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Abstract

Background: Identifying predictors of student success is fundamental across higher education in the United States, particularly for historically underserved first-generation students. In radiologic technology programs, the literature suggests that variables prior to and during matriculation in these programs affects scores on the American Registry of Radiologic Technologists (ARRT) credentialing examination in Radiography. However, the evidence in this area has not considered the educational patterns for first-generation students. **Purpose:** This study sought to improve our understanding about how select student background characteristics and experiences prior to and during the years enrolled in radiologic technology programs accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT) affect scores on the ARRT credentialing examination in radiography, especially for first-generation students. **Method:** The researchers surveyed graduates from radiologic technology programs in 2018 and 2019 who attempted the radiography credentialing examination in these two years. **Results:** A total of 286 cases were included in the analysis, which revealed different patterns and effects of predictor variables on credentialing examination scores for first- and non-first-generation students. Whereas 10 variables prior to and during matriculation affected examination scores for first-generation students, only 8 did for their non-first-generation peers. **Conclusion:** Identifying predictors of success in radiologic technology programs helps professionals in these programs design environments that provide opportunities for students to enhance their chances to be successful on the Radiography exam, especially first-generation students.

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ABSTRACT

Background: Identifying predictors of student success is fundamental across higher education in the United States, particularly for historically underserved first-generation students. In radiologic technology programs, the literature suggests that variables prior to and during matriculation in these programs affects scores on the American Registry of Radiologic Technologists (ARRT) credentialing examination in Radiography. However, the evidence in this area has not considered the educational patterns for first-generation students. **Purpose:** This study sought to improve our understanding about how select student background characteristics and experiences prior to and during the years enrolled in radiologic technology programs accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT) affect scores on the ARRT credentialing examination in radiography, especially for first-generation students. **Method:** The researchers surveyed graduates from radiologic technology programs in 2018 and 2019 who attempted the radiography credentialing examination in these two years. **Results:** A total of 286 cases were included in the analysis, which revealed different patterns and effects of predictor variables on credentialing examination scores for first- and non-first-generation students. Whereas 10 variables prior to and during matriculation affected examination scores for first-generation students, only 8 did for their non-first-generation peers. **Conclusion:** Identifying predictors of success in radiologic technology programs helps professionals in these programs design environments that provide opportunities for students to enhance their chances to be successful on the Radiography exam, especially first-generation students.

Keywords: first-generation, radiography, student success, ARRT, credentialing examination

INTRODUCTION

Student success is measured across a multitude of outcomes in the United States. Many of these outcomes relate to persisting from year to year, learning across academic and social domains, and earning certificates and degrees.[1,2] Across health professions disciplines, success is also measured by earning a passing score on a credentialing examination. In radiologic technology, earning a passing score on the credentialing examination in radiography offered by the American Registry of Radiologic Technologists (ARRT) is one such measure identified by the Joint Review Committee on Education in Radiologic Technology (JRCERT).[3]

The ARRT credentialing examination in radiography is designed to assess knowledge and skills that are universally accepted as foundational for professional practice in this area and is widely considered the gold standard. Additionally, first-time board pass rates are reported by programs directors and tracked for benchmarking purposes. As a result, administrators and faculty members in radiologic technology programs continue to focus on creating curricula and learning environments that support preparedness for this examination and professional practice.

In 2019, nearly 12,000 graduates who earned certificates and degrees in radiologic technology attempted the national credentialing examination in radiography offered by the ARRT for the first time.[4] Although most of the applicants who attempted this exam for the first time in 2017 earned a passing score, approximately 10% did not. For these test takers, one of the major implications of not earning a passing score is limited employment opportunities in this discipline and the potential to be burdened with educational loans, which are being used at increasing rates to finance educational pursuits.[5] Additionally, not earning a passing score limits prospects for employment, or potentially entering a cycle of multiple test attempts without the support of a formal educational program. Given the volume of students who enroll in radiologic technology programs in the United States, and the importance of earning a passing grade on the credentialing examination in radiography, few studies are available showing how variables before and during enrollment in these programs affect success on this credentialing examination. Additionally, there also is limited information about how the effects of these variables differ for first-generation students (i.e., students whose parents have not earned a bachelor's degree) who tend to experience challenges navigating higher education environments.

