# RESEARCH BRIEF

## The Predictive Strength of the Physician Assistant College Admissions Test (PA-CAT) Scores to 2024 Cohort First Semester Performance at St. Elizabeth University Physician Assistant Program

Saint Elizabeth University: Class of 2024 Report
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PA-CAT Physician Assistant College Admissions Test

**Additional Information**

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# Research Brief: The Predictive Strength of the Physician Assistant College Admissions Test (PA-CAT) Scores to 2024 Cohort First Semester Performance at St. Elizabeth University PA Program


## Abstract

The Physician Assistant College Admissions Test (PA-CAT) is a 240-item assessment developed for use by Physician Assistant (PA) programs to inform holistic admissions processes. The current research study investigated the relationship between the PA-CAT scores and performance in the first semester of the incoming class (n=36) of the 2024 cohort at St. Elizabeth University PA Program. Results indicated that PA-CAT scores are useful in predicting performance in didactic courses in the first semester of the PA program, the overall first semester PA program GPA, and the number of C grades or below.


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### Physician Assistant College Admissions Test (PA-CAT)

The PA-CAT is a 240-item specialized discipline-specific assessment that is designed to measure knowledge and application in nine prerequisite science subjects necessary for success in the demanding Physician Assistant (PA) curriculum. The PA-CAT has been developed specifically for use by PA educators and their admissions departments as part of a holistic admissions process. As of June 21, 2023, the assessment has been administered to 2,979 examinees since it was first administered on May 1, 2020. One Composite scaled score based on all items comprising the assessment and three subject scaled scores (Anatomy & Physiology, Biology, and Chemistry) are reported for each examinee. The reliability of PA-CAT Composite scaled scores is very high (0.937), indicating that the PA-CAT Composite scaled scores are very dependable, signifying that it is highly likely that the examinees with higher scaled scores have higher knowledge and application skills in the prerequisite science subjects.

### Relationship between PA-CAT Composite Scores and Performance in Physician Assistant Program

The relationship between PA-CAT Composite scores and performance in the first semester of the PA program at St. Elizabeth University was investigated by calculating the Pearson correlation coefficient and the associated statistical significance. These are discussed next along with the interpretation of the strength of the relationship in terms of the size of the correlation coefficient.

#### *Correlation Coefficient*

The correlation coefficient quantifies the degree of relationship between two variables. Its value can range from -1 to +1. A positive value implies that when one variable increases the other tends to increase as well. A negative value implies that when one variable increases the other tends to decrease. A value of 0 implies that there is no discernible linear relationship between the variables.

The knowledge of the relationship between two variables can be useful in predicting one from the other, especially if one variable is observed in advance of the other. At St. Elizabeth University, PA-CAT Composite scores have a positive correlation with performance in three of the PA program courses (PA 601, PA 603, and PA 621) and the first semester PA program GPA.

Students with higher PA-CAT Composite scores are expected to do better in these PA program courses and in the first semester of the PA program compared to students with lower PA-CAT Composite scores. PA-CAT Composite scores have a positive inverse correlation with the number of C grades or below. Students with higher PA-CAT Composite scores are expected to get a lower number of C grades or below in the first semester of the PA program.

### *Statistical Significance*

Statistical significance is determined using the *p-value*, the probability of observing a correlation coefficient by chance if the actual coefficient is 0. For example, if the *p-value* associated with a correlation coefficient is 0.082, the probability of observing this or a higher absolute correlation coefficient by chance is 8.2% (8.2/100 = 0.082), given that the actual coefficient is 0. A correlation coefficient is statistically significant if the *p-value* is lower than the probability that the decision makers consider too low to be by chance only. This threshold value is referred to as significance level or alpha. One of the most common conventional alpha values used in educational settings is 0.05, also referred to as a 5% significance level. When more conservative decision-making is desired a lower alpha value of 0.01 (1% significance level) is used.

The correlation of PA-CAT Composite scores with the performance in three PA program courses (PA 601, PA 603, PA 621), the first semester PA program GPA, and the number of C grades or below are statistically significant at the 5% significance level. The correlation of PA-CAT Composite scores is not statistically significant with PA 611 and PA 671 at the 5% significance level.

### *Size of the Correlation Coefficient*

The higher the absolute correlation coefficient, the stronger the relationship between two variables, and the better would be the prediction of one variable from another. There are general guidelines on the interpretation of the strength of relationships (Cohen, 1988; Cohen, 1992) in terms of the size of the correlation coefficient. A correlation coefficient of around 0.1 is considered small, 0.3 is considered medium, and 0.5 or greater is considered large.

Correlation coefficients between PA-CAT Composite scores and PA program performance variables, p-values associated with the coefficients, and the interpretation of the size of the relationship are reported in The correlation of PA-CAT composite scores with PA 611 and PA 671 is not statistically significant at the 5% significance level. Therefore, PA-CAT composite scores are not useful in predicting performance in these courses of the PA program.

