Assessing Academic and Non-Academic Factors that Influence Student Persistence in a Bachelor of Science in Nursing Program

Jeff Hill¹ and Mary Judith Yoho²*

¹Regional President, Herzing University, Kenosha, WI, USA
²Assistant Professor of Nursing, Online Baccalaureate Completion Program, Oregon Health & Science University, Portland, OR, USA

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Correspondence should be addressed to
Mary Judith Yoho, USA
E-mail: yohom@ohsu.edu

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Abstract

As most Bachelor of Science in Nursing (BSN) programs in the USA receive many more applications than their enrolment capacities, improvements in the predictive validity of admission criteria are needed in order to meet the present and future healthcare needs of our country. This mixed-methods study focused on the outcomes of 174 BSN students attending a private Midwestern university in the United States who were admitted on a conditional basis. A two-phase, sequential exploratory design was used to examine the predictive validity of an array of variables related to program completion, including Grade Point Average (GPA), Test of Essential Academic Skills (TEAS) scores, transfer credits, financial need, age, and non-cognitive variables including Grit and Self-Efficacy. In the quantitative phase (Phase 1), discriminant function analyses were performed in order to assess the predictive validity of various combinations of variables. In the qualitative phase (Phase 2), a small subgroup of the original sample was interviewed in order to better understand the findings from Phase 1, and to explore new ways to predict and to improve nursing program completion rates. Results from the quantitative phase found there was a statistically significant relationship between financial need and the number of transfer credits awarded with student persistence. The findings of the qualitative phase found that the non-academic factors of self-efficacy, grit, institutional support, and peer support influenced student persistence as well. Implications of the research are that the present admission criteria used by the study site, and many other nursing programs, are not effective predictors for students who do not meet basic admission criteria. Results of a mixed-method study reveal including non-academic admission criteria variables will positively influence student persistence and increase graduation rates of bachelor-prepared nurses.

Keywords
Admission Criteria; Non-Academic Factors; Persistence

Abbreviations

BSN : Bachelor of Science in Nursing
GPA : Grade Point Average
TEAS : Test of Essential Academic Skills
Introduction

The United States is facing a major nursing shortage with a projected shortage of 1,000,000 nurses by 2025 (AACN, 2017). Likewise, the Bureau of Labor Statistics projects a need for at least 1.05 million additional nurses by 2022 and the growing number of older adults in the United States will further strain our nursing schools to produce more qualified graduates [1]. This shortage has widespread economic and societal implications and postsecondary institutions must increase their production of qualified nursing graduates to help address this shortage [1]. This shortfall is the result of both programmatic limitations where nursing schools are restricted to the number of students they can admit based on a limited number of faculty and clinical sites available, as well as low completion rates [2].

Traditionally, nursing schools have only used academic criteria to base admission decisions in an effort to only admit those that are most likely to successfully complete the program [3,4]. Yet, a review of the literature indicates that very little is known regarding the effectiveness of traditional nursing school admission standards and many schools of nursing consistently struggle with their completion rates. Although there has been significant research conducted on student persistence, there is a lack of understanding regarding the relationship between admissions criteria of a baccalaureate nursing program and student completion rates [5]. In addition, there have been substantial shifts in the demographic characteristics of today’s nursing student’s which calls into the question the effectiveness of the traditional academic requirements designed to predict program success [6]. Colleges and universities must improve their admissions practice to increase enrollment while also improving retention and completion rates. Consequently, the purpose of this study was to investigate non-academic factors associated with program persistence for students who were admitted into a Bachelor of Science Nursing program despite not meeting the traditional minimum academic requirements for program acceptance.

There has been extensive research regarding the effectiveness of nursing school admissions criteria, yet there remains a lack of understanding regarding the specific competencies and personal characteristics related to successful program completion [4-11]. As a result, there is an obvious need for colleges and universities to reevaluate the criteria used to assess candidates for their nursing programs. Doing so may help nursing programs admit students that are more likely to complete the program and, as a result, increase the production of registered nurses.

