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Relationship Between Financial Support and Retention of Economically Disadvantaged Students in an Undergraduate Baccalaureate Nursing Program

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RELATIONSHIP BETWEEN FINANCIAL SUPPORT AND RETENTION OF ECONOMICALLY DISADVANTAGED STUDENTS IN AN UNDERGRADUATE BACCALAUREATE NURSING PROGRAM

by

Karen L. O'Brien

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ABSTRACT

RELATIONSHIP BETWEEN FINANCIAL SUPPORT AND RETENTION OF ECONOMICALLY DISADVANTAGED STUDENTS IN AN UNDERGRADUATE BACCALAUREATE NURSING PROGRAM

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Retention in baccalaureate nursing programs has been a concern for administrators and educators for decades. The non-traditional students of the past have become the traditional students of the present and as such lead complex lives. The emerging group of students that requires more attention in nursing education research is the economically disadvantaged students. Economically disadvantaged students typically come to college less prepared for the rigors of higher education and are at-risk for leaving post-secondary education. Retention of economically disadvantaged students can potentially increase the diversity of the nursing workforce since many economically disadvantaged students also come from ethnically diverse background. Federally funded grant programs such as the HRSA Scholarships for Disadvantaged Students can impact the retention of economically disadvantaged students in baccalaureate nursing programs by providing much needed tuition assistance as well as monies that could also be used for child care services, rent, and basic living expenses. The purpose of this study was to evaluate selected outcomes of grant support from the Scholarships for Disadvantaged Students (SDS) program on students in a baccalaureate nursing program in one Midwestern institution. The research questions for this study were:

Research Question 1: After controlling for differences in demographic characteristics, is receipt of SDS financial support associated with (a) a reduction in hours worked per week, (b) an increase in study hours per week, (c) higher nursing GPA and overall GPA, and (d) higher rates of retention in and progression through to program completion in a baccalaureate nursing program?

Research Question 2: After accounting for differences in demographic characteristics, to what extent and in what manner is retention and progression in a baccalaureate nursing program predicted by SDS financial support, hours worked per week, study hours per week, nursing GPA and overall GPA?

This study was a quasi-experimental design utilizing secondary analysis of existing data from available university databases as well as data obtained from a questionnaire developed by the student principal investigator. The sample was 351 subjects in three groups of undergraduate pre-licensure students (SDS, pre-SDS, non-SDS) from the traditional undergraduate nursing program who met the eligibility requirements outlined by HRSA for Scholarships for Disadvantaged Students. Data analysis included descriptive and correlational statistics as well as Chi-squared and ANOVA. A significant difference among groups was found for the variable explaining the relationship between study and work hours (study to work hours). Students receiving SDS financial support on average studied nearly five more hours per week than they worked; the comparison group (pre-SDS) on average worked two more hours per week than they studied. In addition, students receiving SDS financial support had higher overall GPA and higher final nursing GPA than the other two groups. Students receiving SDS financial support had 96.3% on time program completion.

Logistic regression was conducted using a combination of variables. The most parsimonious predictor of on time graduation included only the variables SDS grant status and initial GPA. Students receiving the SDS grant were 10 times more likely to graduate on time than those who did not receive the grant (CI 95%, 3.03-33.76).

This study provides evidence that financial support in the form of grant funding can influence retention and program completion for economically disadvantaged undergraduate nursing students by impacting the students' ability to study more hours per week than they work. This may be the first study to look at the impact of SDS federal grant funding and undergraduate nursing program completion. The student receiving the grant funding all progressed to the next semester and 96% completed the nursing program in the prescribed five semesters.

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I could not have done this without all of you.

CHAPTER 1

Statement of the Problem

The current economy with its subsequent unemployment rates and the availability of higher education has enabled more people to pursue post-secondary education than was previously possible. This access to higher education however does not necessarily equate to successful program or degree completion. Retention and attrition in higher education have been critical issues and under study for decades. Attrition, a concept that is well researched in education, typically focuses on some fault within the student's abilities and/or motivation to succeed (Tinto, 2006). However, as Tinto (2006) explains, "Leaving is not the mirror image of staying. Knowing why students leave does not tell us, at least directly, why students persist" (p. 6). As such, much of the current research focuses on retention and the need to know what factors influence a student's decision to stay in an institution and what an institution can do to enhance a student's decision to stay.

An understanding of the issues that affect retention, particularly in nursing education, is of vital importance in order to fill the need of the nursing workforce now and in the future. The projected shortage of nurses is expected to grow as Baby Boomers age and the need for healthcare grows. Although the nursing workforce is expected to grow, the total number of job openings due to market growth and replacements needed is expected to reach 1.05 million by 2022 (Rosseter, 2014). Schools of nursing must educate well-prepared nursing students at the baccalaureate level in a way that reflects the ethnic, racial, and socioeconomic diversity of the public to care for the complex needs of patients in a variety of care environments. It is imperative that schools of nursing admit and retain students to fill this projected need. Answering the

question of why nursing students depart early in their academic career and what factors influence retention of nursing students remains a critical issue.

Retention refers to a student remaining in an institution of higher learning until program completion or in a more narrow perspective from the freshman year through to the sophomore year. In contrast, attrition refers to a student leaving a program of study before program completion. Many aspects of retention and attrition have been studied and have often times involved identification of students' characteristics that would put them "at risk" for leaving. As a result of increased availability of higher education, students entering colleges and universities have become more diverse. There is a mix of traditional college students and non-traditional college students, full and part-time students, first generation college students, students of ethnic minorities, English as second language (ESL) students, and economically disadvantaged students. Many of these students are considered to be "at risk" for non-completion of their academic programs and degrees. Strategies are needed to support all students to program completion, but particularly those identified as "at risk".

There has been renewed interest among educators and educational researchers in what is called "economically disadvantaged," "economic inequality," and "socioeconomic diversity" as being influential in admission and retention practices of colleges and universities across the United States. The emerging group of students that requires more attention in higher education research, and in nursing education in particular, is the economically disadvantaged students. Economically disadvantaged students typically come to college less prepared for the rigors of higher education and are at-risk for leaving post-secondary education, thus never reaching degree completion. Although this group of students tends to be considered as part of the greater group of at-risk students—including first generation to attend college, English as a second language, or

having a racial or ethnic minority background—they also need consideration as a separate group with additional and perhaps more specific issues or needs.

To highlight the disparity that is often created by social class and degree completion, Rumberger (2010) investigated the relationship between family background and college completion and earnings. Family background was measured by parental income, highest level of parental education, and family socioeconomic status. The findings of this longitudinal study of 8,901 respondents indicated that 60% of upper class students completed college versus only 7% of lower class students. Upper class students were eight times more likely to complete college than their lower class counterparts. This suggests that social class impacts on ability to complete college. In addition, the Advisory Committee on Student Financial Assistance (2006), an independent committee providing expertise on student financial aid issues to Congress, provides even more startling statistics. They found in the 1990s that between 1-1.6 million college-qualified high school graduates from low and moderate income families who started college did not complete bachelor's degrees. Rumberger (2010) points out education serves as a mechanism for allocating economic rewards, and should not be dependent on one's social origins but more dependent on individual interest and effort. He adds, if there is equal opportunity to acquire education based on personal interest and effort, then education serves to break the link of transmission of economic privilege from one generation to the next.

Socioeconomic diversity has been overshadowed by colleges and universities focusing more attention on racial, ethnic, and gender diversity. Some academicians assert that class-based affirmative action can produce the still needed racial and ethnic diversity that colleges and universities are striving for (Carnevale, Rose, & Strohl, 2014). In a study on economic segregation in American law schools, Sander (2011) found when socioeconomic status was used

instead of race as a criterion for admission; African-Americans were 16 times as likely to be admitted under the socioeconomic program as under other programs, and Latinos 6.8 times as likely to be admitted. As recently as April of 2014, the Supreme Court ruled that voters in Michigan can ban racial preferences in admissions to public universities. This is an important shift from race-based affirmative action to socioeconomic affirmative action, and has the potential to produce greater diversity than focusing on race alone (Kahlenberg, 2014) .

After being admitted to colleges or universities, economically disadvantaged students experience difficulty affording the ongoing cost of higher education. Within five years of starting a postsecondary education, 41% of students from the highest socioeconomic quartile received a bachelor's degree in contrast to only 6% from the lowest socioeconomic quartile (Kahlenberg, 2004). Many economically disadvantaged students do not qualify for the merit-based scholarships many institutions offer. In addition, many of these same students are forced to finance their education by private loans and incur huge amounts of debt, whether they graduate or not. Among graduating seniors from low-income backgrounds, 80% in private and 65 % in public four year institutions required loans to offset the cost of their college education (Gladieux, 2004).

Despite utilizing the resources available, students often must work full or part-time to cover their remaining educational costs plus usual living expenses. Unmet need is the amount of money that is owed to the institution after the expected family contribution (EFC), grants, loans, and any additional assistance are deducted from the institutional cost (King, 2003). Although low-income students typically face a lower average net price for attendance compared to middle- and upper-income students, these low-income students have fewer resources and as such their unmet need is more than three times that of the middle- and upper-income students (King, 2003).

