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Stress, self-efficacy, academic achievement and resilience in emerging adults

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Abstract

Introduction. The aim of this research was to explore whether the variables of academic stress, academic self-efficacy and academic performance are related to resilience, and to compare these variables between groups classified as high and low resilient individuals, in a sample of emerging adults who are university students.

Method. A stratified random sample was used, including 288 students (176 women and 112 men), between 18 and 25 years old. A data record was elaborated for each student, including their academic and socio-demographic data and results from an academic stress inventory, an academic behaviors self-efficacy scale, and a resilience questionnaire. The research was conducted in a public university. Participants were properly informed about the purpose of the research, that the information received would be safeguarded and confidential, and that participation was voluntary. The instruments were applied in the classroom in a group format, over an approximate 35-minute duration. Descriptive analyses were carried out, followed by correlations between the variables and between their factors, as well as a comparative analysis using Student's *t*.

Results. Moderate levels of academic stress were observed; perceived academic self-efficacy was satisfactory; academic performance and level of resilience were both moderate. The correlations were moderate, low and statistically significant; and there were statistically significant differences between the groups classified as high or low resilience.

Discussion and conclusions. The results indicated that higher academic stress levels were associated with lower resilience. Better academic self-efficacy was accompanied by higher academic achievement and resilience; there was a direct relationship between variables. The group classified as not resilient had higher stress scores, lower self-efficacy and slightly lower academic performance than the group classified as resilient.

Key words: Academic stress, academic self-efficacy, academic performance, achievement, resilience, emerging adulthood.

Resumen

Introducción. El objetivo de la presente investigación fue explorar si el estrés académico, la autoeficacia académica y el rendimiento académico son variables relacionadas con la resiliencia y contrastar las variables estudiadas entre grupos clasificados como alta y baja resiliencia en una muestra de adultos emergentes que estudian la universidad.

Método. Se trabajó con una muestra aleatoria estratificada, de 288 estudiantes, 176 mujeres y 112 hombres entre 18 y 25 años. Se aplicó una cédula de datos académicos y sociodemográficos, el inventario de estrés académico; la Escala de Autoeficacia en Conductas Académicas y el cuestionario de Resiliencia. La investigación se realizó en una Universidad pública. A los participantes, se les dio a conocer el objetivo de la investigación y la confidencialidad con la que se resguardaría la información recibida, su participación fue voluntaria. Los instrumentos, se aplicaron en forma grupal dentro de los salones de clase, con un tiempo aproximado de 35 minutos. Se realizaron análisis descriptivos, correlaciones entre las variables y, entre sus factores; además un análisis comparativo con el estadístico *t* de Student.

Results. Se observan niveles de estrés académico moderados; autoeficacia académica percibida satisfactoria; el rendimiento académico es moderado y un nivel moderado de resiliencia. Las correlaciones son moderadas, bajas y estadísticamente significativas; se encontraron diferencias estadísticas significativas entre los grupos clasificados como alta y baja resiliencia.

Conclusions Los resultados señalan que cuando aumentan los niveles de estrés académico, la resiliencia disminuye. A medida que la autoeficacia académica es más satisfactoria, aumenta el rendimiento académico y la resiliencia; puesto que hay una relación directa entre variables. El grupo clasificado como no resiliente tiene puntuaciones más altas de estrés, se perciben menos autoeficaces y un rendimiento académico ligeramente más bajo que el grupo clasificado como resiliente.

Palabras clave: Estrés académico, autoeficacia académica, rendimiento académico, resiliencia, adultez emergente.