Numerous nursing programs utilize a standardized, select admissions process based on academic aptitude in order to admit the students they believe have the greatest chance of successfully completing the program and obtaining their nursing license [12,13]. Specifically, nursing programs typically consider an applicant’s previous academic performance, as well as their scores on a standardized exam in their evaluation [9,14,15]. Seven criteria are most commonly used to assess applicant’s previous academic performance as part of their admissions process. These criteria include Cumulative Grade Point Average (CGPA), nursing prerequisite Grade Point Average (GPA), academic performance in individual science courses, academic performance in other courses, volunteerism, prior healthcare experience and admission interviews [9,14]. Results of these studies found that specific criteria used to assess nursing applicants varied considerably by institution and there is scant evidence available regarding the effectiveness of any of the factors studied in predicting success within a nursing program. Similarly, studies investigating the effectiveness of admission exams indicated minimal correlation between scores on these exams and early academic success, or program completion, within a nursing program [3,16,17].

Additional research into student attrition within nursing education has identified a number of factors that are believed to influence persistence including personal issues, financial responsibilities and poor academic performance [18]. Findings from these studies specified that there was little evidence that identified any one, single reason for influencing student persistence in nursing education [19]. Instead, conclusions from these studies reinforced the fact that the issues pertaining to nursing school attrition are complex and include a variety of factors that influence student persistence [3,18-22]. Other non-academic factors have been identified to influence persistence in these studies include demographical, personal and environmental issues [23,24].

Findings from multiple studies have concluded that several specific factors influenced persistence both positively and negatively [24,25]. On the positive side, the researchers determined that academic ability, family support and financial support all played a positive role in persistence [24,25]. Conversely, findings from these studies determined that excessive workloads both in and out of the classroom, financial concerns and lack of support negatively related with student persistence [24,25]. Based on changes in college student’s demographics, the use of non-academic factors in college admissions is becoming more accepted. A number of studies have shown that assessing both academic and non-academic criteria is a better predictor of student success [26-29].
Materials and Methods

Design

A sequential-explanatory mixed-methods design was used which combines both quantitative and qualitative approaches in order to gain a better understanding of the research problem by taking advantage of the strengths of both methodologies. The study consists of two separate phases of data collection and analysis. In the quantitative phase of research, discriminant analysis is applied to determine how well traditional admission criteria predict nursing program completion. Other academic variables and key demographic variables were investigated to determine their ability to improve the prediction of program completion. Academic variables included GPA, scores on entrance exam (TEAS), transfer credits, the demographic variables of age and financial need of student (Pell eligibility), and the non-cognitive variable responses from the 17-point Grit scale [30]. In the qualitative phase, a small group was purposefully selected for semi-structured interviews based on findings from quantitative results. The aim was to expand upon findings from quantitative phase of research and explore participant experiences and identify factors related to persistence. Triangulation of findings from both phases of research followed the completion of the quantitative and qualitative phases, results and findings were integrated and analysed, and determine if results from different phases align, complement, or contradict one another.

The research questions that were investigated in this study were:

- How well do standard admission variables (GPA and TEAS) accurately predict program completers from non-completers among students who were conditionally admitted to a BSN program?
- Will other academic variables available at the point of admission along with key demographic variables improve predictions of program completion?
- Will the addition of Grit scores improve predictions of program completion?
- Are the non-academic factors of self-efficacy and grit that are not included in the standard admission requirements related to student persistence within a nursing program?

The researcher obtained approval for this study from the Institutional Review Boards of the university of their doctorate program and the university of the research setting and followed all their requirements.

Setting

This study examined a population of students admitted into a 36-month BSN program of a private, not-for-profit Midwestern university between September 2010 and January 2016 despite not meeting the program's minimum admissions criteria. These students were considered "conditionally-admitted" and failed to meet either the minimum GPA requirement of 2.50 or the minimum composite score on the standardized admission exam of 58. However, each of these applicants was required to have a high school, or college, grade point average of 2.0 or higher and achieve a composite score of 48 or higher on the TEAS exam.

Data collection

The quantitative phase of research included five stages and utilized discriminant analysis to examine the relationship between the independent variables and student persistence. The first stage included basic descriptive statistics of all of the variables to be included in discriminant analysis in order to test assumptions of normality and to identify potential outliers. The second stage was a discriminant analysis with two categories as the dependent variable (program completers and non-completers) and three predictor variables: previous GPA, number of transfer credits awarded, and composite score earned on the TEAS assessment. The third stage of research added other predictors to the model that were available to at the point of admission including both academic and non-academic variables. The fourth stage used basic descriptive statistics to examine the Grit scale scores, to test for assumptions of normality and for potential outliers. The 17-item Grit [31] includes two subscales with specific statements focused on assessing each participant’s consistency of interest and their perseverance of effort. Consistency of interest involves an individual’s ability, and willingness, to focus dedicated effort and interest toward a specific objective over time. Similarly, perseverance of effort is related to an individual’s willingness to work hard toward a challenging goal, as well as their ability to overcome adversity [31]. The fifth stage determined if adding scores from the Grit surveys to the other variables in the model improved the predictive accuracy of the discriminant function.