Researchers have established that the higher education experiences of parents influence the higher education experiences of their children.[6-10] In this area of the literature, first-generation students tend to be underprepared academically upon college entry, demonstrate lower levels of academic and social integration in college, and have lower persistence and certificates/degrees completion levels than their non-first-generation counterparts.[2,10-22] Collectively, these findings about first-generation students are concerning for higher education professionals because student success is foundational to the higher education system in the United States. Therefore, identifying these patterns as they relate to success on the radiography exam for first-generation and non-first-generation students is not only germane, but timely.

Limited research relative to predictors of success on the radiography examination means not much is known in this area about 1) the opportunities for prospective students to prepare for radiologic technology programs; 2) the educational patterns of students enrolled in radiologic technology programs; and 3) the beneficial program/college experiences for students enrolled in radiologic technology programs, particularly for first-generation students. The results from the current study can assist directors and faculty members in radiologic technology programs in creating systems and processes that support success on this exam by shaping programmatic entry requirements, mentoring and advising students, and incorporating beneficial program/college experiences, especially for first-generation students. The results from this study can also assist professional accrediting agencies such as JRCERT in developing standards related to program quality.

LITERATURE REVIEW

Few studies in the radiologic technology literature are available showing how pre-program variables affect scores on the radiography credentialing examination. Miller found relatively strong and positive correlations between high school rank and credentialing examination scores, and between combined SAT scores and credentialing examination scores.[23] Additionally, grades in prerequisite mathematics has a particularly strong correlation (Pearson Correlation Coefficient r >.80) with credentialing examination scores.[24] Although not related to radiography exam scores directly, prerequisite GPA appears to have a modest effect on specific program courses and on readiness exams related to these courses.[25] Similar patterns are evident in the literature in related medical disciplines. In the respiratory therapy literature, GPA (prerequisite, non-prerequisite, and overall) at time of program entry positively affected scores on the credentialing examination.[26] In an earlier study in the nuclear medicine literature, SAT M had a positive correlation to credentialing examinations scores.[27] Collectively, these findings suggest that as scores on pre-program variables such as high school rank, SAT scores, and prerequisite courses increase, it is likely that radiography exam scores increase as well. The implication is if these pre-program variables affect scores on the radiography exam, then other pre-program variables may also have an effect.

Considering the few studies available in the radiologic technology literature showing how pre-program variables affect scores on the radiography exam, more studies in this area of the literature are available showing how variables while enrolled in educational programs affect scores on this exam. Several studies suggest that preparatory examinations have positive effects on radiography exam scores. Researchers have found that for some students, two different preparatory examinations had relatively strong effects (Pearson Correlation Coefficient $r > .70$) on credentialing exam scores, but for other students, only one of these examinations had a similar effect.[28] Although not statistically significant, Schmuck and Cook also suggested that scores on a mock examination might affect credentialing exam scores, but only at specific cutoff scores.[29] Earlier studies show comparable results. Students who participated in a preparation program earned higher exam scores than their peers who did not participate in this program.[30] Likewise, completing a preparatory examination had relatively strong effects (Pearson Correlation Coefficient $r > .70$) on exam scores.[31] Similar results have also been shown in the nursing literature where a preparatory examination is highly correlated with earning a passing score on the credentialing examination in nursing.[32]

College GPA is another variable that positively affects scores on the radiography exam. There is some agreement that college GPA has a relatively strong impact on exam scores.[24,31] In the nursing literature, a similar pattern exists where discipline GPA and grades in discipline-specific courses are highly correlated with earning a passing score on the licensing examination in nursing.[32] In an earlier study in the nuclear medicine literature, cumulative GPA had a positive correlation to scores on licensing examinations.[27] As a variable, college GPA has limitations because although grades are commonly understood measures, grades are subject to schematic inconsistencies.[33]

Accreditation is another variable that appears to affect radiography exam scores, where graduates from programs with programmatic accreditation scored higher than their counterparts from programs with institutional accreditation only.[34] This finding suggests that accreditation is particularly more valuable at the program level, when compared to the institutional level.

Laboratory equipment may also affect scores on particular sections of the radiography examination.[35] In this study, the addition of CR equipment in laboratory settings had a negative effect on a section of the credentialing examination for students enrolled at a university, but a slight positive effect for students enrolled at a community college.

