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## The Predictive Relationship Between Psychological Capital and Academic Burnout in Postgraduate Students

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# The Predictive Relationship Between Psychological Capital and Academic Burnout in Postgraduate Students

## Abstract

**Purpose:** The purpose of this quantitative correlational study was to determine if, or to what extent, the composite and sub-composite categories of Psychological Capital (PsyCap) predict academic burnout in American postgraduate health science students at a university in the Southeastern United States. **Methods:** The variables of the study were measured by the Psychological Capital Questionnaire (PCQ-24) and the Maslach Burnout Inventory-Student Survey (MBI-SS). A convenience sampling method was used to collect data from the target population, which included a final sample of 90 health science postgraduate students. **Results:** A simple linear regression analysis revealed that PsyCap was a significant and negative predictor of academic burnout ( $F(1,88) = 12.00, p < .001, R^2 = 0.12; B = -0.28, t(88) = -3.46, p < .001$ ). Additionally, multiple linear regression analysis revealed that only one sub-category of PsyCap, labeled as Optimism, was a significant and negative predictor of academic burnout ( $F(4,85) = 5.17, p < .001, R^2 = 0.20; B = -0.90, t(85) = -3.17, p = .002$ ). **Conclusion:** The findings may be used by higher education instructors, advisors, and administrators in the United States to adopt policies, practices, programs, student advising, and student mentorship that foster PsyCap and Optimism development in students, which may mitigate the risks and consequences of academic burnout.

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### **ABSTRACT**

**Purpose:** The purpose of this quantitative correlational study was to determine if, or to what extent, the composite and sub-composite categories of Psychological Capital (PsyCap) predict academic burnout in American postgraduate health science students at a university in the Southeastern United States. **Methods:** The variables of the study were measured by the Psychological Capital Questionnaire (PCQ-24) and the Maslach Burnout Inventory-Student Survey (MBI-SS). A convenience sampling method was used to collect data from the target population, which included a final sample of 90 health science postgraduate students. **Results:** A simple linear regression analysis revealed that PsyCap was a significant and negative predictor of academic burnout ( $F(1,88) = 12.00, p < .001, R^2 = 0.12; B = -0.28, t(88) = -3.46, p < .001$ ). Additionally, multiple linear regression analysis revealed that only one sub-category of PsyCap, labeled as Optimism, was a significant and negative predictor of academic burnout ( $F(4,85) = 5.17, p < .001, R^2 = 0.20; B = -0.90, t(85) = -3.17, p = .002$ ). **Conclusion:** The findings may be used by higher education instructors, advisors, and administrators in the United States to adopt policies, practices, programs, student advising, and student mentorship that foster PsyCap and Optimism development in students, which may mitigate the risks and consequences of academic burnout.

**Keywords:** academic burnout, health sciences, optimism, postgraduate students, psychological capital, university

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## INTRODUCTION

Burnout syndrome is a condition that is associated with distinct characteristics. Emotional exhaustion and cynicism play a significant role in burnout syndrome. Several authors contend that emotional exhaustion will often lead individuals to a state of depersonalization during interactions with others, as well as reducing the quality and personal accomplishment of their work.<sup>1,2</sup> Burnout syndrome is common to individuals that frequently engage in intense interaction with other people, including students.<sup>2</sup> The common term for burnout syndrome in a student population is academic burnout.<sup>3,4</sup> Academic burnout is common in student populations at many different grade levels.<sup>3-9</sup> Thus, students in an academic environment may be at risk of experiencing academic burnout.

Academic burnout is prevalent among university health science students. One quantitative correlational study of 249 medical students found that 21% of first-year students, over 40% of second- and third-year students, and 31% of fourth-year students experienced a moderate or high degree of academic burnout.<sup>10</sup> In addition to significant prevalence, academic burnout has been found to have negative consequences, including decreased student engagement, lower academic performance, reduced student motivation, and incivility in the classroom.<sup>6,8</sup> Further, academic burnout typically causes a state of exhaustion associated with the demands of school work, a detached attitude toward school, and feelings of inadequacy as a student.<sup>7</sup> It is, therefore, of vital significance to conduct research that examines constructs that may reduce the potential for students to experience the negative consequences of academic burnout.

