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INFLUENCE OF LEARNING STRATEGIES ON LEARNING STYLES: THEIR IMPACT ON ACADEMIC ACHIEVEMENT OF COLLEGE STUDENTS FROM BUENOS AIRES

Agustín Freiberg-Hoffmann, Juliana Beatriz Stover
University of Buenos Aires, Argentina
National Council of Scientific and Technological Research (CONICET), Argentina
E-mail: afreiberg@psi.uba.ar, julianastover@psi.uba.ar

Natalia Donis
University of Buenos Aires, Argentina
E-mail: natalia.correo.gt@gmail.com

Abstract

Frequently, college students have issues to learn academic contents included in the subjects of their courses. Such low quality learning is reflected in failures and academic dropout, therefore being matters of concern for teachers and governments.
Learning processes in college depend, in part, on the coincidence between teaching methods and students' learning styles. They are defined as the preference of students when they have to deal with information, particularly the way to perceive it and process it. Learning styles can be trained by the repeated use of specific learning strategies. In such cases, when learning styles coincide with the learning context in order to facilitate the acquisition of new knowledge and its integration with previous information, academic success can be achieved more naturally. To get this match it is required from teachers to adapt their styles and strategies to their students' learning preferences. Other alternative rests on the design of actions to train students in the use of the appropriate learning styles able to enhance learning. Focused on the second option, the present study aims at: 1) the description of the influence of different learning strategies on each learning style, and 2) the analysis of the way each style explains students' academic achievement. A transversal, non-experimental, explicative design was employed. 763 college students from Buenos Aires with ages ranging from 17 to 36 years were included in the sample. Locally adapted versions of the Honey-Alonso Questionnaire of Learning Styles -CHAEA as its Spanish acronym-, and Learning and Study Strategies Inventory –LASSI- were used for data gathering. Results showed that the Accommodating style is explained positively and significantly by the Collaborative Learning, Resources for Learning and Information 2.0 Management Competence strategies. Besides, it is observed that the strategies Collaborative Learning, Resources for Learning and Motivation explain to the Assimilating style in a significant and positive way. The Pragmatist and Converging styles are explained significantly but negatively by the Motivation and Information 2.0 Management Competence strategies respectively. Finally, Converging style explained Academic Achievement in a significant and negative way. These findings led to the possibility to plan specific actions to train students' learning styles. Furthermore, this information could be useful for different actors in higher education, such as - institutions, teachers, educational psychologists, students, etc., in order to design academic activities which require the repeated use of the specific learning strategies which each student needs to train, aiming at the improvement of particular learning styles able to facilitate learning. At this point, it seems important to discourage the use of Converging style given the negative effect it would have on the students' performance. Results and limitations of the study are discussed and future research lines are proposed.
Key words: *academic achievement, college students, learning strategies, learning styles.*

Introduction

In the last decades, an increase in the number of college admissions has been registered worldwide. The number of students raised from 139 to 196 million from 2005 to 2012, and it is estimated that the world population of students will increase by 2025 to 263 million. In Latin America, the raise in the referred period was 117% (United Nations Educational Scientific and Cultural Organization, 2015).

Unfortunately, educational equity is not accompanied by an improvement in learning quality. That can be verified observing the rates of academic failure and dropout, as well as in delays in the completion of studies, affecting especially Latin America countries (United Nations Educational, Scientific and Cultural Organization, 2013). Locally, official information indicates that although college admissions have increased by approximately 22% in the last 10 years, only 30% of students achieve a degree (Ministerio de Educación de la Nación Argentina, 2013). Efficacy in graduation, understood as the relation between admissions and graduations, places Argentina below countries such as Chile and Brazil, which reach 60% and 40% respectively (Centro de Estudios de la Educación Argentina, 2015).

Added than the above mentioned, while 60% of the students pass two or more courses in a year-term, the other 40% does not reach this number, which is mandatory to remain in the system according to Law #24.521 of Higher Education (Ministerio de Educación de la Nación Argentina, 1995, 2013). Given the concern generated by this situation in governments, it becomes relevant to analyze those factors which could benefit the learning process in order to plan actions to improve students' achievement.

