight items and has two subscales: consistency of interest (example item "I often set a goal to achieve but later choose another goal.") and persistence of effort (example item "I finish whatever I start."). The items were rated on a 5-point Likert scale, where 1 means "*does not suit me very well*" and 5 "*suits me very well*". The internal consistency of the scale was good, with Cronbach's alpha coefficient being .72; also, the internal consistency was good for the two subscales: the consistency of the interest subscale (Cronbach's alpha = .82) and the persistence of effort subscale (Cronbach's alpha = .72).

Workload was measured using the scale from the Work Experience and Evaluation Questionnaire (QEEW; Van Veldhoven & Meijman, 1994). This includes five items (example item: Do you have too much work?) rated on a 5-point Likert scale (1 = *never*, 5 = *always*). The internal consistency of the scale was good (Cronbach's alpha = .87).

Results

The statistical analysis of the collected data was carried out using the SPSS for Windows v. 22.0 program, and the mediated moderation model (Model 7) was estimated with the PROCESS macro in SPSS.

Table 1 shows the correlation analysis and the descriptive statistics. Thus, CSE correlated positively and significantly with grit ($r = .51$, $p < 0.01$) and negatively and significantly with mental health complaints ($r = -.58$, $p < 0.01$), and with workload ($r = -.14$, $p < 0.05$). Grit was negatively and significantly related to mental health complaints and workload ($r = -.45$, respectively, $r = -.21$, $p < 0.05$). Finally, the workload was positively and significantly related to mental health complaints ($r = .34$, $p < 0.01$).

We used model 7 from PROCESS macro to test our hypotheses; the results are shown in Table 2, and the coefficients are from a bootstrap analysis.

Table 1. *Descriptive statistics and correlation between variables (N=224)*

Variables	<i>M</i>	<i>SD</i>	1	2	3	4
Core self-evaluation	42.87	6.47	-			
Workload	13.63	4.44	-.14*	-		
Mental health complaints	13.09	4.11	-.58**	.34**	-	
Grit	30.64	4.78	.51**	-.12*	-.45**	-

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

Table 2. *Mediated moderation indicator table*

Variables	Outcome					
	Grit			Mental Health Complaints		
	Coeff.	SE	p	Coeff.	SE	p
Core self-evaluation	.38*	.04	<.001	-.30*	.03	<.001
Workload	-.04	.06	.48	-	-	-
Core self-evaluation * Workload	.02*	.009	.01	-	-	-
Grit	-	-	-	-.18*	.05	<.001
	R ² =.29			R ² =.37		
	F (3,220) = 30.18*, p<.00			F (2,221) = 65.82*, p<.001		

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

First, the PROCESS analysis showed that CSE is negatively and significantly related to mental health complaints ($b = -.30$, $p < .001$), which confirms Hypothesis 1. A high level of CSE predicts lower mental health complaints. Second, the result showed that CSE is positively and significantly related to grit, offering support for Hypothesis 2. Hypothesis 3 was confirmed too, and grit is significantly negatively associated with mental health complaints ($b = -.18$, $p < .01$). A high level of grit predicts lower health complaints. We also tested if grit mediates the relationship between CSE and health complaints. Based on a total of 5000 replications (corrected and accelerated bias), bootstrap analyses presented in Table 2 show a significant partial mediation effect of grit.

Finally, we explored the moderation effect of workload. There is a statistically significant positive moderating effect of workload on the relationship between CSE and grit, the

interaction variable being significant ($b = .02$, $p < .05$). As seen in Figure 2, the relationship between CSE and grit is slightly stronger for people who experience higher levels of workload.

Discussions

This paper investigated the mediating relationship of the grit concept in the relationship between CSE and mental health complaints. Also, we examined the moderating role of workload in the relationship between CSE and grit based on COR and JD-R theories.

First, CSE was negatively associated with mental health complaints. Thus, based on COR theory, these results align with previous studies results. The meta-analysis by McKee-Ryan et al. (2005) established a strong link between CSE and the physical and mental health of the unemployed.