King also found that students who borrowed money in the form of student loans and worked part-time (one to fourteen hours per week) tended to have better than average persistence rates. However, time spent at work is time that is not available for studying. Students who do not pursue student loans to help offset the need to work tend to work more than part-time and often end up with less than a full-time course load because they cannot manage full-time status and a heavy work schedule (King, 2003). Balancing financial obligations with work obligations is difficult for economically disadvantaged students. These students would benefit most from need-based scholarships and grants that would not require repayment to the provider and would help to deter the need to work full or part time.

There is a great deal of research published pertaining to which students work, why they work, how much they work, and the effects on academic performance. The American Council on Education (King, 2006) reports that a majority of students enrolled in college work. Of these students, those who are enrolled part-time and are older, from low-income backgrounds, and from underrepresented minority groups, work more hours than other students. The primary reasons given by students for working are to pay for tuition and fees, as well as living expenses. Generally students who are financially independent work to support themselves and their families. However, of those students who are financially dependent, 41% from the highest income level work to pay for tuition, fees, or living expenses compared to 66% from the lowest income level (King, 2006). In a study of undergraduate students and work, Holmes (2008) reported that 22% of students work to cover basic costs of living, while an additional 36% work to contribute to the basic costs of living, such that over half the students in this study work for basic living needs. Of the students questioned, only 5% were working to gain future work experience. Torres, Gross, and Dadashova (2011) found the average undergraduate student under

the age of 21 typically works 31 hours per week while enrolled in a full-time academic load. The findings also indicated a negative relationship between hours worked and academic success. Students with financial stress who experience poor academic outcomes often must reduce course loads or withdraw from schools completely (Joo, Durband, & Grable, 2008).

Undergraduate nursing students, like most college students, need to work. Employment, work hours, and financial stress can have detrimental effects on academic performance and hinder program success. Several studies involving undergraduate nursing students support 16 hours as the threshold for work hours before negative effects are reflected in lower course grades and overall grade point averages (Salamonson & Andrew, 2006; Salamonson, Everett, Koch, Andrew, & Davidson, 2012; Reyes, Hartin, Loftin, Davenport, & Carter, 2012). Also of interest, Salamonson and Andrew (2006) found that nursing-related employment was not advantageous to students' academic performance in nursing courses.

Retention of students in undergraduate baccalaureate nursing programs is essential to fulfill the needs of the nursing workforce. Much of the research related to retention in undergraduate nursing programs focuses on projects designed to recruit and retain minority and underrepresented groups, as well as students who have English as a second language (ESL) and other at-risk populations; however, there is little research related to economically disadvantaged nursing students. Like other economically disadvantaged students, these students admitted to nursing programs are typically underprepared for the rigors of academia and nursing. In addition, these students often must work full or part time to finance their education, reducing the time available to study and complete assignments. For these students, financial assistance is most beneficial in the form of grant funding not required to be paid back to the provider.

One such grant-funded program that can help offset the cost of nursing program completion is Scholarships for Disadvantaged Students (SDS). This is a grant-funded program that provides full-time students from disadvantaged backgrounds and in financial need scholarship monies to offset tuition costs and other education related costs (Health Resources and Services Administration, 2013).The Health Resources and Services Administration (HRSA), a component of the Department of Health and Human Services (DHHS), in an effort to increase the diversity of the health professions workforce and the number of providers working in underserved communities, provides funds to accredited U.S. health professions schools, including schools of nursing. HRSA defines *disadvantaged* as the following: coming from an environment that has inhibited the individual from obtaining the knowledge, skill, and abilities required to enroll in and graduate from a health professions or nursing school; or coming from a family with an annual income below a level based on low-income thresholds according to family size published by the U.S. Bureau of Census, adjusted annually for changes in the Consumer Price Index, and adjusted by the Secretary, U.S. Department of Health and Human Services, for use in health professions and nursing programs (Health Resources and Services Administration, 2013). Participating schools are responsible for selecting scholarship recipients, making reasonable determinations of need, and providing scholarships that do not exceed the cost of attendance (tuition, reasonable educational expenses, and reasonable living expenses). Nursing programs must apply for this competitive grant funding and will receive priority points for funding if they demonstrate the following: a 15 percent or better rate of enrollment of under-represented minorities; a 15 percent or better rate of graduates practicing in primary care; and/or a 10 percent or better rate of graduates working in medically underserved communities (Health Resources and Services Administration, 2013). Nursing programs can be funded for up to

$650,000 per year for a four-year funding period. Students who receive SDS funding can receive $15,000 per year and may use the monies for tuition, reasonable educational expenses, and reasonable living expenses incurred while attending the school (Health Resources Service and Administration, 2014)

Programs such as SDS can impact the retention of economically disadvantaged students in baccalaureate nursing programs by providing much needed tuition assistance as well as monies that could be used beyond academic costs for child care services, rent, and basic living expenses. At the same time retention of economically disadvantaged students can potentially increase the diversity of the nursing workforce since many economically disadvantaged students also come from ethnically diverse backgrounds. Schools of nursing need to graduate students of racial and ethnic minority backgrounds to be more reflective of the United States population as a whole, yet at the same time need to be cognizant of socioeconomic diversity as well. Although there are many studies in the nursing education literature that have increased understanding of undergraduate retention of nursing students, few studies have focused on interventions to assist economically disadvantaged students. This group is emerging as a population of students with additional issues and needs that requires more attention in higher education and in nursing education in particular.

As stated by Haverman and Wilson (2007), "the nation's colleges and universities appear to be an integral part of the process whereby family economic status is passed along from generation to generation" (p. 38). With the current need for baccalaureate educated nurses, the economically disadvantaged student is a potentially untapped resource considering the incompletion statistics for low-to-moderate income students. It is important to investigate this

particular population of at-risk students to determine what can be done to enhance their admission, retention, and completion of baccalaureate nursing programs.

Purpose of the Study

The purpose of this study was to evaluate selected outcomes of grant support from the Scholarships for Disadvantaged Students program on students in a baccalaureate nursing program in one Midwestern institution.

Conceptual Model

"It is one thing to understand why students leave; it is another to know what institutions can do to help students stay and succeed" (Tinto, 2006). The Jeffreys Model of Nursing Undergraduate Retention and Success (NURS) was the conceptual model utilized in this study. The NURS model was an outgrowth of identification of the changing demographics among college students and as a response to the continued shortage in the nursing workforce evident at that time. Jeffreys (2012) states "the most persistent trend in student persistence research is that student attrition persists" (p. 3). This model shifts the focus from the study of attrition to the study of retention of nursing students as well as identifying at-risk students, and developing diagnostic and prescriptive strategies and interventions to facilitate nursing student success. Beyond seeing the effects of this model on the student alone, this model can also guide teaching and educational research as well as influence evaluation of intervention effectiveness (Jeffreys, 2004).

The Jeffreys NURS model is based on Bean and Metzner's (1985) Conceptual Model of Nontraditional Student Attrition, which was developed from earlier models of attrition and informed by research from the education and behavioral sciences literature (Tinto, 1975; Pascarella & Terenzini, 1980). The Bean and Metzner model was the first to address the

"nontraditional" undergraduate student. The Jeffreys model was originally designed for nontraditional students as well but focuses specifically on undergraduate nursing students. Later, the Jeffreys model was modified to be applicable to both traditional and nontraditional nursing students and applicable to students in any of the entry level nursing programs including diploma, associates, and baccalaureate programs. The model consists of student affective factors, academic factors, environmental factors, professional integration factors, and outside surrounding factors. Retention decisions made by the student are influenced by all of these components. In addition, student profile characteristics are considered along with academic outcomes and psychological outcomes. See Figure 1 for an illustration of Jeffreys' NURS Model.

Greater detail of several of the earlier conceptual models of retention of undergraduate students from the education literature beginning in the 1970s through to Bean and Metzner in the 1980s, and end with Jeffreys work in the late 1990s through 2004 is presented in Chapter 2. Each of the factors and outcomes will be explained further along with model assumptions. The Jeffreys NURS model is the only model that specifically addresses retention among undergraduate nursing students and can be applied to any type of prelicensure nursing program. It has expanded upon the Bean and Metzner (1985) Conceptual Model to include factors that impact on nursing students, most notably the professional integration factors. It also includes issues that impact students in today's world versus the student of the 1980s, recognizing the additional background that students bring to college and their nursing programs. Cultural values and beliefs have been incorporated as well as outside factors that can impact on retention of nursing students; for example child care, living arrangements, and transportation.

