Ambiente de aprendizaje positivo, compromiso académico y aprendizaje autorregulado en bachilleres

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How to cite this article:
Gaxiola Romero, J.C., Gaxiola Villa, E., Corral Frías, N.S., & Escobedo Hernández, P. (2020). Positive learning environment, academic engagement and self-regulated learning in high school students. *Acta Colombiana de Psicología*, *23*(2), 279-288. http://www.doi.org/10.14718/ACP.2020.23.2.11

Recibido, agosto 10/2019; Concepto de evaluación, diciembre 12/2019; Aceptado 10 marzo 2020

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Resumen

De acuerdo con la teoría de ambientes positivos, los contextos donde se brinda apoyo académico pueden promover la adaptación exitosa de los estudiantes, y, a su vez, el resultado de dicha adaptación favorece su éxito académico, lo cual puede medirse con los constructos de compromiso académico y aprendizaje autorregulado en el ámbito académico. Teniendo esto en consideración, en la presente investigación se da cuenta de un trabajo de psicología positiva aplicada en el que se tuvo como objetivo evaluar la relación entre el ambiente de aprendizaje positivo (AAP), el compromiso académico y el aprendizaje autorregulado en bachilleres mexicanos. Para esto, se diseñó un estudio de tipo correlacional en el que participaron 166 estudiantes voluntarios de primer grado de bachillerato, seleccionados por conglomerados, con consentimiento informado individual y de sus padres. Del total de participantes, 76 fueron de sexo masculino (45.8 %) y 90 de sexo femenino (54.2 %), con una edad promedio de 15.2 años (*DE* = .43); quienes respondieron a cuestionarios sobre apoyo académico de padres, amigos pro-académicos, ambiente familiar positivo, compromiso académico y aprendizaje autorregulado. Se realizó un análisis de ecuaciones estructurales, y en los resultados se encontró, con una $p < .05$, que el AAP fue un factor latente formado por el apoyo académico de los padres, los amigos pro-académicos y el ambiente familiar positivo; además, en el modelo estructural, el AAP correlacionó positivamente con el compromiso académico (coeficiente estructural = .80), y este último se relacionó positivamente con el aprendizaje autorregulado de los estudiantes (coeficiente estructural = .55); finalmente el modelo estructural resultante explicó el 30 % del aprendizaje autorregulado. Para concluir, se discute respecto a la posibilidad de que el AAP promueva el compromiso académico y el aprendizaje autorregulado de los estudiantes.
Palabras clave: ambientes positivos, éxito académico, adolescentes, aprendizaje autorregulado.

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El presente artículo se realizó gracias al financiamiento del proyecto CONACYT, clave 281010, "Variables ecológicas predictoras de la resiliencia académica: un estudio longitudinal".

Positive learning environment, academic engagement and self-regulated learning in high school students

Abstract

From the perspective of positive environment theory, supportive environments, can promote student successful academic adaptation. Accordingly, student academic success is the result of academic adaptation, and can be assessed via means of academic engagement and self-regulated learning. Thus, the aim of the present study was to test the relationship between positive learning environments (POLE), academic engagement and self-regulated learning in high school students. Using a cross-sectional design, participants included 166 freshmen high school students, 76 participants of the sample were male (45.8%) and 90 were female (54.2%). Mean age was 15.2 (*S.D.* = .43). Before participation informed consent was obtained from parents and assent from participants. Students answered a questionnaire regarding academic support given by parents, pro-academic friends, positive family environment, and academic engagement and self-regulated learning. Using Structural Equation Modeling the results demonstrated ($p<.05$) that POLE represented a latent factor formed by parental academic support, pro-academic friends and positive family environment. The structural model showed that POLE was positively related to academic engagement (structural coefficient= .80); also, academic engagement was related with self-regulated learning (structural coefficient= .55) and explained 30% of student self-regulated learning. Results suggest that POLE could promote academic engagement and self-regulated learning.
Keywords: positive environments, academic success, adolescents, self-regulated learning.

Introduction

School dropout in Mexico is one of the most critical issues facing the national education system, especially in middle and high school levels. Recent statistics show that only 67.3% of students graduate (INEE, 2017), which implies that 32.7% of the students who start middle school do not complete their high school studies. School dropout may be multifactorial involving psychological, social, economic and cultural factors.

