

Relationship between Academic Stress and Academic Engagement: Moderating Role of Growth Mindset and Grit

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This study examined the relationship between academic stress and academic engagement of college students. Specifically, the current study was designed to understand growth mindset and grit as moderators in stress–engagement relationship. The study was conducted on 220 undergraduate students of commerce and management streams. Using random sampling approach, data were collected on a standard questionnaire from both male and female students. Correlations and moderated regression analyses revealed that stress is debilitating to academic engagement and both students' growth mindset and grit countered the effect of stress and moderated significantly on the stress–engagement relationship. The implications of the study are explained in the research.

Keywords: Student engagement; Academic engagement; Academic stress; Growth mindset; Grit.

Students' engagement or academic engagement has become the buzzword in educational institutions in the same way as in corporate for employees. Higher educational institutions have started giving much emphasis in making their students' engaged academically because it leads to high quality of learning (Krause & Coates, 2008), reduced dropout rates, increased academic success and achievements (Appleton, Christenson, Kim, & Reschly, 2006; Dev, 1997; Kushman, Sieber, & Heariold-Kinney, 2000), increased employment success (Kahu, 2011) and lifelong learning (Sanacore, 2008). Students who fail to get engaged academically feel exhaustion, cynicism, reduced efficacy (Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002), which in turn have negative influence on academic achievement. Feeling of exhaustion represents stress because it depletes individual's emotional and physical resources (Lin, Jiang & Lam, 2013). Higher education has been marked with the increased stress level in students especially in Asian countries (Huan, See, Ang, & Har, 2008; Tang & Westwood, 2007) because of the high academic burden, low satisfaction regarding their academic performance, high expectations (Bataineh, 2013; Lee & Larson, 2000), concerned over future career (Pariat,

Rynjah, Joplin & Kharjana, 2014). Stress is explained in terms of demand and resource mismatch. When a person perceives his resources inadequate to meet the demands, results in a condition called stress (Lazarus, 1999). Analysis of existing studies on students' stress revealed that scholars have focused primarily on the relationship between stress and outcomes such as health, well-being and academic performance (e.g. Verma, Sharma, & Larson, 2002; Krishnakumar, Geeta, & Gopalan, 2005). These relationships were mostly found to be in negative direction. These findings are significant and pertinent for institutions, parents and teachers; however, researchers have not looked into the influence of stress on students' academic engagement, given the increased significance of academic engagement in students' current and future benefits. Given the impact of stress on various outcomes, it seems logical and reasonable to presume that stress could have a similar undesirable effect on students' academic engagement. Thus, the current study is the extension of the existing line of research on stress – outcomes relationship on students. This study explored the relationship between stress and students' academic engagement on college students.

Stress-outcome relationship is not always linear. Scholars have pointed out the need to examine the mechanisms or moderators in stress–outcome relationship (Boswell, Olson-Buchanan, & LePine, 2004). As the outcome in the current study is students' academic engagement; thus this study proposed growth mindset and grit, which could be significant moderators in the relationship between the two variables of the study. In other words, growth mindset and grit are assumed to work as buffer which will lessen the effect of stress on students' academic engagement. In recent years researchers have focused their attention in examining non-cognitive factors in students' outcomes (Bowles & Gintis, 2002; Farkas, 2003) which include growth mindset and grit among others. Growth mindset refers to the beliefs that intelligence is malleable that can be expanded or developed through efforts and strategy application, which makes students meet challenges in institutions (Dweck, 2006; Yeager & Dweck, 2012). Students with growth mindset can develop strategies to meet with academic stress. Growth mindset can also enable students to work and put efforts in the direction towards their academic goal thus making them academically engaged. Thus, it is argued in this study that stress will not influence negatively on students' academic engagement when they have high level of growth mindset.

Grit refers to perseverance and passion for long-term goals (Duckworth, Peterson, Matthews, & Kelly, 2007). High level of grit enables students to maintain focus on academic work and goal, be diligent, and not get discouraged by problems and setbacks. Thus it is also argued that high level of grit will act as a buffer in dealing with stress on students' academic engagement where, stress will have fewer negative effects on engagement.

The current study is significant from two perspectives. First, the relationship between academic stress and academic engagement is examined here which has not been explored so far. Second, the moderating effect of growth mindset and grit are tested to better understand students' stress - engagement relationship.