Table 3. Indirect effects of the mediation model

Value	Workload	Effect	SE	95% Bootstrap CI
Mean -SD	-4.33	-.05	.02	[-.095; -.015]
Mean	0	-.07	.02	[-.117; -.023]
Mean +SD	4.33	-.08	.03	[-.147; -.030]
Index of moderated mediation	-.004		.002	[-.0088; -.0007]

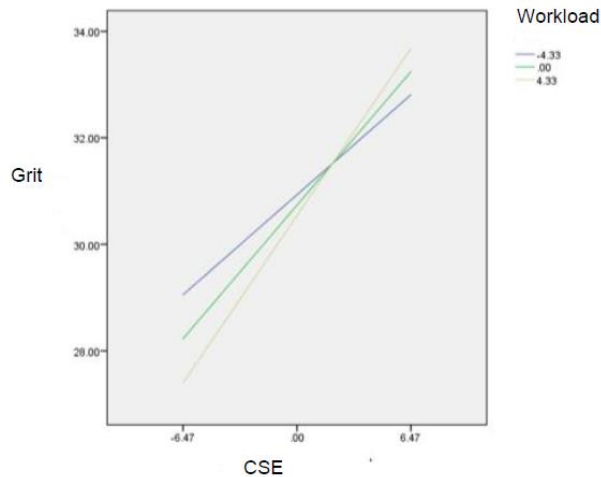


Figure 2. Moderation effect of workload

Also, in the meta-analysis by Chang et al. (2012), a negative association between CSE and mental health complaints was established. Other studies on student samples directly confirm the association between CSE and mental health symptoms (Zhang & Zhao, 2009; Xiang et al., 2019). Accordingly, employees who have a habit of consistently viewing themselves in a favorable light in various circumstances and believe that they are competent, deserving individuals who possess control over their lives (high CSE) would be negatively associated with mental health complaints (they will be less demoralized, sad or agitated).

Second, the results confirmed a significant positive association between CSE and grit. Previous studies have shown positive associations of CSE components with grit. Muenks et al. (2017) established the link between grit and self-efficacy, and Weisskirch (2016) showed a strong link with self-esteem. Also, Young and Kleiman (2015) showed the association between grit and emotional

stability, and Çelik and Sariçam (2018) revealed the link between grit and locus of control. Therefore, employees with a high CSE, those who consistently evaluate themselves positively in different situations and perceive themselves as competent, valuable people with power over their existence, would be positively associated with the grit construct. This allows them to focus on long-term goals and persist in their efforts, even when facing challenges and setbacks.

Third, the results supported the negative association between grit and mental health complaints. The results obtained are consistent with most of the studies that have shown that grit is associated with lower depression (Anestis & Selby, 2015; Jin & Kim, 2017; Lovering et al., 2015; Musumari et al., 2018; Datu, King, Valdez, & Eala, 2019) and with a decrease in anxiety levels (Musumari et al., 2018). Thus, employees with higher perseverance and passion for long-term goals tend to report fewer mental health complaints.

Forth, the partial mediating role of grit in the relationship between CSE and mental health complaints was demonstrated. A high level of CSE leads to a high level of grit and lower health complaints. Because mediation is partial, grit does not fully explain the relationship between CSE and health complaints. This result complements the three previously tested hypotheses. Both CSE and grit are characterized by positive affectivity. Related to CSE, employees with high levels of this construct have been shown to have a strong sensitivity to positive information and experience more positive emotions and situations in which they feel happy (Chang et al., 2012). In the review of grit by Schimschal et al. (2021), positive thought and behavior patterns, including self-efficacy, positive emotions, and goal commitment, were identified as antecedents (thus, CSE can be an antecedent). A possible explanation for this is given by Fredrickson (2001), who explains that positivity broadens an individual's perspective, increasing one's ability to explore different interests and build commitment by overcoming challenges. The second explanation is that in the face of adversity, people with higher levels of self-efficacy persevere through higher levels of confidence in their abilities and ability to succeed. As argued earlier, the literature provides ample evidence of the link between CSE and mental health complaints, on the one side, and grit and health complaints, on the other side. At the base of these relationships is the COR theory; thus, CSE with grit together form a pool of personal resources (grit is considered a personal resource that can be developed, and CSE is viewed as a personality trait). According to this theory, as people experience resource gains, they report more health and well-being (Ten Brummelhuis & Bakker, 2012). At the same time, the decrease in resources leads to a reduction in health and well-being.