From a psychological perspective, two variables of interest in the academic performance and successful permanence literature are academic commitment (Gómez et al., 2015), and self-regulated learning of students (Chase, Hilliard, Geldhof, Warren and Lerner, 2014; Daura, 2015). Both variables are considered protective against student dropout.

The current study is based on the positive environments conceptual framework (Corral et al., 2014). This theory proposes the existence of positive institutions (Seligman & Csikszentmihalyi, 2000), where positive learning environments constitute sustainable academic supportive contexts that promote student school adjustment. In the case of the present study, student school adjustment is operationalized as academic commitment and self-regulation of learning. In positive learning environments, investment in academic support by parents, teachers, and friends, ultimately results in school adjustment and psychological well-being for all involved. The foregoing allows for the permanence of support and academic performance over time, that is, it is the basis of the sustainability of the system.

In the context of positive environmental psychology, positive environments or sustainable environments in general, promote psychological adaptation. In these contexts, positive families have a fundamental role, because they help the equitable distribution of physical and psychological resources. This allows for the development and optimal growth of each member in the family (Corral et al., 2014). Positive families are characterized by transactional interactions, that is, each member gives and receives resources for the maintenance of a positive family. Affective transactions include giving and receiving affection. Educational transactions can be understood as exchanges of knowledge and skills between family members. Cooperative transactions consist of giving and receiving support to complete tasks. Finally, economic transactions are intended to maintain and develop financial resources for all members.

Relevant to this study, the literature demonstrates a relationship between families that provide an environment of communication and cooperation among their members and student academic commitment (Eccles and Harold, 2013). Likewise, parents who support their children's school activities, providing them with material and motivational resources for their education, can improve their academic commitment (Álvarez et al., 2015). Academic commitment is also associated with pro-academic friendships, that is, those that provide emotional and instrumental resources to

strengthen the learning of their friends (Chen, 2008; Shin and Ryan, 2014). Pro-academic friendships can influence peer academic motivation and persistence (Ricard and Pelletier, 2016; Rodríguez, Ramos, Ros and Zuazagoitia, 2018).

According to previous research, and based on the theoretical positive environments proposal (Corral, et al., 2014), a positive learning environment can be characterized by pro-academic friendships, a positive family environment, and parental academic support. According to the literature, these variables are directly related to academic commitment, and indirectly, as will be discussed later, with self-regulated learning.

Academic commitment includes institutional and student facets where the first includes school rules, infrastructure, and schedules and the latter comprises of student learning effort and student security or acquiescence (Yazzie-Mintz, 2009). The academic engagement dimension includes emotional (interest, positive attitude toward learning, sense of belonging), behavioral (effort, participation, positive behavior), and cognitive engagement (learning goals, investment in learning) (Appleton, Christenson, Kim and Reschly, 2006; Fredericks, Blumenfeld and Paris, 2004).

Self-regulated learning is very important in education, given that it promotes student cognitive awareness, strategy planning and it aids learning by directing their motivation and effort towards important goals all of which may improve academic performance (Lamas, 2008). Students who employ self-regulated learning effectively use learning strategies, assess their progress, and are persistent in executing goal-directed behaviors (Zimmerman, 2000, 2002). Likewise, research indicates that students who use self-regulated learning strategies, where they establish academic goals and use strategies to achieve such goals obtain better results in their classes (Roux, 2015). Furthermore, there is a positive effect of the use of learning strategies on academic performance (Daura, 2015). According to Sharma (2013) self-regulated learning includes organization, critical thinking, strategy formulation and metacognitive self-regulation. Organizational skills enable students to select and differentiate important ideas from irrelevant information. Critical thinking consists of using previously acquired skills and knowledge to reason logically about new situations. Strategy formulation entails the use of learning strategies such as paraphrasing, summarizing and taking notes that involve the translation of new terms to their own words to form new knowledge. On the other hand, metacognitive self-regulation includes goal and activity planning, action monitoring which promote attention and progress self-evaluation, as well as the continuous regulation of cognitive strategies and goals.