Several factors reduce the risk of students experiencing Academic burnout. When students perceived their teachers as positive and motivational, the risk of students experiencing academic burnout lessened.<sup>7</sup> Positive affect, or the extent to which a person has an enjoyable, alert, and engaged type of personality, decreased an individual's risk of academic burnout.<sup>5</sup> Additionally, resilience is a trait that has been correlated with a decreased risk of developing academic burnout.<sup>11</sup> Thus, a negative correlation exists between academic burnout and constructs associated with positive psychology and resilience.

A significant paradigm characterized by positive psychology and resilience is Psychological Capital (PsyCap). PsyCap is a positive psychological model of growth and development. Hope, efficacy, resilience, and optimism constructs are the primary characteristics of PsyCap.<sup>12</sup> The authors proposed a state-trait continuum to define these four constructs associated with Psychological Capital, in which pure states are changeable momentary moods or feelings, while pure traits are relatively unchangeable and fixed characteristics.<sup>12</sup> Additionally, two other components are included in the continuum between states and traits, which the authors labeled as state-like and trait-like.<sup>13</sup> A state-like criterion is described as an individual characteristic that is open to development, change, or adaptation while a trait-like criterion is viewed as a fixed construct that is relatively difficult to develop, change, or adapt.<sup>13</sup> The authors contend that the criterion associated with PsyCap are state-like characteristics, capable of development, change, or adaptation.<sup>13</sup>

The first state-like criterion characterizing PsyCap is hope. The hope resource is often considered empowered thinking and is argued to contain two major components that lead individuals toward goal-oriented behavior and accomplishments.<sup>13,14</sup> The first is agency, which involves the willpower and capacity of motivation to start, pursue, and accomplish a given goal.<sup>13,14</sup> Individuals will often employ positive self-talk when establishing agency.<sup>13,14</sup> The second component is pathways, which involve the generation of routes necessary to accomplish a given goal.<sup>13,14</sup> Pathways often require frequent modification, adaptation, or development of alternative paths in the presence of obstacles.<sup>13,14</sup> Thus, the hope resource involves the capacity for problem-solving and planning needed for an individual to succeed.

The second state-like criterion characterizing PsyCap is efficacy. The efficacy criterion, often referred to as self-efficacy, is a key construct in Social Cognitive Theory.<sup>13,15</sup> Self-efficacy involves an individual's perceptual belief in their knowledge, ability, and skill to complete a given task within a specific environmental context.<sup>13,15</sup> Self-efficacy is argued to be a construct that can be developed through mastery over challenging tasks, learning through modeling, feedback, and emotional well-being and support.<sup>13,15</sup> Therefore, the efficacy resource refers to an individual's inherent belief in their capacity to be successful.

The third state-like criterion of PsyCap is resilience. Resilience typically involves a series of personal assets or resources that predict positive adaptation and success despite the presence of challenges or adversity.<sup>16</sup> Resiliency theory derives from a concept of biopsychospiritual homeostasis, which contends that individuals actively work to achieve balance with physical, psychological, and spiritual considerations.<sup>17,18</sup> Resiliency theory argues that internal and external stressors are continuously present, challenging, and eventually disrupting one's biopsychospiritual homeostasis.<sup>17,18</sup> In response to a disruption in homeostasis, individuals will engage in reintegration processes that lead to four alternative outcomes: 1) resiliency reintegration (return to higher level of homeostasis), 2) reintegration back to homeostasis (return to baseline status), 3) reintegration with loss (achievement of a lower

level of homeostasis), and 4) reintegration dysfunction (resorting to mal-adaptive and self-destructive behaviors).<sup>17,18</sup> Therefore, the resilience resource refers to an individual's ability to overcome barriers to achieve success.

The final state-like criterion of PsyCap is optimism. Optimism is a general cognitive state of acknowledgment that positive events occur through internal, stable, and global causes, while adverse events arise through external, unstable, and specific reasons.<sup>13,19</sup> Optimism is grounded in positive psychology theory, which is characterized by the expectation that in general, good outcomes will result from an increased effort, even in the presence of adversity.<sup>13,19</sup> Optimism differs from self-efficacy in that self-efficacy is the belief in accomplishing a task based on one's skill, while optimism is the general expectation of positive outcomes that are less connected to one's abilities.<sup>13</sup> Therefore, the optimism resource refers to an individual's perception that their outcome will likely be a positive success.