The qualitative phase of research utilized one-on-one, semi-structured interviews with former BSN students and the Generalized Self-Efficacy Scale (GSE) [32], used to collect data on participant’s levels of self-efficacy. The rationale for this approach is that the qualitative data collected and analyzed...
through these interviews and instruments helped explain the statistical relationships identified in the quantitative phase of research, as well as the relationship between other non-academic factors and student persistence. Findings were triangulated from both phases of research following the completion of the quantitative and qualitative phases. Results were integrated and analyzed to best answer the research questions.

Sample

The total student population of students admitted into the nursing program during the study period was 642. The sample in this study consisted of 174 students that were admitted into the BSN program between September 2010 and January 2016 despite not meeting the minimum admissions criteria of the program. These students were considered “conditionally-admitted” because their previous GPA or score on the standardized admission exam fell below the minimum requirements for program acceptance. However, each of these applicants did meet the minimum requirement for conditional admittance which was a previous grade point average of at least 2.0 and achieve a composite score of at least 48 on the TEAS exam.

The sample population represented approximately 26.9% of the total nursing student population admitted during this time. Table 1 describes the demographic characteristics of the study participants. In general, the sample population was almost exclusively female (95.4%), though very diverse with respect to age and financial need. The average overall age of the sample was 30.7 (SD = 24.9) and ages ranged from 18 to 67. Financial need was measured as a categorical variable based on whether students received the Pell grant or not. 63% (n = 109) of the sample received the Pell grant while 37% (n = 64) did not. The number of transfer credits awarded was measured as a continuous variable and ranged from 0 to 48 for the participants. Admission GPA and TEAS exam are the standard academic criteria used by the study site and were measured as continuous variables. Student admission GPA ranged from 1.39 to 3.92 and scores on the TEAS test ranged from 48.0 to 57.3.

The participants for the qualitative phase of research were purposely selected based on the incorrect prediction of their persistence. Of the 30 invited students, 17 agreed to participate in the qualitative phase of research. Specifically, 9 of the participants graduated from the nursing program between 2013 and 2018 even though they were predicted not to. Conversely, 8 of the participants did not graduate despite being predicted to by the statistical model.

Data analysis

The academic variables that were examined for each student in this stage of analysis are:

- TEAS composite score - continuous variable with individual scores ranging from 48.0 to 57.9
- Previous grade point average - continuous variable with individual scores ranging from 1.0 to 4.0
- Transfer credits awarded - continuous variable with individual scores ranging from 1 to 60

The non-academic variables that were examined for each student in this stage of analysis are:

- Pell grant eligibility - dichotomous variable defined as either receiving Pell Grant (1) or not receiving Pell Grant (0)
- Student age - continuous variable with individual scores ranging from 21 to 65
- Grit score - continuous variable with individual scores ranging from 1.0 to 5.0
- Consistency of interest (Grit sub-score) - continuous variable with individual scores ranging from 1.0 to 5.0
- Perseverance of effort (Grit sub-score) - continuous variable with individual scores ranging from 1.0 to 5.0
- The Generalized Self-Efficacy Scale (GSE) - 10 items entailed a four-point Likert scale. Self-efficacy was determined as a sum total of the responses, which could range from a raw score from 10 to 40 (1.0 to 4.0)
- Semi-structured interviews were conducted with former nursing students who were conditionally admitted and completed the Grit survey.

Results

Quantitative analysis

The first phase of quantitative analysis was focused on how well the standard admission variables of previous grade point average and composite scores on the TEAS accurately predict student persistence within a nursing program. After all analysis was
completed the final study population included records of 166 individuals, of which 87 completed the program and 79 who did not complete the program. The second phase of quantitative analysis was designed to answer the first research question guiding this study: How well do standard admission variables (GPA and TEAS) accurately predict program completers from non-completers among students who were conditionally admitted to a BSN program? A discriminant analysis was used to conduct a multivariate analysis of variance test of the hypothesis that the persistence rates of students conditionally-admitted into a BSN program would differ significantly on a linear combination of three variables, composite score on the TEAS, previous grade point average and the number of transfer credits awarded. The overall Chi-square test was not significant (Wilks λ = .955, Chi-square = 7.509, df = 3, Canonical correlation = .212, p < .057); the three functions extracted accounted for less than 5% of the variance in student persistence, thus rejecting the hypothesis.

