RESEARCH BRIEF

The Predictive Strength of the Physician Assistant College Admissions Test (PA-CAT) Scores to Class of 2025 Didactic Performance at Miami-Dade College Physician Assistant Program

Miami-Dade College: Class of 2025 Report
Avril Nimblett-Clark, DMSc, MS, PA-C (1), Scott Massey, PhD, PA-C,
Rajat Chadha, PhD (Psychometrician for PA-CAT)

(1) Miami-Dade College

Date: November 2024

Exam Master®

PA-CAT Physician Assistant College Admissions Test

Miami Dade College Physician Assistant Program
Medical Campus
950 NW 20th Street
Miami, FL 33127

Mission:
The mission of the Miami Dade Physician Assistant Program is to educate and train students from a culturally diverse background to become competent primary care physician assistants who will serve the medically underserved patients in urban and rural communities in Florida. The program also promotes academic excellence, high professional standards, and the development of lifelong learners.

Director: Avril Nimblett-Clarke, DMSc, MS, PA-C

Dr. Nimblett-Clarke serves as the Program Director and Chairperson of the Physician Assistant program. She holds a Bachelor of Science degree in Physician Assistant Studies from Howard University and a Master and Doctoral degree in Educational Leadership from A.T. Still University. She has more than 20 years of clinical experience as a Certified Physician Assistant. Her primary clinical practice areas are general pediatrics, adolescent medicine, and sickle cell research. She has also held the roles of Assistant Professor and Academic Coordinator. On a national level, she has served as a facilitator for the Physician Assistant Education Association (PAEA) New Faculty Skill Workshop mentoring new faculty. She is a member of the PAEA leadership committee, where she continues to contribute to a platform of building excellence in leadership among Physician Assistant faculty. Dr. Nimblett-Clarke is passionate about student success and is committed to growing a community of servant leaders. Dr. Nimblett-Clarke was awarded the 2021 Capstone Award of Excellence from A.T. Still University for her capstone project, "Classroom Assessment Techniques in Physician Assistant Education: Improving Learning Gains."

Scott Massey, PhD, PA-C

With over three decades of experience in PA education, Dr. Scott Massey is a recognized authority in the field. He has demonstrated his expertise as a program director at the esteemed Central Michigan University and as the research chair in the Department of PA Studies at the University of Pittsburgh. Dr. Massey's influence extends beyond practical experience; he has significantly contributed to accreditation, assessment, and student success. His innovative methodologies have guided numerous PA programs to ARC-PA accreditation and have improved program outcomes. His predictive statistical risk modeling has enabled schools to anticipate student results. Dr. Massey has published articles related to predictive modeling and educational outcomes. He has also conducted longitudinal research in stress among graduate Health Science students. His commitment to advancing the PA field is evident through participation in PAEA committees, councils, and educational initiatives.

Rajat Chadha, PhD

Dr. Rajat Chadha, with a PhD in Education from Indiana University, Bloomington, is an expert psychometrician with more than 14 years of extensive experience working on multiple significant projects. Dr. Chadha has worked as a psychometrician in high-stakes certification for physicians in the United States. He has also worked on predictive risk modeling for Physician Assistant programs and has published book chapters and peer-reviewed articles in leading journals.

Additional Information

If you would like to ask questions about the research brief, access to the full research study, or express interest in participating in future research studies, reach out to:

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Research Brief: The Predictive Strength of the Physician Assistant College Admissions Test (PA-CAT) Scores to 2023 Cohort Complete Didactic Performance at Miami-Dade College Physician Assistant Program

Abstract

This study investigates the relationship between PA-CAT composite scores and academic performance in the didactic phase of the Physician Assistant (PA) program at Miami-Dade College. Using the Pearson correlation coefficient, the analysis examines the strength and direction of correlations between PA-CAT scores and various academic metrics, including performance in didactic courses and semester GPAs.

Results indicate a statistically significant positive correlation between higher PA-CAT scores and improved academic outcomes across several key measures, particularly in courses like Physical Diagnosis I and Clinical Anatomy and Physiology, where the correlation is strong. These findings suggest that PA-CAT scores can be a useful predictor of success in certain didactic areas of the PA program. However, the study's generalizability is limited by the small sample size (n = 53) from a single cohort.