An association between PsyCap and academic burnout has been previously established in medical students from an Iranian university.<sup>9</sup> A significant negative correlation between academic burnout and Psychological Capital was found, including two sub-variable components (Exhaustion = -0.762; Cynicism = -0.740).<sup>9</sup> The third sub-variable (Inefficacy) was found to have a positive relationship with PsyCap (Inefficacy = 0.190).<sup>9</sup> A significant limitation to the study involved a sample of participants from a single university in Iran that reduced the generalizability of the findings and warrants further study.<sup>9</sup>

Additional studies further contribute to the gap in the literature pertaining to PsyCap and burnout. For example, literature has established a negative relationship between academic self-efficacy, which is a component of psychological capital, and academic burnout. One study conducted a quantitative correlational study with multiple regression analysis to examine the relationships among academic self-efficacy, socially-prescribed perfectionism, and academic burnout in Korean medical school students.<sup>20</sup> Based on the results of the study, academic self-efficacy has a negative association with academic burnout and serves a mediating role in the relationship between perfectionism and academic burnout in Korean medical school students.<sup>20</sup> The authors noted that a limitation to the study involved a sample of medical students from a single educational institution in Korea.<sup>20</sup>

Literature has also established a negative relationship between resilience, which is a component of psychological capital, and academic burnout. For example, one quantitative correlational study examined the relationships among resilience, academic burnout, and psychological health in a sample of 218 nursing students at the University of Murcia in Spain.<sup>21</sup> The authors found a significant negative relationship between resilience and academic burnout, and between resilience and psychological health.<sup>21</sup> Further, the authors discovered that resilience serves as a moderator in the negative relationship between academic burnout and psychological health in sampled nursing students at the University of Murcia.<sup>21</sup> Thus, the authors concluded that students with lower levels of resilience are more likely to experience burnout and report worse perceived psychological health.<sup>21</sup> The authors recommended future research to better clarify the role of resilience as a psychological capacity in the development of burnout syndrome and psychological symptoms.<sup>21</sup>

Finally, literature has established a relationship between occupational burnout and psychological capital. For example, one significant study examined the interrelation between positive psychological capital, occupational burnout, and job performance.<sup>22</sup> The authors sampled 282 faculty members from 17 technical institutions located in the province of Punjab, Pakistan.<sup>22</sup> One significant finding in the study was that psychological capital serves as a mediator in the relationship between occupational burnout and job performance.<sup>22</sup> Thus, the authors concluded that psychological capital may significantly reduce the negative impact of occupational burnout on performance outcomes of faculty members in Pakistan.<sup>22</sup> One limitation of the study noted by the authors is that the sample involved faculty members from technical and professional institutions under Pakistan government control.<sup>22</sup>

Thus, the aim of this study was to determine if, or to what extent, a significant predictive relationship exists between the composite and sub-categorical levels of Psychological Capital and academic burnout in American postgraduate students. The predictor variables of the study included the composite score of Psychological Capital and the sub-composite scores of each construct of Psychological Capital. The sub-composite categories of PsyCap include hope, efficacy, resilience, and optimism constructs. The composite and sub-composite categories of PsyCap were measured using the Psychological Capital Questionnaire (PCQ-24).<sup>12</sup> The criterion variable of the study was academic burnout, which was measured by the Maslach Burnout Inventory-Student Survey (MBI-SS).<sup>3</sup> Refer to Table 1 for a summary of the definitions of the study variables.

**Table 1.** Definition of Study Variables

Variable	Predictor or Criterion	Conceptual Definition	Operational Definition	Statistical Level of Measurement
PsyCap	Predictor	Grounded in Positive Psychology Theory and characterized by Hope, Efficacy, Resilience, and Optimism constructs. <sup>12</sup>	Aptitude level as measured by the PCQ-24	Ordinal data but treated as continuous based on previous literature
Hope	Predictor	Hope is a positive motivational state that intentional goal-directed energy (agency) and its associated pathways will lead to accomplishing established goals. <sup>23</sup>	Aptitude level as measured by the PCQ-24	Ordinal data but treated as continuous based on previous literature
Efficacy	Predictor	Efficacy is the perceived belief that one's capabilities directly lead to the successful planning and completion of a specific course of action. <sup>15</sup>	Aptitude level as measured by the PCQ-24	Ordinal data but treated as continuous based on previous literature
Resilience	Predictor	Resilience is a series of personal assets or resources that predict positive adaptation and success in the face of significant adversity. <sup>16</sup>	Aptitude level as measured by the PCQ-24	Ordinal data but treated as continuous based on previous literature
Optimism	Predictor	Optimism is a belief acknowledging that positive outcomes and events are realistic based on evaluations of internal and external attributions. <sup>19</sup>	Aptitude level as measured by the PCQ-24	Ordinal data but treated as continuous based on previous literature
Academic burnout	Criterion	Grounded in the theory of Burnout Syndrome characterized by the three-construct model of Exhaustion, Cynicism, and Competence in students within an educational setting. <sup>2,6</sup>	Severity level as measured by the MBI-SS	Ordinal data but treated as continuous based on previous literature

