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**Does LASSI Predict Academic
Performance in First Semester At-Risk
Medical Students?**

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DOES LASSI PREDICT ACADEMIC PERFORMANCE IN FIRST SEMESTER AT-RISK MEDICAL STUDENTS?

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The transition to medical school can be challenging for first semester students due to the volume of material in the pre-clinical curriculum. At the American University of Antigua College of Medicine (AUACOM), a Caribbean medical school, many first semester students face the dilemma of seeking to navigate the challenges of medical education. Since medical school requires learned skills that may not be second nature, some students may lack the skills associated with cognitive processing and critical thinking or strategies for studying crucial to their academic success. Despite strong ability levels, about 25% of AUACOM semester one students are academically unsuccessful and are required to repeat their first semester on academic probation (AP). This study explored the use of the Learning and Study Strategies Inventory (LASSI) as a tool to predict academic success in at-risk medical students. Being able to predict academic performance using LASSI scales assisted facilitators and students enrolled in a learning and study strategies program to develop greater awareness of students' strengths and weaknesses, and opportunities for improvement.

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Method

One hundred and thirty-four (134) AUACOM medical one AP students completed the LASSI before returning to repeat the semester and prior to registering for a learning and study strategies support program. The data was analyzed using descriptive statistics, and multiple regression to determine the effect of the predictor variable on the likelihood of students' academic performance. The dependent variable was the semester one average examination scores with a passing score of 70%. Inter-correlation, descriptive statistics, and multiple regression analysis were used to determine the predictive value of the 10 LASSI subscales.

Results

Table 1 shows that academic performance was highly correlated with motivation $r(133) = .23, p < .001$ and attitude ($r(133) = .18, p < .05$). Interestingly, after taking the LASSI and exposing students to the support program, students' overall average scores improved ($M = 74.54, SD = 5.72$).

Table 1

Inter-correlations, Means, and Standard Deviations of LASSI and Academic Performance												
	1	2	3	4	5	6	7	8	9	10	M	SD
1.ANX											45.14	5.72
2. ATT	.13										67.04	22.81
3. CON	.28*	.38**									53.43	25.74
4. INP	.24*	.31**	.27*								54.55	27.50
5.MOT	.11	.55**	.50**	.49**							58.78	27.27
6. SMI	.32**	.18*	.40**	.29**	.26*						45.76	26.55
7. SFT	.90	.29*	.33**	.43**	.36**	.34**					54.68	27.28
8. TST	.40**	.22*	.31**	.38**	.31**	.70**	.39**				47.40	28.43
9. TMT	.10	.33**	.43**	.26*	.56**	.22*	.42**	.27*			66.19	23.13
10.UAR	.23	.28*	.25*	.27*	.32**	.29**	.39**	.28*	.43*		49.45	26.29
Avg.	.11	.18*	.10	.05	.23**	-.05	.05	.15	.05	.02	74.54	5.72

$R = .37$. * $p < .05$, ** $p < 0.01$

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Table 2 revealed that three LASSI subscales: test taking strategies ($\beta = 0.32$), motivation ($\beta = 0.28$), and selecting the main idea ($\beta = -0.31$) were significant predictors of students' academic performance. Test taking strategies and motivation were positive predictors, while selecting the main idea was a negative predictor of performance.

Table 2

Predictors of Academic Performance in Semester One AP Students

Variable	Academic Performance			
	B(SE)	β	t	95% CI
Constant	72.51 (1.98)		36.54	68.58, 76.44
Information Processing	-.03 (.02)	-.13	-1.20	-.07, .02
Selecting Main Idea	-.07 (.03)	-.31	-2.54*	-.12, -.02
Test Strategies	.06 (.03)	.32	2.44*	0.01, .12
Anxiety	.01 (.02)	.06	.56	-.03, .05
Attitude	.02 (.03)	.08	.80	-.03, .07
Motivation	.06 (.03)	.28	2.21*	0.01, .11
Concentration	.01 (.02)	.03	.29	-.04, .06
Self-testing	.01 (.02)	.02	.23	-0.04, .05
Time Management	-.03 (.03)	-.10	-.90	-.09, .03
Using Academic Resources	-.01 (.02)	-.07	-.66	-.06, .03

N = 134, $R^2 = .139$, $F = 1.98^*$, $*p < 0.05$

Implications for Practice

The main implications for educational practice are developing a curriculum with relevant teaching and learning strategies. Motivation was found to be a positive predictor of academic performance and self-efficacy is a key factor in student motivation. First, to increase

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self-efficacy students can observe faculty members or other students modeling or demonstrating the desired skill prior to engaging in the activity themselves. This will facilitate vicarious learning through observation. Secondly, program facilitators may seek to provide opportunities for students to be successful on low-risk or formative assessments to establish a sense of mastery in the subject matter. Additionally, program facilitators can provide encouragement, affirmation and timely constructive feedback regarding student performance.

According to Sefcik, Bice and Prerost (2013), high test scores are the result of the interaction between test preparation and test performance; knowing how to effectively prepare for the test and what study strategies maximize test performance enhances the development of this skill. Program facilitators should encourage students to prepare for a test in three steps.

(i) Reviewing the rules, knowing what content will be covered, and predicting what types of questions will be asked, so they can be familiar with the test. At-risk students may know what the main idea is, but they may not be able to identify the precise concepts associated with the learning objectives. Additionally, being able to identify the main ideas might not be advantageous to students where examinations are very detailed oriented. At AUACOM, semester one examination requires students to know specific details about the concepts tested.

(ii) Studying the appropriate content and practicing questions to improve knowledge and skills. Basic science exams require students to demonstrate proficiency in sorting through exam questions - separating the extraneous and essential information, synthesizing the important findings, and reaching a decision (NBME, 2016).

Additionally, informing and teaching students that examination performance can be further enhanced by previewing for lectures, creating concise notes using visuals such as concept maps, cognitively processing multiple-choice questions, creating their own, utilizing a variety of study resources, studying in small groups, improving memorization, minimizing test anxiety, and developing self-regulation through metacognition (Winston, Cees, Van Der Vleuten, & Albert, 2010; Sefcik, et al., 2013). According to Sefcik, et al. (2013) students who are well prepared for the examination will most likely have higher self-efficacy since they believe that they have control over the factors that affect their test scores.

Conclusion

A medical student who is highly motivated, well prepared and uses the best learning and study strategies is more likely to score higher on exams. Utilizing the LASSI has encouraged AUACOM students

to develop the skill of identifying critical information for study. Program facilitators will continue to aid students in developing this skill, while providing opportunities for students to build self-efficacy, thus propelling students to engage in the learning approaches necessary to be successful in medical education. With this knowledge, program facilitators can provide support and guidance to probationary students with goals and beliefs that contain patterns of learning and studying that enhance their ability to be successful.