Factors Involved in the Learning Process

Factors potentially involved in the problem of learning can be classified in two major types; they are the academic one and those linked to students' features and circumstances.

Those which belong to the academic system and its available resources, having therefore an actual impact on learning come first - human, economic, organizational, among others- (United Nations Educational, Scientific and Cultural Organization, 2014). Second, factors related to students' issues to adjust themselves to academic demands of each major in order to achieve efficacy in earning and, therefore, achieve a degree (Núñez-Pérez & González-Pienda, 1993). These last factors can be grouped into five major categories named as identification variables (e.g. gender, age, marital status), academic (e.g. previous academic performance, actual attendance to classes), didactic (e.g. evaluation formats, monitoring of learning), social/family (e.g. parental education, persons who live with the students, geographical environment) and psychological (skills, study strategies and personality traits, among others) (Tejedor-Tejedor, 2003). These features could be helpful for students when they have to deal with learning activities spending less time and effort (Richardson, Abraham, & Bond, 2012) or, oppositely preventing them from achieving success in academic life. Following these ideas, several studies have analyzed the beneficial or prejudicial effect of some of such variables on academic performance. Among the identification variables, employment status, marital status and gender were especially examined (e.g. Echavarri, Godoy, & Olaz, 2007; Osornio-Castillo, Valdez-Nava, Cuellar-Gaxiola, & Moje-Martínez, 2008; Núñez-Peña, Suárez-Pellicioni, & Bono, 2016; Peralta-Díaz, Ramírez-Giraldo, & Castaño-Buitrago, 2006). Regarding the academic ones, the type of high school (vocational or technical), as well as the average qualification obtained in such educational step were found as influential factors (e.g. Bernardo, Núñez, Rodríguez, Bernardo, Fernández, Cerezo, & González, 2011; Dapozo, & López, 2010). Among didactic variables, tutorial actions performed by teachers, teaching methods and evaluation forms arose as important (e.g. Cano-González, 2009, Hernández-Pina, Arán-Jara, & Salmerón-Pérez, 2012). Regarding, socio-family variables, parental education, geographical localization and group of persons living with the student were also studied (e.g. Faisal, Shinwari, & Mateen, 2016; Tafani,

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Bosch, Caminati, Chiesa, Branquer, Estrada, & Gaspio, 2009). Finally, among psychological variables, academic stress, perceived social support, learning strategies, personality traits, self-esteem, motivation, locus of control, etc. were considered relevant and were analyzed as well (e.g. Albert & Dahling, 2016; Alt, 2015; Feldman, Goncalves, Chacón-Puignau, Zaragoza, Bagés, & De Pablo, 2008; Hamideh & Hamddan-Mansour, 2014; Khalaila, 2015; Komarraju, Karau, & Schmeck, 2009; Martín, García, Tobay, & Rodríguez, 2008). However, within the set of psychological variables, learning styles deserve a special mention owing to their importance in college success (Fayombo, 2015; Jiraporncharoen, Angkurawaranon, Chockjamsai, Deesomchok, & Euathrongchit, 2015; Omar, Mohamad, & Paimin, 2015). This is the reason why this study is dedicated to analyze them in depth.

The Role of Learning Styles in Improving Learning

Students learn through the transformation of perceived experience, integrating new ideas to previous knowledge. Thus, learning is understood as a continuous process of learning and relearning (Kolb & Kolb, 2005). It is important to remark that learning situations are not always similar. This implies that each of them requires to be faced using a specific processing way. Hence, the mismatch between any student's learning styles – in terms of how he or she perceives and processes information - and the way this information is presented could become an issue in terms of actual learning. In other words, the analysis of learning styles - understood as the way a student tends to perceive, process and integrate new information to the previous one- allow to answer the question of why two students participating in the same learning situation achieve to learn different amounts and quality of content (Honey & Mumford, 1986; Kolb, 1976). The analysis of the correlation between learning styles and academic performance in college has arisen as a matter of interest in academic environments in view of its practical value. Consequently, different studies were carried out reaching identical results. Low achievements are usually associated with styles characterized by the set in motion of ideas, or else by the development of problem solving activities in the empiric field (Cox, 2013; Olivos, Santos, Martín, Cañas, Gómez-Lázaro, & Maya, 2016). Conversely, high achievement is generally associated with styles connected to learning based on the conceptual integration or to the observation and experiments derived from theoretical notions under real conditions (JilardiDamavandi, Mahyuddin, Elias, Daud, & Shabani, 2011; Ruiz-Ruiz, Trillos-Gamboa, & Morales-Arrieta, 2006).

