Examining Pharmacy Students’ Critical Thinking Abilities in the Context of Their Learning Styles
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Background & Justification
Schools of pharmacy must equip students with the knowledge and skills necessary to problem solve, think critically, innovate, collaborate and communicate effectively.1 Pharmacy programs should rethink how students are educated and shift away from a primarily passive delivery of content.2,3,4 In recent years, pharmacy education has evolved to include more active-learning strategies, such as clinical case-based discussion and team-based problem solving, flipped classroom methods, computer simulation, reflection and applied or hands-on learning in the practice setting.5,6 While evidence supports that varied teaching methods facilitate learning, the connection between learning and critical thinking capacity remains nebulous.

The purpose of this study was to explore whether there is an association between learning styles and critical thinking ability, as well as academic success among pharmacy students in relation to more traditional passive vs. active learning types of courses.

Objectives
• To determine if there is an association between pharmacy students' learning styles as measured by VARK7 & the Health Professionals Inventory Learning Styles (H-PILS)8 and their critical thinking abilities as measured by the California Critical Thinking Disposition Inventory (CCTDI)9 & the Health Sciences Reasoning Test (HSRT).10
• To analyze the association between learning styles and performance in traditional lecture-based and active-learning courses.
• To analyze the association between critical thinking ability and performance in a traditional lecture-based and active-learning courses.

Methodology
Study Setting & Population
• All students enrolled at the Bernard J. Dunn School of Pharmacy admitted into the classes of 2015-2018 who also completed baseline learning styles and critical thinking assessments upon admission.

Study Methods
• Retrospectively, students’ total CCTDI and HSRT scores were compared with their dominant learning styles for H-PILS and VARK (Figure 1)
• Data were analyzed with SPSS version 21 using the following statistical tests: Chi-square, ANOVA, Logistic regression; p-values less than 0.05 were considered statistically significant.
• Traditional and active-learning course were identified for analysis.

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Results

The Health Professionals Inventory Learning Styles (H-PILS) was developed and validated by Zuban Austin. It measures a dominant and secondary learning style, helping students understand how they acquire knowledge and process information. A majority of students in this study displayed a dominant learning style of either assimilator or converger.

Learning styles were not associated with critical thinking ability.

Students who are multimodal may perform better in active learning courses that require students to complete varied learning activities.

Students who performed better in traditional and active-learning courses had higher critical thinking ability, or HSRT scores.

Total CCTDI scores were not predictive of performance in either traditional or active-learning courses.

Performing these different assessments might help identify pharmacy students with learning needs early on in the curriculum and assist faculty with implementing teaching methodologies to ensure each student is obtaining and retaining information appropriately based upon their learning style and critical thinking abilities.

More studies are needed to assess how critical thinking ability tests relate to learning styles and pharmacy students’ performance in the curriculum.

Conclusions & Implications

References
See attached handout
References