Self-regulated learning studies arise from sociocognitive learning theory, which indicates that support characteristics increase and maintain student academic behaviors (Zimmerman, 2002). Additionally, longitudinal studies have provided evidence on the importance of supportive environments, which include parents and friends, in the development of self-regulated learning (King & Ganotice, 2012; Wang & Eccles, 2014).

Previous literature provides evidence of academic commitment preceding self-regulated learning, as it is a motivating element that promotes long-term academic performance development and maintenance (Skinner and Pitzer, 2012). Accordingly, You and Kang (2014) highlighted that self-regulated learning requires that students perceive control and accept their academic environment as well as their school environment-related emotions, which are all indicators of academic emotional and cognitive commitment.

Positive learning environment research, developed in Mexico high school student samples, demonstrate a direct relationship between parental and friend support perception as well as positive family environments and student academic self-regulation. Furthermore, these report an indirect relationship mediated by dispositions to resilience and academic goals (Gaxiola & González, 2019). On the other hand, Gaxiola, Escobedo and González (2018) showed that positive learning environments were indirectly related to academic commitment.

Increasing knowledge about high school student environmental variables associated with self-regulated learning and academic commitment, in the Latin American and international context, can serve as a basis for the development of future promotion, prevention and rehabilitation programs, aimed at improving student academic adjustment and successful permanence. On the other hand, at the disciplinary level, specifically in psychology, it is important to empirically justify the relevance of positive learning environments in relation to academic adjustment-related variables.

Based on the previous evidence, the objective of the present investigation was to evaluate the relationship between the positive learning environment, academic commitment and self-regulated learning in high school students. The exogenous independent variable was positive learning environment, whereas academic commitment was the independent mediating variable and self-regulated learning was the dependent variable. The main hypothesis was that a positive learning environment will be positively associated to academic commitment and, in turn, this will have a positive relationship with self-regulated learning. The hypothetical model is presented in Figure 1.