Fifth, the moderating role of workload in the relation between CSE and grit, postulated by hypothesis, was proved. Thus, people with a high workload experience a stronger connection between CSE and grit. Still, the association is present and less intense for people with a lower workload level (see Figure 2). Although according to the JD-R

theory, individuals tend to utilize their resources more in stressful situations, even those brought about by high demands (Demerouti & Bakker, 2011). De Reuver, Van de Voorde, and Kilroy (2021) found that an increased workload moderated the association between opportunity-enhancing high-performance work system practices and absenteeism.

Another explanation for these results relates to how workload is perceived. Employees may see stressors (in our case, workload) as challenges or obstacles to achieving goals. Gritty people show greater resilience and determination in threatening contexts (Maddi et al., 2012). Despite obstacles, they are oriented toward reaching long-term goals through perseverance and passion. Muenks, Yang, and Wigfield (2018) argue that the more adaptive response experienced by those high in grit to high workload may result from self-regulatory processes, such as maintaining a sense of self-efficacy.

Theoretical implications

As theoretical implications for grit, a relatively recent construct in the specialized literature, this paper confirmed grit's connection with the health status of employees. Moreover, the study brings more knowledge to understanding grit's antecedents. In current studies, only positive emotions, self-efficacy, and goal commitment are predicted as antecedents (Schimschal et al., 2021), proving that CSE, a higher construct, can be considered an antecedent. Another theoretical implication can be related to the workload mobilizing personal resources, increasing the intensity of the relationship between CSE and grit. The results are based on the recent extension of the original JD-R model (Xanthopoulou et al., 2007) and support the critical role of personal resources at work. Also, grit is a partial mediator between CSE and health complaints, serving as a link between CSE and mental health complaints. It plays a processual role in forming a pool of resources with CSE to reduce health complaints under high workload conditions.

Practical implications

As a result of its motivational origins, grit is thought to be responsive to behavioral modification, modeling, training, and development, as well as to interventions that target the specific motivations underlying work interests (Jordan, Wihler, Hochwarter, & Ferris, 2019). According to Kautz and colleagues (2014), non-cognitive skills develop through interactions with the external environment. Because context is an essential enabler of non-cognitive skills, employees need opportunities for trial-and-error and self-reflection for grit to emerge and mature (Duckworth, 2016). They must engage in deliberate practice, with endless opportunities to explore and develop their interests within the broader goal-setting process. Also, employees' work interests must be encouraged and re-encouraged frequently for goal hierarchies to consolidate. In addition, employees need opportunities to develop goals and strategies for accomplishing them through tasks and reflecting on appropriate methods (Duckworth, 2016). Reflection on previous goals serves as a reference point for further adaptation. Thus, managers need to create an engaging and encouraging work context that provides stimulation and feedback to employees (Bashant, 2014).

Developing a growth mindset

Because gritty individuals are more likely to have a growth mindset at their core, scientists argue that the distinction between a growth and a fixed mindset is critical to understanding how grit develops over time (Duckworth, 2016; Jordan, Ferris, Hochwarter, & Wright, 2019). Individuals with a fixed mindset believe intelligence is inherent and unchanging (Dweck, 2006). In comparison, those with a growth mindset believe that personal attributes and abilities are likely to change and thus can be developed over time (Lee, 2018). Therefore, the alternative offered by Jordan et al. (2019) is for managers to provide access to workshops highlighting the malleable nature of skills and the ever-growing potential of human capacity. As part of this training, managers should give the employees neuropsychological research

demonstrating our skills' developmental nature throughout life. Managers can also use counter-attitudinal reflection by asking employees to identify a situation in their lives that they initially struggled with but now on reflection considered relatively easy to complete (Heslin, 2010). Overall, just like a muscle when properly exercised, the opportunities for growth and development in goal setting are endless.