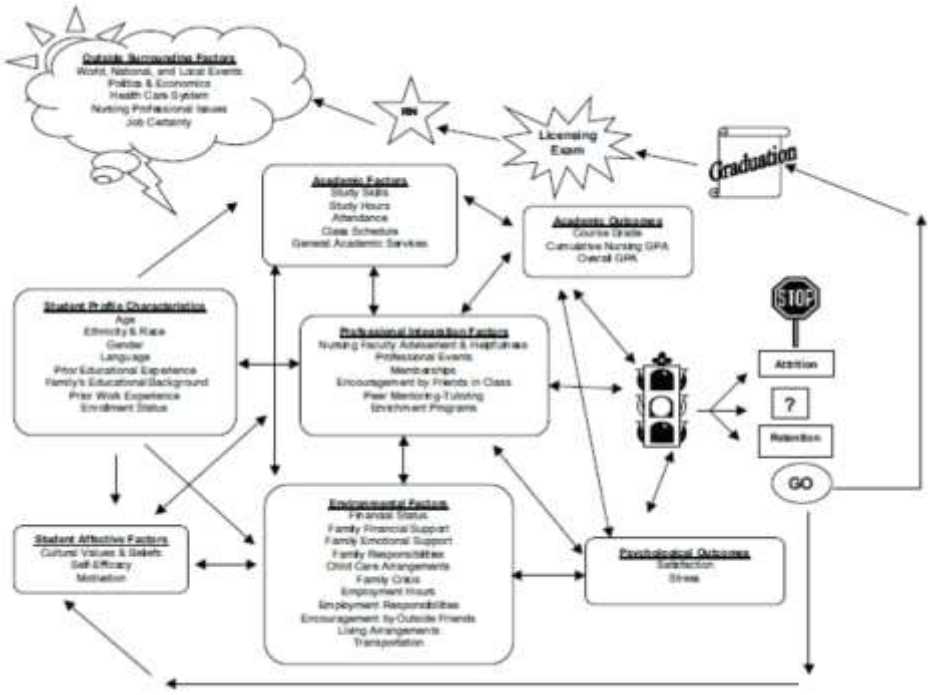

Figure 1. Model of Nursing Student Retention (NURS) (Jeffreys, 2004)

Although both the Bean and Metzner model and the Jeffreys NURS model relate to undergraduate student retention/attrition, the latter provides a more relevant theoretical background for the current retention study involving economically disadvantaged baccalaureate nursing students. In light of the continued nursing shortage, and the need to increase the diversity of the nursing workforce, research on retention of baccalaureate nursing students utilizing such a model is especially pertinent. This model is large and complex, but has the potential to be used widely in nursing education research. Jeffreys recommends using portions of the model to guide research questions and studies rather than testing the model in its entirety. Thus, this study on the retention of economically disadvantaged nursing students focused on the effect of financial support through grant funding on the following: (1) select environment factors (employment hours); (2) academic factors (study hours) and outcomes (nursing GPA, overall GPA); and

ultimately (3) retention to the following semester or through to program completion. See Figure 2 for the modified version of Jeffreys model that guided this study.

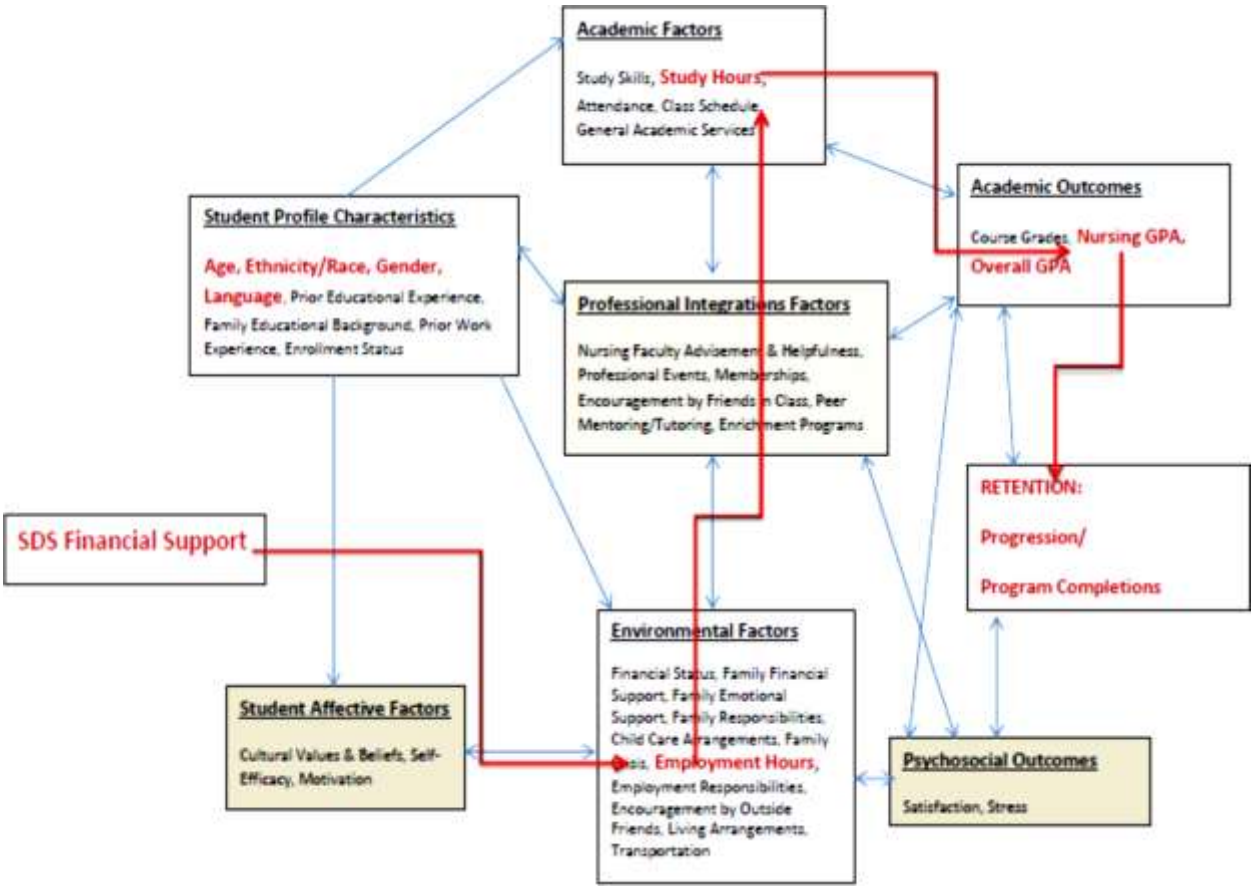

Figure 2. Modified NURS Conceptual Model

Rigorous research studies should be based on a framework or model to guide the design of the study, and the concepts under study should be clearly defined. Because the focus of the NURS model is on retention of nursing students versus attrition of students, this model proposes a proactive rather than reactive approach, and posits variables that influence students to remain until program completion. Jeffreys' many variables, described as factors or outcomes, are pertinent to the issues of undergraduate nursing students today and are based on research more recent than the Bean and Metzner model. The Jeffreys NURS Model is relevant to nursing since it was designed specifically for undergraduate nursing students. This model could inform nursing education research on interventions designed to admit and retain more students in nursing programs and see them through to graduation and assimilation into the nursing profession.

Research Questions

Based upon the Jeffreys model and the SDS program, the research questions were:

Research Question 1: After controlling for differences in demographic characteristics, is receipt of SDS financial support associated with (a) a reduction in hours worked per week, (b) an increase in study hours per week, (c) higher nursing GPA and overall GPA, and (d) higher rates of retention in and progression through to program completion in a baccalaureate nursing program?

Hypothesis 1: Students receiving SDS financial support will report a reduction in number of hours worked per week compared to students who did not receive SDS financial support, after controlling for differences in demographic characteristics.

Hypothesis 2: Students receiving SDS financial support will report an increase in study hours per week compared to students who did not receive SDS financial support, after controlling for differences in demographic characteristics.

Hypothesis 3: Students receiving SDS financial support will show better nursing GPA and overall GPA compared to students who did not receive SDS financial support, after controlling for differences in demographic characteristics.

Hypothesis 4: Students receiving SDS financial support will show better nursing GPA and overall GPA and higher rates of retention by progression to next semester or to program completion compared to students who did not receive SDS financial support, after controlling for differences in demographic characteristics.

Research Question 2: To what extent and in what manner is retention and progression in a baccalaureate nursing program predicted by SDS financial support, hours worked per week, study hours per week, nursing GPA, and overall GPA, after controlling for differences in demographic characteristics?

Definition of Terms

The terms used in this study are defined in the following section. Definitions are given for each term as described by Jeffreys in the NURS Model, followed by a brief description of how it will be operationalized for this study. Jeffreys does not specifically define the terms "factors" and "outcomes" that are used in the model. According to Merriam-Webster (2015), a factor is defined as something that helps produce or influence a result; an outcome is defined as something that follows as a result or consequence.

Study hours are part of the Academic factors. Academic factors include aspects of students' involvement with the academic process at the college or university (Bean & Metzner,

1985). Jeffreys (2004) defines *Academic factors* as the students' study skills, number of study hours, attendance at class, and class scheduling. These factors also include the institution's academic services—for example, library, counseling, and computer lab services. The academic factor of concern to this research study was *study hours*. As defined by Jeffreys (2012), *study hours* are the number of hours exclusively allocated to positive study behaviors that are adaptive, self-directed, realistically goal-oriented, and appropriate; not merely the total of all hours spent. For this study, *study hours* was operationalized as the average number of hours studied per week.