Introduction

Emerging adulthood is a stage between adolescence and young adulthood that covers the ages of 18 to 25 years (Arnett, 2000; 2016). It is characterized by identity exploration, instability, focus on self, and feeling in-between (Arnett, 2000, 2013, 2016). Emerging adults who enroll in higher education experience opportunities and challenges; for example, a change of residence, greater independence from their parents, combining school with work, or establishing new social relations (Arnett, 2013; Peer, Hillman, & Van Hoet, 2015). The changes that take place during this period, together with the increase in academic demands, may make successful adaptation to university difficult, generating high levels of stress, dissatisfaction and/or poor academic performance (Franco, 2015). However, external factors such as the university education (Gutierrez & Park, 2015), and support from family, friends or a romantic partner (Arnett, 2013) and internal factors such as optimism (Arnett, Žukauskienė, & Sugimura, 2014), self-esteem and self-efficacy (Arnett, 2013), are important for managing this transition.

Stress is an individual's relation to his or her environment when that environment is considered to be threatening, to exceed their resources or to put their well-being at risk (Lazarus & Folkman, 1986). In particular, when speaking of the demands typical of the educational context, we refer to academic stress. Academic stress appears when the student is subject to demands that he or she judges to be stressful; they create a disequilibrium, leading the individual to implement action and coping strategies to restore a state of equilibrium (Barraza, 2006). Fernández, González and Tiranés (2015) and Sheykhjan (2015) indicate that exams, peer competition, conflicts with teachers and project deadlines are reported as sources of stress, which, if not managed successfully, may not only lower performance but can affect students' physical and mental health (Lin & Huang, 2014; Peer et al., 2015; Watson & Watson, 2016). On the other hand, those who respond positively to academic stress take physical and mental care of themselves, regulate their emotions and are more self-efficacious (Watson & Watson, 2016; Zajacova, Lynch, & Espenshade, 2005).

Bandura (1995; 2006) conceptualized self-efficacy as one's belief in one's ability to succeed in specific situations. When students have the conviction that they are able to successfully perform scholastic activities, it is called academic self-efficacy (Bandura, 1995; Zajacova et al., 2005). Students with high self-efficacy beliefs tend to interpret academic

work as one more challenge that they efficiently handle, relying on their abilities; they make effective use of their acquired knowledge and skills (Bandura, 1995), present higher academic achievement and are more likely to meet their academic goals (Denovan & Macaskill, 2013; Khan, 2013; Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). By contrast, low self-efficacy is often linked with high rates of anxiety and stress-related symptomology (Cabanch, Valle, Rodríguez, Piñeiro, & González, 2010). In this way, personal efficacy has been found to moderate the effect of stressful factors and to predict high academic achievement at university (Dwyer & Cummings, 2001; Zajacova et al., 2005).

Academic achievement is considered the outcome of the student's learning, with school grades being used most often as an indicator (Castejón, 2014). Achievement is obtained by fulfilling certain academic activities (Caballero, González, & Palacio, 2015). However, some researchers (Arnett, 2013; Caso-Niebla & Hernández-Guzmán, 2007) concur in that quantitative results obtained during the school year do not reflect the student's performance, given that the latter depends on socioeconomic, demographic, cognitive and affective-emotional variables. Among the factors that have been shown to play a critical role in university students' academic achievement we find: adequate stress management (Conley, Travers, & Bryant, 2013), self-efficacy (Caballero, Abello, & Palacios, 2007; Prince-Embury, 2013; Zimmerman, 2000) and resilience (Wilks & Spivey, 2010).

Resilience is defined as individuals' ability to adapt and/or make constructive adjustments when facing adverse situations or crises. It encompasses skills such as problem-solving; the individual's perception of possible support from family and friends, and the likelihood of an altruistic, prosocial response in the face of adverse circumstances (González Arratia, 2016, 2018); resilience involves adjusting to the demands of the environment in a functional, adaptive way. Overcoming adverse situations will depend on an individual's age, gender and cultural context (Barcelata, 2015; González Arratia, 2016). While resilience has been shown to be a fundamental pillar of childhood development, the study of resilience in the stages of adult development has drawn increasing attention in the scientific literature (Diehl, Hay, & Chui, 2012), especially in the early years of adult life, given that this is a period of plasticity, exploration, challenge and changes needed in order to ultimately establish the roles and responsibilities of adults (Tanner, Arnett, & Leis, 2009). Research by Dawson and Pooley (2013), Luecken and Gress (2010) and Wilks and Spivey (2010) is consistent in indicating that, during the university years, protective mechanisms that foster resilience --such as sup-

port from family and friends-- help emerging adults to reduce stress and promote psychological well-being; by contrast, the lack of positive relations with others negatively influences academic achievement and increases the level of stress.