Limitations and suggestions for future research

A first limitation relates to the cross-sectional design of the paper, which prevents testing or making causal claims. Future studies based on an experimental or longitudinal design may assist in establishing causality. Another limitation and, simultaneously, a research direction is measuring the workload as a central dimension. Future studies can approach workload from two perspectives to better understand the moderating relationship, quantitative and qualitative. Future longitudinal studies can better capture the dynamics of the relationships between variables, and this can also be done by using samples of participants from specific work domains.

Conclusions

This paper examined the role of grit in the relationship between CSE and mental health complaints. CSE, as individuals' beliefs about their worth and competence, was related to mental health complaints. Grit has been shown to mediate the relationship between CSE and health complaints. At the same time, the moderating role of workload in the relationship between CSE and grit was highlighted. Therefore, individuals with higher workloads demonstrate a stronger association between their CSE and their perseverance and passion for long-term goals.

References

- Austin, J. T., & Vancouver, J. B. (1996). Goal constructs in psychology: Structure, process, and content. *Psychological Bulletin*, *120*(3), 338. doi: 10.1037/0033-2909.120.3.338

- Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology, 22*(3), 273. doi: 10.1037/ocp0000056
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.
- Barrick, M. R., Mount, M. K., & Li, N. (2013). The theory of purposeful work behavior: The role of personality, higher-order goals, and job characteristics. *Academy of Management Review, 38*(1), 132-153. doi: 10.5465/amr.2010.0479
- Bashant, J. (2014). Developing grit in our students: Why grit is such a desirable trait, and practical strategies for teachers and schools. *Journal for Leadership and Instruction, 13*(2), 14-17.
- Blalock, D. V., Young, K. C., & Kleiman, E. M. (2015). Stability amidst turmoil: Grit buffers the effects of negative life events on suicidal ideation. *Psychiatry Research, 228*(3), 781-784. doi: 10.1016/j.psychres.2015.04.041
- Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality–social, clinical, and health psychology. *Psychological Bulletin, 92*(1), 111. doi: 10.1037/0033-2909.92.1.111
- Çelik, İ., & Sarıçam, H. (2018). The Relationships between Positive Thinking Skills, Academic Locus of Control and Grit in Adolescents. *Universal Journal of Educational Research, 6*(3), 392-398.
- Chang, C. H., Ferris, D. L., Johnson, R. E., Rosen, C. C., & Tan, J. A. (2012). Core self-evaluations: A review and evaluation of the literature. *Journal of Management, 38*(1), 81-128. doi: 10.1177/0149206311419661
- Cooper, S. L., Carleton, H. L., Chamberlain, S. A., Cummings, G. G., Bambrick, W., & Estabrooks, C. A. (2016). Burnout in the nursing home health care aide: A systematic review. *Burnout Research, 3*(3), 76-87. doi: 10.1016/j.burn.2016.06.003
- Credé, M., Tynan, M. C., & Harms, P. D. (2017). Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology, 113*(3), 492-511. doi: 10.1037/pspp0000102
- Datu, J. A. D., King, R. B., Valdez, J. P. M., & Eala, M. S. M. (2019). Grit is associated with lower depression via meaning in life among Filipino high school students. *Youth & Society, 51*(6), 865-876. doi: 10.1177/0044118X18760402