The correlation between academic achievement and learning styles is often explained based on the predominance of traditional teaching methods in higher education (González-Clavero, 2011). Such methods privilege conceptual integration over the practical testing of ideas, prioritizing abstract contents over empirical manipulation. In this way, teachers perform expositive classes and students must perceive, understand and integrate information by themselves. Moreover, traditional methods aimed at the evaluation of learning ask for the recall and recovery of the contents presented in class, putting aside the accomplishment of practical activities in the empiric field, disregarding the use of problem solution skills. As can be inferred, learning quality depends in part on learning styles. Students who prefer or exhibit styles able to match the kind of teaching they receive will learn easily, accomplishing academic goals. On the contrary, students with styles which cannot match teaching methods will show major issues to learn, spending more time and effort to achieve acceptable results.

The above referred stresses the importance of research developments on the subject, since that information could be useful for the higher education field in order to adapt their programs and syllabi to help low achievers when they need to improve their performances. In addition, the importance of teachers basing their methods on students' strengths and adapting their teaching styles and strategies in order to enable successful learning must be emphasized (Thomson, 2000). Educational psychologists, besides, must be properly skilled and trained to special programs for teachers, to introduce positive changes in methods and evaluation

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devices, which could be useful to adapt teaching to any type of learning style. Regarding tutorial systems, educational psychologists could design specific plans for different majors and universities, particularly for freshmen, who need to settle down on academic life. At this point, it is important to highlight that learning styles are not directly modifiable, but they are quite able to be trained by means of the repeated use of learning strategies, which are not necessarily managed by students (Curry, 1983; Kolb & Kolb, 2005). In other words, it is stated that the several actions a student is taking to successfully solve a specific activity -learning strategies- (Biggs, 1988) would have an effect on their cognitive configuration and personality traits, performing indirect changes in their learning preferences.

Given the importance of learning styles in higher education along with the requirement to train students in specific styles according to some specific learning situation, this research pursues two goals: 1) To analyze the influence of each learning strategy on each learning style. 2) To study the ability of each learning style to predict academic achievement in college students.

Methodology of Research

Design

A quantitative, cross-sectional, non-experimental and explicative design was employed (Miles & Banyard, 2007). Primary data were gathered during the 2016 year-term, using a convenience sample (Pathak, 2008). Although this type of design weakens generalization since it is not a longitudinal study, and considering that the type of sampling restricts the generalization as well, the study allows a first approach to the phenomenon, which is mandatory to establish the new directions and lines for future research (Namakforoosh, 2005).

Participants

762 college students from Buenos Aires participated (49% males, 51% females), with ages from 17 to 36 years old ($\overline{X}_{age}$ = 22.8; SD = 3.58), attending different faculties (40.4% Psychology, 28.8% Engineering, 15.7% Exact and Natural Sciences, 9.2% Law, 5.9% Medicine). Students from three public universities were included in the sample, excluding freshmen. This decision is based on the criterion of analyzing samples of students with, at least, one year-term of continuity in the major since, according to recent reports 58% of freshmen decide to dropout or to change the major where they initially applied (Pintos, 2012).

Answer sheets which were totally completed by participants were kept, discarding those in which there was at least one omitted item considering this as lack of interest and willingness to respond the survey. This procedure was carried out in order to guarantee the internal validity of data collection. (Newman & Benz, 1998).

Instruments

Demographic and academic survey: gender, age, type of university –public, private-, faculty, number of courses passed and time elapsed from admission to the present. The two last variables were included with the aim of assessing a measure of academic achievement according to Law #24521 on Higher Education (Ministerio de Educación de la Nación Argentina, 1995). This law states that two courses should be passed in an annual term to remain in the system. For this reason, and following recommendations from other researchers, academic achievement has been estimated as the quotient between the total number of courses passed and the time elapsed form the admission (De Miguel & Arias, 1999).

