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White Paper

HESI® RN Specialty Exams Improve Scores on Exit Exam (E2)

HESI RN SPECIALTY EXAMS IMPROVE SCORES ON EXIT EXAM (E2)

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Published August 2020

INTRODUCTION

Nurse educators continually search for evidence to inform the educational progress of their students. In a time when resources are limited, nursing faculty must be sure the interventions designed to prepare nursing students for the NCLEX®, and ultimately practice, are effective. Elsevier HESI® solutions have a history of evaluating the effectiveness of their products by providing benchmarks for success, measuring student achievement, and guiding remediation prior to licensure or certification candidacy (Barton, Willson, Langford, & Schreiner, 2014; Langford & Young, 2013). Results of a new study on the correlation between HESI RN Specialty Exams and the HESI RN Exit Exam (E2) gives nurse educators additional evidence regarding tools to support student success throughout their nursing program. This paper describes the results of this study, including the benefits for nursing education.

THE RESEARCH QUESTION

The Elsevier research team wanted to ***determine the extent to which HESI Specialty Exams given throughout students' course of study predict their HESI Exit Exam (E2) scores.*** Specialty exams are designed to measure students' abilities to apply content related to specific clinical nursing areas and are often used as end-of-course final exams. The correlation of specialty exams taken and E2 scores is important, given that findings from completed RN validity studies published to date demonstrate that the E2 was 96.4% to 99.2% accurate in predicting NCLEX-RN success for students who achieved the recommended score of 900 or greater (Elsevier Education, 2018).

THE RESEARCH PROCESS

To evaluate the impact of HESI Specialty Exams upon the scores of the HESI Exit Exam (E2), researchers analyzed the mean scores on the E2 for students who took different numbers of unique RN specialty exams from 2015 through the end of 2019. To ensure accuracy, the sample was cleaned to remove as much synthetic and erroneous data as possible. For example, the data set excluded test scores below 300 and scores of students who have taken the same exam version more than once. Additionally, groups of students who took more than 12 specialties were excluded from the analysis because there were fewer than 1000 students per group. The ultimate sample, a subset of the total data set, included more than 200,000 students from approximately 700 nursing programs who took more than 1,000,000 exams.

RESEARCH FINDINGS

The most important finding of the analysis was that students who took more unique ***HESI Specialty Exams performed significantly better on the HESI Exit Exam (E2).*** For example, the mean score on the E2 of students who took two specialty exams was on average 12.8 points greater than that of students who took no specialty exams. However, when students took six specialty exams, the mean score on the E2 was 29 points greater. **Figure 1** gives a visual representation of these findings and **Table 1** provides a statistical analysis.

Figure 1

Relationship Between Number of Unique HESI RN Specialty Exams Taken and Scores on the HESI Exit Exam (E2)

