

Stress Mindset of Lebanese Secondary School Students on Public Schools and its Relationship to Academic Performance

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Abstract.

The aim of this study is to examine the extent to which secondary public school Lebanese students adopt a mindset that the effects of stress are enhancing or debilitating. Moreover, it investigates the relationship between students' stress mindset and their academic performance. The stress mindset of third secondary students, grade 12, having official exams at the end of their academic year was compared to the mindset of grade 11 students not having official exams. The study employed a descriptive quantitative design. The sample included 285 participants, 165 grade 12 students and 120 grade 11 students chosen from eight public secondary schools in Aley district in Mount Lebanon. The participants were selected using the systematic random sampling technique. Data was collected using the Stress Mindset Measure (SMM) developed by Crum et al. (2013) and then analyzed using SPSS (Statistical Package for the Social Sciences version 23). The results showed that the majority of students experience extreme and moderate stress, with schools and exams being the main primary source of stress. Data analysis revealed that more than half of grade 12 students have a mindset that stress is debilitating which was more than that of grade 11 students. Chi-square analysis showed a significant association between stress mindset and academic performance.

Keywords: Stress mindset, performance, Lebanon, official examinations

1. Introduction

Stress is the process by which potentially stressful situations (stressors) cause psychological stress responses (ie, emotional, behavioral, and cognitive responses induced by stressors). To better understand stress, it is necessary to identify the determinants of psychological stress responses. Coping, the cognitive and behavioral effort required to manage stressors, is one such determinant (Lazarus & Folkman, 1984). The experience of stress motivates a person to either overcome, withstand, or minimise the demands placed on them by a particular stressor (Salehi et al., 2010). Yet, the impact of this stress can be quite varied, with some benefitting and others suffering as a consequence of their stress (Updegraff & Taylor, 2000). There is considerable evidence that stress can produce positive psychological and physiological effects (for a review see Linley & Joseph, 2004), however, there is an equally extensive body of evidence associating stress with negative psychological and physiological effects (for a review see Lupien et al., 2007). The term “mindset” in learning was officially proposed by Carol Dweck in 2006:

“mindset profoundly affects the way you lead your life” (p. 6). It is a new concept that has the potential to enhance our understanding of stress in the field of psychology. According to Crum et al. (2013), stress mindset is a distinct and meaningful variable that influences an individual’s response to stress and outcomes such as health and performance under stress. Stress mindset is conceptualized as the extent to which an individual holds the mindset that stress has enhancing consequences for various stress-related outcomes (referred to as a “stress-is-enhancing mindset”) or holds the mindset that stress has debilitating consequences for outcomes such as performance and productivity, health and well-being, and learning and growth (referred to as a “stress-is-debilitating mindset”). Thus, Stress mindset focuses on the nature of stress itself (i.e., whether stress is enhancing or debilitating). Preliminary studies measuring stress mindset suggest that stress mindset is related to perceived health and life satisfaction over and above aggregate measures of amounts of stress, appraisals of stress, and various coping strategies. In line with evidence that suggests mindsets can be changed quite readily by simply orienting people to different information (Blackwell et al., 2007; Dweck, 2008). Taken together, the emerging body of research on mindsets suggests that one way to meaningfully influence the stress response is to change an individual’s mindset about stress.

Stress mindset theory suggests that positive stress beliefs lead to positive, rather than negative, outcomes when engaging with stressors. Similarly, the Transactional Model of Stress predicts that perceiving a stressor as challenging leads to positive outcomes whereas negative perceptions of the stressor as threatening invoke negative outcomes (Kilby & Sherman, 2016). According to Ben-Avi et al. (2018) having a stress-enhancing mindset makes your life better, if you can put a positive spin on having a life that’s full of pressure. Individuals who have a stress-is-enhancing mindset exhibit more adaptive physiological responses and more approach-oriented behavioral responses in the face of stress. Stress mindset is distinct from stress evaluations in that it is a metacognitive belief about the nature of stress in general, and exists regardless of how an individual assesses demands and resources at any particular moment (Crum et al., 2013). For