Honey-Alonso Questionnaire of Learning Styles –CHAEA in Spanish- (Alonso Gallego, & Honey, 1994): The adapted version of the test for college students from Buenos Aires (Freiberg-Hoffmann & Fernández-Liporace, 2013) was used. This version obtained robust

content validity evidences, *facies* and construct validity evidences –principal components analysis and confirmatory factor analysis-, as well as an appropriate internal consistency for each of its dimensions. It is composed of 28 items which must be responded by means of a dichotomous scale - agreement (+), disagreement (-) - to each sentence. The questionnaire assesses four learning styles –*Accommodating, Assimilating, Converging and Pragmatist*-which describe different preferences of students when they learn. Thus, the accommodators are prone to novel challenges; they enjoy experiences avoiding the logical analysis, guiding their actions by intuition and feelings and at the same time leaving technical aspects on others' hands. The assimilators stand out for managing and understanding a wide variety of information. They are rather unsociable, and enjoy the analysis of abstract notions looking for and logical validity of ideas. The convergers are reluctant to follow other people's advice; they enjoy performing novel models, simulations and laboratory trials. This makes them prefer to work in solitude, solving technical problems and avoiding any social activity which could imply any sort of interpersonal relationship. Finally, the pragmatists tend to practice novel ideas, finding out positive aspects of each idea. They are usually impatient and act promptly when they feel attracted to a good idea, looking for solutions to problems.

Learning and Study Strategies Inventory or LASSI (Weinstein, Schulte, & Palmer, 1987): The inventory version adapted to college students from Buenos Aires (Freiberg-Hoffmann, Ledesma, & Fernández-Liporace, 2016) was used, as it has shown an appropriate test-retest reliability and internal consistency of its dimensions as well as content and construct validity evidences. The inventory is composed of 33 items to be responded by a 5-option Likert scale. It assesses five types of strategies such as, *Motivation* –academic attitudes and goals which guide the student in his/her study-, *Resources for Learning* –techniques used by students to help them studying, enabling understanding, learning and recall of contents in evocation processes-, *Abilities to Rank Information* –skills to select important information which should be learned in depth-, *Collaborative Learning* –interpersonal communication oriented to improve the access to information and learning contents-, and *Information 2.0 Management Competences* –strategies referring to data search, analysis, selection and communication-.

Procedures

A qualified psychologist gathered data during school hours with the endorsement of the university and teachers' authorization. Participation was voluntary assuring explicitly the confidentiality of results, the protection of any data which could let to their identification. An informed consent was signed and no financial compensation was offered.

Data Analysis

The research aims were 1) to analyse the influence of each learning strategy on each learning style, and 2) to study the ability of each learning style to predict academic achievement in these college students. Both were responded through path analysis methods. The tested model was checked by means of AMOS 16 software. Method of maximum likelihood (ML) was employed since, on the one hand, every observable variable has been measured by quantitative scales and, on the other hand, the multivariate normal distributions assumption was accomplished (Kline, 2011). The model fitting was assessed by Chi-square test, GFI indexes (Goodness of Fit Statistic), AGFI (Adjusted Goodness of Fit Statistic), and SRMR (Standardized Root Mean Square Residual).