Transitional periods of development can be moments of vulnerability; emerging adulthood along with stressful situations in the university context can create disequilibrium, where the demands exceed available resources, and result in multiple tensions (Peer et al., 2015). Cicchetti (2010), however, has argued that individuals can demonstrate resilience in certain domains and contexts, while presenting problems in others when risk is involved; in fact, there is empirical evidence (Sagone & Caroli, 2014a; Taylor, Doane, & Eisenberg, 2014) demonstrating that in the university context, students classified as resilient use adaptive coping strategies, know how to ask for help, and perceive that they have the support of family and friends, while the non-resilient tend to procrastinate and have a lower level of psychological well-being.

Elsewhere, certain researchers indicate that stress is negatively associated with resilience (Wilks & Spivey, 2010), while self-efficacy and academic achievement have a positive association. In Mexico, the relationship of these variables as a whole has not been the subject of research in a university population or in a specific period of adult life such as emerging adulthood. This type of research is relevant for the different actors in higher education (administrators, teachers and students), because healthy stress management can be promoted by developing factors that encourage resilience. Moreover, better understanding of personal resources may be useful in the design and implementation of interventions that promote resilience in this stage of life.

Objectives and hypotheses

The aim of the present study was: a) to determine whether academic stress, academic self-efficacy and academic performance are variables related to resilience, and b) to compare these variables between groups classified as individuals with high and low resilience. The following hypotheses are proposed: 1) a high level of academic stress is negatively related to resilience; 2) academic self-efficacy and academic achievement are positively related to resilience, and 3) academic stress, academic self-efficacy and academic achievement are statistically different between the high and low resilience groups.

Method

Participants

The study sample was a stratified, random sample composed of 288 Mexican students from different degree programs, as follows: Business Administration $n=50$ (17.4%), Accounting $n=43$ (14.9%), Law $n=58$ (20.1%), Computer Science $n=35$ (12.2%), Psychology $n=57$ (19.8%) and Computer Engineering $n=45$ (15.6%). Of the total sample, 176 were women (61.1%) and 112 were men (38.9%); ages ranged from 18 to 25 years ($M=20.44$, $SD=1.61$). A large majority of students were single with no children (93.1%), 4.5% were living with a partner and 2.4% married. A total of 32.3% received some type of scholarship, 78% lived with their parents, 67.7% had no outside employment. Regarding the students' parents, 38.9% of the fathers and 35.8% of the mothers had completed basic education.

Instruments

For purposes of the present study, a record of academic and sociodemographic data was elaborated for each student, including their grade point average, sex, age, marital status, number of children (if any), commute time from home to school, any change in residence, and schooling completed by their parents.

The SISCO inventory of academic stress was applied (Barraza, 2007). This scale contains 31 items on a Likert scale, with five possible categorical values (1 = never, 2 = rarely, 3 = sometimes, 4 = almost always and 5 = always); the scale assesses intensity of stress, how frequently environmental demands are considered to be stressful, how frequently one experiences symptoms or reactions to a stressful stimulus and how frequently coping strategies are used. It explained 58.43% of the variance, obtained a split-half reliability of .87, and Cronbach alpha= .90.