Relationship between Stress and Academic Engagement

Various conceptualization of academic engagement exists in the literature. However, the current study took student engagement as conceptualized by Schaufeli et al., (2002) i.e., students' engagement is a positive, fulfilling state of mind characterized by vigor, dedication, and absorption. Vigor element of the engagement refers to students' high level of energy, mental resilience and willingness to put efforts in the study. Dedication is characterized by a sense of significance, enthusiasm, inspiration, motivation and challenge in their study; absorption is a mental state in which students concentrate on, get immersed and feel happy with studying.

Stress is normally portrayed in a negative light (e.g. Atkinson, 2004; Schneiderman, Ironson, & Siegel, 2005). When a person experiences stress, behavioral, emotional and physical problems such as feeling of depression, trouble in relationship, decreased learning and performance, decreased well-being (e.g., Hammen, 2005; Schwabe & Wolf, 2010) arises which negatively affects students' engagement in their academic life. In a study in an organization, Simon and Amarakoon (2015) found occupational stress is related to anxiety, fatigue, and disengagement by employees. However, stress is not always debilitating but has enhancing effect as well. Stress creates adaptive reactions to the situation in the person leading to successfully address the issues. According to Fay and Sonnentag (2002), stress leads to initiative-taking, by which person experiencing stress acts to acquire the necessary skills needed to meet demands. However, the current study viewed stress as debilitating and argued that stress will be negatively related to students' academic engagement. Stress has destructive characteristics and students experiencing stress will face problem in engaging in their academic world. Thus, it is conjectured that –

H1: Stress is negatively related to academic engagement.

Moderating Role of Growth Mindset in Stress – Engagement Relationship

Growth mindset is one of the two types of mindset as postulated in the mindset

theory (Dweck, 2006) which is based on the assumptions of the malleability of personal qualities and characteristics. Growth mindset refers to the belief that a person's intelligence and competence can be developed through efforts and hard work as against the fixed mindset which consider individual's abilities as immutable, unchangeable (Dweck, Chiu, & Hong, 1995; Yeager & Dweck, 2012). To the knowledge of the present researcher, there is no study examining the relationship between growth mindset and academic engagement. In this study the relationship between the two is proposed. Several researchers have studied growth mindset in relation to academic achievement (e.g. Blackwell, Trzesniewski, & Dweck, 2007) such as grade or marks improvement, which is related to academic engagement (e.g. Gunuc, 2014). Additional evidence of the relationship between growth mindset and students' engagement comes from the study by Aronson, Fried, & Good, (2002), in which they found that students who were encouraged to think and believe intelligence as malleable reported greater enjoyment and engagement in their academic activities. Thus, it can be inferred that growth mindset will lead to academic engagement in students. However, it is also assumed that growth mindset of students would work as a buffer in stress to enhance student's engagement. More specifically it is argued that students' stress will not affect negatively in their academic engagement when the level of their growth mindset is high. Growth mindset has motivational characteristic that influences students' thoughts (Taylor & Gollwitzer, 1995) and behaviors (Lieberman, Samuels, & Ross, 2004) which keep them to learn, grow, and develop (Zeng, Hou & Peng, 2016), an indication of academic engagement. Studies have found that students with growth mindset demonstrated improvements in attitudes and behaviors such as increased efforts and motivation, enhanced enjoyment of learning (Aronson et al., 2002; Blackwell et al., 2007). The growth mindset promotes resilience, defined as the capacity to cope effectively with past and present adversity (Brooks & Goldstein, 2001), which makes students more likely to persist in their efforts and overcome challenges (Dweck

et al., 1995; Dweck, 2006), thus keeping them engaged academically even if they are facing stress because of problems and challenges in their academic life. Thus, drawing from above studies and arguments it is hypothesized that –

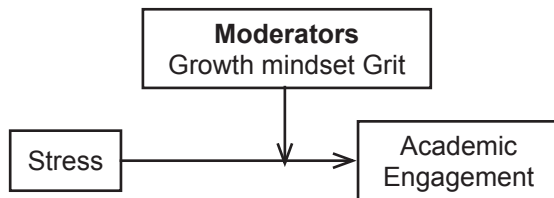
H2: Growth mindset will moderate the stress-engagement relationship such that the relationship will be weaker when the level of growth mindset is higher.