Physician Assistant College Admissions Test (PA-CAT)

The PA-CAT is a discipline-specific assessment consisting of 240 test items designed to evaluate knowledge and application across nine prerequisite science subjects critical for success in the rigorous 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 July 20, 2024, the PA-CAT has been administered to 4,315 examinees since its inception on May 1, 2020. Each examinee receives one composite scaled score, which reflects overall performance across all test items, along with three subject-specific scaled scores in Anatomy & Physiology, Biology, and Chemistry. The reliability of the composite score is exceptionally high (0.939), making it a dependable indicator of examinee knowledge and application skills in the prerequisite sciences and a strong predictor of success in PA program coursework.

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

The relationship between PA-CAT composite scores and academic performance in the PA program at Miami-Dade College was analyzed using the Pearson correlation coefficient and its associated statistical significance. The results, along with an interpretation of the strength of the correlation based on the magnitude of the coefficient, are discussed in the following sections.

Correlation Coefficient

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. 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.

Understanding the relationship between two variables can be useful in predicting one variable based on the other, especially if one variable is observed before the other. At Miami-Dade College, the PA-CAT composite scores show a positive correlation with performance in several didactic courses, first-semester GPA, second-semester GPA, third-semester GPA, and fourth-semester GPA. This suggests that students with higher PA-CAT composite scores are likely to perform better in these areas compared to those with lower scores.

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 5% significance level. When more conservative decision-making is desired, a lower alpha value of 0.01 (1% significance level) is used.

In this study, the correlation between PA-CAT composite scores and performance in the PA program is statistically significant at the 5% level for several variables, indicating a reliable relationship between higher PA-CAT scores and better academic outcomes.

Size of the Correlation Coefficient

A higher absolute correlation coefficient indicates a stronger relationship between two variables and better prediction of one variable based on another. There are general guidelines on the interpretation of the strength of relationships (Cohen, 1988; Cohen, 1992) in terms of the size of correlation coefficient. A correlation coefficient of around 0.100 is considered small, 0.300 is considered medium, and 0.500 or greater is considered large.

Table 1 presents the correlation coefficients between PA-CAT composite scores and various PA program performance variables, along with their associated *P* values and interpretations of the relationship strength. For clarity, only correlation coefficients that reached statistical significance at the 5% level are included.

For example, the correlation coefficient between PA-CAT composite scores and performance in the Physical Diagnosis I course at Miami-Dade College is large, indicating that PA-CAT composite scores are highly predictive of student performance in this course. By contrast, the correlation between PA-CAT composite scores and performance in Clinical Diagnostic Imaging is small, suggesting that PA-CAT scores are less predictive for this course. Thus, PA-CAT composite scores are more useful in forecasting success in Physical Diagnosis I than in Clinical Diagnostic Imaging. Similar interpretations apply to the other correlation coefficients in the table.

Appendix A contains scatter plots illustrating the relationships between PA-CAT composite scores and various PA program performance variables.

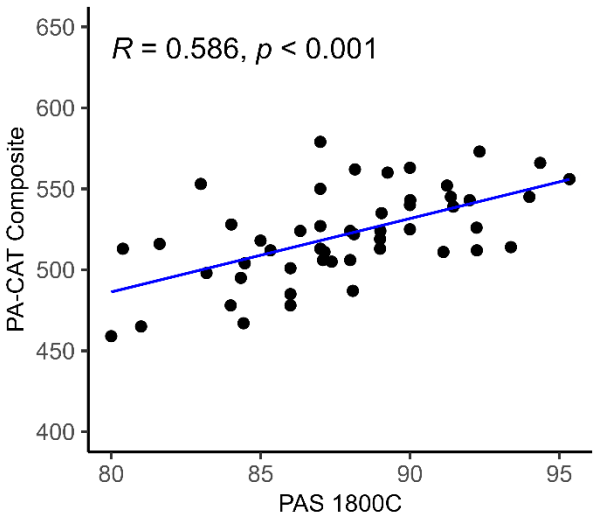
Table 1: Correlation between PA-CAT Composite Scores and PA Program Performance