The *Escala de Autoeficacia en Conductas Académicas* (EACA, Academic behaviors self-efficacy scale) (Blanco, Aguirre, Barrón, & Blanco, 2016; Blanco, Martínez, Zueck, & Gastélum, 2011) contained 16 Likert items, with 10 response options (0 not at all, to 10 totally), comprising four factors: communication ($\alpha= .82$), attention ($\alpha= .79$), comprehension ($\alpha= .80$) and excellence ($\alpha= .68$). Taken as a whole they explained 74% of the variance. The questionnaire has optimal fit due to its tetra-dimensional structure (GFI .966; RMSEA .43; CFI .982). For purposes of this investigation, the global index of perceived self-efficacy was considered.

The Resilience questionnaire (González Arratia López-Fuentes, 2016) contains 32 items assessed on a 5-point Likert scale (1 = never, 2 = sometimes, 3 = unsure, 4 = most of the time, and 5 = always). It has three dimensions: a) internal protective factors, related to problem-solving skills ($\alpha = 0.80$), b) external protective factors, referring to the possibility of support from the individual's family or significant others ($\alpha = 0.73$), and c) empathy, referring to altruistic and prosocial behavior ($\alpha = 0.78$). It explained 37.82% of the total variance and showed a reliability coefficient of Cronbach alpha = 0.91.

Procedure

The research was conducted in a public university in Mexico. The inclusion criteria consisted of being a student at the university and having expressed consent to participate in the study. The participants were informed about the purpose of the research, and that the information received would be safeguarded in confidentiality. Students agreed to participate voluntarily and gave their consent. The instruments were applied in the classroom in a group format, with an approximate 35-minute duration.

Data analyses

Descriptive analyses were carried out, as well as correlations between the variables and between their factors; finally, Student's *t* test was used to compare groups with high and low resilience.

Results

Regarding academic stress, according to the standards established by Barraza (2008), observed levels of stress were moderate; students rated the demands of the academic environment as sometimes stressful; and physical, psychological or behavioral reactions were rarely manifested. The EACA, for its part, does not distinguish students obtaining low or high scores; the present study used the classification proposed by Gutiérrez-García and Landeros-Velázquez (2017), with the following ranges of perceived self-efficacy: low (0 to 6.4), satisfactory (6.5 to 7.9) and high (8.0 to 10). Students in this sample fell within the satisfactory range of perceived self-efficacy.

Grade-point average was considered the indicator of academic achievement; for the Mexican population, a GPA below 6 is considered failing, from 6 to 7.4 is low; 7.5-8.9 is

moderate; while scores from 9-10 are high (Gutiérrez-García & Landeros-Velázquez, 2017). For this study sample, moderate academic achievement was observed. The global resilience score was obtained based on the percentile range of 25-75: low (80 to 126), moderate (127 to 144) and high (145 a 160); the average score for this sample indicated that students showed a moderate level of resilience. In like fashion, ranges based on the percentiles 25-75 were established for internal protective factors, external protective factors and empathy, with moderate scores obtained (See Table 1).

Table 1. *Descriptive statistics of the variables, global scores and scores by factor*

Variables	Factors	Descriptive statistics			
		Min.	Max.	Mean	SD
Academic stress	Global index	8.59	85.94	43.03	14.40
	Stressors	13.89	97.22	53.20	15.57
	Physical reactions	.00	100	35.77	22.02
	Psychological reactions	.00	100	38.19	22.29
Perceived self-efficacy	Behavioral reactions	.00	100	31.77	20.71
	Academic achievement	3.50	9.63	7.52	1.16
	Resilience	6.2	9.5	8.18	0.56
Resilience	Global score	76	160	136.26	12.95
	Internal protective factors	29	70	59.27	7.03
	External protective factors	33	55	48.30	4.26
	Empathy factor	12	35	28.68	4.29

Results from Pearson correlation between the study variables and their factors showed moderate, low and statistically significant correlations. Global stress index, stressors, and physical reactions were negatively related to academic self-efficacy, to global resilience and to internal protective factors. Psychological reactions to stress were negatively and significantly related to academic self-efficacy, to the global resilience score, to external protective factors and to empathy. Behavioral reactions to stress were negatively and significantly related to academic self-efficacy, global resilience score, internal protective factors, external protective factors, and empathy. Academic self-efficacy was related positively and significantly to academic achievement, resilience, and its three factors. Academic achievement was positively and significantly related to global resilience score, external protective factors, and empathy (see Table 2).