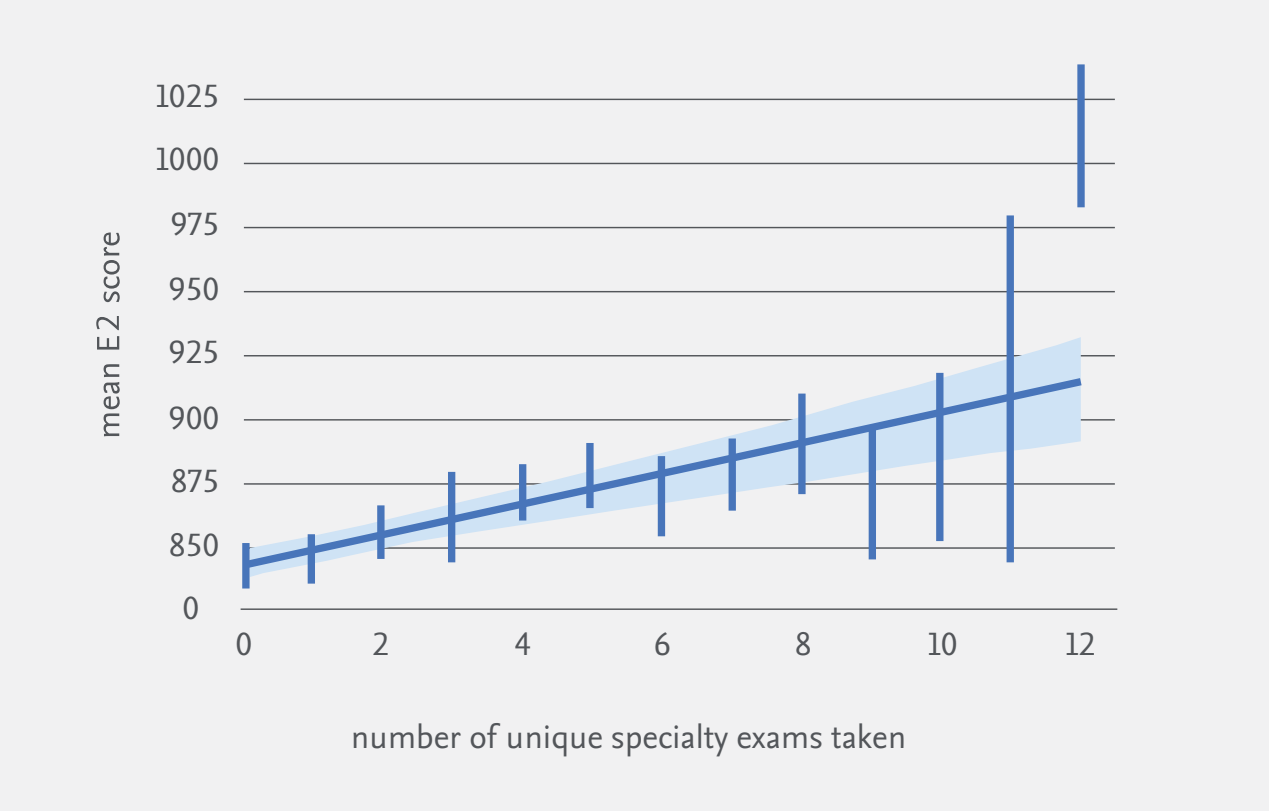

Figure 1 above shows a linear regression predicting student mean HESI Exit Exam (E2) scores based on the number of unique HESI Specialty Exams taken. The shaded region represents our 95% confidence interval around the linear regression and the vertical lines represent the 95% confidence interval of the estimate of the mean for students who have taken each number of unique specialty exams. We are estimating the confidence intervals using a hierarchical/multilevel bootstrap (n=1000) which resamples both organizations and students within organizations. This corrects for some of the correlations within organizations and provides more robust and cautious confidence interval estimates.

Table 1 below provides results documenting the primary finding that there is a statistically significant difference in HESI Exit Exam (E2) scores between students who took no HESI Specialty Exams compared to students who took one or more. The increase in student E2 means from group to group is demonstrated in the mean shift column in the table below. This table does not represent the hierarchical/multilevel bootstrap resampling performed for the figures, only the raw values for straightforward statistical comparisons against not taking any specialty exams. μ represents the mean E2 score of all n students who took that number of unique specialty exams. If a student took several different E2 versions, the mean of all attempts was used. σ is the standard deviation of the E2 score of all n students who took that number of unique specialty exams. t and p are the test statistic and p value for a Welch's t-test measuring the difference between this row and the set of students who took no specialty exams.

Table 1

Statistical Analysis of the Relationship Between Number of Unique HESI Specialty Exams Taken and Mean HESI Exit Exam (E2) Score