## METHODS

This study utilized a quantitative correlational design with multiple linear regression analysis to examine whether PsyCap and its four associated constructs are predictor variables of academic burnout. The selected methodology and design is supported by previous research, which has utilized the quantitative correlational design related to the variables of Psychological Capital and burnout syndrome in steelworkers in China,<sup>24</sup> factory workers in China,<sup>25</sup> and Iranian university students.<sup>9</sup>

### Participants

The setting for this study involved a private, small liberal arts University located in the Southeastern United States with an undergraduate student population of roughly 2,100, and about 1000 graduate students actively enrolled. The target population for the study involved 627 actively enrolled students in postgraduate studies within the University's College of Health Sciences. The College of Health Sciences has several areas of study, including Doctor of Physical Therapy, Doctor of Medical Sciences, Master of Public Health, Master of Science in Athletic Training, and Master of Science in Nursing.

A minimum of 85 participants from the target population was needed based on a power of 0.80 ( $\beta = 0.80$ ), a significance level of 0.05 ( $\alpha = 0.05$ ), and an effect size of 0.15 ( $\rho = 0.15$ ). A total of 96 participants was achieved in this study, above the required minimum set by the a priori analysis. Site authorization was requested and approved through the Institutional Review Board (IRB) at the University for permission to sample graduate students for the study.

The researcher implemented a convenience sampling of the target population and was blinded for this study. The participants of the study completed the Psychological Capital Questionnaire (PCQ-24) to measure Psychological Capital and the Maslach Burnout Inventory-Student Survey (MBI-SS) to measure Academic burnout as part of a survey on Google Forms. Demographic information, such as age, gender, marital status, program and level of experience (time enrolled in a postgraduate program), was obtained from the survey on Google Forms with permission from study participants.

### Instrumentation

This quantitative correlational study used two primary measures of psychological capital and academic burnout. The PCQ-24 was selected for this study because it is a valid and reliable instrument to measure psychological capital.<sup>12</sup> Similarly, the MBI-SS was selected for this study because it is a valid and reliable instrument in the measurement of academic burnout.<sup>6,26,27</sup>

#### **Psychological Capital Questionnaire (PCQ-24)**

The PCQ-24 is a 24-item questionnaire that incorporates six questions related to each of the sub-group categories, including Hope, Efficacy, Resilience, and Optimism.<sup>12,13</sup> Responses to the questions are rated on a 6-point Likert-type scale: (a) 1 = strongly disagree, (b) 2 = disagree, (c) 3 = somewhat disagree, (d) 4 = somewhat agree, (e) 5 = agree, and (f) 6 = strongly agree.<sup>12,13</sup> The PCQ-24 yields an ordinal level of measurement, however, for this study, the Likert ratings from the PCQ-24 will be approximated to continuous and classified as such. Previous literature has widely accepted the approximation of the PCQ-24 Likert ratings from ordinal to continuous.<sup>9,25</sup> The PCQ-24 produces a total composite score of a maximum of 144 and a minimum of 24. The PCQ-24 also yields a maximum score of 36 and a minimum score of 6 for each of the sub-group categories.<sup>12,13</sup>

#### **Maslach Burnout Inventory-Student Survey (MBI-SS)**

The MBI-SS covers three sub-group categories of academic burnout, labeled exhaustion, cynicism, and competence. The MBI-SS consists of a total of sixteen items, of which six questions are specific to the competence sub-group, and 5 questions each are specific to the exhaustion and cynicism sub-groups.<sup>6</sup> The ratings on the MBI-SS are scored on a frequency scale ranging from 0 (never) to 6 (always).<sup>6</sup> The MBI-SS yields an ordinal level of measurement; however, for this study, the Likert ratings from the MBI-SS will be approximated to continuous and classified as such. Previous literature has widely accepted the approximation of the MBI-SS Likert ratings from ordinal to continuous.<sup>5,9,25</sup> The MBI-SS produces a total composite score of a maximum of 96 and a minimum of 0, in which higher ratings indicate a greater risk of Academic burnout.<sup>6</sup>

### Statistical Analyses

Complete data were entered into an Excel spreadsheet for upload into Intellectus Statistics from completed participant survey documents including a) total composite score for the Maslach Burnout Inventory-Student Survey (MBI-SS), b) total composite score for the PCQ-24, and c) sub-composite scores for each of the constructs (hope, efficacy, resilience, and optimism) associated with the PCQ-24. Simple linear regression was performed to examine the predictive relationship between PsyCap and academic burnout. Multiple linear regression was performed to examine the relationship between PsyCap and the four constructs of PsyCap. All associated assumptions for both simple linear regression analysis and multiple linear regression analysis were tested. Demographic characteristics for the participants were determined (Table 3) and descriptive statistics calculated (Table 4).