Based on this discriminant analysis, student's previous grade point average and composite score on the TEAS are not effective in predicting individuals who will complete a BSN program from those who will not.

The 3rd stage of analysis focused on the second research question guiding this study: Will other academic variables available at the point of admission along with key demographic variables improve predictions of program completion? Discriminant analysis was used to conduct a multivariate analysis of variance test of the hypothesis that the persistence rates of students conditionally-admitted into a BSN program would differ significantly on a linear combination of three variables, the number of transfer credits awarded, the age of the student and the receipt of Pell grant funding. The overall Chi-square test was moderately significant (Wilks λ = .898, Chi-square = 17.587, df = 3, Canonical correlation = .319, p<.001); the three functions extracted accounted for approximately 10% of the variance in student persistence, proving the hypothesis. Table 2 presents the standardized discriminant function coefficients. Function 1 was labelled “non-academic criteria”. Student age showed a minor correlation to the function. Credits transferred to program and receipt of the Pell grant was slightly correlated with the function. Number of credits awarded had a moderately positive correlation while receipt of Pell grants had a moderately negative correlation with the function. Table 2 also shows the two functions at the group centroids. Reclassification of cases based on the new canonical variables was moderately successful: 62.3% of the cases were correctly reclassified into their original categories.

Based on this discriminant analysis, student's age is not effective in predicting individuals who will complete a BSN program from those who will not. Further, the variables of transfer credits awarded, and a student's receipt of the Pell grant were shown to have a moderate correlation with student persistence and may be effective in helping improve predicting student persistence within a nursing program.

The fourth stage of analysis investigated the character trait of Grit in an effort to determine if it may help improve predictions of student persistence within a nursing program. This phase examined the respondents within the sample population who completed a Grit survey and tested this group for assumptions of normality while searching for outliers. 86 individuals within the sample population (166) completed the Grit survey. Within this group, 65 of the survey responses graduated from the nursing program (75.6%) while 21 of the surveys did not graduate (24.4%). This model did not perform statistically better than chance: Wilk's Lambda=.988, Chi-Square (df=3) =1.025, p<.795.

The fifth phase of discriminant analysis intended to determine
if adding the non-academic trait of Grit would improve our ability to predict student persistence. This trait is made up of two sub-sections which include an individual’s consistency of interest and their perseverance of effort in achieving a specific objective [30]. Participant’s scores for this study were collected using a 17-point survey which has been tested and validated [30]. All members of the sample population were invited to complete a 17-point grit survey as part of the research study. An initial email was sent to all 174 individuals explaining the nature of the research study and the role of the survey. After the initial and follow-up emails, the response rate for the grit survey was 51.1% (89 of 174). The survey response rate was just over half of the sample which meets the threshold to provide statistically reliable results. This final stage of analysis added the sub-scores of Grit to the demographic variables of student age and financial need to answer the third research question guiding this study: Will the addition of Grit scores improve predictions of program completion? The overall Chi-square test was not statistically significant (Wilk’s λ = .858, Chi-square = 12.58, df = 3, Canonical correlation = .377, p > .001); the three functions extracted accounted for approximately 1% of the variance in student persistence. Student age and receipt of the Pell grant was slightly correlated with the function. Both the Grit subscale of consistency of interest and the Grit subscale of perseverance showed a minor correlation to the function. Student age and receipt of the Pell grant had a moderately positive correlation while students’ score on perseverance of effort had a moderately negative correlation with the function. Table 3 shows the two functions at the group centroids. Reclassification of cases based on the new canonical variables was moderately successful: 74.4% of the cases were correctly reclassified into their original categories.

Overall, findings from the quantitative phase of research was not able to identify significant relationships between the variables studied and student persistence. As a result, the qualitative phase of research looked to further investigate the influence these variables, and others, had on student persistence. The discriminant function identified a number of individuals that were incorrectly classified and interviewing them may help us better understand the factors that influenced their persistence. Specifically, 13 individuals within the sample population were incorrectly predicted not to graduate but did. Similarly, 10 individuals within the sample population were incorrectly predicted to graduate but did not. These two groups were the targets for the next stage of research in an attempt to obtain a better understanding of the factors that influence nursing student persistence within the nursing program through qualitative interviews.