Nursing GPA and overall GPA are *academic outcomes*, which are the end result of the students' academic achievement in a program of study. One of the most frequently measured academic outcomes in retention research is GPA (Jeffreys, 2012). Jeffreys defines *academic outcomes* as current nursing course grades, cumulative nursing GPA (NGPA) and overall GPA (Jeffreys, 2004). The academic outcomes of interest to this study are NGPA and overall GPA. Nursing GPA is defined by Jeffreys as the grade point average calculated for all required nursing courses through the end of a semester or at program completion. Overall GPA is defined by Jeffreys as the cumulative grade point average for all general education, prerequisites, and required nursing courses.

NGPA and overall GPA are measures of academic achievement as defined by a particular institution. For the researcher's institution the grading scale/GPA point scale within the School of Nursing is as follows:

93-100 A/ 4.0 points

85-92 B/ 3.0 points

77-84 C/ 2.0 points

70-76 D/ 1.0 points

0-69 F/ 0.0 points

Students must complete all nursing and supportive courses with a "C" or better. GPA and NGPA are calculated on a 4-point scale with a course grade of "A" earning 4 points, "B" 3 points, "C" 2 points, "D" 1 point, and "F" 0 points. Students must maintain an overall GPA and NGPA of 2.3/4 or higher. Students who fail to maintain the 2.3 are allowed one semester of probation. Students are dismissed for a grade of "F" or after one semester of probation if the 2.3 is not reached. Students may only repeat one nursing course.

Employment hours are among the *environmental factors*, which are defined by Jeffreys as those aspects that are external to the academic process but that can influence performance and retention. These factors can include the following: financial status, financial support from the family, emotional support of the family, family obligations and responsibilities, child care issues, crisis within the family, hours of employment and employment responsibilities, encouragement by friends outside the academic setting, living arrangements, and transportation issues (Jeffreys, 2004). The environmental factor of concern to this study was *employment hours*, which refers to both the number of hours worked and the compatibility of work hours with school and/or family responsibilities (Jeffreys, 2012). For this study, *employment hours* was defined as the average number of hours worked per week by the students.

Financial support includes those monetary resources (scholarships, loans, grants) available to a student to meet all expenses including tuition, fees, books, living expenses and outside financial obligations. For this study, *financial support* was defined as monies received from the Scholarships for Disadvantaged Students HRSA-funded grant.

For this study, *retention* was defined as the student remaining in the nursing program from one semester to the next or until program completion.

Assumptions

The overall study was based on the following assumptions:

(1) Retention of baccalaureate nursing students is a priority for nurse educators.

(2) Diversity (racial, ethnic, gender, socioeconomic) is necessary and desirable in both nursing programs and the nursing workforce.

(3) Retention is multidimensional and is influenced by a many variables.

Significance

This study contributes to the body of knowledge related to retention in higher education and more specifically retention of baccalaureate nursing students. This study has the potential to better inform nurse educators about the relationship between work hours and study hours which could facilitate purposeful counseling that would benefit retention in nursing programs. This study could also influence admission practices of schools of nursing to increase economic diversity among the student population. Schools of nursing must educate well-prepared nursing students at the baccalaureate level in ways that reflect the ethnic, racial, and socioeconomic diversity of the public to care for the complex needs of patients in a variety of care environments. The increase in economic diversity could positively impact overall racial and ethnic diversity in schools of nursing (Carnevale et al., 2014). This study will also provide information about the effects of financial support that is unencumbered by payback requirements provided to eligible economically disadvantaged baccalaureate nursing students. The study results may have broader application to better inform university administrators and state and federal policy makers as to the merits of grant-based funding as a means to better degree completion rates for economically disadvantaged baccalaureate nursing students and ultimately increased diversification of the nursing workforce.

Summary

Chapter 1 discussed the issue of retention as it relates to economically disadvantaged students both broadly in higher education and more specifically as it related to baccalaureate nursing students. The Jeffreys NURS conceptual model was presently briefly followed by proposed research questions as well as definitions of terms applicable to this study. The potential implications and as well as significance were presented. Chapter 2 presents the literature review in the context of two manuscripts for publication. The first manuscript is an abbreviated chronological history of the evolution of attrition and retention models beginning in the 1970s with the education literature and moving to the nursing education literature. Two of the conceptual models will be discussed in detail and their potential application for research on retention among undergraduate baccalaureate nursing students will be explored. The second manuscript is an integrative review of retention literature related to undergraduate baccalaureate nursing student success and or failure both in terms of program completion and navigation of NCLEX-RN licensure exam; literature related to NCLEX-RN predictors of success, baccalaureate nursing program completion/success as well as academic and nursing aptitude; literature related to environmental variables including non-academic/non-aptitude, non-cognitive variables of interest; and lastly, the impact of finances on retention and attrition in baccalaureate nursing programs. Chapter 3 details the methods used for data collection and data analysis. Chapter 4 discusses the finding of the current study and Chapter 5 presents a discussion of the findings as well as implications for further research, nursing education, and policy development.

CHAPTER 2

Literature Review: General Introduction

Chapter 2 consists of two manuscripts that were submitted for publication. The first manuscript is an abbreviated chronology of the evolution of attrition and retention models beginning in the 1970s with the education literature and moving to the nursing education literature. Earlier models do exist, however the demographic differences of students now compared to then may make those models less relevant to the current discussion. Two of the conceptual models are discussed in detail and their potential application for research on retention among undergraduate baccalaureate nursing students will be explored. This manuscript was submitted to the Journal of Professional Nursing for publication according to the journal's guidelines and includes the cover letter, abstract, manuscript, and references. The second manuscript is an integrative review of retention literature related to undergraduate baccalaureate nursing student success and or failure both in terms of program completion and navigation of NCLEX-RN licensure exam; literature related to NCLEX-RN predictors of success, baccalaureate nursing program completion/success, and academic and nursing aptitude; literature related to environmental variables including non-academic/non-aptitude, non-cognitive variables of interest; and lastly the impact of finances on retention and attrition in baccalaureate nursing programs. This manuscript was submitted to the Journal of Nursing Education for publication according to the journal's specific guidelines and includes the cover letter, abstract, manuscript, and references. Appendix A and B were included in the electronic submission of the manuscript as separate files, not as part of the manuscript section.

Manuscript One

Cover Letter

Patricia Gonce Morton, PhD, RN, ACNP-BC, FAAN
Editor-in-Chief
Journal of Professional Nursing
June 6, 2015

Dear Dr. Gonce Morton,

I am submitting my manuscript entitled "Conceptual Models and Baccalaureate Nursing Student Retention" for publication as an original work in Journal of Professional Nursing.

This manuscript is part of my dissertation work at the University of Milwaukee-Wisconsin. The manuscript reviews conceptual models related to student retention in higher education, then critiques two models and discusses their applicability to nursing education research.

Retention in and progression to program completion in undergraduate baccalaureate nursing programs continues to be an issue of great importance and as such is appropriate for the readership of this journal.

I confirm that this manuscript has not been published elsewhere and is not under consideration by another journal. The work was not supported by any grant funding. The author has no conflicts of interest to declare.

Please address all correspondence to:

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I look forward to hearing from you at your earliest convenience.

Respectfully,

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Abstract

For decades, retention in and attrition from baccalaureate nursing programs has been a concern for administrators and educators. Admitting qualified students to programs and seeing them through to program completion are multifaceted and complex tasks for nurse educators, perhaps even more today than in the past. A wide range of students enter programs from various backgrounds, some more prepared for the rigor of academia than others. The non-traditional students of the past have become the traditional students of the present, and as such, lead complex lives in which education is only one component. The purpose of this paper is to present an abbreviated chronology of the evolution of attrition and retention models beginning in the 1970s with the education literature and moving to the nursing education literature. Earlier models do exist, however the demographic differences of students now compared to then may make those models less relevant to the current discussion. Two of the conceptual models will be discussed in detail and their potential application for research on retention among undergraduate baccalaureate nursing students will be explored.

Keywords: retention, baccalaureate, nursing, conceptual models

Conceptual Models and Baccalaureate Nursing Student Retention

Introduction

Retention in and attrition from baccalaureate nursing programs has been a consistent problem for decades among administrators and educators. Admitting students to programs and seeing them through to program completion are multifaceted and complex tasks for nurse educators, perhaps even more today than in the past. A wide range of students enter programs from various backgrounds, some more prepared for the rigor of academia than others. The non-traditional students of the past have become the traditional students of the present, and as such, lead complex lives in which education is only one component. In addition, many of these students are considered to be at-risk such as, those with English as a second language, those who are first generation college attendees, those from underrepresented minorities, and those who are economically disadvantaged.