Collectively, these findings suggest that variables while enrolled in programs affect scores on the radiography exam. That is, increases in preparatory examination scores, college GPA, accreditation from institutional to programmatic, and specific types of laboratory equipment suggest increases in scores on the credentialing examination. The implication is if these college environments and experiences affect scores on the credentialing examination, then others may as well.

However, because of limited research in the radiologic technology discipline about program variables that affect radiography exam scores, the social science literature can provide general insights about additional program variables that might affect this college outcome. In the social sciences literature, faculty interactions and sense of belonging are variables that positively affect cognitive outcomes ranging from weak to strong correlations.[1,36-39] Because cognitive outcomes form the basis of credentialing examinations, these variables might influence credentialing exam scores as well and will be included in the current study.

THEORETICAL FRAMEWORK

Astin's input-environment-output (I-E-O) model of college impact guided the current study.[40] In this model, inputs (I) are attributes students bring with them to college, environments (E) are attributes of academic institutions (college experiences are the results of interactions with college environments), and outcomes (O) are the results of college participation. This framework was employed in the current study to understand the intricate relationships between independent (i.e., background characteristics, pre-program, and college/program experiences) and dependent (i.e., score on the radiography exam) variables incorporated in this study.

METHODOLOGY

The purpose of the current study was to improve our understanding about how select student background characteristics and experiences prior to and during the years enrolled in JRCERT accredited radiologic technology programs affect scores on the ARRT credentialing examination in radiography, especially for first-generation students.

Data Source and Sample

The researchers reviewed health professions and social science literature and created a survey with questions about background characteristics, pre-program and program/college experiences, and a program outcome. A panel of program directors and recent radiologic technology program graduates subsequently reviewed these survey questions to establish face validity for this instrument. The final questions about inputs, environments, and experiences were derived from the literature and panel reviews and were used as independent variables, and the ARRT examination score was used as the dependent variable.

Subjects

After IRB approval, this anonymous survey was distributed to approximately 600 directors of JRCERT accredited radiologic technology programs in the United States by e-mail requesting that these directors forward an attached document with the survey link to 2018 and 2019 graduates from their respective programs (e-mail addresses for these directors are published publicly by the JRCERT). Additionally, this anonymous survey was distributed to the American Society of Radiologic Technologists (ASRT) Graduate Bridge members to include 2018 and 2019 graduates.

Participants responded to an initial set of five questions to confirm eligibility and consent to participate. Subsequently, eligible participants answered the 20-question survey designed by the researchers. A total of 356 recent graduates participated in this study, and after screening procedures, 286 valid cases were included in the analysis.

Variables

All variables were self-reported. Survey questions were designed as Likert-type, sliding scale, or categorical. Sense of belonging was measured by asking participants how often they felt that they were "important members" of their respective program, educational institution, and clinical site. Income was a scaled variable with seven levels, and the midpoint of each level was used in the analysis. First-generation status was operationalized as students whose parents did not earn a bachelor's degree.[41] Program location was categorized into six regions (Northeast; Midwest; South; West; Puerto Rico, Guam, or other U.S. Territories and Protectorates; and other regions outside of the United States).

Analysis

After cleaning and screening the data, and checking statistical assumptions, ANOVA and post-hoc tests with Tukey HSD method were conducted. Variables with less than five observations per level were suppressed from descriptive statistics. Missing cases were excluded by analysis, with bivariate correlations using Pearson's correlation coefficient for continuous variables excluding missing values pairwise. SPSS v24 statistical software package was used for all analyses.

RESULTS

Descriptive statistics about demographic variables are presented in Table 1. The majority of the participants in this study were classified as first-generation, female, and White, with representation across the four regions of the United States. Average scores on the credentialing exam were not significantly different for first-generation students (89) when compared to their non-first-generation counterparts (89).