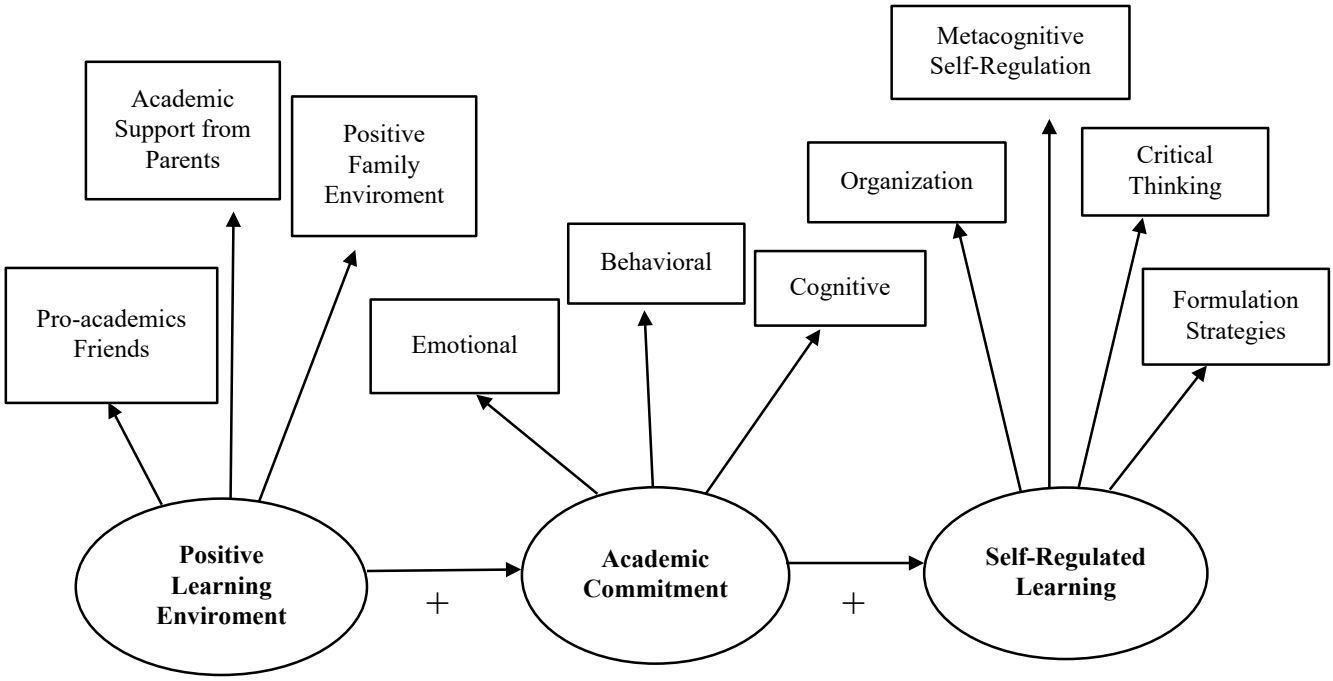

Figure 1. Hypothetical model of self-regulated learning with the mediation of academic commitment.

Methods

Participants

The current study was cross-sectional, correlational and cluster design was used for the sample. Participants were high school students from Hermosillo, Sonora (Mexico) who scored close to average achievement levels according to the PLANEA test (SEP, 2017). This national survey annually measures student mathematics, language, and communication achievement levels. About 20% of students from the selected school were in the most advanced levels for language and communication achievement (level IV) (schools with lowest achievement 1.5% of the students had this level, where those in highest were in the 31.4 %). On the other hand, 14.3% of the students in the selected school scored the most advanced levels in mathematics (level IV), (schools in the highest level had 38.6% of their students score in this level whereas schools in the lowest levels had 0%). This selection criterion was used to avoid possible self-regulated learning or academic commitment, in students belonging to educational institutions with very low or very high academic achievement.

All first-year students from the selected high school were invited to participate in the study. First year students were voluntarily selected in order to include the largest number of new students before they chose to leave their studies. Considering ethical principles, parents and students voluntarily signed informed consent forms. To calculate the necessary sample size for the study, the A-priori Sample Size Calculation Software for Structural Equation Models was used (Soper, 2018). This analysis was developed with the consideration of a hypothetical model composed of three latent variables, 10 manifest variables, a size of the anticipated effect between the high parameters of 0.5, a level of statistical power of 0.9, and an expected probability level of 0.05. The calculation resulted in a sample size of at least 156 participants.

For the selection of the clusters and, in order to meet the recommended sample size, using random numbers five random groups were selected from a total of eight first-admission groups, with an average of 40 students per group. A total of 166 students participated in the chosen clusters, of which 45.8% (n = 76) were male, and 54.2% (n = 90) were female. The average age of the students was 15.2 years (*SD* = 0.43).

Instruments

The utilized instruments were compiled in a booklet, which included questions regarding sociodemographic data such as age and sex, in addition to Likert-type scales to measure each of the research variables.

In order to assess pro-academic friendships, a translation of Chen's Friend-Peer Academic Support Scale (FPASS) (2008), which contains 22 questions, was used. This scale measures emotional and instrumental supports associated to academic activities carried out by friends (e.g. my friends are willing to help me learn). The scale ranges from 0 to 5 (0 = never, to 5 = always) and the original author reported high internal consistency (α = .83).

Parental academic support was measured with a translation of the Chen (2008) PASS (Parental Academic Support Scale), which includes 28 questions about instrumental and emotional parental academic support (e. g. my parents buy me complementary learning materials). The scale is answered from 0 to 5 (0 = never, to 5 = always). According to the authors, the instrument obtained a high internal consistency (α = .88).

To assess positive family environment, the Positive Families Scale (FAMPOS) with 19 items by Aranda, Gaxiola, González and Valenzuela (2015) was used to evaluate the affective, educational, cooperative and economic transactions that family members maintain (e.g. we express affection between us). The scale ranges from 0 to 5 (0 = never to 4 = always) and obtained, according to the authors, high internal consistency (α = .93).