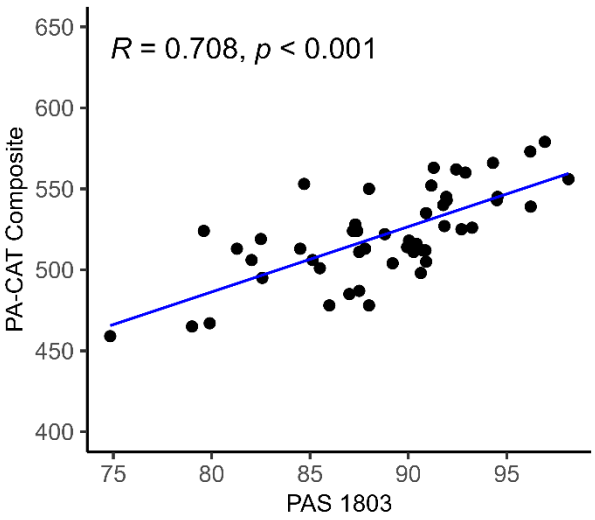
	Correlation with PA-CAT Composite scores	*P* value	Statistically Significant (5% level)?	Size of the Correlation Coefficient
PAS 1800C: Physical Diagnosis I	0.586	p < 0.001	Yes	Large
PAS 1803: Clinical Anatomy and Physiology	0.708	p < 0.001	Yes	Large
PAS 1831: Clinical Diagnostic Imaging	0.289	p = 0.044	Yes	Small
PAS 1801C: Physical Diagnosis II	0.311	p = 0.036	Yes	Medium
PAS 1811C: Clinical Medicine I	0.433	p = 0.003	Yes	Medium
PAS 1813: Pathophysiological Basis of Disease I	0.389	p = 0.007	Yes	Medium
PAS 1823: Pharmacology I	0.368	p = 0.012	Yes	Medium
PAS 1824: Pathophysiological Basis of Disease II	0.368	p = 0.013	Yes	Medium
PAS 3038C: Physical Diagnosis III	0.313	p = 0.039	Yes	Medium
PAS 3075: Pharmacotherapeutics	0.413	p = 0.005	Yes	Medium
PAS 3140: Genetics	0.420	p = 0.006	Yes	Medium
PAS 3042C: Clinical Medicine III	0.356	p = 0.018	Yes	Medium
Semester 1 GPA	0.606	p < 0.001	Yes	Large
Semester 2 GPA	0.423	p = 0.003	Yes	Medium
Semester 3 GPA	0.346	p = 0.021	Yes	Medium
Semester 4 GPA	0.308	p = 0.035	Yes	Medium