Moderating Role of Grit in Stress – Engagement Relationship

Grit is defined as passion and perseverance for long-term goals (Duckworth et al., 2007). Grit, a dispositional characteristic, is a higher order construct consisting of consistency of interest and perseverance of effort (Duckworth et al., 2007; VonCulin, Tsukayama, & Duckworth, 2014). Consistency describes the extent to which individuals constantly focus on achieving their long-term goals and aspirations. Perseverance indicates the degree to which individuals can endure challenges and adversity, while sustaining personal effort and determination to attain their long-term goals and ambitions. Grit contains determination and sustenance to stay towards a goal even when the person is faced with various setbacks (Duckworth et al., 2007). The present researcher found only one study in which grit is examined in relation to academic engagement and found positive association between the two (Datu, Valdez, & King, 2016). An important characteristic of grit is perseverance in the face of challenges and adversity which is strongly associated with an orientation toward engagement (Peterson, Ruch, Beermann, Park, & Seligman, 2007). Thus, based on above studies, association between the grit and academic engagement can be established. However, in the current study grit is proposed as moderating factor in stress–academic engagement relationship. Grit is a dispositional characteristic and existing research showed the moderating effect of personality variables in predicting students' outcomes (e.g. Srivastava & Pathak, 2011). Examining the moderating effect of grit on students' outcome may provide different implications when predicting academic performance (Chang,

2014). Thus, it is argued that students' stress will not affect negatively in their academic engagement when the level of their grit is high. Grit involves resilience, and persistence which makes the person "work strenuously toward challenges, maintaining effort and interest over years, despite failure, adversity, and plateaus in progress" (Duckworth et al., 2007, p. 1088), implying that students with high grit is expected to be engaged academically even if they have stress compared to the students who are low in grit. Drawing from above studies and arguments it is hypothesized that –

H3: Grit will moderate the stress-engagement relationship in a way that the relationship will be weaker when the level of grit is higher.



Source: Author's Construct

Fig.: 1. Conceptual framework presented schematically

Method

Respondents and Procedure

Data were collected from a total of 220 final year undergraduate students of management and commerce programs. 62 percent of respondents were from commerce stream. Random method of sampling was used in this study. Respondents' age varied between 17 and 24 years, with average for the sample being 19 years approximately. Sample of the study consisted of both the genders and 52 percent of the sample was male. Approximately 38 percent of respondents were from rural areas and 62 percent from urban areas. All the necessary information about the research such as objectives of the study, ways of answering the questionnaire etc., was provided to respondents. They were also assured of the confidentiality of their responses. Survey research suffers from common method variance. Several measures as reported in the literature (Podsakoff, MacKenzie,

Lee, & Podsakoff, 2003) were taken to minimize bias. First, data on independent and dependent variables were collected in temporal gap, i.e. in two waves, with a lag of two weeks. In wave 1, questionnaire consisting of stress and moderating variables were administered which was followed by administration of academic engagement scale (Wave 2). Second, it was emphasized that there were no right or wrong answers in the questionnaire. Anonymity to respondents was also assured.

Measures

Academic Stress: Students' academic stress was measured using 40-item scale developed by Rajendran and Kaliappan (1990). The scale measured five areas of stress namely Personal inadequacy, Fear of failure, Interpersonal difficulties with teachers, Teacher-pupil relationship / Teaching methods and Inadequate study facilities. Responses were taken on 5-point Likert scale ranging 1 (No stress) to 5 (Extreme stress). Scoring was done on total points of the full scale. Higher score indicated high stress. Reliability of the scale was found to be 0.77 (Cronach's alpha) on the present sample.

Academic Engagement: Students academic engagement was assessed using Utrecht Work Engagement Scale – Student version (UWES-S), developed by Schaufeliet al. (2002). 17-items UWES-S consisted of three sub-scales: vigor (6 items), dedication (6 items) and absorption (5 items). Sample items included; 'When I'm doing my work as a student, I feel bursting with energy' (vigor); 'I find my studies full of meaning and purpose' (dedication); and 'Time flies when I am studying' (absorption). The scale items were scored on 5 points ranging from 1 (Never) to 5 (Always). Scoring was done on total points of the full scale because when we talk academic engagement, we take it as a singular concept rather than three different concepts. Higher score indicated higher level of academic engagement. Cronbach's alpha on the current sample of the scale was found to be 0.78.