## RESULTS

A total of 96 participants completed the survey following acceptance of informed consent, which equates to a response rate of about 15%. Once data were exported into the Excel spreadsheet, the document was examined for missing data responses. Of the 96 responses received, six responses were omitted due to missing information from the data set. Table 2 summarizes the findings regarding eliminating incomplete responses from recruited participants.

**Table 2.** Participants

# of Initial Participant Response	# of Omitted Responses due to Missing Data	Final Number of Participants
96	6	90

Table 3 presents the self-reported data results regarding the demographic profile of the study participants, which specifically include age, gender, marital status, program of study, and level of experience (length of time enrolled in a specific program).

Eighty-four (84) participants (93.33%) reported an age between 18-30 years, 74.44% of the study participants identified with the female gender, and 76.67% of participants in this study identified as single, never married. Additionally, 82.22% of study participants identified the Doctor of Physical Therapy program as their program of study. Finally, participants exhibited a broad and varied level of experience in this study based on the length of time enrolled in their current graduate program. Specifically, 45.56% of study participants identified with 1-12 months enrolled in their current graduate program, while 28.89% and 21.11% identified with 13-24 months and 24-36 months enrolled in their current graduate program, respectively (Table 3).

**Table 3.** Demographic Profile

Variable	n	%	Cumulative %
<u>Age Group</u>			
18-24	47	52.22	52.22
25-30	37	41.11	93.33
40 or older	4	4.44	97.78
31-39	2	2.22	100
<u>Gender Identity</u>			
Female	67	74.44	74.44
Male	23	25.56	100
<u>Marital Status</u>			
Single, never married	69	76.67	76.67
Married	18	20.00	96.67
Divorced	3	3.33	100
<u>Program of Study</u>			
Doctor of Physical Therapy	74	82.22	82.22
Masters of Physician Assistant Medicine	13	14.44	96.67
Masters of Public Health	3	3.33	100
<u>Level of Experience</u>			
1-12 months	41	45.56	45.56
13-24 months	26	28.89	74.44
25-36 months	19	21.11	95.56
More than 36 months	4	4.44	100

Note: n=90

Variable descriptive statistics were calculated for both the predictor and criterion variables and the findings are outlined in Table 4 below. The observations for the MBI-SS total score show a mean score of 55.80 with a standard deviation of 11.14, which is an important finding of moderate prevalence of academic burnout in the participants tested. Additionally, the observations for the PCQ-24 total score demonstrate an average of 107.20 with a standard deviation of 13.93, which is a significant finding of strong psychological capital in the participants tested. Further of note is a high kurtosis observed for the resilience variable, suggesting the resilience construct for this study may have been influenced by outliers.

**Table 4.** Variable Descriptive Statistics

Variable	M	SD	Min	Max	Mdn	Skewness	Kurtosis
<b>MBI_SS_Total_Score</b>	<b>55.80</b>	<b>11.14</b>	<b>33.00</b>	<b>88.00</b>	<b>54.00</b>	<b>0.29</b>	<b>-0.09</b>
PCQ24_EFFICACY	26.58	3.75	17.00	36.00	26.00	-0.30	0.18
PCQ24_HOPE	27.61	4.10	14.00	36.00	28.00	-0.64	0.80
PCQ24_OPTIMISM	25.74	4.98	13.00	35.00	26.50	-0.61	-0.00
PCQ24_RESILIENCE	27.27	4.16	6.00	35.00	28.00	-1.61	6.16
PCQ24_TOTAL_SCORE	107.20	13.93	53.00	131.00	109.50	-1.08	1.99

Scale reliability (Table 5), utilizing a Cronbach alpha coefficient, was calculated for the MBI-SS Instrument and the PCQ-24 Instrument. Cronbach's alpha coefficient values between 0.70 and 0.90 are considered strong.<sup>28</sup> The results of scale reliability testing indicate that the MBI-SS and PCQ-24 were reliable instruments.