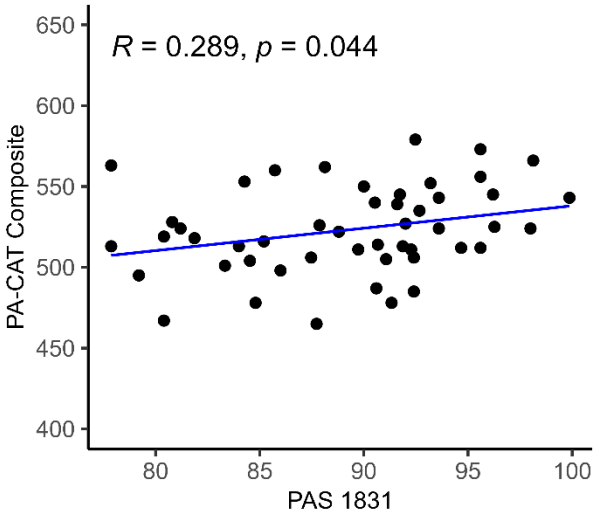
Limitations

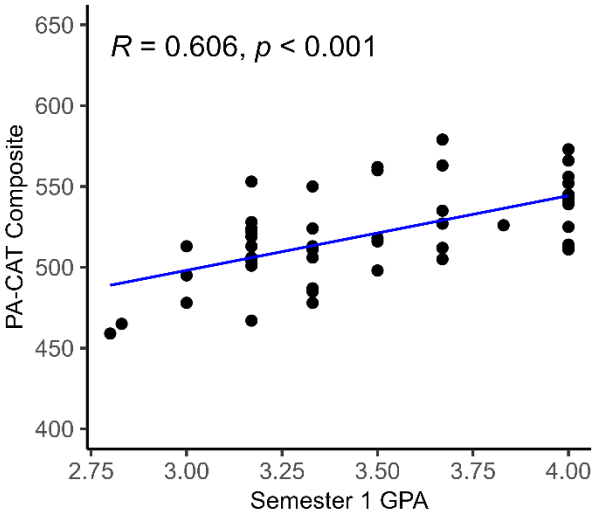
A limitation of this research study is that the findings are based on a small sample (n = 53) from a single cohort at one PA program and may not be generalizable to other cohorts at the same institution or to other PA programs.

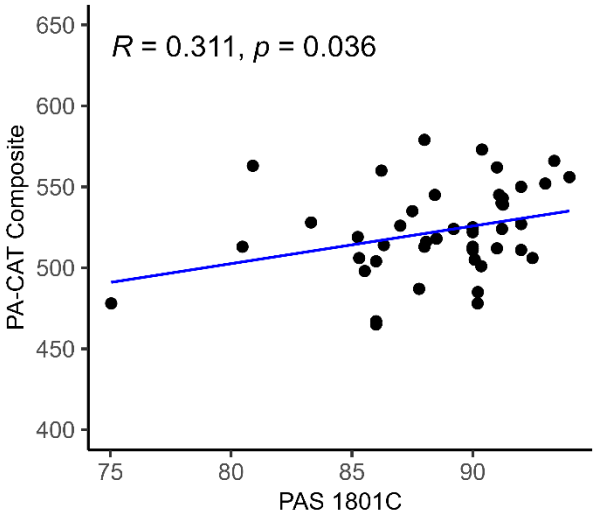
Appendix A: Scatter plots – Relationship between PA-CAT Composite Scores and PA Program Performance

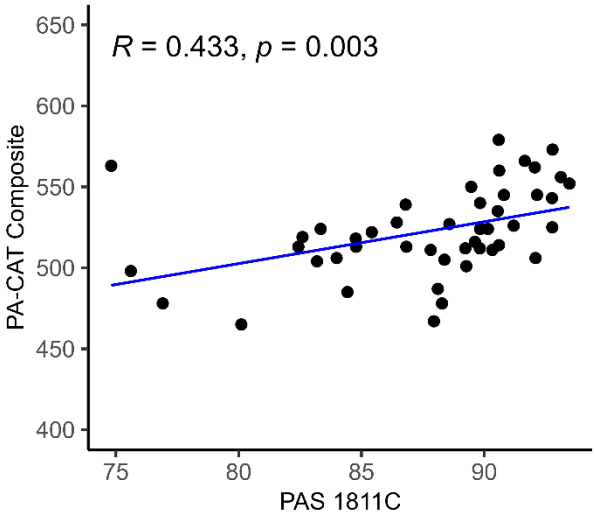


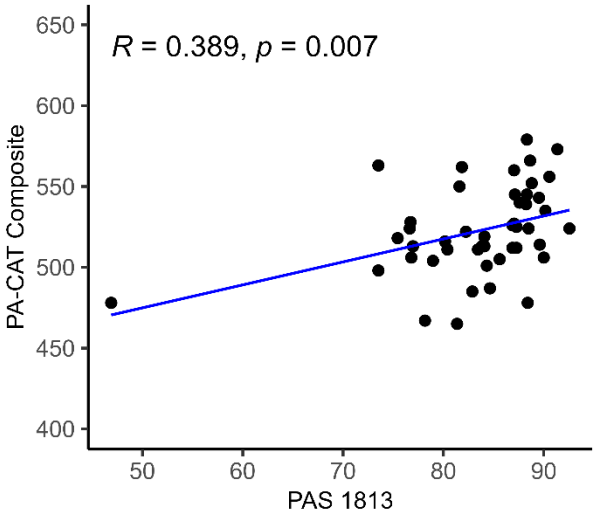







R = 0.311, p = 0.036
PA-CAT Composite
650
600
550
500
450
400
75
80
85
90
PAS 1801C