Results of Research

In order to test the influence that learning strategies have on learning styles on the one hand, and the way learning styles explain academic achievement on the other, the model showed in Figure 1 was suggested.
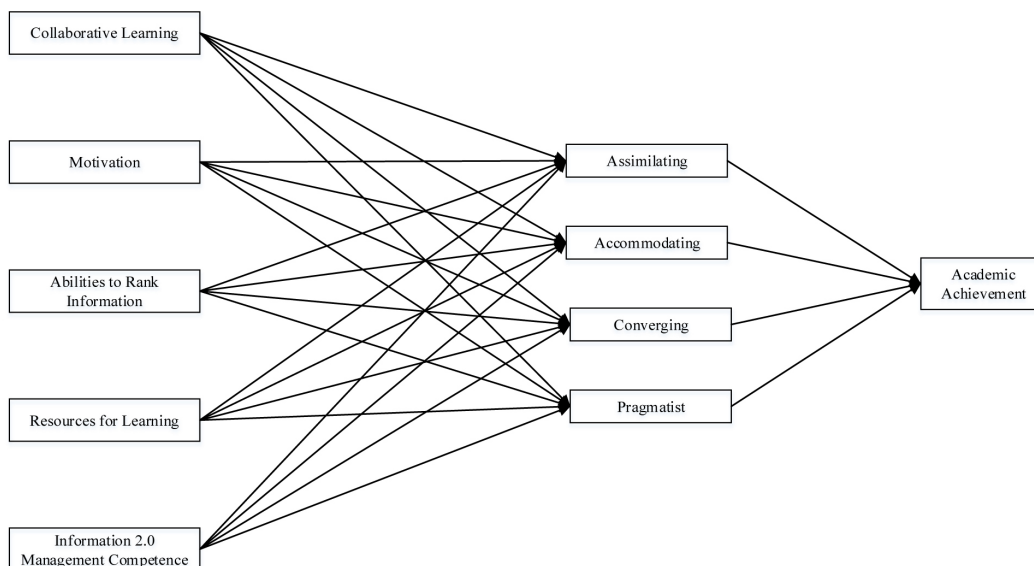
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Figure 1: Path analysis, learning styles, learning strategies and academic achievement.

Table 1 shows that the Chi-square test was statistically significant, which indicates a correct fitting of empiric data to the theoretical model. Moreover, GFI index surpassed the indicated value for a good fitting (> .90). This was not the case of AGFI index which, though it showed close values, failed to reach the consensual ones (Brown, 2015). On the other side SRMR index reached expected values (< .08) (Lévy-Mangin & González, 2006).

Table 1. Fit indexes for the path analysis.

	Goodness of fit indices				
	χ^2	df	GFI	AGFI	SRMR
Model	156.31**	11	.964	.820	.055
p-value < .01					

Table 2 shows values of estimated parameters together with *p* values for each regressor. As can be seen, Accommodating style is explained positively and significantly by Collaborative Learning, Resources for Learning and Information 2.0 Management Competence strategies. Besides, Collaborative Learning, Resources for Learning and Motivation strategies explained the Assimilating style positively and significantly. Pragmatist style was significantly but negatively explained by Motivation strategy, whereas Converging style was also negatively and significantly explained by Information 2.0 Management Competence. Finally, Converging style explained Academic Achievement in a negative and significant way.

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Table 2. Estimated parameters.

			Estimate	SD	p
Assimilating	←	CL	-.001	.010	.947
Accommodating	←	CL	.029	.008	**< .01**
Converging	←	CL	.018	.012	.134
Pragmatist	←	CL	-.005	.008	.521
Assimilating	←	M	.125	.016	**< .01**
Accommodating	←	M	.012	.012	.346
Converging	←	M	-.022	.019	.245
Pragmatist	←	M	-.027	.012	.026
Assimilating	←	ARI	-.012	.018	.510
Accommodating	←	ARI	.015	.014	.282
Converging	←	ARI	.026	.022	.253
Pragmatist	←	ARI	-.011	.014	.428
Assimilating	←	RL	.058	.020	**.004**
Accommodating	←	RL	.053	.016	**< .01**
Converging	←	RL	.028	.024	.244
Pragmatist	←	RL	-.004	.016	.803
Assimilating	←	IMC	.114	.027	**< .01**
Accommodating	←	IMC	.076	.021	**< .01**
Converging	←	IMC	-.107	.033	**.001**
Pragmatist	←	IMC	.009	.021	.655
AA	←	Assimilating	.048	.033	.146
AA	←	Accommodating	-.048	.043	.267
AA	←	Converging	-.088	.029	**.003**
AA	←	Pragmatist	-.018	.045	.687

Discussion

The aim of this research was, in first place, to describe the ability of learning strategies to explain each learning style. In second term, it was sought to identify those styles able to predict academic achievement in college students from Buenos Aires. In order to accomplish both requirements a path analysis was conducted, and most indices achieved values showing an adequate fit of empiric data to the theoretical model.

However, the low value of AGFI, deserves a special mention. It could be attributed to the relationship between the sample size and the number of estimated parameters (Bollen & Long, 1993; Westland, 2015). Therefore it is mandatory to increase the number of participants in future studies in order to verify whether AGFI indicator reaches appropriate figures in a wider sample.