**Table 5.** Scale Reliability Testing

Scale	Number of Items	$\alpha$	Lower Bound	Upper Bound
MBI-SS Instrument	16	.90	.87	.93
PCQ-24 Instrument	24	.92	.90	.94
PCQ-24 Hope	6	.84	.79	.89
PCQ-24 Efficacy	6	.79	.73	.86
PCQ-24 Resilience	6	.80	.74	.87
PCQ-24 Optimism	6	.84	.79	.89

Note. The lower and upper bounds of Cronbach's  $\alpha$  were calculated using a 95.00% confidence interval.

All assumptions for simple linear regression and multiple linear regression analyses were met in this study. Simple linear regression analysis was conducted to assess whether PCQ24\_TOTAL\_SCORE significantly predicted MBI\_SS\_Total\_Score. The results of the simple linear regression model were significant,  $F(1,88) = 12.00, p < .001, R^2 = 0.12$ , indicating that approximately 12% of the variance in MBI\_SS\_Total\_Score is explainable by PCQ24\_TOTAL\_SCORE. The regression equation was: predicted MBI-SS Total Score =  $85.50 - 0.28*(PCQ-24 \text{ Total Score})$ . PCQ24\_TOTAL\_SCORE significantly predicted MBI\_SS\_Total\_Score,  $B = -0.28, t(88) = -3.46, p < .001$ . This finding indicates that on average, a one-unit increase of PCQ24\_TOTAL\_SCORE will decrease the value of MBI\_SS\_Total\_Score by 0.28 units. Post hoc power analysis of the simple linear regression model revealed an observed power of 0.933. The model summary for simple linear regression analysis includes an R value of 0.346, with an R Square value of 0.120 and an Adjusted R Square value of 0.110. The results in Table 6 indicate that the total score of Psychological Capital is a significant predictor of academic burnout as measured by the PCQ-24 and the MBI-SS, respectively.

**Table 6.** Results for Simple Linear Regression

Variable	B	SE	CI	$\beta$	t	p
(Intercept)	85.50	8.64	[68.32, 102.68]	0.00	9.89	< .001
PCQ24_TOTAL_SCORE	-0.28	0.08	[-0.44, -0.12]	-0.35	-3.46	< .001

Note. CI is at the 95% confidence level. Results:  $F(1,88) = 12.00, p < .001, R^2 = 0.12$

Unstandardized Regression Equation:  $MBI\_SS\_Total\_Score = 85.50 - 0.28*PCQ24\_TOTAL\_SCORE$

Additionally, multiple linear regression analysis was conducted to assess whether PCQ24\_EFFICACY, PCQ24\_HOPE, PCQ24\_RESILIENCE, and PCQ24\_OPTIMISM significantly predicted MBI\_SS\_Total\_Score. The results of the multiple linear regression model were significant,  $F(4,85) = 5.17, p < .001, R^2 = 0.20$ , indicating that approximately 20% of the variance in MBI\_SS\_Total\_Score is explainable by PCQ24\_EFFICACY, PCQ24\_HOPE, PCQ24\_RESILIENCE, and PCQ24\_OPTIMISM. The regression equation was: predicted MBI\_SS\_Total\_Score =  $79.47 + 0.18*(PCQ24\_EFFICACY) - 0.50*(PCQ24\_HOPE) + 0.31*(PCQ24\_RESILIENCE) - 0.90*(PCQ24\_OPTIMISM)$ . Post hoc power analysis of the simple linear regression model revealed an observed power of 0.973. The model summary for multiple linear regression analysis includes an R value of 0.443, with an R Square value of 0.200 and an Adjusted R Square value of 0.158.

Neither the hope, efficacy, nor resilience constructs, as measured by the PCQ-24, were found to be significant predictors of academic burnout (Table 7). However, PCQ24\_OPTIMISM significantly predicted MBI\_SS\_Total\_Score,  $B = -0.90, t(85) = -3.17, p = .002$ . This finding indicates that on average, a one-unit increase of PCQ24\_OPTIMISM will decrease the value of MBI\_SS\_Total\_Score by 0.90 units. Thus, the Optimism construct, as measured by the PCQ-24, was found to be a significant predictor of Academic burnout.