R = 0.433, p = 0.003
PA-CAT Composite
650
600
550
500
450
400
75
80
85
90
PAS 1811C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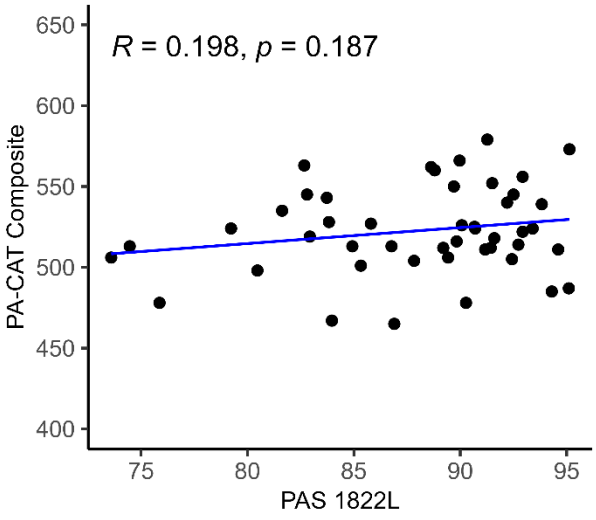
PA-CAT Composite
650
600
550
500
450
400
50
60
70
80
90
PAS 1813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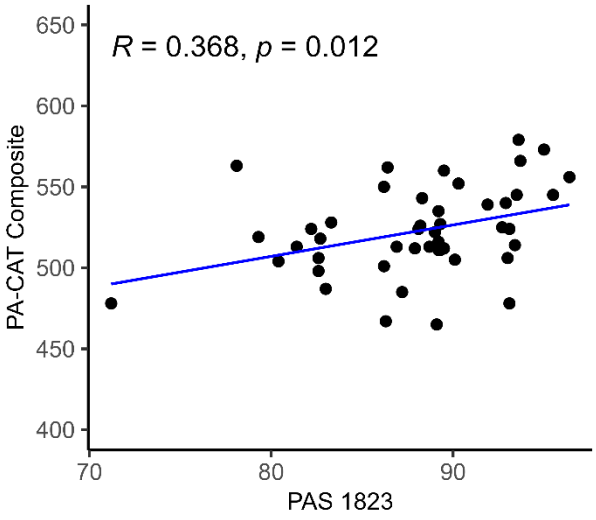
PA-CAT Composite
650
600