# of unique specialty exams	n	μ	σ	mean shift	Cohen's D	t	p
0*	74,265	842.6	121.7				
1	20,969	845.4	117.6	2.8	0.02	3.0	0.0012
2	19,874	855.3	118.3	12.8	0.11	13.4	< 0.0001
3	20,748	861.3	120.4	18.7	0.15	19.8	< 0.0001
4	18,831	873.1	120.0	30.5	0.25	31.1	< 0.0001
5	21,207	876.2	120.7	33.7	0.28	35.8	< 0.0001
6	18,289	872.1	126.5	29.5	0.24	35.8	< 0.0001
7	10,929	876.9	122.3	34.3	0.28	27.4	< 0.0001
8	8,472	890.9	121.0	48.3	0.40	34.8	< 0.0001
9	3,908	876.2	133.1	33.7	0.28	15.5	< 0.0001
10	2,310	888.6	121.7	46.0	0.38	17.9	< 0.0001
11	1,117	915.7	122.2	73.1	0.60	19.8	< 0.0001
12	1,002	1005.9	98.3	163.3	1.34	52.0	< 0.0001

**Comparison group*

IMPACT OF LOWER BENCHMARK SCORES

Although many nursing programs use a HESI Exit Exam (E2) score of 900 as a benchmark, others use a lower benchmarking score, often 850. The research examined the percent of students who achieve a benchmark score of 850 or 900 depending on how many unique HESI Specialty Exams the students took. The study found that the

percent of students who achieved success on the E2 was higher for students who took more specialty exams. Figure 2 demonstrates the upward trajectory of success on the E2 for both benchmark scores.

Figure 2

Relationship Between Number of Unique HESI RN Specialty Exams Taken and Students Achieving HESI Exit Exam (E2) Benchmark Scores