**Table 7.** Results for Multiple Linear Regression

Variable	B	SE	CI	$\beta$	t	p
(Intercept)	79.47	8.76	[62.05, 96.90]	0.00	9.07	< .001
PCQ24_EFFICACY	0.18	0.37	[-0.55, 0.91]	0.06	0.49	.625
PCQ24_HOPE	-0.50	0.40	[-1.30, 0.31]	-0.18	-1.23	.222
PCQ24_RESILIENCE	0.31	0.36	[-0.42, 1.03]	0.12	0.85	.400
PCQ24_OPTIMISM	-0.90	0.28	[-1.46, -0.33]	-0.40	-3.17	.002

Note. CI is at the 95% confidence level. Results:  $F(4,85) = 5.17$ ,  $p < .001$ ,  $R^2 = 0.20$ . Unstandardized Regression Equation:  $MBI\_SS\_Total\_Score = 79.47 + 0.18*PCQ24\_EFFICACY - 0.50*PCQ24\_HOPE + 0.31*PCQ24\_RESILIENCE - 0.90*PCQ24\_OPTIMISM$

## DISCUSSION

Empirical research is scarce regarding the relationship between Academic burnout and Psychological Capital (PsyCap). The current literature indicates that academic burnout is associated with significant negative consequences, such as a state of exhaustion related to the demands of school work, a detached attitude toward school, and feelings of inadequacy as a student.<sup>7</sup> Financial strain associated with students' tuition costs has been found to be a predictor of heavier work investment and academic burnout in a sample of students at the University of Belgrade.<sup>29</sup> Additionally, academic burnout is correlated with behavioral incivility in the classroom, low levels of motivation, and poor academic performance.<sup>8,9</sup> Recent literature also indicates that PsyCap is positively associated with well-being, engagement, motivation, positive study and learning habits, and academic achievement.<sup>30</sup> Further, individuals with higher levels of PsyCap are likely to have less stress and burnout, both in the workplace and the academic environment.<sup>9,25,31</sup>

Several main thematic outcomes were identified in this study. First, the finding that PsyCap is a predictor of academic burnout extends the knowledge base regarding the relationship between PsyCap and academic burnout in the current literature. The majority of the current research related to PsyCap and Burnout pertains specifically to the workplace environment.<sup>24,25,32-34</sup> However, the literature in this field that does relate to the educational environment has studied health science students outside of the United States educational system.<sup>9,35,36</sup> The findings in these articles advanced the knowledge base regarding the predictive relationship between PsyCap and academic burnout to include the educational environment. The results of the current study confirm these findings and have advanced the current knowledge base of the relationship between PsyCap and burnout to include health science students from the American educational system.

Second, this study enhanced the current knowledge of the predictive relationship between academic burnout, hope, efficacy, and resilience. Previous research has identified a strong negative correlation between burnout and hope, efficacy, and resilience.<sup>32,34,36</sup> However, empirical research is lacking regarding the predictive relationship between hope, efficacy, resilience, and academic burnout in the current literature. This study did not find a significant predictive relationship among these variables. These unexpected findings call for a qualitative investigation as to why higher levels of hope, efficacy, and resilience do not predict lower levels of academic burnout risk in students. It is possible that hope, efficacy, and resilience are constructs of PsyCap that are most important from an intervention standpoint once a student has already acquired academic burnout, as opposed to predicting whether a student may be at risk.

It is also possible that hope, efficacy, and resilience are closely correlated with each other, as was found in previous literature.<sup>34,37,38</sup> It may be that the instrumentation did not discriminate well enough in the measurement between these variables. Therefore, future research is warranted to investigate whether a predictive relationship exists between hope, efficacy, resilience, and academic burnout utilizing specific gold standard instrumentation for hope, efficacy, and resilience. While the results of this study extend the understanding of the relationship between hope, efficacy, resilience, and academic burnout to include students in the American educational system, future research is needed to determine the role of PsyCap intervention, including the sub-categories of hope, efficacy, resilience, and optimism, for academic burnout in students.