- De Neve, J. E., & Oswald, A. J. (2012). Estimating the influence of life satisfaction and positive affect on later income using sibling fixed effects. *Proceedings of the National Academy of Sciences, 109*(49), 19953-19958. doi: 10.1073/pnas.1211437109
- De Reuver, R., Van de Voorde, K., & Kilroy, S. (2021). When do bundles of high-performance work systems reduce employee absenteeism? The moderating role of workload. *The International Journal of Human Resource Management, 32*(13), 2889-2909. doi: 10.1080/09585192.2019.1616594
- Demerouti, E., & Bakker, A. B. (2011). The job demands-resources model: Challenges for future research. *SA Journal of Industrial Psychology, 37*(2), 01-09. Doi: 10.4102/sajip.v37i2.975
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*(3), 499. doi: 10.1037/0021-9010.86.3.499
- Desrumaux, P., Lapointe, D., Sima, M. N., Boudrias, J. S., Savoie, A., & Brunet, L. (2015). The impact of job demands, climate, and optimism on well-being and distress at work: What are the mediating effects of basic psychological need satisfaction?. *European Review of Applied Psychology, 65*(4), 179-188. doi: 10.1016/j.erap.2015.06.003
- Duckworth, A. L., & Gross, J. J. (2014). Self-control and grit: Related but separable determinants of success. *Current Directions in Psychological Science, 23*(5), 319-325. doi: 10.1177/0963721414541462
- Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the short grit scale (Grit-S). *Journal of Personality Assessment, 91*(2), 166-174. doi: 10.1080/00223890802634290
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92*(6), 1087-1101. doi: 10.1037/0022-3514.92.6.1087
- Duckworth, A. L., Quirk, A., Gallop, R., Hoyle, R. H., Kelly, D. R., & Matthews, M. D. (2019). Cognitive and noncognitive predictors of success. *Proceedings of the National Academy of Sciences, 116*(47), 23499-23504. doi: 10.1073/pnas.1910510116
- Dugan, R., Hochstein, B., Rouziou, M., & Britton, B. (2019). Gritting their teeth to close the sale: The positive effect of salesperson grit on job satisfaction and performance. *Journal of Personal Selling & Sales Management, 39*(1), 81-101. doi: 10.1080/08853134.2018.1489726
- Dweck, C. S. (2006). *Mindset: The new psychology of success*. Random House.
- Eskreis-Winkler, L., Gross, J. J., & Duckworth, A. L. (2016). Grit: sustained self-regulation in the service of superordinate goals, in K. D. Vohs and R. F. Baumeister (eds.) *Handbook of Self-Regulation: Research, Theory and Applications*. 380-395. 16, New York, NY: Guilford,
- Eskreis-Winkler, L., Shulman, E. P., Beal, S., & Duckworth, A. L. (2014). The grit effect: Predicting retention in the military, the workplace, school, and marriage. *Frontiers in Psychology, 5*(36), 1-12. doi: 10.3389/fpsyg.2014.00036
- Eysenck, H. J., & Eysenck, S. B. G. (1968). *Manual for the Eysenck Personality Inventory*. London, England: Hodder and Stoughton.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*(3), 218-226. doi:10.1037//0003-066X.56.3.218. doi: 10.1037/0003-066X.56.3.218
- Goodman, F. R., Disabato, D. J., Kashdan, T. B., & Kauffman, S. B. (2018). Measuring well-being: A comparison of subjective well-being and PERMA. *The Journal of Positive Psychology, 13*(4), 321-332. doi: 10.1080/17439760.2017.1388434
- Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: a meta-analysis. *Journal of Applied Psychology, 87*(2), 268. doi: 10.1037/0021-9010.87.2.268