Growth Mindset: To measure students' growth mindset, the current study adopted items from Implicit Theories of Intelligence Scale -Self

Table – 1: Means, Standard Deviations (SDs) and Correlation Coefficients among Variables

Variables	Mean	SD	1	2	3	4	5	6	7
1 Age	18.67	2.42	-						
2 Gender	1.18	.56	.04	1					
3 Locality	1.06	.28	.06	.04	1				
4 Stress	3.28	.32	.09	.08	.04	1			
5 Engagement	2.64	.63	.07	.16*	.02	.10	1		
6 Growth mindset	3.50	.52	.12*	.05	.13*	.09	.41**	1	
7 Grit	3.17	.48	.08	.07	.06	-.22*	.37**	.35**	1

* Correlation is significant at the 0.05 level , ** Correlation is significant at the 0.01 level.

Form, developed by (Dweck, 2000). The scale consisted of six items in all of which three items are to measure fixed mindset and three for the growth mindset. Sample item to measure growth mindset is, “No matter who you are, you always can change your intelligence a lot”. Responses were taken on a 5-point Likert-type scale anchoring 1 (strongly disagree) to 5 (strongly agree). Higher scores reflected higher level of growth mindset. Reliability of the scale in the current sample was found to be 0.81 (Cronach's alpha).

Grit: Grit was measured using the Grit–S scale developed by Duckworth and Quinn (2009). The 8-item scale measured two dimensions of grit: perseverance of effort and consistency of interest, having four items each. Sample items included, “New ideas and projects sometimes distract me from previous ones” (reverse coded for consistency); and “Setbacks don't discourage me” (perseverance of efforts). Responses were taken on a 5-point Likert scale ranging from 1 (Not like me at all) to 5 (Very much like me). Higher score indicated higher level of grit in students. The reliability for this measure in the current sample was found to be 0.82 (Cronach's alpha).

Results

The analysis was performed in combination of a confirmatory factor analysis (CFA) and a hierarchical regression analysis including moderating effects. The CFA was conducted to evaluate the distinctiveness of the measures used in the study. This CFA resulted in acceptable model fit to the data. GFI= 0.85, CFI= 0.88, TLI=

0.84; RMSEA = 0.06 was found in the four–factor model compared to the single factor model (GFI = 0.65., CFI =0.38, TLI= 0.35; RMSEA = 0.29). Thus, CFA results revealed that self-reported variables were distinct from one another.

Means, standard deviations, and correlations for the study's variables are presented in table 1. As expected, a negative and significant relationship was found between stress and engagement. Perception of higher stress reduces engagement level of students, the results revealed. Growth mindset and grit showed positive and significant relationship with students' academic engagement.

Table 2: Hierarchical Regression Analysis: Moderating Effect of Growth mindset and Grit

	Model 1		Model 2	
	β	t	β	t
Stress	-.11*	-3.78	.52	0.88
Growth mindset	.25**	8.34	.36**	3.21
Grit	.20**	2.37	.15*	3.32
ST*GM			.59**	8.39
ST*GR			.43**	8.27
R ²		.52**		.60**
ΔR^2		.52**		.08**

*p < 0.05; **p < 0.01

β = Standardized Coefficients Beta; t = t-values;
ST*GM = Interaction of stress and growth mindset;
ST*GR = Interaction of stress and grit

Hypotheses of the study were tested using hierarchical regression analysis. Table

2 summarized the results of the regression analysis. As hypothesized, academic stress has negative effect on engagement ($\beta = -.11, p < .05$), supporting the hypothesis 1 of the study. The result of the study is in line with other researches on stress-outcomes relationship which showed stress as debilitating such as decreased performance and well-being (e.g. Spangler, Koesten, Fox, & Radel, 2012). Perception of stress decreases students' efforts and abilities to deal with their academic requirements, thereby reducing their academic engagement.