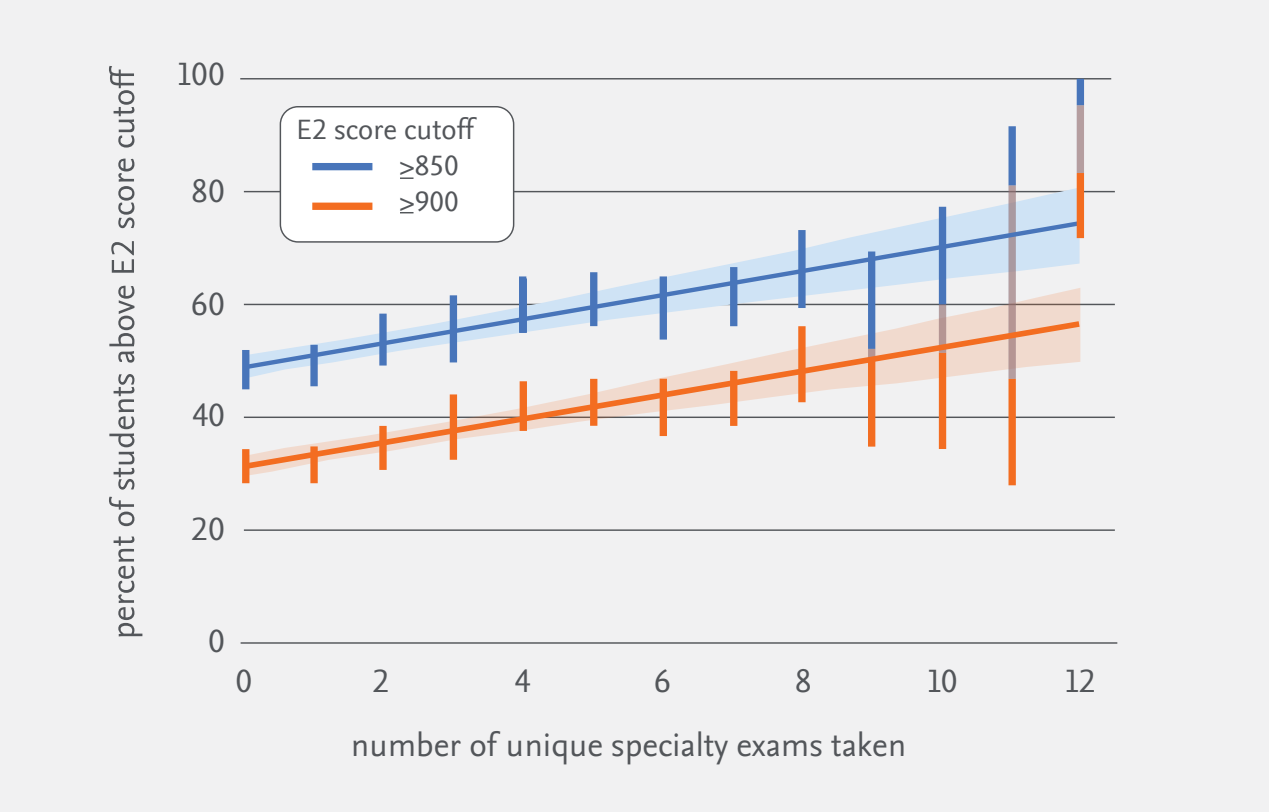

Figure 2 above shows a linear regression predicting the percent of students whose mean HESI Exit Exam (E2) scores are above the commonly used thresholds of 850 and 900 based on the number of unique HESI Specialty Exams taken. Confidence intervals are represented and calculated as in **Figure 1**.

IMPLICATIONS

The finding that HESI Specialty Exams given throughout students' course of study predict their HESI Exit Exam (E2) scores suggests a number of educational benefits for nursing students and faculty.

Using specialty exams as a final exam for select courses ensures a valid and reliable assessment of students' competence in applying the content presented in these courses. Administration of specialty exams throughout the curriculum not only confirms students' grasp of the concepts presented, it also provides students a regular exposure to test items that mirror the NCLEX style, thus improving students' comfort with such exams.

Given efforts taken by HESI solutions to ensure validity, reliability, and security of each exam, faculty can be confident that the assessment closely represents students' actual abilities to apply important concepts of nursing care in a particular specialty area. The results of these exams give powerful information regarding students' abilities, which can be used by both students and faculty. When a required remediation program for "at risk" students is available soon after a poor exam performance, students have evidence of gaps in their understanding of specific content and they, in conjunction with their faculty, can develop an individualized remediation plan. This immediate intervention addresses the problem quickly and reduces the likelihood students will bring these misunderstandings into future courses. Using the scores on specialty exams for remediation also reduces the need to give multiple versions of the E2 just before graduation in an attempt to judge student competency.

There are other benefits to the use of specialty exams in conjunction with the E2. Using the specialty exams as finals also reduces faculty time required to create these exams. Faculty can then spend this time creating teaching-learning activities to develop clinical judgment and mentoring students as they develop as a novice nurse. As an additional benefit, the aggregate result of a specialty exam can stimulate faculty assessment of content where an entire cohort may be lacking in order to develop a plan to reinforce content going forward in the curriculum (Glasgow, Dreher, & Schreiber, 2019).

CONCLUSION

The purpose of the research described in this paper was to determine the extent to which the number of HESI Specialty Exams given throughout students' course of study predict their HESI Exit Exam (E2) score. The data analysis found that as ***the number of specialty exams taken by students increased, the mean score on the E2 increased***. These findings provide nurse educators with more evidence upon which to base their testing and remediation processes. Given that testing and remediation play a key role in the success of students on the NCLEX-RN examination, implementing the suggested strategies may have a positive impact on the program's first-time NCLEX pass rate.

REFERENCES

Barton, L., Willson, P., Langford, R., & Schreiner, B. (2014). Standardized predictive testing: Practices, policies, and outcomes. *Administrative Issues Journal: Connecting education, practice, and research, 4*(2), 68-76.

Elsevier Education (2018). 2018 Scientific Evidence for Elsevier HESI Exams and Products [White paper]. Elsevier Education. **https://pages.evolve.elsevier.com/2018-Scientific-Evidence-for-Elsevier-HESI-Exams-and-Products-White-Paper.html**.

Glasgow, M. E. S., Dreher, H. M., & Schreiber, J. (2019). Standardized testing in nursing education: Preparing students for NCLEX-RN® and practice. *Journal of Professional Nursing, 35*(6), 440-446.

Langford, R., & Young, E. (2013). Predicting NCLEX-RN success with the HESI Exit Exam: Eighth validity study. *Journal of Professional Nursing, 29*(2S). S5-S9.

20-NHPep-0581 EP/AF 9/20