- Heslin, P. A. (2010). Mindsets and employee engagement: Theoretical linkages and practical interventions. In Albrecht, S. L. (ed.) *Handbook of employee engagement*. Edward Elgar Publishing. doi: 10.4337/9781849806374.00025
- Hill, P. L., Burrow, A. L., & Bronk, K. C. (2016). Persevering with positivity and purpose: An examination of purpose commitment and positive affect as predictors of grit. *Journal of Happiness Studies*, 17(1), 257–269. doi: 10.1007/s10902-014-9593-5
- Hobfoll, S.E. (2001). The influence of culture, community, and the nested-self in the stress process: advancing conservation of resources theory. *Applied Psychology*, 50(3), 337–421. doi: 10.1111/1464-0597.00062
- Höchli, B., Brügger, A., & Messner, C. (2018). How focusing on superordinate goals motivates broad, long-term goal pursuit: A theoretical perspective. *Frontiers in Psychology*, 1879. doi: 10.3389/fpsyg.2018.01879
- Jin, B., & Kim, J. (2017). Grit, basic needs satisfaction, and subjective well-being. *Journal of Individual Differences*, 38(1), 29. doi: 10.1027/1614-0001/a000219
- Johnson, R. E., Rosen, C. C., & Levy, P. E. (2008). Getting to the core of core self-evaluation: a review and recommendations. *Journal of Organizational Behavior*, 29(3), 391–413. doi: 10.1002/job.514
- Jordan, S. L., Ferris, G. R., Hochwarter, W. A., & Wright, T. A. (2019). Toward a work motivation conceptualization of grit in organizations. *Group & Organization Management*, 44(2), 320–360. doi: 10.1177/1059601119834093
- Jordan, S. L., Wihler, A., Hochwarter, W. A., & Ferris, G. R. (2019). The roles of grit in human resources theory and research. In Buckley, M.R., Wheeler, A.R., Baur, J.E. and Halbesleben, J.R.B. (Ed.) *Research in Personnel and Human Resources Management (Research in Personnel and Human Resources Management, Vol. 37)*, Emerald Publishing Limited, Bingley, pp. 53–88. <https://doi.org/10.1108/S0742-730120190000037003>.
- Judge, T. A., Bono, J. E., Iliès, R., & Gephardt, M. W. (2002). Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology*, 87, 765–780 doi: 10.1037//0021-9010.87.4.765
- Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. (1998). Dispositional effects on job and life satisfaction: The role of core evaluations. *Journal of Applied Psychology*, 83, 17–34. doi: 10.1037/0021-9010.83.1.17
- Judge, T.A. (2009). Core self-evaluations and work success. *Current Directions in Psychological Science*, 18(1), 58–62. doi: 10.1111/j.1467-8721.2009.01606.x
- Judge, T.A., Van Vianen, A.E. & De Pater, I.E. (2004). Emotional stability, core self-evaluations, and job outcomes: a review of the evidence and an agenda for future research. *Human Performance*, 17(3), 325–346. doi: 10.1207/s15327043hup1703_4
- Kandelman, N., Mazars, T., & Levy, A. (2018). Risk factors for burnout among caregivers working in nursing homes. *Journal of Clinical Nursing*, 27(1-2), e147-e153. doi: 10.1111/jocn.13891