Growth mindset and grit are hypothesized to moderate the relationship between stress and engagement. Using approach of Cohen, Cohen, West, and Aiken (2003), moderation analysis was conducted. In the first step, the main effect of the stress, growth mindset and grit were regressed on academic engagement followed by the cross-product terms representing the interaction of the stress and growth mindset (ST*GM) and stress and grit (ST*GR). To control multicollinearity, the standardized scores for predictors were computed (Aiken & West, 1991) and then new variables for interaction terms were created by multiplying standardized scores for predictors. Table 2 showed that interaction of stress and growth mindset and stress and grit had significant effects on academic engagement. Interaction terms together substantially increased the amount of explained variance by 8 percent ($\Delta R^2 = .08, p < .01$). Growth mindset interacted significantly with stress in relation to academic engagement ($\beta = .59, p < .01$), lending support to second hypothesis of the study. Following the procedure suggested by Aiken and West (1991), Interaction pattern was graphically created (Figure 2) by drawing separate regression lines for two groups of students: high stress and low stress (one standard deviation above and below the mean, respectively). Under conditions of high stress, academic engagement is significantly higher for those with high growth mindset than those with low growth mindset, the interaction plot revealed.

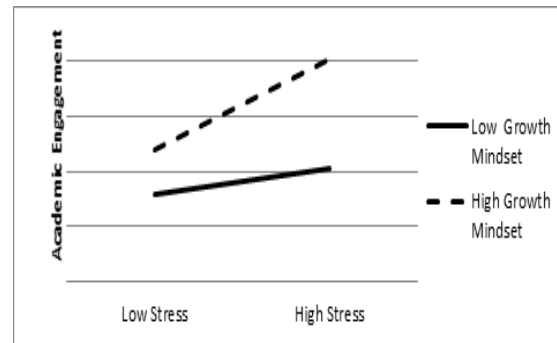


Figure 2: Plot of the interaction between the stress and growth mindset in predicting academic engagement

Grit also interacted significantly with stress in relation to academic engagement ($\beta = .43, p < .01$). Graphical representation of the interaction effect is shown in figure 3. Examination of the interaction plot showed that grit also worked on stress-engagement relationship. Specifically, when students perceived higher level of grit, students' academic engagement was high even in the condition of high stress. Students with low grit are likely to succumb in high stress. Thus, the finding supported the third hypothesis of the study.

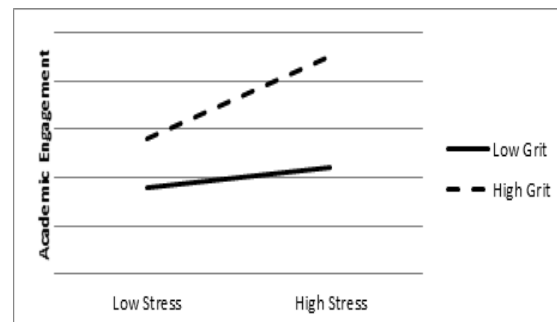


Figure 3: Plot of the interaction between the stress and grit in predicting academic engagement

Discussion

Stress has become visible in college students' life in modern times. Negative effects of stress on students' outcomes such as their academic performance and well-being are well documented in the stress literature. Similarly, the current study showed negative influence of stress on students' academic

engagement. The study was undertaken on final year undergraduate students of commerce and business. Final year undergraduates are overburdened with relatively high level of course works, projects, examinations, scarcity of study time, and become highly concerned about their career and competition. These issues make them stressed and as result of this, they are likely to become disengaged with their academic work. Such students find difficulty in concentrating on their academic activities, lose motivation and enjoyment and exhibit reduced interest in their academic activities and responsibilities. Performance pressure makes academic environment very stressful (Erkutlu & Chafra, 2006), disrupt daily functioning leading to the problem of adaptation (Franken, 1994) and adjustment (Bernstein, Penner, Stewart, & Roy, 2008) in campus which affects their academic engagement. According to Motowidlo, Packard, and Manning (1986) stress leads to a decrease in cognitive/motivational elements, such as concentration, perseverance, and adaptability. Stress produces cognitive impairment and depression (e.g., Hammen, 2005; Schwabe & Wolf, 2010) promotes absenteeism, reduces productivity (Atkinson, 2004; Schneiderman et al., 2005); and because of these, students are not able meet their academic requirements as per the expectation, thus affecting their academic engagement.