Academic commitment was measured with a Spanish translation of the High School Student Engagement Survey (HSSSE) created by Indiana University (Yazzie-Mintz, 2009), which assesses emotional commitment with a total of 121 questions, using a scale between 1 to 4 (1 = strongly agree 4 = strongly disagree). In addition, the questionnaire measures behavioral and cognitive commitment on a scale between 0 and 4 (0 = never, to 4 = frequently). Although the authors of the original questionnaire did not report instrument reliability, Fooladvand, Soltani, FathiAshtiani and Shoae (2012) obtained a .96 alpha value. An example of an emotional academic engagement item is “They treat me well at school”; Academic behavioral engagement included questions like "How often do you talk to the teacher about class work?"; An example of an item assessing cognitive academic engagement is "I put a lot of effort into doing my schoolwork."

Finally, to evaluate self-regulated learning, a Spanish translation of the short form of the Motivated Strategies for Learning Questionnaire (MSLQ) inventory (Pintrich, Smith, Garcia and McKeachie, 1991, 1993; Sharma, 2013) containing 24 corresponding questions was used. This assessed cognitive and metacognitive strategies that students use in regulating their academic activities. Questions were answered using a 1 to 7 scale where 1 = is not true for you, and 7 = is very true for you (eg I try to relate my ideas to what I am learning in the math course). Sharma (2013) reported acceptable internal consistency for the instrument (α = .73). By subscales, the reliability values of the various strategies were elaboration (α = .78), organization (α = .73), critical thinking (α = .76), and metacognitive self-regulation (α = .83).

Except for the inventory assessing positive family environment, all other instruments were translated from English into Spanish by a group of three bilingual psychology researchers from northwestern Mexico. The translations were first performed individually. Subsequently, a review panel was held with a moderator, until full agreement was reached in the translation of each of the items. Special attention was paid to include the most common Spanish words within the Mexican context. The translation was accepted when 100% agreement among translators was reached. This was accomplished by considering the psychological research experience and cultural knowledge of the translators (Van de Vijver and Hambleton, 1996). All the instruments were validated in a previous, unpublished pilot study, where construct validity within the Mexican context was verified, through the application of confirmatory factor analyses.

Table I demonstrates internal consistency (Cronbach's alpha) values for each of the scales used. Values range from .84 for the pro-academic friendships scale, to .92 for the self-regulated learning scale, which proves statistical relevance and acceptable internal consistency (Oviedo and Arias, 2005).

Table I.
Cronbach's Alpha values for the scales used in the investigation.

Scale	Min.	Max.	Mean	S.D.	Alpha
Pro-academic Friendships	0	4	2.3	.89	.84
Parental Academic Support	0	5	2.5	.72	.87
Positive Family Environment	0	4	2.8	.83	.90
Academic Commitment	2	4	3.4	.51	.89
Emotional	1	5	3.7	.57	.86
Behavioral	1	4	2.0	.59	.72
Cognitive	2	5	4.4	1.02	.72
Self-Regulated Learning	1	7	4.6	1.11	.92
Organization	1	7	4.4	1.4	.75
Critical Thinkng	1	7	4.4	1.2	.76
Strategy Formulation	1	7	4.5	1.2	.77
Metacognitive Self-Regulation	2	7	4.9	1.1	.77

Procedure

Research objectives were explained to the selected institution’s officials; consequently, the corresponding

permits were obtained. Officials were then asked about the number of new groups in the institution and the average number of students per group, in order to decide the number of groups that will be needed to reach the necessary number of participants. Group selection was made at random. In the selected groups, students and teachers were informed of the research objectives, the confidentiality of their personal data, as well as the importance to sign informed consent if they decide to participate freely and voluntarily in the study. As the participants are minors, informed consent was given to each to be signed by their parents or guardians. Both personal assent and parent/guardian consents were collected the next day. Only the students who brought back tutor signed consent and personal assent were able participate in the study.

During class time, two trained psychologists handed out the questionnaires and ensured participants responded to each of them by following the instructions specified for each of the scales. The psychologist did not provide any additional assistance. Completion of the questionnaires took approximately 50 minutes.