The third main outcome of this study is that optimism, positive psychology, and an optimistic expectation that good outcomes will result from increased effort, is a significant predictor of academic burnout in American postgraduate health science students.<sup>13,19</sup> This finding is a significant contribution to the field and extends previous knowledge that optimism negatively correlates with burnout syndrome.<sup>5,33,35</sup> Additionally, literature has established a negative predictive relationship between optimism and academic burnout. One quantitative correlational study of Spanish undergraduate students found a significant predictive relationship between optimism and academic burnout, in addition to a significant predictive relationship between coping strategies and academic

burnout.<sup>39</sup> Optimism was found to significantly predict the emotional exhaustion aspect of academic burnout in Spanish undergraduate students and is likely a protective factor against the negative emotional stressors of exhaustion related to burnout syndrome.<sup>39</sup>

These findings provide significant practical benefits for programmatic instructors, advisors, and administrators in postgraduate health science education in the United States. First, the results indicate the need for instructors, advisors, and administrators to examine the risk profile of academic burnout for each student, and to identify each student's baseline capacity for PsyCap and optimism. Second, the results of this study also indicate the need for continual monitoring of PsyCap, optimism, and academic burnout among students. For example, it is possible that an individual's optimism, psychological capital, and risk of academic burnout may change or fluctuate depending on multiple additional variables, such as stress, sleep habits, and grade performance, among others. Therefore, a student's optimism, psychological capital, and risk profile for academic burnout are likely not fixed or static, requiring varied advice, mentorship, and intervention approaches from instructors, advisors, and administrators.

Last, the results suggest that education programs ought to consider strategies that develop and cultivate PsyCap and optimism among its students, which may significantly decrease the overall risk of its students experiencing academic burnout.<sup>13</sup> For example, Psychological Capital Intervention (PCI) is a treatment program focusing on the developmental dimensions of PsyCap constructs and includes a two-hour workshop on fostering the following dimensions: (a) goals and pathways, (b) implementing obstacle planning, (c) building confidence and efficacy, (d) developing positive expectancy, (e) experiencing success and modeling others, (f) enhancing persuasion and arousal, (g) building assets and avoiding risks, and (h) how to affect the influence process.<sup>13</sup> Future research as to the effectiveness of the PCI in reducing the risk profile for academic burnout among students is indicated. Based on the findings of this study, focusing PCI intervention heavily on developing optimism would likely provide the most practical value and impact on reducing the risk of Academic burnout among American postgraduate health science students.

### **Limitations**

Key limitations of this study include the use of a convenience sampling method, a narrow target population that specifically included only postgraduate health science students enrolled at one university in the Southeastern region of the United States, and the use of self-report measures for predictor and criterion variables. The treatment of Likert data as continuous (rather than ordinal) in this study can be considered a limitation even though this approach has been justified in previous studies. Additionally, 82.22% of study participants were enrolled in a single program (Doctor of Physical Therapy), which further limits the generalizability of the findings. Although the design of this study limited the ability to draw causal relationships, predictive correlational studies, such as linear regression, involve a stronger statistical analysis that enables a researcher to determine if a relationship of sufficient magnitude exists between variables such that the score on one variable may predict the score on another variable.<sup>40</sup> While determining causality is not the aim of predictive correlational studies, the researcher is better able to predict behavior or response based on the relationship of the action to other variables.<sup>28</sup> Thus, predictive studies may better position future researchers for practical decision making and developing hypothetical interventions for future research.<sup>28</sup> Thus, the design of the study enhances the credibility of the results to conclude that PsyCap and optimism are significant negative predictors of academic burnout.

### **Recommendations for Future Research**

Future research should be extended to study students at various levels of education (e.g., undergraduate), various fields and disciplines, additional geographical regions, and various types of institutions to secure a more representative sample. Future investigations into various measures of optimism, hope, resilience and efficacy might inform future research efforts. Additionally, hope, efficacy and resilience were not found to be significant predictors of those individuals likely to experience burnout in this study. However, it may be that these particular resources are of more value in the presence of burnout as sources of planning and belief that one has the capacity to overcome the condition. Therefore, qualitative inquiry may be of value to investigate why individuals experience academic burnout and what resources offer aid to the individual in overcoming the negative characteristics and consequences of academic burnout. Finally, future investigations into the effect of specific interventions designed to enhance PsyCap, hope, efficacy, resilience, and optimism on the risk profile for academic burnout in students is necessary to further inform instructors, advisors, and administrators to advocate for policies, practices, mentorship, and programs that may reduce the risk of academic burnout.

### **CONCLUSIONS**

In summary, the findings of this study indicate that Optimism is a significant predictor of Academic burnout in American postgraduate health science students. Therefore, the findings of this study indicate that an optimistic expectation that good outcomes will result from increased effort is a strong negative predictor of Academic burnout.

## Disclosure

Ethical Approval: Ethical approval has been granted from the authorizing educational University Institutional Review Board (February 15, 2019) and site authorization was received from the Institutional Review Board associated with the host University for data collection (December 4, 2018). In addition, there was no funding provided for this study.

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