550
500
450
400
75
80
85
90
95
PAS 1822L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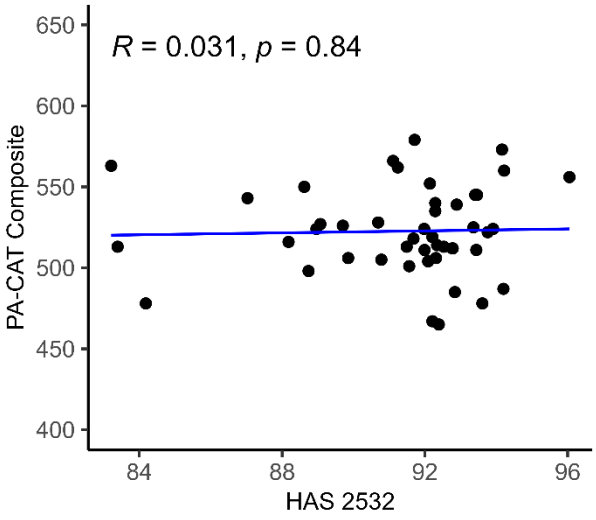
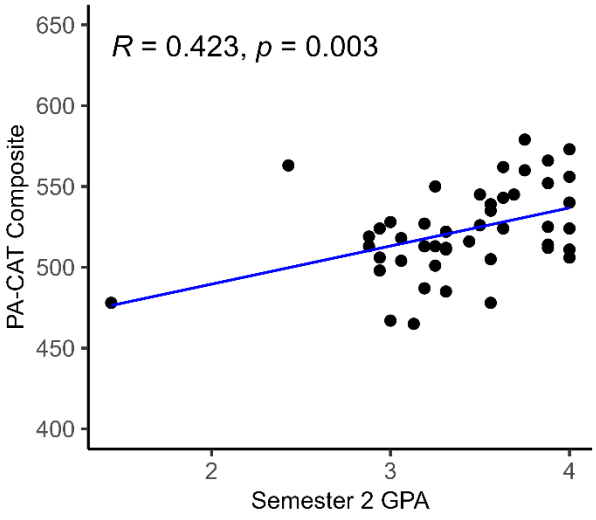
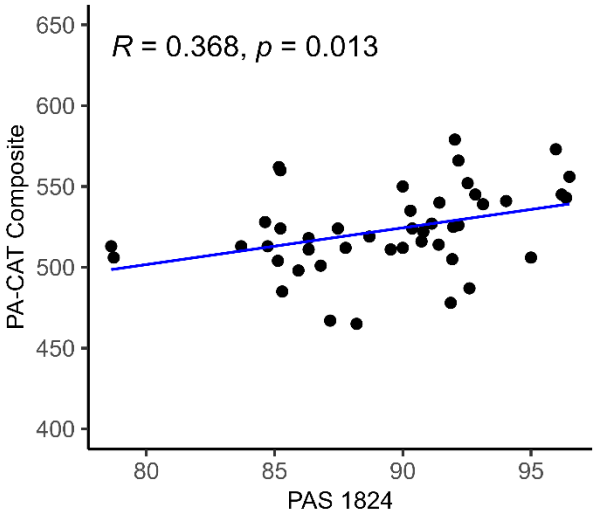
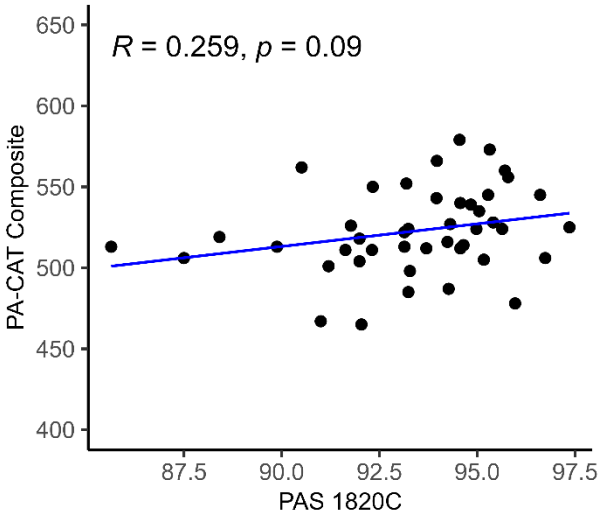
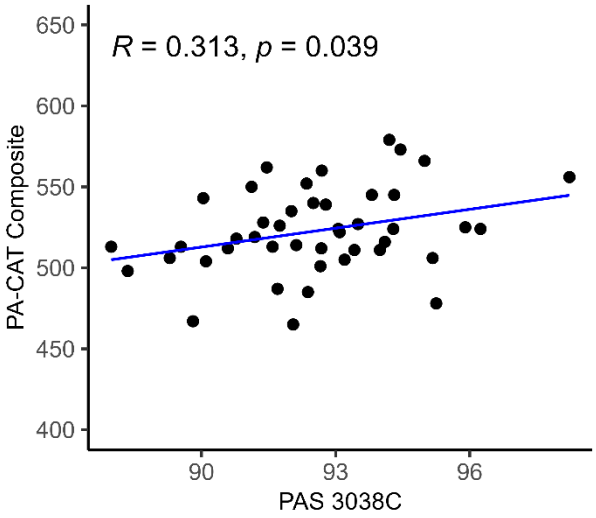
PA-CAT Composite
650
600
550
500
450
400
70
80
90
PAS 1823