There has been a great deal of nursing education research examining attrition and retention of specific populations of students and prediction of success, both in terms of program completion as well as success on the NCLEX-RN licensure exam. However, nursing education research is not often guided by an underlying theory with clear descriptions of concepts and variables. As a result, the findings are limited in their ability to be generalized to a wider population or combined using meta-analytic methods. In addition, small samples sizes and short term retention projects versus longitudinal institutional changes also contribute to the limited nature of solving this difficult problem. Meleis (2007) describes a theory as "an organized, coherent, and systematic articulation of a set of statements related to significant questions in a discipline that are communicated in a meaningful whole" (p. 37). As such nursing theory should be used to answer questions related to issues or problems important to nursing. The theoretical

waters become muddied when terms are used interchangeably (Meleis, 2007). For example, the terms model and framework are often interchanged within the same manuscript. Similarly, the terms theoretical and conceptual are used interchangeably. Nursing education research should be based on sound theoretical underpinnings and should use a model to guide the development of the research questions and study design. However, Meleis (2007) urged researchers to get on with the work of nursing research and not become bogged down in semantics. Recently, Imenda (2014) delineated a difference between the terms conceptual framework and theoretical framework proposing that the researchers' perspectives or points of reference will determine the use of these terms. He maintained that the problem solving approach used in the social sciences involves an inductive approach and so he proposes the term conceptual framework to be appropriate, whereas in the natural sciences, a deductive approach is used and the term theoretical framework would be appropriate.

Although the attrition and retention models have come from sociology, psychology, and education, use of terms to describe the theoretical underpinning have not been used consistently. To say that there is a one size fits all model for attrition and retention studies is unrealistic, but using and testing these models, changing current models based on research, and developing new models could contribute to effective, long term solutions to the attrition and retention problems in undergraduate nursing programs. The term model will be used to broadly describe the structured way of thinking the researchers used to describe the concept under study. The terminology used in the researchers' particular writings will be presented, without attempting to reconcile the "correct" use of a particular term especially as related to theoretical frameworks, conceptual frameworks, theoretical models, and conceptual models. The purpose of this paper is to present an abbreviated chronology of the evolution of attrition and retention models beginning

with the general education literature of the 1970's and moving to the nursing education literature. Although earlier models do exist dating back as far as the 1930's, this paper will focus on later models. Two of the more current models will be discussed in detail and their potential application for research on retention among undergraduate baccalaureate nursing students will be explored.

Early Models of Attrition and Retention

Models addressing student departure from institutions of higher education have evolved over the last 90 years. Early in the 20th century higher education was far less accessible to general population compared to today. This is an abbreviated chronology of the evolution of attrition and retention models beginning in the 1970s with the education literature and moving to the nursing education literature. Earlier models do exist, however higher education has become more accessible to all people and the demographic differences of students now compared to then may make those models less relevant to the current discussion. In the early years, research was focused on attrition and why students "dropout" of higher education. The definitions of the terms attrition and dropout are difficult to find and are applied differently in research studies. The term dropout was an expression for those students who failed to earn college degrees in the expected four year period of time (Astin, 1975). The term dropout carries a negative connotation, implying some fault within the student for leaving the institution and does not distinguish leaving related to academic failure from leaving due to other personal reasons. Attrition is defined as a reduction in numbers usually as a result of resignation, retirement or death (Merriam-Webster, 2014). This definition is often applied in business settings. In education, attrition refers to students prematurely departing from an academic institution, usually at a specified period of time. For example, first year attrition refers to those students who do not return to the institution

after the first year regardless of the reason. Attrition can be further defined in terms of involuntary attrition versus voluntary attrition. Involuntary attrition means academic dismissal related to inadequate grades and voluntary attrition, often called "stop out", means withdrawal for personal, non-academic reasons (Jeffreys, 2012; Tinto, 1993).

Attrition can also be distinguished as departure from the institution with transfer to another institution (institutional departure), or withdrawal from the educational system as a whole (system departure) (Tinto, 1993). Definitions for attrition and retention seem to be used interchangeably by some authors and are often times not clearly defined conceptually or operationally in research. Tinto (2006) explained, "Leaving is not the mirror image of staying. Knowing why students leave does not tell us, at least directly, why students persist (p.6)". Retention means continuous enrollment in an academic program through completion and degree attainment. Jeffreys (2012) further distinguishes between course retention, defined as continuous enrollment in this case nursing course without withdrawal, and program retention, defined as continuous enrollment in a nursing program, completing all program requirements and subsequently graduating with a nursing major. Jeffreys' definitions are specific to the nursing major and nursing student enrollment. A nursing student who is no longer enrolled in nursing courses and the nursing major, could be retained with in the academic institution but this model would no longer apply as it is specific to the population of all undergraduate nursing students. The focus of current retention research reflects the need to know what factors influence students' decisions to stay in an institution and what an institution can do to enhance students' decisions to stay, not merely why students leave.

During the 1970's, more researchers began to examine student attrition from higher education. Spady (1970) developed one of the first models of attrition that was based on

Durkheim's Theory of Suicide (Durkheim, 1961). Durkheim proposed that suicide can be related to lack of integration within a society. Spady adapted this viewpoint to attrition and proposed that students need to be socially integrated into the academic environment or they may drop out of school. Tinto (1975) presented a theoretical model of dropout as a longitudinal process seeking to explain why students leave institutions of higher learning. Tinto adapted Durkheim's theory equating a lack of social integration in an institution of higher education resulting in drop out with the lack of social integration in society as a whole resulting in suicide. Tinto emphasized formal and informal social integration within the academic institution and academic integration within the institution as being critical to persistence in the institution. In addition, Tinto's model acknowledged that the background characteristics of the students are influential in interactions within the academic system as well as the social system. The Tinto model was intended to be broadly applied to all institution types (two-year, four-year) and all students (residential and commuter) to help identify which students would be most likely to dropout or withdraw from an institution. Pascarella and Terenzini (1980) moved understanding of attrition forward by using Tinto's model as the basis for a study of predictive validity of the constructs of attrition described by a newly developed instrument to measure social and academic integration as described in Tinto's model. Pascarella and Terenzini's (1980) longitudinal study of a sample of 1,457 students from Syracuse University in New York generally supported the predictive ability of the model, with student-faculty support being of particular importance to students' persistence at the institution. Later, Pascarella and Chapman (1983) further explored the explanatory power of Tinto's model. The study sample included 11 institutions: three 2-year commuter, and four 4- year residential, and four 4-year commuter. The results of the path analysis showed that the variance in persistence/withdrawal decisions explained by the model

ranged from 13 to 17% with social integration and academic integration contributing very little to the model. A reduced model explained only 12% of the variance in freshman persistence. Of the variables, institutional commitment and the individual's goal commitment had an equal and direct effect. Social and academic integration showed an indirect effect through a direct effect on institutional commitment. However, when the data were disaggregated, results differed by institutional type. Institutional commitment had a stronger direct effect in both the 4-year institutions, whereas goal commitment had a somewhat stronger direct effect in the 2-year commuter institution. For the residential institutions, social integration did show a significant direct effect on persistence, while academic integration showed no direct or indirect effect on persistence. One of the important outcomes of this research showed the influence of institution type on the patterns of influence in the model that explains persistence and withdrawals (Pascarella & Chapman, 1983). This is by no means an exhaustive review of retention models in the literature. The models described above are considered integration models. Additional models have been developed focusing on different approaches to retention with a socio-cultural basis, including assimilation models (Nunez, 2004) and multi-cultural models (Nora, Barlow, & Crisp, 2006; Rendon, 1994).

Shifting focus from the education literature to the nursing literature, very few research studies related to undergraduate nursing student attrition or retention are based on an underlying model. Likewise, articles describing specific retention projects, which are typically focused on increasing recruitment and retention of a specific minority group, are rarely based upon an underlying model. Noone (2008), in a review of recruitment and retention strategies used to address increasing diversity in nursing programs, mentioned Bessent's Model for Exemplary Strategies to Recruit, Retain, and Graduate Minority Students in Nursing (Bessent, 1997) .

Bessent's model emphasizes that community members, faculty, staff, and students are important to all aspects of recruitment, retention and progression to graduation for minority nursing students (Noone, 2008). The Bessent model does not provide a theoretical basis for the review but instead, the author recommended the model to nursing programs as a means of developing a comprehensive approach for recruitment, retention, and graduation of minority students. Cason et al. (2008) used a model to frame a descriptive, qualitative study of Hispanic health care professionals, including professional nurses, to help identify barriers to retention as well as identify supports that facilitate retention to graduation for Hispanic students pursuing health profession programs. They adapted the Model of Institutional Support originally developed by Valverde and Rodriguez (2002) who described institutional support among Hispanic doctoral students. The revised model for the Cason study consisted of six components: financial support, emotional/moral support, mentoring, professional socialization, academic advising and technical support. The study included a convenience sample of Hispanic nurses and other Hispanic health professionals from Texas (n = 29) but did not specify the number of each in the sample. The researchers conducted focus groups using questions based upon the six components of the model. The results of the study helped to define some of the perceived barriers to recruitment, retention, and progression faced by Hispanic nurses and other Hispanic healthcare professionals (Cason et al., 2008). Amaro, Abriam-Yago, and Yoder (2006) utilized a model developed earlier by Yoder (1996). Yoder's model was originally developed to help nurse educators communicate more effectively with ethnically diverse nursing students and highlighted cultural awareness as influential during interactions between nursing faculty and ethnically diverse students. This model guided the qualitative study by Amaro, Abriam-Yago, and Yoder (2006) who investigated the perceived barriers that ethnically diverse new graduate nurses encountered during their

nursing education programs as well as what helped or hindered their coping with the barriers. The sample consisted of 17 ethnically diverse recent nurse graduates from both associate (n = 11) and baccalaureate (n = 6) degree nursing programs from the central coastal valley of California. The findings highlighted the barriers and needs ethnically diverse nursing students face during their education and also revealed student perceived supportive factors that could be important to retention in nursing programs.