- Kannangara, C. S., Allen, R. E., Waugh, G., Nahar, N., Khan, S. Z. N., Rogerson, S., & Carson, J. (2018). All that glitters is not grit: Three studies of grit in university students. *Frontiers in Psychology*, 9, 1539. doi: 10.3389/fpsyg.2018.01539
- Kautz, T., Heckman, J. J., Diris, R., Ter Weel, B., & Borghans, L. (2014). Fostering and measuring skills: Improving cognitive and non-cognitive skills to promote lifetime success. Working Paper 20749 <http://www.nber.org/papers/w20749>, doi: 10.3386/w20749
- Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Chatterji, S., Lee, S., Ormel, J., ... & Wang, P. S. (2009). The global burden of mental disorders: an update from the WHO World Mental Health (WMH) surveys. *Epidemiology and Psychiatric Sciences*, 18(1), 23–33. doi: 10.1017/S1121189X00001421
- Klein, H. J., Cooper, J. T., & Monahan, C. A. (2013). Goal commitment. In *New developments in goal setting and task performance* (pp. 65–89). Routledge.
- Lee, C. S. (2018). Authentic leadership and organizational effectiveness: The roles of hope, grit, and growth mindset. *International Journal of Pure and Applied Mathematics*, 118(19), 383–401.
- Lee, Y. C., Chatterton, M. L., Magnus, A., Mohebbi, M., Le, L. K. D., & Mihalopoulos, C. (2017). Cost of high prevalence mental disorders: Findings from the 2007 Australian National Survey of Mental Health and Wellbeing. *Australian & New Zealand Journal of Psychiatry*, 51(12), 1198–1211. doi: 10.1177/0004867417710730
- Lovering, M. E., Heaton, K. J., Banderet, L. E., Neises, K., Andrews, J., & Cohen, B. S. (2015). Psychological and physical characteristics of US Marine recruits. *Military Psychology*, 27(5), 261–275. , 261–275. doi: 10.1037/mil0000082
- Maddi, S. R., Matthews, M. D., Kelly, D. R., Villarreal, B., & White, M. (2012). The role of hardiness and grit in predicting performance and retention of USMA cadets. *Military Psychology*, 24(1), 19–28. doi: 10.1080/08995605.2012.639672
- Molero, M. D. M., Pérez-Fuentes, M. D. C., & Gázquez, J. J. (2018). Analysis of the mediating role of self-efficacy and self-esteem on the effect of workload on burnout's influence on nurses' plans to work longer. *Frontiers in Psychology*, 9, 2605. doi: 10.3389/fpsyg.2018.02605
- Moshier, S. J., Szuhany, K. L., Hearon, B. A., Smits, J. A., & Otto, M. W. (2016). Anxiety sensitivity uniquely predicts exercise behaviors in young adults seeking to increase physical activity. *Behavior Modification*, 40(1-2), 178–198. 40, 178–198. doi: 10.1177/0145445515603704
- Mueller, B. A., Wolfe, M. T., & Syed, I. (2017). Passion and grit: An exploration of the pathways leading to venture success. *Journal of Business Venturing*, 32(3), 260–279. doi: 10.1016/j.jbusvent.2017.02.001
- Muenks, K., Wigfield, A., Yang, J. S., & O'Neal, C. R. (2017). How true is grit? Assessing its relations to high school and college students' personality characteristics, self-regulation, engagement, and achievement. *Journal of Educational Psychology*, 109(5), 599. doi:10.1037/edu0000153