Table 1. Demographics of Study Participants

	First-Generation	Non-first Generation
Parents Education	64%	36%
Race/Ethnicity		
Asian	4%	7%
Black or African American	4%	4%
Hispanic	8%	<2%*
White	78%	82%
More than one group	5%	<2%*
Other identity	<2%*	5%
Gender		
Female	80%	77%
Male	18%	23%
Other identity	<2%*	<2%*
Household Annual Income	$38,000	$40,000
High School GPA (HSGPA)	3.46	3.58
Program Location		
Northeast	25%	19%
Midwest	26%	27%
South	25%	34%
West	23%	18%
Clinical Program Grades	3.84	3.88
Classroom Program Grades	3.65	3.63
Credential/Degree Earned		

Associates	76%	83%
Certificate/Bachelors	24%	17%
Average Radiography Exam Score	89	89

*percentage suppressed to prevent identification

First-Generation Students

Statistical analysis revealed ten variables that are associated with Radiography exam scores for first-generation students. For the only scaled variable, analysis of variance revealed different patterns across each level of clinical instruction from radiologists (see Table 2). More specifically, post-hoc analysis revealed that receiving clinical instruction from radiologists quarterly has a greater effect on credentialing exam scores when compared to never (see Table 3).

Table 2. Means and Standard Deviations Comparing Frequencies of Clinical Instruction from Radiologists on Radiography Exam Scores for First-Generation Students.

	Radiography Exam Score		
Clinical Instruction from Radiologists	*n*	*M*	*SD*
Never	70	87.69	5.50
Quarterly	29	91.14	5.47
Monthly	33	88.70	5.22
Weekly	32	89.31	5.84
Daily	18	86.94	4.65
Total	182	88.63	5.53

Table 3. Mean Differences in Radiography Exam Scores for First-Generation Students Between Frequencies of Clinical Instruction from Radiologists

(I) Instruction from Radiologists	(J) Instruction from Radiologists	Mean Difference (I-J)	Std. Error	Sig.	ANOVA
Quarterly	Never	3.45	1.20	***.036***	*F*(4,177)=2.64 p=.036
	Monthly	2.44	1.38	.397	
	Weekly	1.83	1.39	.685	
	Daily	4.19	1.63	.080	

For the remaining nine continuous variables, bivariate correlations were computed and show that several pre-program and program experiences positively affect radiography exam scores for first-generation students (see Table 4). Among the pre-program variables, grades in pre-requisite chemistry/physics and anatomy have moderately positive effects on credentialing exam scores, while grades in math and HSGPA have weak positive effects. In terms of program experiences, grades in classroom courses have a strong positive effect, while the remaining variables have positive and weak effects.

Non-First-Generation Students

Statistical analysis revealed eight variables that affect Radiography exam scores for non-first-generation students. For three scaled variables, the ANOVA revealed different patterns across each level of interactions with program faculty (see Table 5). Post-hoc analysis revealed specific patterns and effects for these interactions (see Table 6). When compared to daily clinical interactions with program faculty; never, weekly, and monthly interactions appear to have greater effects on credentialing exam scores. Moreover, weekly interactions with program faculty during class have a greater effect on credentialing exam scores when compared to daily interactions. Although significant, post-hoc tests did not reveal any differences among the groups relating to these interactions before or after class.

Table 4. Intercorrelations for Select Pre-program Variables and Program Experiences on Radiography Exam Scores for First-Generation Students

Pre-program Variables	*r*	*n*
Chemistry/Physics	.35**	163
Anatomy	.32**	183
Math	.24**	182
HSGPA	.17*	182
Program Experiences		
Sense of Belonging: Clinic Location	.19*	181
Sense of Belonging: Rad Tech Program	.23**	181
Classroom grades	.54**	181
Clinical grades	.24**	184
Highest Mock Exam Score	.17*	147

* Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Table 5. Means and Standard Deviations Comparing Frequencies of Interactions with Program Faculty on Radiography Exam Scores for Non-First-Generation Students

Interactions	**ARRT Score**		
Interactions with Program Faculty During Clinical Rotations	*n*	*M*	*SD*
Never	7	91.71	2.81
Monthly	39	89.67	5.26
Weekly	39	88.97	5.45
Daily	16	84.69	5.04
Total	101	88.75	5.45
Interactions with Program Faculty Before or After Class			
Never	6	92.67	4.03
Monthly	21	90.52	5.90
Weekly	44	88.61	4.69
Daily	30	86.93	5.84
Total	101	88.75	5.45
Interactions with Program Faculty During Class			
Monthly	3	91.00	3.61
Weekly	21	91.43	4.38
Daily	78	88.00	5.55
Total	102	88.80	5.44