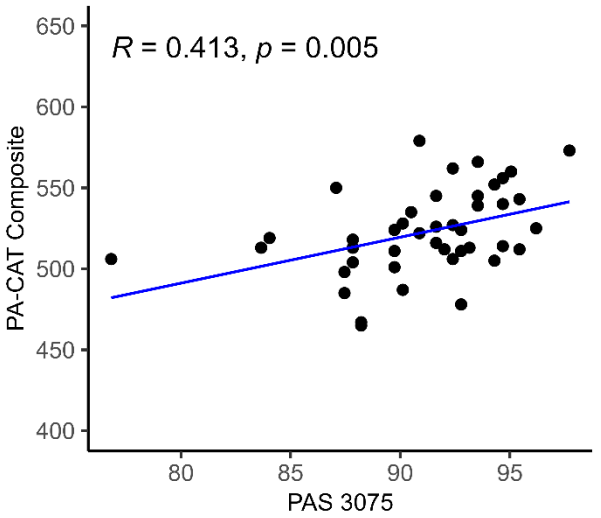

R = 0.031, p = 0.84
PA-CAT Composite
650
600
550
500
450
400
84
88
92
96
HAS 2532

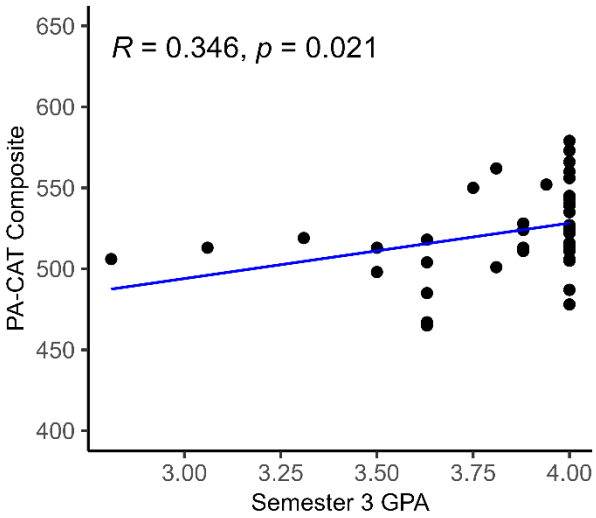

R = 0.423, p = 0.003
PA-CAT Composite
650
600
550
500
450
400
2
3
4
Semester 2 GPA

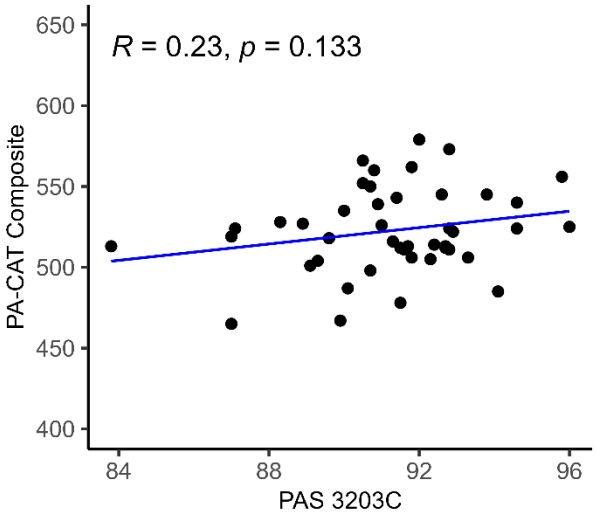

R = 0.368, p = 0.013
PA-CAT Composite
650
600
550
500
450
400
80
85
90
95
PAS 1824

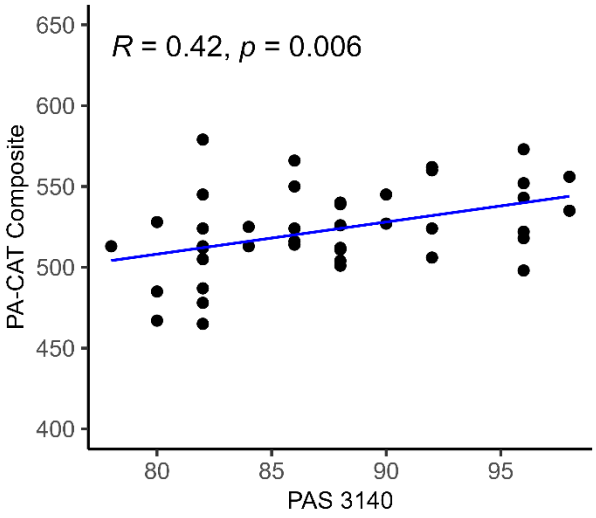

R = 0.259, p = 0.09
PA-CAT Composite
650
600
550
500
450
400
87.5
90.0
92.5
95.0
97.5
PAS 1820C