Of the studies mentioned above, two were guided by underlying models: Cason et al. (2008) studying of Hispanic health care professionals and Amaro et al. (2006) studying ethnically diverse nursing students. These investigators provided information on barriers that ethnically diverse, and more specifically Hispanic nursing students, face in their programs of study. Although the results of these studies have the potential to inform interventions that may help recruitment, retention, and graduation of diverse students, they were not specifically designed with a focus on retention.

Next, Bean and Metzner's Conceptual Model of Nontraditional Student Attrition from the education discipline and Jeffreys' Model of Nursing Undergraduate Retention and Success (NURS) from the nursing discipline will be presented. Both models shift the research focus from traditional students to nontraditional students. Jeffreys' model is based upon Bean and Metzner's model, but focused specifically on retention, not attrition, of undergraduate nursing students. Each will be described within the context of undergraduate student retention, then critiqued using the process described by Walker and Avant (2005). Finally, applicability to the study of undergraduate nursing student retention will be discussed.

Bean and Metzner's Conceptual Model of Nontraditional Student Attrition

Overview

Bean and Metzner (1985) developed the Conceptual Model of Nontraditional Student Attrition based on previous models of attrition and informed by research from the education and behavioral sciences literature (Pascarella & Terenzini, 1980; Tinto, 1975). This model was the first to address the "nontraditional" undergraduate student. Previous models and research studies focused on traditional undergraduate students, those 18-24 years, living on campus, and enrolled full-time in classes. Bean and Metzner defined the "nontraditional" student as older than 24, commuting to class, and enrolled part-time in courses, or any combination of these descriptors. During this time period, there was a large increase in the number of older, part-time, commuter students attending both two-year community colleges as well as four-year institutions (Bean & Metzner, 1985). Little was known about additional characteristics and needs of this group of students, how they differed from each other and how they differed from the traditional students. Developers of this model sought to clarify factors that would influence these students' ability to remain in school versus dropping out. The authors presented an extensive review of literature for each variable shown in the model based on past and current research for that time from 1960-1985, (Figure 1). Later, Metzner and Bean (1987) undertook a validation study of the model. The sample consisted of 624 part-time freshman commuter students at a primarily commuter university in the Midwest with a mean age of 23.8 years, and one third of the students older than 25. The sample was primarily women (61%), half working full-time, and 14% were of a minority background. The results showed GPA, intent to leave, and credit hours enrolled as the best predictors of dropout. Intent to leave was strongly predicted by utility of education and student satisfaction. High school performance, age, and ethnicity were also significantly related to GPA.

Previous researchers studying traditional college students focused on social factors as being important to intent to leave and subsequent dropout; however, this study showed social factors were unrelated to intent to leave/dropout and academic factors as more important to the "nontraditional" students' decision to stay or leave (Metzner & Bean, 1987). Following the illustration is a detailed description of the Conceptual Model of Nontraditional Student Attrition (Bean & Metzner, 1985).

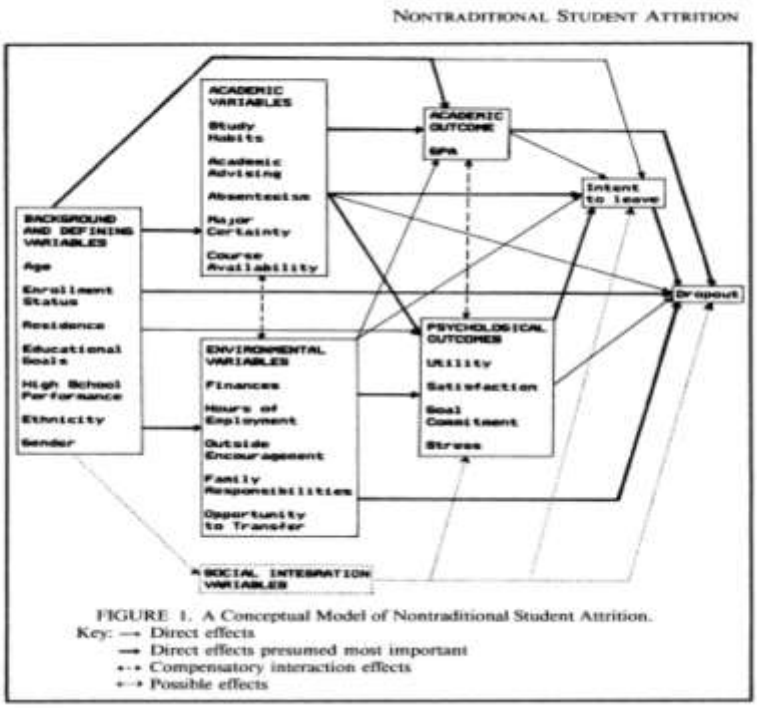

Figure 1. A conceptual model of nontraditional student attrition (Bean & Metzner, 1985)

Major Concepts

Bean and Metzner (1985) defined the "nontraditional" student as older than 24, commuting to class, and enrolled part-time in courses, or any combination of the three. This student is not greatly influenced by the social environment of the institution and is most

concerned with academics and he/she spends more time in the environment external to the institution (Bean & Metzner, 1985). It is interesting to note, these authors do not specify a definition for attrition either conceptually or operationally. There are no underlying assumptions listed in relation to this model, but four assumptions are defined in text with the descriptions of the variables. First, the social interaction variables are assumed to be of little importance to the nontraditional student, unlike the traditional student. Second, it is assumed that older students will have more family responsibilities, hours of employment, and higher levels of absenteeism than younger students. Third, students often enroll part-time due to other responsibilities; therefore, it is assumed older students are more likely to be enrolled part-time than younger students. Fourth, it is assumed that few nontraditional students will reside on campus. There are four sets of variables in the model and two sets of outcomes (see Figure 1).The variables include background and defining variables, academic variables, environmental variables, and social integration variables. The social integration variables have been empirically linked to four-year residential institutions and student persistence; however for the nontraditional student, this is not the case, so the researchers do not consider it as a major component of this model. The outcomes are academic and psychological (Bean & Metzner, 1985). Each variable set and the outcomes influence intent to leave and subsequent dropout and will be explained further. The authors presented an extensive review of literature for each variable in the model based on past and current research for that time from 1960-1985. Later, the model was tested in a validation study and was discussed previously (Metzner & Bean, 1987)

Background and Defining Variables

This set of variables is divided into two parts, the defining variable and the background variables. The defining variables include age, enrollment status and residence and describe the

student at that point in time. The background variables include educational goals, high school performance, ethnicity, and gender. These variables are what the student is bringing to college. The background variables are typically included in other models and the belief that past behavior is expected to predict to future behavior. In previous models, age typically has not been shown to be a major factor but nontraditional older students usually have more family responsibilities, hours of employment, and potential for increased absenteeism. These variables may have an indirect effect on dropout (Bean & Metzner, 1985). Enrollment status indicates the number of academic credits the student had enrolled in during the term of the assessment. Previous researchers have noted that older students typically have additional responsibilities outside of schoolwork and as a result enroll on a part-time basis. In addition, there is a positive relationship between part-time student and hours of employment (Bean & Metzner, 1985). Residence refers to where students live and nontraditional students typically do not live in campus residences. This is one of the distinguishing features of the nontraditional student. As such, nontraditional students spend less time on campus when not in class, and have fewer friends at school (Bean & Metzner, 1985). For the defining variables, educational goals are those set when the student begins attending college and includes the highest level of education sought, the amount of importance ascribed to obtaining a college education, and the likelihood of completing the educational goal. High school performance continues to be one of the strongest pre-enrollment predictors of persistence for both resident and non-resident students, although there has been limited research conducted with older college students. High school performance is predicted to have an indirect effect on dropout through its influence on college GPA (Bean & Metzner, 1985). There are inconsistencies reported in the literature about the effect of ethnicity on attrition. This model proposes that ethnicity will have an indirect negative influence on college

GPA as a result of lack of educational preparation for minority students at the high school level. Gender is included as a defining variable due to its relationship to students' roles in the environment outside of school. The model proposes that gender has an indirect effect on attrition through the environmental variables, for example family responsibilities (Bean & Metzner, 1985).