Table 6. Mean Differences in Radiography Exam Scores for Non-First-Generation Students Between Frequencies of Interactions with Program Faculty

(I) Interactions During Clinical Rotation	(J) Interactions During Clinical Rotation	Mean Difference (I-J)	Std. Error	Sig.	ANOVA
Daily	Never	-7.03	2.35	***.018***	*F*(3,97)=4.47 *p*=.006
	Monthly	-4.98	1.54	***.009***	
	Weekly	-4.29	1.54	***.032***	
(I) Before or After Class	(J) Before or After Class	Mean Difference (I-J)	Std. Error	Sig.	
Daily	Never	-5.73	2.36	.079	*F*(3,97)=3.08 *p*=.031
	Monthly	-3.59	1.50	.086	
	Weekly	-1.68	1.25	.538	
(I) During Class	(J) During Class	Mean Difference (I-J)	Std. Error	Sig.	

Weekly	Monthly Daily	.43 3.43	3.27 1.30	.991 ***.026***	*F*(2,99) =3.74 *p*=.027

For the remaining five continuous variables, bivariate correlations were computed and revealed that several pre-program and program experiences are positively correlated with Radiography exam scores for non-first-generation students (see Table7). Among the pre-program variables, grades in pre-requisite anatomy have a moderately positive correlation on credentialing exam scores. In terms of program experiences, grades in classroom courses have a moderately positive correlation, while clinical grades and mock exam scores have positive and weak effect sizes. Conversely, sense of belonging in college has a weak and negative correlation with credentialing exam scores.

Table 7. Intercorrelations for Select Pre-program Variables and Program Experiences on Radiography Exam Scores for Non-First-Generation Students

Pre-program Variables	*r*	*n*
Anatomy	.34**	101
Program Experiences		
Sense of Belonging: College	-.22*	97
Classroom grades	.49**	102
Clinical grades	.26**	102
Highest Mock Exam Score	.28**	83

* Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Limitations

The findings from this study may not be generalized across radiologic technology programs due to limitations. First, this was a retrospective design, which asked graduates to recall information and experiences from memory. Second, first-generation was operationalized as parents who did not earn a bachelor's degree, which means students whose parents had no post-secondary experience were combined with students whose parents perhaps had several years of college experience. Third, all participants reported passing ARRT scores, which means that this study does not address students whose scores were lower than passing. Finally, participants identified as mostly female and White, which means the findings from the current study might not represent diverse groups of students.

DISCUSSION AND IMPLICATIONS

The purpose of the current study was to improve our understanding about how select student background characteristics and experiences prior to and during the years enrolled in JRCERT accredited radiologic technology programs affect scores on the ARRT credentialing examination in Radiography, especially for first-generation students. Although the findings from the current students do not show differences in credentialing exam scores for first-generation students when compared to their non-first-generation counterparts, the evidence suggests that the general educational patterns are different across these two populations.

The one pre-program variable that appears to be equally important on radiography exam scores for these two populations is prerequisite anatomy grade. This finding is not surprising considering that knowledge of anatomy is central to the practice of radiologic technology. Yet, other pre-requisite grades and grades in high school only affect credentialing exam scores for first-generation students. Researchers have shown similar correlations between high school performance and prerequisite mathematics and credentialing exam scores among general student populations, but not disaggregated for first-generation populations.[23,24] Perhaps these new findings in the current study about pre-requisite coursework and HSGPA speaks to the larger issues of educational inequities for first-generation students as they prepare for college academics.[11,12,14-16,18,42]

In terms of program experiences, grades in didactic and clinical courses and mock exam scores appear to be equally important on radiography exam scores for first- and non-first-generation populations. The effects of grades and mock preparation exam scores on credentialing exam scores has been documented in previous studies.[24,28-31] These new findings from the current study advance this area of the research by showing these effects for populations based on generation status. It is important to note that grading schemes are not standardized and can be artificially inflated.[33,43-44] However, the presumption is that grading schemes are designed

to measure learning, and improved learning leads to higher grades, with higher grades leading to better performance on the credentialing exam. A different pattern emerges for other program experiences for these two populations.