- Muenks, K., Yang, J. S., & Wigfield, A. (2018). Associations between grit, motivation, and achievement in high school students. *Motivation Science, 4*(2), 158. doi: 10.1037/mot0000076
- Musumari, P. M., Tangmunkongvorakul, A., Srithanaviboonchai, K., Techasrivichien, T., Suguimoto, S. P., Ono-Kihara, M., et al. (2018). Grit is associated with lower level of depression and anxiety among university students in Chiang Mai, Thailand: a cross-sectional study. *PLoS ONE 13*:e0209121. doi: 10.1371/journal.pone.0209121
- OECD/European Union (2020), *Health at a Glance: Europe 2020: State of Health in the EU Cycle*, OECD Publishing, Paris, doi:10.1787/82129230-en.
- Parasuraman, S., & Purohit, Y. S. (2000). Distress and boredom among orchestra musicians: the two faces of stress. *Journal of Occupational Health Psychology, 5*(1), 74. doi: 10.1037/1076-8998.5.1.74
- Purohit, B., & Vasava, P. (2017). Role stress among auxiliary nurses midwives in Gujarat, India. *BMC health services research, 17*(1), 1-8. doi: 10.1186/s12913-017-2033-6
- Roberts, B. W., Lejuez, C., Krueger, R. F., Richards, J. M., & Hill, P. L. (2014). What is conscientiousness and how can it be assessed? *Developmental Psychology, 50*(5), 1315–1330. doi: 10.1037/a0031109.
- Schimschal, S. E., Visentin, D., Kornhaber, R., & Cleary, M. (2021). Grit: A concept analysis. *Issues in Mental Health Nursing, 42*(5), 495-505. doi: 10.1080/01612840.2020.1814913
- Schmidt, F. T. C., Nagy, G., Fleckenstein, J., Möller, J., & Retelsdorf, J. (2018). Same same, but different? Relations between facets of conscientiousness and grit. *European Journal of Personality, 32*(6), 705–720. doi: 10.1002/per.2171
- Sharkey, C. M., Bakula, D. M., Gamwell, K. L., Mullins, A. J., Chaney, J. M., & Mullins, L. L. (2017). The role of grit in college student health care management skills and health-related quality of life. *Journal of Pediatric Psychology, 42*(9), 952-961. doi: 10.1093/jpepsy/jsx073
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology, 13*, 290–312. doi: 10.2307/270723
- Soto, C. J. (2013). Is happiness good for your personality? Concurrent and prospective relations of the Big Five with subjective well-being. *Journal of Personality*. doi:10.1111/jopy.12081.
- Southwick, D. A., Tsay, C. J., & Duckworth, A. L. (2019). Grit at work. *Research in Organizational Behavior, 39*, 100126. doi: 10.1016/j.riob.2020.100126
- Spreitzer, G., & Porath, C. (2012). Creating sustainable performance. *Harvard Business Review, 90*(1), 92–99.
- Srivastava, A., Locke, E. A., Judge, T. A., & Adams, J. W. (2010). Core self-evaluations as causes of satisfaction: The mediating role of seeking task complexity. *Journal of Vocational Behavior, 77*, 255–265. doi: 10.1016/j.jvb.2010.04.008
- Tedesqui, R. A., & Young, B. W. (2017). Investigating grit variables and their relations with practice and skill groups in developing sport experts. *High Ability Studies, 28*(2), 167-180. doi: 10.1080/13598139.2017.1340262
- Tedesqui, R. A., & Young, B. W. (2018). Comparing the contribution of conscientiousness, self-control, and grit to key criteria of sport expertise development. *Psychology of Sport and Exercise, 34*, 110-118. doi:10.1016/j.psychsport.2017.10.002
- Ten Brummelhuis, L.L. and Bakker, A.B. (2012). A resource perspective on the work-home interface: the work-home resources model, *American Psychologist, 67*(7), 545-556. doi: 10.1037/a0027974
- Van Veldhoven, M. J. P. M., & Meijman, T. (1994). Het meten van psychosociale arbeidsbelasting met een vragenlijst: de vragenlijst beleving en beoordeling van de arbeid (VBBA).
- Vela, J. C., Lerma, E., & Ikononopoulos, J. (2017). Evaluation of the life satisfaction and subjective happiness scales with Mexican American high school and college students. *Hispanic Journal of Behavioral Sciences, 39*(1), 34-45. doi: 10.1177/07399863166812
- Virgă, D. & Iliescu, D. (2017). The well-being of Romanian workers in Spain: antecedents and moderators, *European Journal of Work and Organizational Psychology, 26*(1), 149-159. doi: 10.1080/1359432X.2016.1225728
- Virgă, D. & Rusu, A. (2018). Core self-evaluations, job search behaviour and health complaints: The mediating role of job search self-efficacy, *Career Development International, 23*(3), 261-273. <https://doi.org/10.1108/CDI-11-2017-0208>
- Weisskirch, R. S. (2018). Grit, self-esteem, learning strategies and attitudes and estimated and achieved course grades among college students. *Current Psychology, 37*(1), 21-27. doi: 10.1007/s12144-016-9485-4
- Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2007). The role of personal resources in the job demands-resources model. *International Journal of Stress Management, 14*(2), 121. doi: 10.1037/1072-5245.14.2.121
- Xiang, Y., Zhao, J., Li, Q., Zhang, W., Dong, X., & Zhao, J. (2019). Effect of core self-evaluation on mental health symptoms among Chinese college students: The mediating roles of benign and malicious envy. *Psychiatric Annals, 49*(6), 277-284. doi: 10.3928/00485713-20190508-01
- Zhang X, & Zhao Y. (2009). Relationship between core-self evaluation and mental health of normal school students. *Chinese Journal of School Health, 30*(2),129-130
- Zissman, C., & Ganzach, Y. (2020). In a representative sample grit has a negligible effect on educational and economic success compared to intelligence. *Social Psychological and Personality Science*. doi:10.1177/1948550620920531.