Going through the analysis of the estimated parameters, it is observed that each learning style is explained by means of a set of specific strategies. As for Assimilating style, which is exhibited by students with a high ability to manage and understand a wide of information, it is explained by Motivation strategies –academic attitudes and goals which guide the student in learning activities -, Resources for Learning -techniques employed to help themselves to learn, enhancing analysis, comprehension acquisition and content evocation processes-, and Information 2.0 Management Competences –strategies connected to search, analysis, selection and communication of data. This explicative ability seems to be logical since all the strategies associated to Assimilating are linked to behaviors oriented to prioritize the perception and comprehension of information.

Regarding Accommodating, featured by students prone to assume novel challenges, enjoying new experiences and avoiding logical analysis, it is significantly related, such

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as Assimilating style, with the Resources for Learning as well as the and Information 2.0 Management Competences strategies. It is also associated with Collaborative Learning strategy – interpersonal communication aimed at improving the access to information and learning contents-. In order to understand how the aforementioned strategies contribute to explain Accommodating style, it is important to state that this style comprises problem-solving skills, activity which requires the use of diverse resources, including both technological and non-technological types. The Accommodating style also includes abilities which privilege action such as leadership and initiative (Kolb & Kolb, 2005). About strategies, the correlation found with Collaborative Learning results is logical since it is linked to the use of social nets, ICT, and communication among students whereas the learning process occurs. Such strategies are essential in *e-learning* and *b-learning* environments (Morán, 2012). The contribution of Information 2.0 Management Competences strategy arise as clear and expected in view of the increasing tendency to integrate ICT in higher education. A proper use of this strategy will enable learning with the aid of technological resources and, moreover, fostering Collaborative learning. As regards of Resources for Learning strategy, it provides students techniques to help themselves in learning, allowing them a better achievement as well as making them more self-confident and feeling more at ease. At this point, managing ICT seems to be a factor, which plays a main role in a successful learning process (Stover, Uriel, & Fernández Liporace, 2012).

Converging style, typical of students reluctant to follow other people's advice, and who are relish to test new hypotheses and simulations, is explained significantly and negatively only by the Information 2.0 Management Competence strategy. This might imply that their preference to learn in a practical way, transferring theoretical knowledge to the empiric field could be obstructed their skills to look up, analyze, select and communicate the information which they find in virtual environments. Such outcomes seem logical when it is taken into account that these students are not prone to pay attention to the information coming from others. Considering that, the possibility to hypothesize that such an attitude could appear is likely to be extended to ICT management. Regarding Pragmatists, who are impatient and impulsive when testing new ideas empirically, their style is significantly and negative related with the Motivation strategy. This would be indicating that the impulsivity and impatience of such style could be influenced by the use of strategies oriented to the adoption of adequate academic attitudes such as self-discipline and the set in motion of actions towards specific goals. Consequently, it would imply that this non appropriate style is feasible to change by means of programs focused on motivational aspects, then in the use of the Motivation strategy.

Referring now to the correlation between learning styles and academic achievement, only Converging style explained achievement in a significant though negative way. Such finding suggests that academic achievement decreases when they show a strong preference for practical learning testing ideas and performing laboratory trials in the field. This result is consistent with previous studies (Cox, 2013; Olivos, Santos, Martín, Cañas, Gómez-Lázaro, & Maya, 2016). Based on that information, it seems likely to infer that Converging style would be dysfunctional in accordance with the predominant learning in traditional teaching situations as local universities maintain, preventing these students from achieving successful results (González-Clavero, 2011). It must be outlined that such traditional teaching methods do not lead students neither to test new knowledge in the field nor to foster the use of learning strategies, let alone practical evaluation systems. On the contrary, it prioritizes expositive classes and evaluation methods based on the recall and avocation of contents (Torre-Puente & Gil-Coria, 2004). Present findings stress the importance of changing teaching programs and methods in order to adapt them to actual styles of students. Using trial and error and having to cope with problem-solving situations, active participation will be fostered, hence improving learning quality (López-Noguero, 2007).