Qualitative analysis
To expand upon findings from the quantitative phase of research, 30 former BSN students within the sample population were invited to interview and further investigate student persistence among conditionally-admitted students within a BSN program and answer the fourth research question: Are the non-academic factors of self-efficacy and grit that are not included in the standard admission requirements related to student persistence within a nursing program? These individuals were incorrectly predicted by our discriminant analysis model and possessed the characteristics that were shown to correlate with student persistence during the quantitative phase: (1) received Pell, (2) received credit for previous education and (3) completed the Grit survey. A total of 17 individuals agreed to participate and divided into two groups based on completion of the program: 9 individuals who successfully completed the BSN program at the study site and 8 individuals who did not complete the program.
This phase of research utilized one-on-one, semi-structured interviews and two survey instruments to help gain a better understanding of how non-academic factors are related to student persistence in the program. The Generalized Self-Efficacy Scale (GSE) [32] was used to collect data on participant’s levels of self-efficacy while the Grit Scale [30] guided data collection on participant’s levels of grit. The rationale for this approach is that the qualitative data collected and analyzed through these interviews and instruments helped explain the statistical relationships identified in the quantitative phase of research, as well as the relationship between other non-academic factors and student persistence. The interview protocol, outlined in table 4, provided structure and consistency for every conversation and included 10 open-ended questions.

**Interview Guide**

**Previous Education/ Transfer Credits**
- Tell me about your previous experience with your education prior to enrolling in our nursing program? Where did you previously attend? When did you attend? How many schools attended?
- Timeframe from last enrollment to applying to the study site. Were you studying nursing or another subject?
- How did you perform academically?
- What, if anything, contributed to your success or struggles in your coursework?
- What made you decide to leave the school you were attending?
- What motivated you to enroll at the study site?
- Did you have any credits from previous education transfer into the program? If so, were you happy with the credit you received from your previous education?
- Did the number of credits you received have an impact on how you viewed achieving your goal of becoming a nurse? If so, how?

**Financial Need/ Support System**
- Did you experience any challenges while enrolled in college (study site or other institutions)?
- If so, can you describe these challenges and how you dealt with them?
- Financial (affording school, paying bills, etc.)
- Time (balancing work, family and school responsibilities). Did you work while attending? If so, how many hours?
- Emotional (staying motivated, overcoming doubts, etc.) How did these challenges impact your ability to study, complete coursework, etc.?
- Did you face similar challenges during your previous enrollment(s)? If so, was your response (or support system) different or the same?
- Did you have people around you that were involved in your education? Who were they and how did they contribute to your persistence within the nursing program? What support did they provide (or not) – financial, time, emotional?
- Did these people proactively engage in your education or were they simply a resource that you reached out to when you needed support?

**Grit/ Self-efficacy**

On a scale of 1-10 (with 10 being highest) how important was completing your education to you when you enrolled at the study site? Why? Was this desire the same when you were enrolled at previous schools (if applicable)?

On a scale of 1-10 (with 10 being highest) how hard was nursing school for you? What was the hardest part? How did you address this challenge?

Were you aware that you were conditionally-admitted into the BSN program? If so, did this impact the way you viewed nursing school or the expectations you set for yourself?
- Did you have any concerns or doubts about your ability to successfully complete the program? If so, what were they and did you share them with anyone else? If so, did they change over time?
- Please rate the truthfulness of the following statements (not at all true, hardly true, moderately true or exactly true) I can always manage to solve difficult problems if I try hard enough.
- Can you tell me about a specific problem that you solved that you’re most proud of?
- Please rate the truthfulness of the following statements (not at all true, hardly true, moderately true or exactly true). I am confident that I could deal efficiently with unexpected events.
- Were there any unexpected events you encountered during nursing school? What happened?
- Please rate the truthfulness of the following statements (not at all true, hardly true, moderately true or exactly true). Thanks to my resourcefulness I know how to handle unforeseen situations. I can solve most problems if I invest the necessary effort. I can remain calm when facing difficulties because I can rely on my coping abilities.
- Did you encounter any difficulties while in school? How did you cope with these?
- Please rate the truthfulness of the following statements (not at all true, hardly true, moderately true or exactly true) When I am confronted with a problem, I can usually find several solutions. If I am in trouble I can usually think of a solution. I am a hard worker.
- What do you think were the main contributing factors to your persistence within the nursing program?
• Is there anything else that you believe was significant with your persistence in school that we haven’t already discussed? If so, please explain.