Data Analysis

Descriptive data analyses were performed using SPSS version 23. Subsequently, data normality tests were performed. Latent variables were constructed by summing the mean scores of each of the items on the scales. Pearson correlation analyses were performed to test the association between the study variables. Finally, a structural equations model was tested using EQS. Direct and indirect relationships between variables were tested where the degree of fit of the theoretical and hypothetical model proposed (Bentler, 2006). To assess the validity of the structural model, the proposed hypothetical model was compared with the empirical data using the model's fit indices (Escobedo, Hernández, Estebané & Martínez, 2016). Structural equation models require compliance with goodness-of-fit scores such as the Bentler-Bonnet Norm-Fit Index (BBNFI) and the Bentler-Bonnet Non-Norm Fit Index which should be higher greater than 0.90; values above 0.95 of the Comparative Adjustment Index (CFI) are also expected. Additionally, the ratio between χ^2 / degrees of freedom should be less than or equal to 2.5, and an RMSEA value less than 0.06 to 0.08 (Bentler, 2006; Schreiber, 2008).

The positive learning environment factor was comprised of pro-academic friendships, academic parental support, and positive family environment. Academic commitment was a factor which based on the theoretical proposal includes emotional, behavioral, and cognitive commitment (Appleton et al., 2006). Finally, self-regulated learning was assessed with 3 components: strategy formulation, organization, critical thinking, and metacognitive self-regulation (Sharma, 2013).

Results

To evaluate the multivariate normality of the data, the Mardia coefficient test (1970) was used, which resulted in a value of 20.5. According to Bollen (1989) if this coefficient is less than p (p + 2), where p is the observed variables. In the case of the present investigation, the total number of variables was 10. Thus, it is possible to argue for normality in the data, justifying the use of statistical tests for normal samples such as Pearson correlations.

Table 2 shows Pearson correlations between all research variables. These demonstrate that all correlations were positive and significant. Most of the correlations were highly statistically significant (i.e. $p < .01$) and only five had lower significance ($p < .05$). These were between friend academic support and academic behavioral commitment ($r = .19$), friend academic support and organizational academic self-regulation ($r = .16$), friend academic support and critical thinking academic self-regulation ($r = .18$), and friend academic support and metacognitive self-regulation ($r = .17$). Caution is needed while interpreting significant correlations that are low (<.36) in large samples (n > 100), because Pearsons coefficients regularly tend to be significant at low levels in large sample sizes (Taylor, 1990). For a more accurate interpretation of the association between different variables, additional analysis may be necessary, such as structural equations models. These models use a covariance matrix between variables to estimate associations and the level of fit of the data in regard the hypotheses (Bentler, 2006).

Figure 2 presents results of the structural equations model. The model demonstrates that all the factorial weights and structural coefficients were significant ($p < .05$). The positive learning environment factor, comprised of pro-academic friendships, parental academic support and the positive family environment, was highly and positively associated with academic commitment (.80), in turn, academic commitment showed a high and positive association (.55) with self-regulated learning. The model shows that academic commitment was formed by behavioral, emotional, and cognitive commitment variables; while, self-regulated learning included theoretically relevant dimensions such as strategy formulation, organization, critical thinking and metacognitive self-regulation.

Table 2.
Pearson Correlations of the research variables

	COMPEM	CAPEM	COMCB	COMCG	AUTRG	AUTOR	AUTPC	AUTAM	AUTE	AMFP	APAP
COMPEM	1										
CAPEM	.96**	1									
COMCB	.38**	.38**	1								
COMCG	.44**	.47**	.41**	1							
AUTRG	.32**	.32**	.33**	.39**	1						
AUTOR	.25**	.25**	.41**	.34**	.80**	1					
AUTPC	.33**	.35**	.32**	.39**	.89**	.66**	1				
AUTAM	.27**	.26**	.21**	.31**	.92**	.62**	.76**	1			
AUTE	.28**	.30**	.30**	.36**	.91**	.68**	.78**	.78**	1		
AMFP	.51**	.53**	.45**	.37**	.31**	.35**	.29**	.26**	.25**	1	
APAP	.50**	.50**	.35**	.34**	.38**	.34**	.31**	.34**	.35**	.68**	1
APDA	.39**	.42**	.19*	.30**	.21**	.16*	.18*	.17*	.23**	.38**	.48**

**$p < .01$; *$p < .05$

Note: COMPEM= Emotional Academic Commitment; CAPEM= Emotional, Behavioral, and Cogntive Academic Commitment; COMC= Behavioral Academic Commitment; COMCG= Cogntive Academic Commitment; AUTRG= Academic Self-regulation; AUTOR= Academic Self-regulation Organization; AUTPC= Academic Self-regulation Critical Thinking; AUTAM= Academic Self-regulation Metacognitive; AUTE= Academic Self-regulation Strategy Formulation; AMFP= Positive Family Environment; APAP= Parental Academic Support; APDA=Friend Academic Support.