Table 2. *Correlations matrix between factors of the variables*

Variable	Factors	Global resilience score	Internal protective factors	External protective factors	Empathy factor
Academic stress	1.Global stress index	-.193**	-.240**	-.112	-.076
	2.Stressors	-.139*	-.184**	-.076	-.041
	3.Physical reactions	-.184**	-.230**	-.103	-.076
	4.Psychological reactions	-.280**	-.320**	-.195**	-.125*
	5.Behavioral reactions	-.287**	-.305**	-.216**	-.151*
6.Perceived academic self-efficacy		.338**	.315**	.300**	.205**
7.Academic achievement		.143*	.082	.161**	.137*

* p<.05 ** p<.01

Based on the total resilience score, the 50th percentile was taken as the reference point for the purpose of comparing groups with high and low resilience; participants below this point were classified in the low resilience group, participants above the 50th percentile were classified as high resilience.

In this manner, Student's *t* test was used in order to observe between-group differences (low vs. high resilience), with respect to each of the factors of the study variables. Statistically significant differences indicated that the low resilience group was higher in stress and in its physical, psychological and behavioral reactions; the high resilience group, however, scored higher in the variables of perceived self-efficacy and academic achievement (See Table 3).

Table 3. *Differences between high and low resilience groups in factors of the variables*

Variable	Factor	Low resilience (n=155)				High resilience (n=133)	
		p	T	Mean	SD	Mean	SD
Academic stress	Stress (global index)	.007	2.68	45.14	13.70	40.58	14.86
	Stressors	.063	1.86	54.80	14.25	51.33	16.85
	Physical reactions	.009	2.61	38.89	21.42	32.14	22.22
	Psychological reactions	.000	3.78	42.70	21.44	32.93	22.20
	Behavioral reactions	.000	4.84	37.01	20.62	25.65	19.14
Perceived self-efficacy		.000	-4.40	7.25	1.18	7.83	1.06
Academic achievement		.021	-2.32	8.10	.60	8.26	.51

Discussion and Conclusions

The study sample revealed a moderate level of academic stress; these results differ from those obtained by Estrada-Martínez, Caldwell, Bauermeister and Zimmerman (2012), and by Leipold, Munz, and Michéle-Malkowsky (2018), who indicate that the university ex-

perience and dealing with the typical characteristics of emerging adulthood tend to increase stress levels in university students. These differences are probably due to contextual characteristics of this sample: most students did not have jobs and they lived with their parents. In fact, Arnett (2006) noted that in Mexico, full-time university students often do not look for jobs and do not try to move out, unless it is necessary to attend university in some other city. Since they do not experience such drastic changes as in other populations (Arnett, 2015), they can reflect moderate stress levels.

The sample as a whole obtained satisfactory perceived self-efficacy scores, similar to those reported in other samples of Mexican university students (Blanco et al., 2011; Gutiérrez-García & Landeros-Velázquez, 2017), as well as in samples from other countries (Cassidy, 2012; Sagone & Caroli, 2014b). The typical cognitive development of emerging adulthood allows students to view themselves as capable of making independent decisions (Arnett, 2013), such as enrolling in university; moreover, they have the belief that they can meet their academic goals. Following Bandura's line of thinking (Bandura, 1999), aside from cognitive components, economic conditions and family structure also have an impact on students' aspirations.

With regard to resilience, moderate scores were observed, as in other research studies carried out with similar samples (González-Torres & Garde, 2014; Wilks, 2008). It is likely that conditions of adversity are not as intense in samples of university students; however, one must also consider that resilience is understood and manifest in a unique manner in different contexts.