For non-completers:

• What factors were involved in your decision to leave the study site? Voluntary or involuntary?
• Did you ever reapply? If so, what happened?
• What did you do after leaving the study site?
• Did you enroll in another institution? If so, what was timeframe from leaving this university to enrolling in the new school? If so, what was the outcome? If no, do you still have interest in pursuing your nursing degree?
• What are you doing for work now? In a related healthcare field or something different?

Table 4: Interview Guide.

Generalized Self-Efficacy (GSE) scale scores

The GSE scores varied between the two study groups with graduates scoring higher than the non-completers. The total scores ranged from 3.17 to 4.0 for graduates and 2.33 to 3.67 for non-completers. The mean GSE score for graduates was 3.55 while the mean score for non-completers was 3.27 as shown in table 5.

| Item                                                                                    | Graduate | Non-completer |
|-----------------------------------------------------------------------------------------|----------|---------------|
| I can always manage to solve difficult problems if I try hard enough                    | 3.50     | 3.67          |
| If someone opposes me, I can find the means and ways to get what I want                  | 3.67     | 2.33          |
| It is easy for me to stick to my aims and accomplish my goals                            | 3.33     | 3.33          |
| I am confident that I could deal efficiently with unexpected events                     | 3.50     | 3.67          |
| Thanks to my resourcefulness I know how to handle unforeseen situations                 | 3.33     | 3.33          |
| I can solve most problems if I invest the necessary effort                               | 4.00     | 3.33          |
| I can remain calm when facing difficulties because I can rely on my coping abilities    | 3.17     | 3.33          |
| When I am confronted with a problem, I can usually find several solutions               | 3.33     | 3.00          |
| If I am in trouble I can usually think of a solution                                    | 3.67     | 3.00          |
| I am a hard worker                                                                     | 4.00     | 3.67          |
| Generalized Self-Efficacy Scale                                                         | 3.55     | 3.27          |

Table 5: Generalized Self-Efficacy Scale (GSE) scores.

Findings from this phase of research demonstrated self-efficacy was a factor in the persistence of these students in key areas including their perception of control and levels of confidence. Thematic analysis of text data taken from participant’s interviews and individual scores from the GSE, identified perceived level of control influenced student persistence. This concept is a key component of Bandura’s Theory of Self-Efficacy and posits that highly efficacious individuals attribute any success or failure to insufficient effort on their part and tend to remain confident in their ability to overcome and persevere [33]. Individuals with lower levels of efficacy perceived a lack of control over their situation and are more likely to become discouraged when facing a difficult task [33].

All of the non-completers interviewed described a recurring theme that their lack of faculty support contributed to their academic struggles. Common factors from these conversations included keywords such as “unfair”, “inconsistent”, “favoritism” and “unsupportive”. This concept is consistent with Bandura’s Theory of Self-Efficacy whereby individuals with lower levels of self-efficacy perceive a lack of control over their situation [32]. Each interviewee referenced specific instances to support this perception and reinforce the negative impact it had on their confidence, motivation and commitment. One student described their experience as, “I performed well in other schools, but my instructors here weren’t fair. Several complained about my accent and they weren’t consistent with how they graded.” This perceived bias was shared by other interviewees as apparent factors to their persistence. Another student stated, “I was confident in my abilities when I started the program, but the instructors played favourites and weren’t willing to help me when I needed it.” These perceptions align with Bandura’s theory whereby individuals with lower levels of self-efficacy attribute a failure or setback to factors beyond their control and reduces their confidence and motivation in the pursuit of a specific goal [33].
Grit scale scores

Overall scores on the Grit scale showed a difference between graduates and non-completers. Graduates had an average Grit score of 4.02 while individuals who didn’t complete the program had an average score of 3.29. Grit scores ranged from 3.42 to 4.58 for graduates and 2.83 to 3.83 for non-completers as shown in table 6.