Academic Variables

Academic variables are the next major set of variables in the model and include study skills/habits, academic advising, absenteeism, major certainty and course availability. These variables are expected to have indirect effects on intent to leave and dropout through the academic outcome of college GPA and psychological outcomes, especially satisfaction. Bean and Metzner (1985) cited a paucity of research on older students and their study time and the rating of their study skills and habits. The academic advising variable refers to the students' evaluation of the quality of academic advising they have received. There are conflicting results in the literature about academic advising and persistence versus dropout. It was suggested that more extensive information be gathered such as length of contact, frequency, and topics of discussion (Bean & Metzner, 1985). Absenteeism refers to the extent a student has missed class time and can be an indicator of less interaction with the college community. This topic has rarely been investigated. Absenteeism has been found to be influenced by academic confidence. Bean and Metzner (1985) proposed that older students will miss more classes related to outside responsibilities The variable of major certainty is the students' degree of certainty about what their academic major will be. It is typically positively related to persistence, and appears to have a stronger association to older students than to traditional age students (Bean & Metzner, 1985). Course availability is the students' perception of their ability to take the courses they prefer at

their college. This can include factors such as courses offered by the college, courses offered at the times when the students wish to enroll, and courses that have capacity for student demand. These factors have an impact on the students' intent to leave and dropout.

Environmental Variables

The environmental variables in the model are factors that the academic institution has little control over, but may cause students to leave the institution. This set of variables includes finances, hours of employment, outside encouragement, family responsibilities, and a perceived opportunity to transfer from the institution. The finance variable is a reflection of the students' ability to pay for their college education. In this model it is a reflection of the students' perception of ability to pay for school for the following semester and the following year although other researchers studying attrition have used parents' SES, student/parent income, or perceptions of finances. Results typically show financial problems positively related to attrition (Bean & Metzner, 1985). Hours of employment per week, another environmental variable, has been extensively reported in the literature. Hours in excess of 20 to 25 hours per week of employment were negatively related to persistence. This is problematic for older, part-time students who often need to maintain employment outside of school (Bean & Metzner, 1985). Outside encouragement is a variable that measures the amount of encouragement a student receives to remain in college. This encouragement is from an influential person outside of the college community and can be a parent, spouse, close friend, or outside employer. This model of nontraditional students purports that encouragement from outside the institution will be more prominent than support from within the institution, again related to the nontraditional student spending more time outside the institution (Bean & Metzner, 1985). Family responsibilities have been examined in the literature in terms of number of children at home, amount of stress, and

family pressures and obligations. This model reflects family responsibilities in terms of how many people the student is responsible for at home (Bean & Metzner, 1985).

Social Integration Variables

Social integration variables are measures of how well and to what extent students interact within the social system of the college. These measures can include participation in extracurricular activities, peer friendships on campus, relationships with instructors outside of the classroom, satisfaction with these relationships, and degree of satisfaction with their social life or social opportunities (Bean & Metzner, 1985). For the older attrition models, social integration was paramount (Spady, 1970; Tinto, 1975) to the student experience. These models were based on traditional students and it was assumed that the students who had high quality, extensive interaction with others in the social system were more likely to continue at their institution. However, the researchers have shown that commuter students as well as older students have less interest in and less need for social integration at their institutions and it has not been significantly related to persistence among nontraditional students (Bean & Metzner, 1985). This model does not include the social integration variables in the main design of the model but as indicated in Figure 1, social integration has been incorporated into the model as having "possible effects" should future researchers wish to explore this further (Bean & Metzner, 1985).

Academic Outcomes

According to Merriam-Webster (2015) an outcome is defined as something that follows as a result or consequence. The academic outcome variable included in this model is GPA. Students are required to maintain a minimum GPA as a reflection of their academic performance within their institution and a low GPA is typically grounds for dismissal according to most

institutional policies. GPA remains a significant predictor of persistence among various types of institutions. In this model, the effect of GPA on attrition is a direct effect, although it could also have an indirect effect through intent to leave (Bean & Metzner, 1985). There are conflicting results concerning GPA and persistence between part-time and older students, so GPA may be less predictive in this population (Bean & Metzner, 1985).

Psychological Outcomes

The psychological outcomes that are included in this model include: utility, satisfaction, goal commitment, and stress. These outcomes are influenced most by the academic and environmental variables; however, the effect of these outcomes does not directly affect dropout but instead indirectly influences dropout through intent to leave.

Utility. Utility is a measure of the students' perception of how useful their college education will be for future employment, as well for personal development. Utility is interpreted as the practical value of education and how it can impact job opportunities in the future. The utility of education has a consistently negative effect on attrition in the literature; however importance of personal development does not show conclusive results (Bean & Metzner, 1985).

Satisfaction. Satisfaction is a measure of the degree to which the student enjoys the role of being a student, and in addition reports a lack of boredom with the college courses. Role satisfaction appears to be negatively associated with attrition and intent to leave. Students' lack of interest in their college courses appears to be negatively associated with persistence (Bean & Metzner, 1985).

Goal Commitment. Goal commitment refers to the amount of personal importance the student holds for completing a degree and graduating from college. Goal commitment is closely tied to educational aspirations that indicate the highest level of college education a student plans

to achieve or the highest degree sought. Educational aspiration is positively related to persistence among traditional students but is less consistent among older students (Bean & Metzner, 1985).

Stress. In this model stress is a measure of the extent to which students believe they experience stress from outside factors not related to college attendance and stress from the amount of time and energy required for college level studying (Bean & Metzner, 1985). Outside stress is implicated in the literature as being a significant indicator of commuter attrition. Insufficient preparation for college and/or prolonged absence from a formal learning environment may have more of an effect on older students. In addition, the stress of outside commitments and lack of time for schoolwork can negatively impact persistence (Bean & Metzner, 1985).

Intent to Leave

Intent to leave the current college at the end of the semester or academic year has been found to be highly predictive of actual attrition. In this model the psychological outcomes are expected to be the best predictors of intent, with intent to leave the best predictor of actual dropout from the institution (Bean & Metzner, 1985).

Dropout

Dropout is the endpoint and ultimate outcome of interest in this model. Dropout decisions are made based on the interactions of variables explained above. In this model of nontraditional student attrition, social integration is purported to have minimal effect on retention, in contrast to previous theories of traditional student attrition. The environment outside of the institution

should have greater influence on the nontraditional student especially through the environmental variables, such as family responsibilities, which can have a significant effect on attrition (Bean & Metzner, 1985).

Relationship to Undergraduate Baccalaureate Nursing Retention

The conceptual model of nontraditional undergraduate student attrition developed by Bean and Metzner (1985) can be useful for understanding undergraduate baccalaureate nursing student attrition. It is difficult to ascertain how extensively this model has been used as the framework for research studies related to nursing students. An electronic search of the literature using the term "conceptual model of nontraditional undergraduate student attrition" revealed the original research cited in text but not used as a conceptual model. Students entering into baccalaureate nursing programs are rarely traditional in today's world. Characteristics of today's undergraduate nursing students include ethnically diverse, older, pursuing a second degree or career, first generation to attend college, English as a second language, or economically disadvantaged. Each of these factors, as well as many others, influences the student's ability to remain in school and complete the degree requirements. This model considers variables that are measureable and can help to assess and understand what helps and what hinders nursing students. Background variables like high school performance can be important since many students come to college underprepared for the academic rigor. The academic variables such as study hours and study skills, as well as absenteeism, can greatly affect success. In today's economy many students are forced to work to meet financial demands. Hours worked per week in addition to additional family responsibilities can reduce the time students are able to study to keep up with the rigorous course work required in the nursing major. Although social integration variables are less important in this model, they may provide insight into integration into the

nursing profession. In addition, although the psychological outcome of utility may prove less important, the amount of stress students endure can be very influential.

This model could be useful to understanding undergraduate nursing students and why they would leave a nursing program. It could also guide the design of prospective research studies that are based on a conceptual model rather than simply reporting retrospectively on a variety of interventions and programs.

Critique of the Conceptual Model of Nontraditional Student Attrition

This critique will follow the procedure outlined in Walker and Avant (2005) for theory analysis that includes discussion of origins, meaning, logical adequacy, usefulness, generalizability, parsimony, and testability. The Bean and Metzner model was developed in the education discipline in reaction to changes in the demographics of college students. There were greater numbers of older students attending college who were also part-time and commuters. Previous attrition research had been conducted considering the traditional college student who was younger, full-time, and more likely living in an on-campus residence. The concepts and relationships between the concepts are clearly described. This model is neither highly abstract nor extremely narrow in focus. The content is somewhat specific in terms of the focus populations, but some concepts can be expanded or take on less significance depending on the questions under study. For example, the social integration variables or socioeconomic status as part of the defining variables could be used to expand understanding of the effects that being economically disadvantaged have on coming into the college environment. The model appears to consist of statements and concepts that are logical and hypotheses can be derived from this model. The model is useful in that it helps to explain factors that would influence attrition or persistence among a population of students different from those previously studied, the

nontraditional student. Although few researchers have used the model as a conceptual framework, the model is consistently cited, like a seminal work, in the attrition literature. This model can be relevant to the development of the nursing profession by influencing nursing education, nursing administration, and nursing research. One of the limitations of this model may be its generalizability to all students who are nontraditional by today's definition. For example, differences may exist for sub-groups of the nontraditional population (females, by ethnic group, academically underprepared). The model is clear in its presentation, although it is complex with many variable sets and direct and indirect pathways for consideration. In regards to testability, the authors later used the model to perform an estimation study of the model (Metzner & Bean, 1987) in which they were able to account for 29% of the variance in dropout. The authors suggested that researchers select portions of the model for further research studies versus using the entire model, which would help to better explain smaller aspects in greater detail. See Table 1 for a summary of the critique of this model.