The study investigated growth mindset and grit as moderators in stress–engagement relationship. Results suggested that growth mindset has main as well as interactive effect on students' academic engagement. Growth mindset which is based on the incremental theory of intelligence (Dweck, 2006) advocated that intelligence, abilities, and competencies develop over time and with efforts. Students with growth mindset plan and strategize their work, put efforts to achieve their goals (Dweck et al., 1995; Steele, 2010). Growth mindset generates strong desire to keep learning, growing and developing and this desire and motivation, probably keeps students academically engaged. Growth mindset when interacted with stress showed positively influencing students' academic engagement. Looking at the interaction pattern

presented in figure 2, it was found that students with high growth mindset showed high academic engagement even in the situation of high stress. One reason could be that growth mindset promotes resilience (Dweck et al., 1995; Dweck, 2006; Steele, 2010), which is the capacity to maintain and recover in the face of adversity (Ryff, Love, Essex, & Singer, 1998), which provides energy and to address the challenge and facilitates students to develop skills and strategies to deal with those stressors. Growth mindset alters the way students think, learn and achieve (Steele, 2010), creates positive attitudes in students which may help them navigate barriers (stress) to success (academic engagement). Growth mindset makes students motivated and persistent (Mueller & Dweck, 1998) in efforts which in turn help students subside the negative effects of stress and keep them focused on their academic goal.

Current study also examined the interactive effect of grit on stress-engagement relationship. The study found both direct and indirect effects of grit on students' academic engagement. It is found that gritty (high level of grit) students become dedicated in their academic goal and get absorbed in their study. The study's result is in line with the findings of Datu, et al., (2016). Grit with the interaction of stress is found to positively influence on students' academic engagement. Interaction graph presented in figure 3 clearly showed that gritty students exhibited more engagement when they experienced high stress compared to those students having low level of grit. Grit reflects one's passion, determination and perseverance to accomplish long-term goals in the face of challenges and obstacles (Duckworth et al., 2007). High passion and determination to achieve the goal keep students engaged in their academic activities ignoring perception of stress. Other reason for this could be that grit makes students work hard continuously and consistently, which helps students to address issues that cause stress. In this process, stress gets reduced and students feel positive emotions (Sheldon & Houser-Marko, 2001) leading to academic engagement. Students' orientation towards future goals results in increased level of engagement with their studies (Horstmannshof &

Zimitat, 2007). Thus, grit worked as an antidote to stress facilitating students to get engaged.

Conclusion, Implications and Limitations

The study aimed at understanding the relationship between the students' stress and academic engagement with growth mindset and grit as moderating factors in the relationship between the two variables. As expected, negative relationship is found between stress and engagement. Final year college students have different kinds of demands on them and because of these; students are likely to experience disengagement. Understanding moderating or interactive role of growth mindset and grit in the relationship was the important objective of the study. The study found that both the variables significantly moderated stress-engagement relationship. It was found that students' stress doesn't negatively impact on their academic engagement when they have a growth mindset. In other words, with a higher growth mindset, students get more engaged even when they have stress. Thus, the mindsets make students perceive their academic world differently. Similar result is found with grit as a moderator in the stress-engagement relationship. Students with high grit continued to exhibit academic engagement even in high stress situation. Thus, growth mindset and grit work as key factors in dealing with the academic problems (stress) and steering towards the academic engagement.

The present research has both practical and theoretical implications. Insights collected from this research may help both educational institutions and students. Stress is the reality of college students in current time which has negative implication on psycho-social outcomes of students. The study proved that growth mindset and grit can counter effects of stress. Educational institutions can develop plans and strategies to imbibe growth mindset, the positive psychological resource, in students as it can be taught (Blackwell et al., 2007; Dweck, 2006). Similarly, students can also be trained to become gritty and reap benefits out of it as grit can be developed and cultivated through proper intervention (Duckworth et al., 2007). Students

can mitigate the perception of stress and keep themselves engaged academically by adopting growth mindset and by becoming gritty to the goal they have set. Thus, growth mindset and grit can be used as a mechanism to counter the effect of stress in students. Theoretically, the study will extend contribution and enrich the literature of stress and academic engagement from the perspective of growth mindset and grit.

As the study has certain limitations, therefore findings of the study should be considered with caution. First, although the two-wave design used in the study alleviates the weakness of common method variance (Podsakoff et al. 2003), the self-report data on all variables of the study cannot entirely avoid the risk of common method variance, thus making the result to be contaminated. Second limitation is that the study is based on a small sample which may affect the ability to generalize the study results on wider population. More research is needed to reliably determine the moderating role of mindset and grit on stress – engagement relationship.

Further, the study is cross-sectional and co-relational which only asserts the association among variables but an interconnection cannot be ascertained. Longitudinal and experimental designs should be used in future research to strengthen the validity of these theoretical conjectures. Future research should address these issues to have better insights on the theoretical propositions of the study.

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