example, one may view a stressor (e.g., job interview) as threatening, but has a stress-is-enhancing mindset, expecting the experience of stress to result in positive outcomes (e.g., motivation to practice interviewing skills, staying cognitively focused, and ultimately improving self-esteem). Conversely, one might view the job interview as a challenge but has a stress-is-debilitating mindset, expecting the experience of stress to result in negative outcomes (e.g., energy depletion, cognitive deficits, and reduced self-esteem). In addition, mindset differs from evaluations of challenge or threat in its temporal focus: threat or challenge evaluations are an immediate assessment of one's resources to cope with the demands of the stressor while mindset assesses the long-term influence of the stressor in light of one's belief about the nature of stress. Understanding how stress mindset operates in challenging and threatening contexts provides critical insights into if and how individuals can improve their responses to stress without relying on changing the demands of a situation (which may be difficult or impossible), or improving their immediate resources (which can be infeasible or taxing). Further, the majority of interventions intended to engender adaptive stress responses rely on altering situation-specific stress evaluations. By showing that the stress response can be altered independent of situation-specific evaluations by changing individuals' general beliefs, we advance existing literature and lay the foundation for an integrated theory that can apply to any type of stressful situation. Practically, understanding how stress mindset operates in the context of threat and challenge evaluations will offer more specific coping strategies, and more flexible options that can aid individuals in improving their stress responses in varied contexts.

On the other hand, it is well known that students, both at a secondary and tertiary level, experience high degrees of academic-related stress (Regehr et al., 2013; Galbraith & Brown, 2011; Cohen & Khalaila, 2014). Previous reviews examining the relationship between students' mindsets and their performance indicate that mindset has an essential role in learning (Dweck, 2000, 2012; Tirri & Kujala, 2016; Yeager & Walton, 2011). Based on a review done by Zhang et al. (2017), it is evident that students' mindsets are associated with students' academic achievement in various means. Specifically, students' mindsets play the roles of cause and mediator. Mindset can also be an outcome of students' academic achievement. The result suggests that students' mindsets are related to their academic performance and that their academic achievement can be affected by intervention. Other studies indicated that attributions and emotions were important mediators between mindset and achievement. (Cury et al., 2008; Mouratidis et al., 2017)

Yeager et al. (2011) discussed the negative role in attribution of a fixed mindset and the positive role of intervention in emotion with a growth mindset. Similarly, Earlier studies have also found a negative effect of fixed mindsets on achievement. For example, Heyman and Dweck (1998) found that American second graders' low achievement was related to "belief of trait stability," which might be regarded as a fixed mindset. However, the study by Romero, Master, Paunesku, Dweck, and Gross (2014) illustrated the significantly positive role of a growth mindset in improving course grades in academic subjects.

Moreover, the adoption of a particular mindset was found to depend on prior achievement level. For example, high achievers' mindset was significantly more incremental than that of medium and low achievers. (Gonida et al., 2006)

The new formal educational system of Lebanon implemented in 1997, like in many other countries, splits the years of instruction as follows: 6-3-3 (six years for the primary cycle, three years for the intermediate cycle, and three years for the secondary cycle), followed by the higher education cycle. Primary school education is followed either by a six-year intermediary and secondary program, leading to the official Lebanese baccalaureate certificate in grade 12, which is also based on the equivalent French school diploma, or by a three- to six-year technical or vocational training program. In the Lebanese system progression from one level to another depends generally upon passing official external examinations administered by the government at the end of each school cycle. There are two official exams, the first one, the *brevet certificate*, at the end of the intermediate level (grade nine) and the second one, the baccalaureate II exam, is given at the end of the third year of the secondary cycle (grade twelve). Ninth grade students have to pass the official exam to be allowed to complete their high school education. Similarly, twelfth grade students should pass the Lebanese Baccalaureate Exam to complete their higher university studies. The baccalaureate part II has four main tracks: literature and humanities, which includes language, literature, history, philosophy, education, arts, and religion; sociology and economy, which includes economic sciences, politics, business and management, law, and sociology; general sciences, which includes mathematics, physics, chemistry, and their applications at the level of engineering; and life sciences, which includes biology and life sciences, chemistry and their applications in the area of medicine, health, agriculture, and other related subjects.

Lebanese Official public examinations is a nerve-wracking experience for thousands of Lebanese youth (Abou Jaoude, 2014). These exams rely heavily on memorization rather than comprehension of concepts and can lead to a high rate of failure or dropouts. This fact has led many school teachers to waste much time explaining and teaching the content of previous examinations so students may learn how to answer them correctly.

1.2 Purpose of the study and questions of research

The purpose of this study is to highlight the current status of stress mindset of Lebanese secondary public school students. It aims to study the relationship between students' stress mindset and their academic performance. The study addressed the following research questions:

- 1- To what extent do Lebanese secondary public school students experience stress? What is the primary source of this stress?
- 2- To what extent do grade 12 Lebanese secondary public school students adopt a stress mindset that the effects of stress are enhancing or debilitating as compared to grade 11 students?
- 3- Is there a relationship between students' stress mindset and academic performance?

