

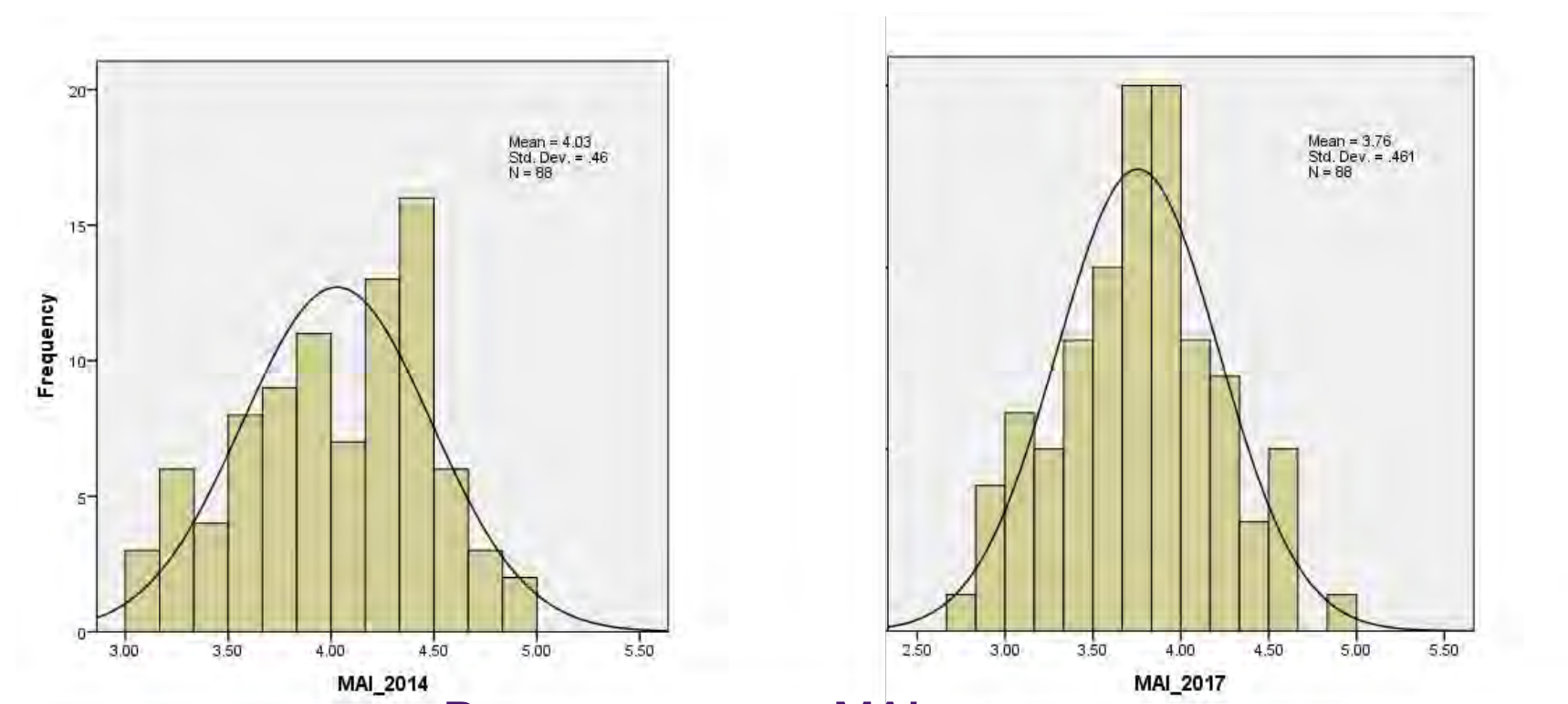
ABSTRACT

The objective of this ongoing study is to examine the relationship between student metacognitive awareness as assessed by the Metacognitive Awareness Inventory (MAI)¹ and academic success at the St. Louis College of Pharmacy. Student self-reported MAI scores from incoming undergraduate freshmen (MAI_2014) are not seen to be correlated with academic performance as determined by semester GPAs (all p values ≥ 0.199). Retest of the same students entering P1 produced MAI scores (MAI_2017) that as a group showed no overall difference between the test and re-rest, but individually showed small and significant correlations (all p values < 0.05) with semester GPAs in all semesters. This pattern suggests that successful completion of the undergraduate curriculum may help students develop more realistic MAI judgements.