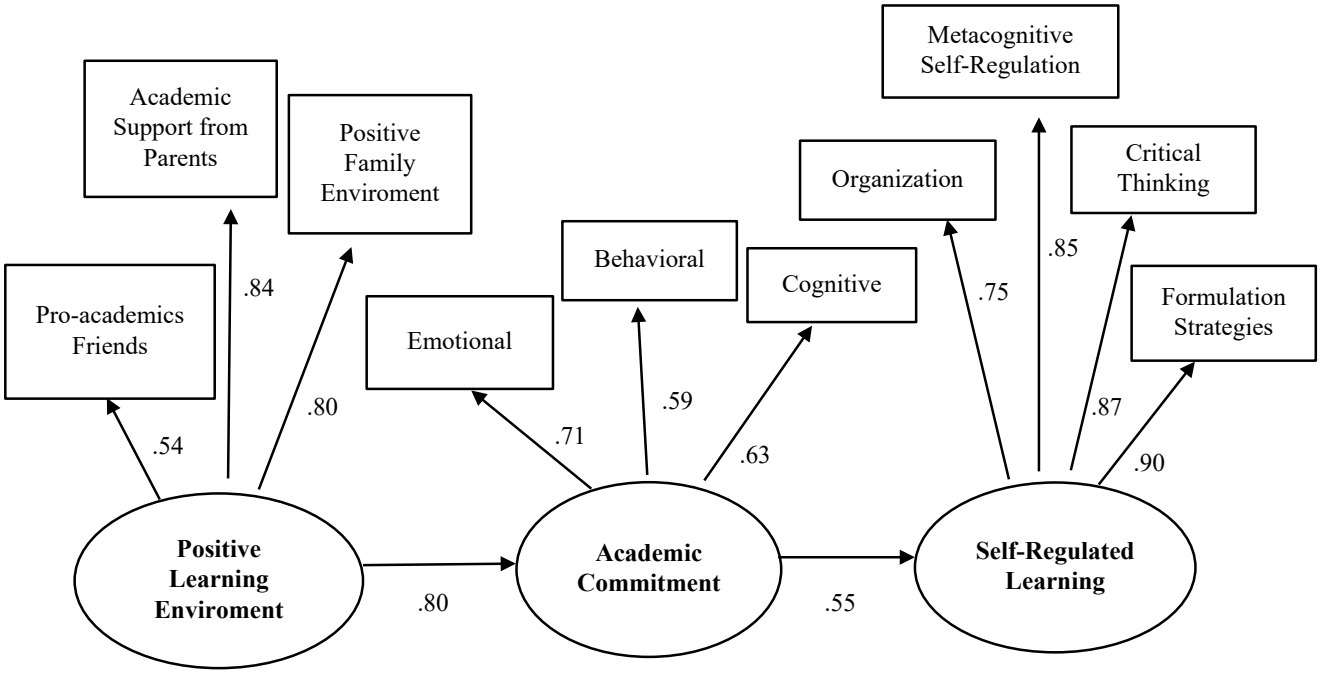

Figure 2. Self-regulated learning model and positive learning environment for high school students. All factor weights and structural coefficients are significant (p <.05). Goodness of fit χ^2 = 53.9 (30 G.L.) p = 0.00463, BBNFI = 0.93, BBNNFI = 0.95, CFI = 0.97, RMSEA = 0.07, R^2 Self-regulated learning = 0.30.

Discussion

The purpose of the present investigation was to evaluate the association between a positive learning environment, academic commitment, and self-regulated learning in high school students. According to the results, academic commitment, as expected from the proposed hypothesis, turned out to be a mediating variable between the association between positive learning environments and self-regulated learning.