The first hypothesis was confirmed, given that academic stress was negatively related to resilience; these results are consistent with Reich, Zautra, and Hall (2010), who indicated that only under stressful conditions can we determine if a person is lacking sufficient resilience resources, or if these resources exist, that they have not been successfully implemented. In this regard, we affirm that the sample investigated here does have resilience resources, given that the global score for this variable was moderate; however, it is possible that strategies for problem solving or making decisions (internal protective factors) were not the most adequate ones, leading them to perceive academic situations as being more intense.

The results support the second hypothesis, given that perceived academic self-efficacy was found to be positively and significantly associated with the three dimensions of resilience. Cassidy (2015) and Sidiropoulou-Dimakakou, Argyropoulou, Drosos, Kaliris and Mikedaki (2015) found similar results. In this regard, one may suppose that self-efficacy beliefs contribute to better resilience, given that persons with high confidence in their abilities tend to face difficult situations and see them as challenges to be overcome, instead of avoiding them (Bandura, 1995); they try to exercise control over different complicated and difficult tasks or situations (Sidiropoulou-Dimakakou et al., 2015). Furthermore, Masten (2014) indicated that self-efficacy, as a resilience-related factor, encourages the adoption of healthy behaviors and sustains changes of behavior when one is facing difficult situations.

In addition, academic achievement had a direct relationship with the global resilience score, external protective factors and empathy. Academic achievement and self-efficacy were also positively associated; this might indicate that university students attain better grades when they perceive themselves as having support and as supportive of others. Better grades also are associated with the belief that one can meet his or her academic goals; this concurs with Zimmerman (1995), who argues that when students have a high sense of efficacy for performing an educational task, they participate more freely, work harder and persist longer when faced with difficulties; by contrast, uncertainty about one's ability reduces expectations of success, and does not encourage learning or personal development (Blanco, Ornelas, Aguirre, & Guedeas, 2012).

The third hypothesis was confirmed, given that statistically significant differences were found between the groups. Students classified as nonresilient presented a higher level of academic stress; higher scores in physical, psychology and behavioral reactions to stress; and slightly lower scores in perceived academic self-efficacy and academic achievement; in comparison to the group classified as high resilience. Stressors were manifest similarly in both groups. Based on these results, students with a resilient profile are inferred to have both internal and external resources that favor stress management; by contrast, those classified as less resilient lack both internal and external resources that would help them manage the stressful situations that appear in an academic context. Prior research supports these results; for example, Ong, Bergeman, Bisconti and Wallace (2006) argued that in less resilient individuals, the unpleasant experience of one ordinary stressful event tends to be quickly followed by another, thereby increasing stress levels later on. For their part, Tugade and Fredrickson (2004) found

that more resilient individuals recover more quickly from the psychological and emotional reactions provoked by stress, they seem to show greater commitment and greater response capacity, and they enjoy everyday positive events.

Limitations

Researchers recognize that there may be other variables associated with resilience in the academic context and in this period of life. Although we used a stratified random, representative sample, this study should be replicated in other contexts of higher education, in different types of schools, degree programs, etc. Even though our analysis established that academic stress, academic self-efficacy, and academic achievement are related to resilience, causality may not be inferred. The relationships were low, moderate and empirically significant.

Suggestions

It must be acknowledged that resilience is neither permanent nor global (Barcelata, 2015); in fact, in longitudinal research studies carried out by Ungar (2011), nonresilient adolescents were observed to become resilient as adults, and were successful in important domains such as employment, housing and social activity. On this account, we recommend longitudinal studies where the behavior of emerging adults classified as having high or low resilience can be observed throughout the transitional period of university and possibly after graduation, in the work context. Future research should investigate other proximal and distal factors associated with resilience in the academic context. Family and friends participate directly and indirectly when it comes to overcoming adverse situations; we therefore propose that their risk and protective factors be identified and evaluated as to how they influence the university student. The results obtained from the present study can represent a diagnosis that prompts the design and development of interventions that fortify resilient factors in students, allowing them to face academic situations in a healthy manner.

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