INTRODUCTION

Metacognition is the ability to critically evaluate one's own thoughts and develop them into effective learning strategies and modify behavior during clinical problem-solving². It can be further subdivided into two major categories: knowledge of cognition (KC) and regulation of cognition (RC). Schraw and Dennison's Metacognitive Awareness Inventory (MAI) is a 52-question, validated instrument for self-report of metacognition, with higher scores indicating better awareness of one's own metacognitive ability.

St. Louis College of Pharmacy's 7-year integrated BS/PharmD degree program is divided into three undergraduate years (freshman, sophomore, and junior) and four professional years (P1 – P4). Courses during the undergraduate years are designed to develop critical thinking and problem solving skills vital for continued success in the professional years. Previous studies have suggested that metacognitive knowledge plays an important role in utilizing these strategies to bolster academic success.



DISTRIBUTIONS OF MAI VALUES
No Sig. Difference

METHODS

Beginning in Fall 2014 the 52 question Metacognitive Awareness Inventory of Schraw and Denison has been administered using a 5-point Likert scale to all incoming undergraduate freshman either during new student orientation or as early in the Fall semester as possible. In 2014 the MAI was administered to 198 incoming undergraduate freshman. Beginning in Fall 2015 the MAI was also administered to all incoming P1 students of the Pharm.D. program early in the fall semester. Therefore in Fall 2017 the students who began at St. Louis College as undergraduate freshmen in 2014 were re-surveyed as part of the Fall 2017 P1 class (N=252). The informed consent process of all administrations asks for permission to link MAI scores of individual students to course grades earned as students progress through the program. End of term course grades were compiled and de-identified by the Office of Institutional Research. Statistical analyses were performed using IBM SPSS Statistics 24.

CORRELATION OF MAI VALUES WITH SEMESTER GRADE POINTS

		Semester GPA				
		2014_Fall (FR Undergrad)	2015_Fall (SO Undergrad)	2016_Fall (JR Undergrad)	2017_Spring (JR Undergrad)	2017_Fall (P1 Professional)
MAI 2014 composite	Pearson Correlation	0.028	0.052	0.127	0.138	0.126
	Sig. (2-tailed)	0.795	0.628	0.239	0.199	0.241
	N	88	88	88	88	88
MAI 2017 composite	Pearson Correlation	0.251*	0.381**	0.409**	0.265*	0.351**
	Sig. (2-tailed)	0.018	0.000	0.000	0.013	0.001
	N	88	88	88	88	88

**.. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

RESULTS

Data presented here are from the 88 students comprising the test-retest group who completed the MAI in the fall of 2014 (44 % of the freshman class) and again in the fall of 2017 (35% of the P1 class). There was no statistically significant change in MAI scores between the first administration (ave. score MAI_2014 = 4.03 ± 1.92) and the re-test (ave. score MAI_2017 = 3.75 ± 1.92).

As had been reported previously, there is no significant correlation between the MAI_2014 scores and academic success as measured by freshman semester GPAs. This study confirms that the lack of correlation of the MAI_2014 scores applies to all subsequent semesters as well. There are, however, modest positive correlations seen between the MAI_2017 scores and semester GPAs both prospectively from the administration of the MAI GPA Fall 2017 ($r^2 = 0.351$, $p < 0.001$), and retrospectively prior to administration GPA Fall 2014 ($r^2 = 0.251$, $p < 0.05$), GPA Fall 2015 ($r^2 = 0.381$, $p < 0.001$), GPA Fall 2016 ($r^2 = 0.409$, $p < 0.001$), and GPA Spring 2017 ($r^2 = 0.265$, $p < 0.05$).

DISCUSSION & IMPLICATIONS

For some time there has been interest in the potential role of metacognition in the behaviors associated with successful clinical practice in health-related professions. It has been proposed that explicit awareness of thought processes can be involved in improvement of professional problem-solving^{3,4}. More recent studies have focused on potential interventions that can foster development of metacognition in students training for the health professions.^{5,6,7} Although there is evidence that the actual MAI scores (especially knowledge of cognition) tend to be fairly stable through time⁸, our results are pointing toward the possibility of students refining their self-awareness of their own thought processes (KC) and the behaviors that they use to regulate their learning (RC). Lines of future investigation will include investigating which undergraduate experiences can contribute to the reliable development of metacognition, and to what degree the size of the correlations might be increased. As we follow these students through the Pharm.D. program we will also be documenting the degree to which metacognitive awareness might assist in the development and refinement of clinical problem-solving skills.

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