About weaknesses in the study, it must be highlighted that findings presented above correspond to a sample composed of students from different faculties. Sample segmentation by major or by faculty in order to test results stability among different academic fields is required

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for future research developments. That segmentation could not be performed in this study since it would have resulted in small sub-sample sizes, making further analyses impossible. Additionally, it should be pointed out that the sample corresponds exclusively to students attending public universities from Buenos Aires. Though this metropolitan area is the most densely inhabited in the country, it will be desirable to include students from private universities as well as from other universities located in Argentina.

To sum up, this research aimed at the identification of the influence of learning strategies on each learning style. Moreover, it was sought to analyze the way in which styles explain academic achievement in local college students. It is expected that the findings reported here will be useful for educational psychologists, encouraging their collaborative work with academic authorities and teachers in the design of more suitable teaching programs according to students' actual features. It would entail, on the one hand, to promote the development or improvement of the strategies which were found as significant when training the learning styles. On the other hand, that would imply to adapt teaching methods and syllabi to all types of students' learning styles, making the former more flexible and open, looking for the facilitation of proper learning as a mid-term and long-term challenge. Both major changes require the design of novel materials related to the way in which information is presented, the encouragement of a rational use of ICT, and major changes in planning classes. However, prior to set in motion such substantial innovations, an intensive training for teachers must be carefully planned and thoroughly monitored.

The design and start-up of renewed and realistic teaching practices is an urgent challenge which does not resist more delays. Even if this topic exceeds the purposes of this research, the ultimate goal is to get the description of cognitive and metacognitive features which should be considered aiming at a significant decrease in academic failure and dropout. Further studies will widen these reported results, generating new hypotheses, questions and more and improve analyses in depth.

Conclusions

Preferences shown by college students to perceive and process academic information are decisive to understand their ability or issues to achieve efficacy in learning. Given the high rates of failure and dropouts in local universities along to low quality learning results, the analysis of the effect of different types of learning styles on academic achievement arose as a matter of concern. Findings suggest that students who prefer Converging style are at risk to be negatively influenced in terms of academic performance. That leads to assume that such style should be discouraged in order to improve learning and achievement, thus avoiding academic failure which frequently leads to frustration and subsequent self-esteem problems, as well as financial and human resources wrongly invested by the system. As can be inferred from findings, learning preferences determined by Converging style decrease as the use of the Information 2.0 Management Competence strategy increases. Henceforward, designing special trainings and tutorial systems starting from the freshmen stage will help new students to acquire useful academic habits, especially referred to data searching, as well as for their analysis, selection and communication -Information 2.0 Management Competences-.

Noteworthy to highlight that these results correspond to a preliminary and general approach to the topic. However, longitudinal designs including pre-tests followed by a certain intervention and post-test step to monitor the efficacy of training programs aimed at fostering the use of more useful learning strategies in terms of accomplishing the desired changes in learning styles.

Future studies must replicate this design in homogenous samples composed by students attending the same majors since the results here obtained seem to indicate that the Converging style would impair performances in the students included in the present sample. Still, the possibility that the analysis of styles by major will obtain non-significant results for each

major relating them to the rest of the styles remains as feasible- Assimilating, Accommodating, Pragmatist-.

In sum, this research puts on the table the influence of learning styles on academic achievement in higher education as well as the way how these styles can be explained by different learning strategies, then suggesting practical transference of these findings to academic daily life. Hopefully, this information will make possible the set in motion of actions aimed at improving learning quality in higher education.

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Agustín Freiberg-Hoffmann	PhD, Postdoctoral Fellow, University of Buenos Aires, National Council of Scientific and Technological Research (CONICET), 2352, Gral. Juan Lavalle St., Buenos Aires, Argentina. E-mail: afreiberg@psi.uba.ar
Juliana Beatriz Stover	Assistant Professor, School of Psychology, University of Buenos Aires & Assistant Researcher, National Council of Scientific and Technological Research (CONICET), Gral Juan Lavalle 2353, Buenos Aires, Argentina. E-mail: julianastover@psi.uba.ar
Natalia Donis	Final Year Grade Student, School of Psychology, University of Buenos Aires, Argentina. E-mail: natalia.correo.gt@gmail.com