**Table 1**.

The size of the correlation coefficient of PA-CAT Composite scores with PA601, PA603, and the first semester PA program GPA at St. Elizabeth University is large. In other words, PA-CAT Composite scores are very useful in the predicting performance of applicants in these two courses and the first semester PA program. The size of the correlation coefficient of PA-CAT Composite scores with PA621 and the number of C grades or below is medium. PA-CAT Composite scores are useful in the predicting performance of applicants in PA 621 and the number of C grades or below. The relative usefulness of PA-CAT Composite scores in predicting PA601, PA603, and the first semester PA program GPA is higher than the usefulness of predicting the performance in PA621 and the number of C grades or below.

The correlation of PA-CAT composite scores with PA 611 and PA 671 is not statistically significant at the 5% significance level. Therefore, PA-CAT composite scores are not useful in predicting performance in these courses of the PA program.

***Table 1: Correlation between PA-CAT Composite Scores and PA Program Performance***

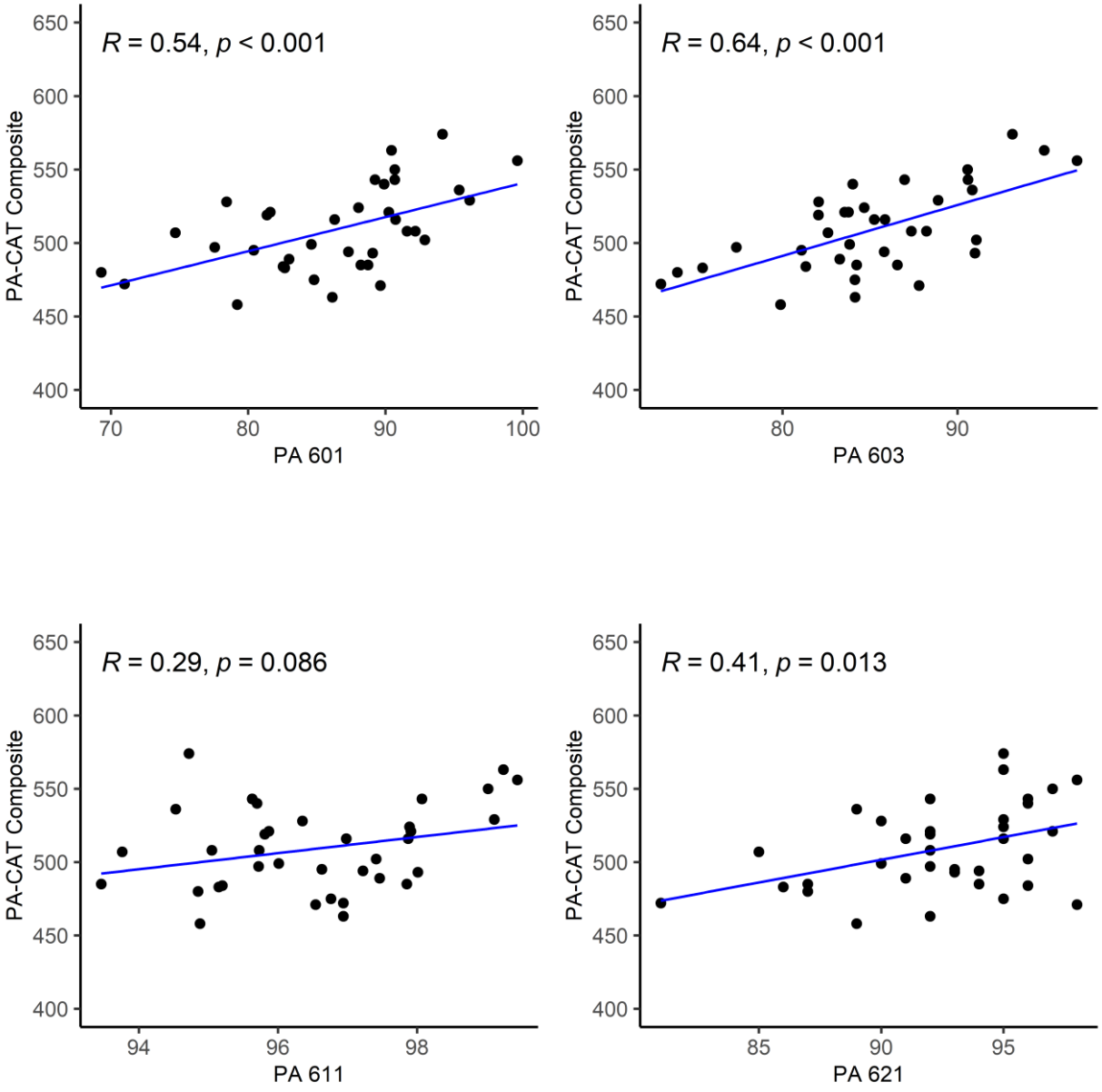
| | Correlation with PA-CAT Composite scores | P value | Statistically Significant (5% level)? | Size of the Correlation |
|---|---|---|---|---|
| PA 601 - Human Anatomy 1 | 0.544 | <0.001 | Yes | Large |
| PA 603 - Physiology, Pathophysiology & Genetics 1 | 0.641 | <0.001 | Yes | Large |
| PA 611 - Foundations of PA Practice | 0.290 | 0.086 | No | |
| PA 621 - Patient-Centered Communication and Approach to Diversity | 0.411 | 0.013 | Yes | Medium |
| PA 671 - Foundations of Critical Thinking and Clinical Decision Making | -0.180 | 0.295 | No | |
| First Semester GPA | 0.582 | <0.001 | Yes | Large |
| Number of C Grades or Below | -0.392 | 0.018 | Yes | Medium |