It appears that developing a sense of belonging at clinical sites and in the program helps first-generation student earn higher scores on the radiography exam. Perhaps these new findings are related to the benefits of acquiring cultural capital for first-generation students navigating a largely unfamiliar college environment. There is evidence suggesting that developing a sense of belonging helps first-generation students build cultural capital in college, which undergirds academic success.[45]

What is interesting to note about sense of belonging on campus for non-first-generation students is the negative association. For these students, feeling that they are important members of their respective educational institutions somehow impedes performance on the radiography exam. Perhaps this new finding suggests that non-first-generation students might have higher levels of participation in campus experiences and activities that help them feel like valued members of the campus community, and these levels of participation might create opportunity costs related to studying. Another explanation is that this variable is correlated with another factor not measured in the current study.

Receiving clinical instruction from radiologists is another new finding that appears to help first-generation students earn higher scores on the radiography exam. For this population, students who receive clinical instruction from radiologists on a quarterly basis earn higher scores on the credentialing exam when compared to their peers who receive no instruction. It is possible that this variable is influenced by a sense of belonging in clinic, which is also positively correlated with credentialing exam scores. Another possibility might be the teaching methods used by radiologists, who inherently are skilled educators.[46] One more possibility might relate to first-generation students viewing radiologists as central figures in healthcare and as potential employers and mentors. Radiologists are cornerstones in the healthcare delivery system in the United States, and first-generation students have described how relationships with mentors affect employment prospects.[41,47]

Interacting with program faculty in clinical settings is another new finding that appears to help non-first-generation students earn higher scores on the radiography exam. For this population, students who interact with program faculty in the clinical setting less often score higher on the credentialing exam than their peers who interact daily. It is important to note that this finding relates to interactions with program faculty in clinical settings and not supervision in clinical settings by designated personnel. Perhaps daily interactions with program faculty in clinical settings limits learning opportunities presented in the clinical environment. In the classroom setting, students who interact on a weekly basis score higher on the credentialing exam than their peers who interact daily. This new finding suggests that non-first-generation students may be well prepared for classroom learning environments, and thus pursue less classroom interaction with faculty.

RECOMMENDATIONS

The findings from the current study suggest that select student background characteristics and experiences prior to and during the years enrolled in radiologic technology programs affect radiography exam scores, and the patterns and effects of these variables differ for first- and non-first-generation students. Considering that radiologic technology program directors and faculty can influence program experiences; the following recommendations could be considered for incorporation in a radiologic technology program as opportunities that might positively affect scores on the radiography exam for first- and non-first-generation students.

First, creating additional opportunities for continuous review of prerequisite coursework is a suggested practice that could benefit first-generation and non-first-generation students alike. This type of ongoing review could not only close lingering gaps from pre-program academic preparation, but also help students learn more and earn higher grades in current courses and possibly on the credentialing exam. Additionally, incorporating a mock board exam toward the end of the program, and providing multiple testing opportunities to improve mock exam scores is another practice that could benefit both groups.

For first-generation students, embedding opportunities to review radiographic images or clinical procedures with radiologists on a quarterly basis, and creating opportunities for these students to be integrated in clinical sites and in the program are also worth considering. For non-first-generation students, providing opportunities for interactions with program faculty in classroom and clinical contexts at different frequencies can be considered. It is important to note that this recommendation relates to interactions with program faculty and not supervision in clinical settings by designated personnel. However, for extracurricular activities on campus, perhaps these students could create a structured plan outlining their participation with safeguards that could be instituted if this type of participation detracts from their academics.

CONCLUSION

The purpose of the current study was to improve our understanding about how select student background characteristics and experiences prior to and during the years enrolled in radiologic technology programs accredited by the JRCERT affect scores on the ARRT credentialing examination in radiography, especially for first-generation students. The findings from this study expand previous research about predictors of success on this credentialing exam and suggests that various factors have different effects on this outcome for populations based on generation status. Although generation status does not appear to affect credentialing exam scores, different educational patterns and effects of predictor variables based on generation status emerged in the current study. Future studies could consider more complex relationships among variables or concurrent effects that could be evaluated by methods such as multiple regression. Considering the number of students enrolling in radiologic technology programs, it is essential for program directors, faculty, and members of accrediting agencies involved in radiologic technology programs to develop systems and processes that support success for these students, especially first-generation students who continue to encounter unique challenges navigating higher education environments.

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