2 Method

This study implemented a descriptive quantitative design. The aim is to explore the relationship between stress mindset and academic performance of Lebanese secondary

public school students. For this purpose the Stress Mindset Measure (SMM) instrument developed by Crum et al. (2013) was administered to grade 11 and 12 secondary students. Students' overall averages was gathered from the schools' administrations. Descriptive and inferential analysis using SPSS program (Statistical Package for the Social Sciences version 23) was implemented to analyse the data collected.

2.1 Sample and participants

Eight public secondary schools in Aley district in Mount Lebanon constituting all the public schools in this region participated in this study. The secondary schools serve students from grade 10 through grade 12, besides they offer the Lebanese Bacculaureate program. 285 students, both males and females, from grades 11 and 12 were selected from these schools by implementing the systematic random sampling technique. Using the roster (students' list), every second, third, fourth or fifth student based on the number of students in each class, was selected to participate. 120 students enrolled in the eleventh grade, and 165 in the twelfth grade answered completely the SMM. The age of students ranged from 16 to 19 years.

2.2 Instrument

Data was collected using the Stress Mindset Measure (SMM) developed by Crum et.al. (2013). The instrument is composed of eight-items used to address the extent to which an individual adopts a mindset that the effects of stress are enhancing or debilitating. Items, listed below, evaluate a participant's general stress mindset (e.g., "The effects of stress are negative and should be avoided"), as well as signs and symptoms related to the enhancing and debilitating consequences of stress in the realms of health and vitality, learning and growth, and performance and productivity (e.g., "Experiencing stress improves health and vitality"). Participants rated items on a five-point scale ranging from 0=strongly disagree to 4=strongly agree. SMM scores are obtained by reverse scoring the four negative items (indicated by an *) and then taking the mean of all 8 items. Higher scores on the SMM represent the mindset that stress is enhancing. The instrument is composed of the following questions:

Preliminary Questions

- a. How much stress are you experiencing in your life right now?
(1=None, 4=A Moderate Amount, 7=An Extreme Amount)
- b. What is the primary source of stress in your life?
(Open response)
- c. How stressful do you perceive this to be?
(1=Not Stressful At All, 4=Moderately Stressful, 7=Extremely Stressful)

Stress Mindset Questions

Rate the extent to which you agree or disagree with the following questions:

(0 = Strongly Disagree; 1 = Disagree; 2 = Neither Agree nor Disagree; 3 = Agree; 4 = Strongly Agree. Use this scale for all 8)

1. The effects of stress are negative and should be avoided.*
2. Experiencing stress facilitates my learning and growth.
3. Experiencing stress depletes my health and vitality.*

4. Experiencing stress enhances my performance and productivity.*
5. Experiencing stress inhibits my learning and growth.*
6. Experiencing stress improves my health and vitality.
7. Experiencing stress debilitates my performance and productivity.*
8. The effects of stress are positive and should be utilized.

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3 Results:

The valid and reliable Stress Mindset Measure (Crum et al., 2013) was used to assess stress mindset. Participants indicated their agreement with eight phrases regarding their beliefs about stress, such as “the effects of stress are negative and should be avoided” on a 5-point Likert-type scale (0 “strongly disagree” to 4 “strongly agree”). Mean scores were calculated with a range from 0 to 4 with higher scores representing a greater stressis-enhancing mindset (i.e., the stress mindset is informed strongly by positive beliefs) while lower scores represent a more debilitating mindset (i.e., the stress mindset is informed strongly by negative beliefs).

Table 1 shows the distribution of the randomly chosen sample among schools, grade level and gender . Forty students were chosen from school A while thirty five students were chosen from the other seven schools. The sample consisted of 120 grade 11 students and 165 grade 12 students with 160 females and 125 males.

Table 1: Students' Demographic Overview: Cross tabulation of School, Grade level and Gender

School		Grade level		Total
		Grade 11	Grade 12	
A	Female	4	12	16
	Male	11	13	24
B	Female	9	11	20
	Male	6	9	15
C	Female	14	12	26

	Male	1	8	9
D	Female	19	14	33
	Male	10	6	16
E	Female	5	7	12
	Male	10	13	23
F	Female	9	12	21
	Male	6	8	14
G	Female	7	14	21
	Male	8	6	14
H	Female	11	14	25
	Male	4	6	10
Total	Female	64	96	160
	Male	56	69	125
		120	165	285

Source: (Students' survey data)

In order to answer research question 1, the extent of stress experienced by Lebanese secondary public school students and the primary source of this stress, the first two items of Crum's (2013) survey were analysed.