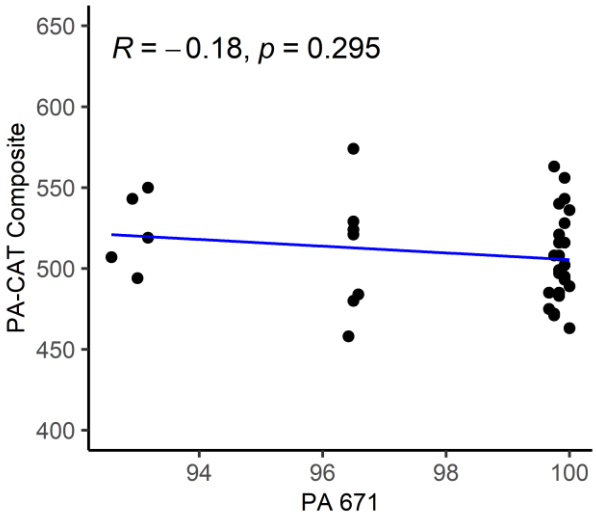
The scatter plots showing the relationship between PA-CAT Composite scores and the PA program performance variables are presented in Appendix A.

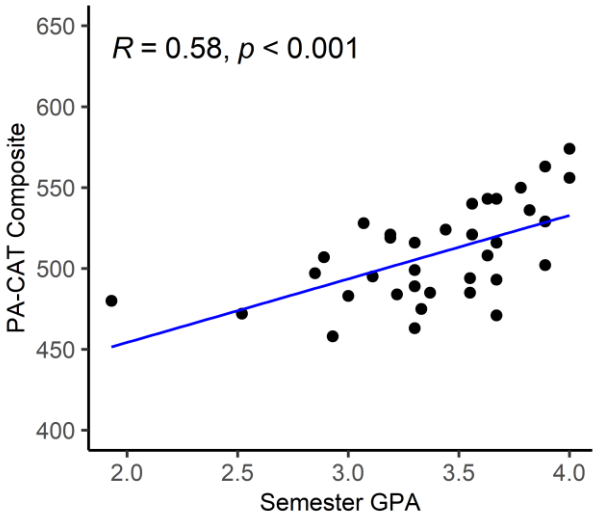
### Limitations

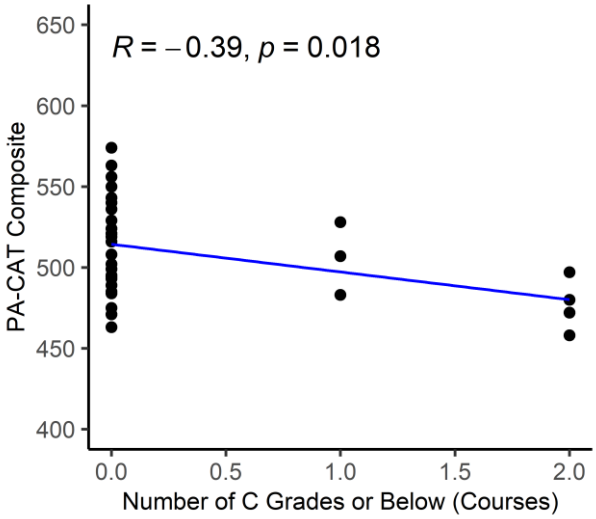
A limitation of this research study is that the findings are based on a small sample (n=36) from a single cohort at one PA program and may not be generalizable to other cohorts at the same institution or to other PA programs.

**Appendix A: Scatter plots – Relationship between PA-CAT Composite Scores and PA Program Performance**




R = −0.18, p = 0.295
PA-CAT Composite
650
600
550
500
450
400
94
96
98
100
PA 671


R = 0.58, p < 0.001
PA-CAT Composite
650
600
550
500
450
400
2.0
2.5
3.0
3.5
4.0
Semester GPA


R = −0.39, p = 0.018
PA-CAT Composite
650
600
550
500
450
400
0.0
0.5
1.0
1.5
2.0
Number of C Grades or Below (Courses)