The model demonstrates that a positive learning environment included pro-academic friendships, parental social support, and positive family environment. Congruent with previous research, remaining a sustainable academic environment, which include students with high academic commitment, requires emotional and material support provided by both parents and friends (Álvarez et al., 2015; Shin and Ryan, 2014). According to the literature, interest shown by parents in the educational process of their children, manifested by their involvement in school tasks and projects, improves adolescent student academic performance (Fajardo, Maestre, Felipe, León del Barco and Polo del Río, 2017). In addition, academic support provided by pro-academic friendships, allow for group social connectedness, which in turn can increase their positive emotions towards academic activities (Rodríguez, Ramos, Ros and Zuazagoitia, 2018), and their motivation and academic persistence (Ricard and Pelletier, 2016).

Based on the present results, a positive family environment, where members cooperate for the maintenance and stability and of contextual positivity, allows living in an organized and responsible environment. This can benefit the sustainable development of responsible behaviors such as academic emotional, behavioral, and cognitive commitment. This supports the theory of positive environments providing evidence for the promotion of psychological adaptation within the educational environment (Corral et al., 2014).

The model results also demonstrate that academic commitment was positively related to self-regulated learning, which includes organization, critical thinking, strategy formulation and metacognitive self-regulation dimensions (Sharma, 2013). According to Lam, Wong, Yang and Liu (2012), the most committed students are able to select learning goals and, by achieving them, their self-management learning capacity is increased, which is in turn is related to self-regulated learning (Skinner and Pitzer, 2012; You and Kang, 2104).

On the other hand, positive environments represent sustainable transaction scenarios where people receive and obtain benefits, but also give something in return to enable system permanence (Corral, et al., 2014). In this sense, a positive learning environment enables students to "receive" the benefits of an environment that provides the essential material and emotional requirements for effective learning, and students "return" the investment made by the people who provided support through their academic commitment that is in turn related to self-regulated learning. Since the positive learning environment factor is an exogenous variable it is the central for programs whose objective is to increase high school student academic commitment and self-regulated learning. Although we provide evidence that these will in turn help improve the student permanence and prevent school dropout, future prospective studies are needed. The present results can serve as a basis for psychoeducational interventions, aimed at improving the self-regulation, to promote greater academic success, related to academic support, specially to those students who show some type educational gap. On the other hand, these interventions include the promotion of positive interactions within the family, highlighting the importance of maintaining academic material and emotional support.

Friend and family academic support dynamics can also generate psychological well-being in those who provide and receive them, which can help maintain a positive, sustainable environment. Based on the foregoing, future research requires testing psychological well-being as an outcome variable in positive school settings. Likewise, it is important to evaluate school adjustment outcomes such as school grades, or the successful completion of academic programs in those students that receive support. Furthermore, subsequent longitudinal studies should test the hypothesis that positive school environments can reduce school dropouts for at-risk students.

The model resulting from the present investigation explained almost a third of the variance of the high school student academic self-regulation. Therefore, it is important to continue investigating the role of positive learning environments and academic commitment in relation with self-regulated learning. Other psychological variables that may participate in the explanation of the remaining variance maybe frontal lobe function, which include functions as a fundamental as executive function, the self-regulation behaviors (Franklin, Tsujimoto, Lewis, Tekok-Kilic and Frijters , 2018). The above warrants future investigations into such relationships.

The present study is not without limitations. Firstly, because the study was cross-sectional, the results may not be generalizable. The association between academic commitment or self-regulated learning and specific measure of academic performance, such as the personal scores obtained in the PLANEA test, was not evaluated. It is expected that there will be a positive relationship between these variables, which should be corroborated in subsequent investigations. Despite these limitations, the present study presents an environmental factors approach, specifically positive learning environments

that are associated to academic success psychological variables. It is likely that positive learning environments are protective factors against high school dropout.

Future studies should attempt to increase the sample size and should include high school students with different degrees of academic achievement. Additionally, it is important to monitor variables longitudinally to test a causal structural model that may be generalizable to other high school student populations. It is also pertinent to measure the degree of academic performance achieved by students with the highest self-regulated learning as compared to those with the lowest scores. This would allow for the assessment of the relationship between the studied variables and high school student graduation rate.

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