| Statement                                                                 | Graduate | Non-completer |
|---------------------------------------------------------------------------|----------|---------------|
| I am the best in the world at what I do                                  | 4.22     | 3.75          |
| I have overcome setbacks to conquer an important challenge               | 4.78     | 3.75          |
| New ideas and projects sometimes distract me from previous ones          | 2.88     | 3.00          |
| I am ambitious                                                            | 4.22     | 4.00          |
| My interests change from year to year                                    | 2.88     | 3.50          |
| Setbacks don't discourage me                                             | 3.67     | 2.13          |
| I have been obsessed with a certain idea or project for a short time but later lost interest. | 4.00     | 3.25          |
| I am a hard worker                                                        | 4.89     | 4.50          |
| I often set a goal but later choose to pursue a different one            | 4.22     | 4.00          |
| I have difficulty maintaining my focus on projects that take more than a few months to complete. | 3.78     | 3.00          |
| I finish whatever I begin                                                | 4.11     | 3.38          |
| Achieving something of lasting importance is the highest goal in life.   | 4.67     | 3.62          |
| I think achievement is overrated                                          | 4.67     | 3.62          |
| I have achieved a goal that took years of work.                          | 5.00     | 3.75          |
| I am driven to succeed                                                    | 4.89     | 3.62          |
| I become interested in new pursuits every few months.                    | 3.33     | 3.25          |
| I am diligent                                                             | 4.67     | 3.25          |
| Grit Scale                                                                | 4.02     | 3.29          |

Table 6: Interview participant’s scores on the Grit Scale.

Findings from the Grit scale, and text data collected from participant interviews, showed discernible differences between participants who completed the program and those who did not. These differences emerged as factors influencing persistence on the full Grit Scale, as well as the subscales of Consistency of Interest and Perseverance of Effort. Scores on the Consistency of Interest scale demonstrated an average score of 3.51 while non-completers had an average score of 3.32. Graduates had an average Perseverance of Effort score of 4.52 while individuals who didn’t complete the program had an average score of 3.46. These factors were found to influence the persistence with all participants in varying ways and their impact was perceived differently based on student outcomes. Individuals that possess higher levels of Grit tend to be extremely committed to their long-term objective and determined to overcome any difficulty or distraction in order to achieve their goal [23,34]. One graduate expressed her determination to become a nurse by saying, “I’m incredibly driven to succeed and achieve my goals which helped me in nursing school.” Another graduate provided similar sentiments by saying, “I’ve always been very goal oriented, but was even more motivated to become a nurse at this stage in my life”. Non-completers also shared common reasons which included unfair policies, favoritism or unwillingness from faculty to provide needed assistance. One non-completer explained her experience by saying, “The university did not have enough resources to help their students succeed. They need to do more to support their diverse students”.

Institutional support and support from family and peers

Institutional support and support from family and peers emerged as factors influencing persistence among all participants. Likewise, there were discernible differences in perception of support between graduates and participants who did not graduate. Meaningful relationship with staff and faculty were listed by all successful graduates of the program while a lack of support was described by 6 of the 8 participants who did not complete the program. Both graduates and non-completers indicated that they received support and encouragement from family and friends that positively impacted their persistence. However, support from peers appeared to differentiate between the groups. Once graduate stated, “My cohort played a huge role in my success in school. We all banded together to deal with the stress of school while holding each other accountable for progressing together. I’m not sure I could have graduated without the group.” Conversely,
participants that did not complete the program expressed a lack of connection with their peers during their education. Only one of the six participants referenced this issue as a correlating factor with their withdrawal from the program, but all non-completers interviewed mentioned that they did not have a strong connection with their fellow students.

**Triangulation of research findings**

The triangulation process is designed to determine if the findings from each research phase align, complement or contradict one another. These processes allowed for triangulation of data collected from discriminant analysis, semi-structured interviews and scores from the Grit Scale and Generalized Self-Efficacy Scale in order to help answer the research questions guiding this study. Additional inquiry was conducted to better understand factors influencing student persistence. Follow-up phone interviews with 11 of 17 interview participants, seven graduates and four non-completers. Feedback from these phone interviews reinforced the influence self-efficacy and grit had on the persistence of the participants, including confidence, perception of control. Perseverance of effort emerged again in how student’s perceived their situation, their ability to overcome challenges and their willingness to continue investing time and energy into their education. Participants were consistent in their views related to financial need and Pell grants influencing their persistence. They did not feel that transfer of credits impacted their persistence.