Figure 1: Extent of Stress Mindset Experienced by Lebanese Secondary Public School Students

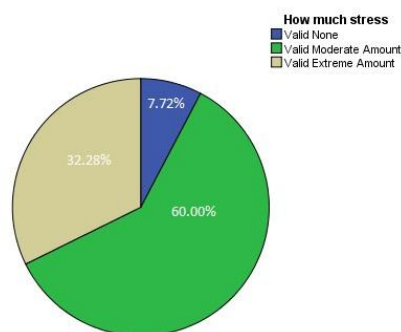


Figure 1 shows that most of the students experience moderate and extreme stress. Moreover, almost half of the students referred the primary source of this stress to exams, while more than the other 25% considered school as a primary source for stress. Family constituted a major source of stress for 3.2% of the participants in the study while some students (14.7%) referred to other sources like peers, sickness, their own thoughts etc. It was also noticed that around 5% has no source of stress and claimed that life was not stressful for them.

Table 2: Students' Primary Source of Stress

Primary source of stress	Frequency	Percent
Exams	140	49.1
School	79	27.7
Family	9	3.2

Other Factors	42	14.7
None	15	5.3
Total	285	100

Source: (Students' survey data)

To answer research question 2 which explores the difference between grade 12 and grade 11 students' extent of mindset whether effects of stress are enhancing or debilitating, the eight likert type items from Crum et al. (2013) questionnaire of mindset were analysed. The mean of the negative items showing that stress is debilitating as well as that of the positive items showing that stress is enhancing was calculated and a cross-tabulation between grade level and extent of stress was constructed and chisquare value was calculated. Results are shown in table 3. Pearson chi-square test was used to study the possible association between the independent variable "students' grade level" and the dependent variable "extent of stress". Results showed that students' perception of stress is debilitating in general rather than enhancing but it was more extant in grade 12 students' perceptions. $X^2 (2, N = 285) = 2.83, p >.05$ indicates that there is no evidence of association between grade level and extent of stress. Thus, the difference between the percentages of grade 12 and 11 may be due to chance.

Table 3: Cross-tabulation of Grade Level and Extent of Mind Stress

Grade level	Stress is enhancing	Stress is debilitating
Grade 11	20 (7%)	101 (35.4%)
Grade 12	16 (5.6%)	148 (51.9%)
Total	36 (12.6%)	249 (87.4%)

Source: (Students' survey data)

To answer research question 3 which aimed to check the relationship between stress mindset and students' performance at school, the mean of the eight items in Crum's et al. (2013) likert type questionnaire was calculated after reversing the negative items and the variable was recomputed by splitting the results of the mean as less than 2 for negative stress mindset and the mean greater than or equal to 2 for positive stress mindset. Also, the students' averages were split into two categories: success for averages of 10 and more and failure for averages less than 10. After that, Pearson chisquare was calculated to examine the association between the independent variable which is the extent of stress and the academic performance of students' as reported by the averages supplied by schools' administrations. Table 4 shows the cross-tabulation, $X^2 (2, N = 285) = 9.41, p <.05$ which indicates that there is an evidence of association between stress mindset and students' academic performance. Thus, the difference between the percentages of low and high mindset- stress extent is not due to chance.

Table 4: Cross-tabulation of Extent of Mind Stress and Students' Academic Performance

Grade level	Success	Failure
Low-Stress Mindset	74 (26%)	137 (48%)
High-Mindset Stress	41 (14.4%)	33 (11.6%)
Total	115 (40.4%)	170 (59.6%)

Source: (Students' survey data)

This study examined the current status of the stress mindset of Lebanese secondary students in public schools, the results showed that around 75 % of the participating students consider exams and schools to be the primary source of stress and around 80 % are experiencing extreme and moderate stress. More than half of grade 12 students have a mindset that stress is debilitating as compared to around 35 % of grade 11 students in spite of the insignificant difference. However, data analysis showed a significant association between stress mind set and academic performance. These findings are in agreement with other studies that emphasized that stress mindset plays an essential role in the learning process (Dweck, 2000, 2012; Tirri & Kujala, 2016; Yeager & Walton, 2011) . Moreover, the results are consistent with the study of Zhang et al. (2017) which reviewed researches between 1998 and 2017 to explore the relationship between stress mindset and academic achievement. The results suggested that students' mindsets are related to their academic performance.

We suggest that educators should provide a positive learning environment for students enhance their mindset.

This research is the first to be done in Lebanon on the Secondary public students' mindset. Despite the fact that all secondary public schools in Mount Lebanon participated in this research, the results cannot be generalized, more studies should be done in all Lebanese provinces and students from all grade levels should be surveyed. More research should be conducted worldwide on the students' growth mind.

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