R = 0.313, p = 0.039
PA-CAT Composite
650
600
550
500
450
400
90
93
96
PAS 3038C


R = 0.413, p = 0.005
PA-CAT Composite
650
600
550
500
450
400
80
85
90
95
PAS 3075


R = 0.346, p = 0.021
PA-CAT Composite
650
600
550
500
450
400
3.00
3.25
3.50
3.75
4.00
Semester 3 GPA


R = 0.23, p = 0.133
PA-CAT Composite
650
600
550
500
450
400
84
88
92
96
PAS 3203C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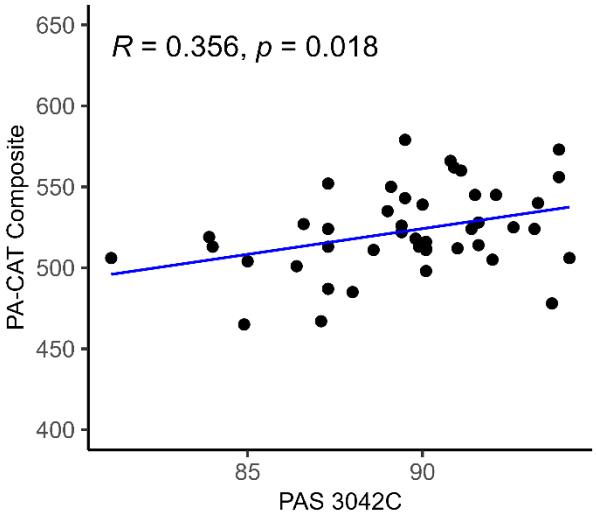
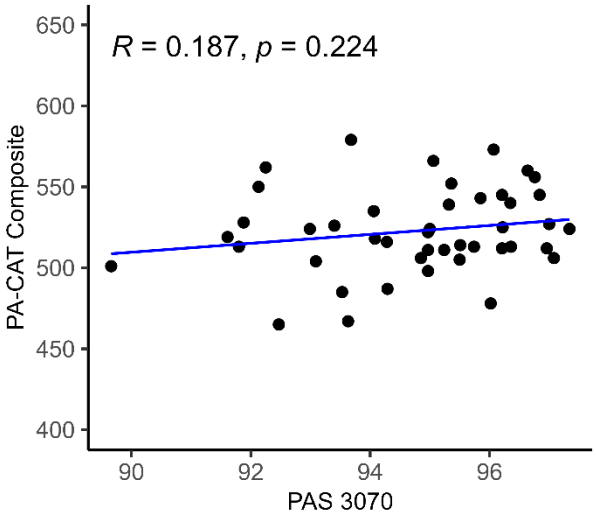
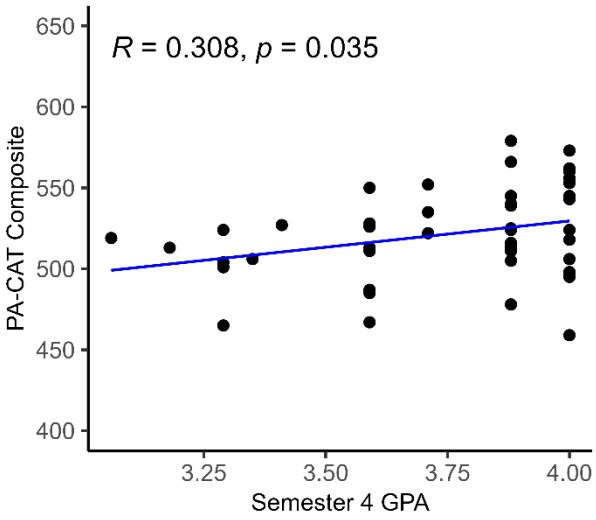
PA-CAT Composite
650
600
550
500
450
400
80
85
90
95
PAS 3140


R = 0.356, p = 0.018
PA-CAT Composite
650
600
550
500
450
400
85
90
PAS 3042C


R = 0.187, p = 0.224
PA-CAT Composite
650
600
550
500
450
400
90
92
94
96
PAS 3070


R = 0.308, p = 0.035
650
600
550
500
450
400
PA-CAT Composite
3.25
3.50
3.75
4.00
Semester 4 GPA