**Discussion**

Previous studies have shown a correlation between the non-academic factors of self-efficacy and grit and student persistence [31,33,35]. Specifically, self-efficacy has been associated with persistence in students as it relates to their level of confidence, commitment level and how they perceive failure and success while grit influences how students perceive both their goals and the challenges they encounter [36-38]. These two traits are similar, and both are believed to relate to an individual’s confidence, their perception of adversity and goal orientation [31,39]. In addition, two other non-academic factors emerged as influencing the persistence of the students within this study. These factors were institutional support and peer support and both factors have been shown to influence persistence in previous research. Faculty engagement, campus environment and peer connections have all been shown to correlate to student persistence [10,40].

This study adds to a growing body of research indicating that the inclusion of non-academic factors can not only help predict student persistence, but also student retention and completion of bachelor degree nursing programs. Limitations are also identified which prevented findings from being generalized to other student populations. The study is limited based on the university setting where it took place and the student populations that were studied. These students are generally older than traditional-aged nursing students with additional external responsibilities that influence their ability to complete the program. Although student demographics continue to change in our country, the majority of nursing students today do not have the same level of outside forces impacting their postsecondary education and, as a result, findings from this study may not necessarily translate to other nursing programs [19]. Graduates of the program had a much higher response rate (75.6%) than individuals who did not complete the program (24.4%). The lower response rate for non-completers impacted the discriminant analysis as the survey data collected did not pass the normality test. Based on these limitations, further research is recommended with different populations of students in order to generalize the results.

**Conclusion**

Research question one asked, “How well do standard admission variables (GPA and TEAS) accurately predict program completers from non-completers among students who were conditionally admitted to a BSN program?” Based on this discriminant analysis, we can conclude that a student’s previous grade point average and composite score on the TEAS are not effective in predicting individuals who will complete a BSN program from those who will not. Research question two examined, “Will other academic variables available at the point of admission along with key demographic variables improve predictions of program completion?” Results from the discriminant analysis indicated that a student’s age is not effective in predicting individuals who will complete a BSN program from those who will not. Further, the variables of transfer credits awarded, and a student’s receipt of the Pell grant were shown to have a moderate correlation with student persistence and may be effective in helping improve predicting student persistence within a nursing program. Research question three inquired, “Will the addition of Grit scores improve predictions of program completion?” Findings from the discriminant analysis showed that the Grit subscale of consistency of interest had a minor correlation to the discriminant function while the subscale of perseverance of effort had a slightly larger correlation to the discriminant function. Thematic analysis of feedback from participants indicated that the Grit subscale of perseverance of effort influenced the persistence of students interviewed. Research question four evaluated, “Are the non-academic factors of self-efficacy and grit that are not included in the standard admission requirements related to student persistence within a
nursing program?” These two traits are both believed to relate to an individual’s confidence, their perception of adversity and goal orientation. In addition, non-academic factors of institutional support and peer support emerged as influencing the persistence of the students within this study.

Overall, the findings from this study concluded the non-academic factors of self-efficacy, grit, institutional support, and peer support influenced the persistence of the students in this sample. Specifically, the aspect of perception of control and confidence was found to differ between graduates and non-completers and influence their persistence. The subscale of grit known as perseverance of effort also emerged as a key factor in whether the individuals studied completed the program or not. Perception of support from the institution, as well as peers was also identified as a factor in the persistence of students within the study.

Four recommendations emerged from this study. First, in addition to standard academic criteria, it may be beneficial to evaluate applicants’ levels of self-efficacy, as well as their perseverance of effort. These additional traits should not deter admission to the program, but provide an awareness for additional support potentially needed to assist their persistence. Second, encourage nurse educators to promote strategies that inspire students’ development of self-confidence. This trait has been shown to influence persistence and is believed to be impacted by personal experiences [33,41]. Third, provide professional development opportunities for faculty regarding the importance of support, empathy and understanding for non-traditional students. Faculty engagement and campus environment were mentioned by nearly all study participants as factors that influenced their persistence within the nursing program. Finally, provide professional development opportunities to all campus faculty and staff regarding grit that includes training for how to foster this trait among students. By creating a campus environment that emphasize dedication, determination and tenaciousness, the faculty and staff can establish a culture that supports and encourages student success.

**Conflict of Interest**

The authors state no conflicts of interest.

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