Jeffreys' Model of Nursing Undergraduate Retention & Success (NURS)

Overview

"It is one thing to understand why students leave; it is another to know what institutions can do to help students stay and succeed"(p.6) (Tinto, 2006). The Jeffreys' Model of Nursing Undergraduate Retention and Success is an outgrowth of identification of the changing demographics among college students and as a response to the continued shortage in the nursing workforce evident at that time. Jeffreys (2012) stated "the most persistent trend in student persistence research is that student attrition persists" (p. 3). The focus of this model shifts from the study of attrition to the study of retention of nursing students, as well as identifying at-risk students, developing diagnostic and prescriptive strategies and interventions to facilitate nursing

student success. Seeing beyond effects of this model on the student alone, this model can also guide teaching and educational research as well as influence evaluation of intervention effectiveness (Jeffreys, 2004), and as such Jeffreys referred to the NURS model as an "organizing framework", rather than a theoretical or conceptual model or framework.

This model is based on the Bean and Metzner (1985) conceptual model reviewed above. The Jeffreys model was originally designed for nontraditional students as well but focused specifically on undergraduate nursing students. Later Jeffreys (2004) modified the model to be applicable to both traditional and nontraditional nursing students and was designed to be applicable to students in any of the entry level nursing programs including diploma, associate, and baccalaureate degree programs. The model consists of student affective factors, academic factors, environmental factors, professional integration factors, and outside surrounding factors. Retention decisions made by the student are influenced by all of these components. In addition, student profile characteristics are considered as well as academic outcomes and psychological outcomes. Each of the factors and outcomes will be explained further along with model assumptions. These variables are presented conceptually versus operationally and are based on literature from 1980-2010. See Figure 2 below for an illustration of Jeffreys' NURS Model.

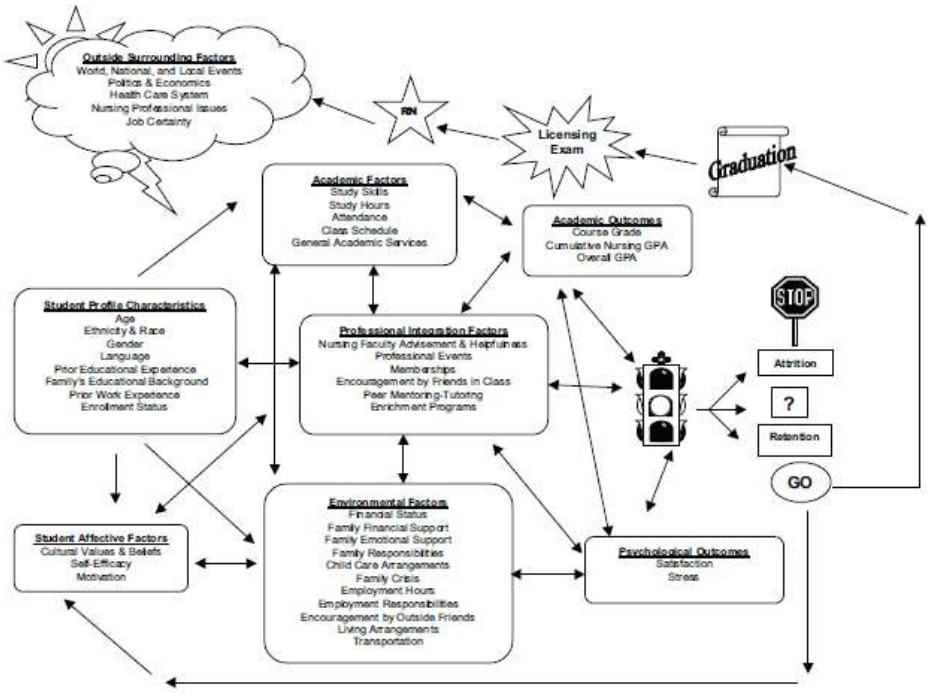

Figure 2. Model of Nursing Undergraduate Student Retention (NURS) (Jeffreys, 2004).

Major Concepts and Assumptions

There are five underlying assumptions to the Jeffreys NURS model and they are as follow:

- Undergraduate nursing retention is a priority concern for nurse educators.
- Student retention is a dynamic and multidimensional phenomenon that is influenced by the interaction of multiple factors.
- For undergraduate nursing students, environmental and professional integration factors greatly influence retention.
- Regardless of prior academic performance, all students can benefit from professional socialization and enrichment throughout pre-professional and profession education.

- Psychological and academic outcomes may interact and influence persistence.

Student Profile Characteristics

Student profile characteristics describe the student prior to beginning nursing courses. These characteristics include age, ethnicity and race, gender, first language, prior educational experience, family's educational background, prior work experience and enrollment status. This information can help identify student needs and strengths as well as identify students who are at-risk (Jeffreys, 2004).

Student Affective Factors

Student affective factors are the attitudes, values, and beliefs students hold about learning and nursing, and includes their cultural values and beliefs, self-efficacy and motivation. It also encompasses their ability to learn and perform necessary tasks and skills (Jeffreys, 2004).

Academic Factors

Academic factors include the students' study skills (reading and writing skills, note taking, preparing papers, studying for exams, listening in class), number of study hours (actual number of hours allotted to positive study activities), attendance at class (can involve active learning, being mentally absent, or acting as a spectator), and class scheduling. This factor also includes the institution's academic services, for example, library, counseling, and computer lab services (Jeffreys, 2004).

Environmental Factors

The environmental factors included in this model are those external to the academic process but can influence performance and retention. These factors can include: financial status, financial support from the family, emotional support of the family, family obligations and responsibilities, child care issues, crisis within the family, hours of employment and employment responsibilities,

encouragement by friends outside the academic setting, living arrangements, and transportation issues (Jeffreys, 2004).

Professional Integration Factors

Professional integration factors are those that can improve interaction of the student within the institution's social system to enhance socialization into the nursing profession and career development. These include academic advising with nursing faculty, membership in nursing organizations, attending professional events, peer-tutoring and mentoring, and other enrichment programs (Jeffreys, 2004). Professional integration factors appear in the center of the model due to the influence of these factors on the decision to persist, dropout, or stopout (Jeffreys, 2004).

Outside Surrounding Factors

Outside surrounding factors exist outside of both the student's personal environment and the academic setting and can influence retention. These include: local, national and world events, economics and policy changes, changes in the healthcare system, issues in professional nursing, and employment certainty (Jeffreys, 2004).

Academic and Psychological Outcomes

According to Merriam-Webster (2015), an outcome is defined as something that follows as a result or consequence. Academic outcomes in this model include current nursing course grade, cumulative nursing GPA, and overall GPA. The psychological outcomes include stress and satisfaction. These outcomes directly influence persistence and retention and can impact upon self-efficacy and motivation. This model assumes that good academic performance results in retention only when accompanied by positive psychological outcomes (Jeffreys, 2004). However academic and psychological outcomes are not the endpoint to this model.

Retention versus Attrition

In this model, decisions about remaining or leaving will be made by the students after assessment of the interaction of student profile characteristics, student affective factors, academic factors, environmental factors, professional integration factors, academic and psychological outcomes, and outside surrounding factors. Retention decisions will be made to remain in a nursing course and continue in the nursing program during and at the end of each nursing course. These decisions will in turn affect later decisions to sit for the NCLEX-RN licensing exam and become a professional nurse (Jeffreys, 2004).

Critique of the Jeffreys' NURS Model

This critique will follow the procedure outlined in Walker and Avant (2005) for theory analysis which includes discussion of origins, meaning, logical adequacy, usefulness, generalizability, parsimony, and testability. Jeffreys' NURS model was created after extensive research by Jeffreys on nontraditional undergraduate nursing students enrolled in associate's degree in nursing (ADN) program from a public urban commuter college (Jeffreys, 1993, 1998, 2001, 2002) using the Bean and Metzner model of nontraditional student attrition as the underlying conceptual framework. Jeffreys' (1993, 1998) dissertation research was a descriptive study of the relationship of self-efficacy and select academic and environmental variables, as cited in the Bean and Metzner model, and academic achievement and retention. From that original research, she found students enrolled in ADN programs were predominantly nontraditional students and had multiple roles to manage for such as, student, parent, financial provider, and employee, and were more likely to be influenced by environmental variables than academic or social variables. Self-efficacy was not found to be a significant predictor of academic achievement or retention. Jeffreys also developed and used an instrument called the Student Perception Appraisal (SPA) tool used to assess how select academic and environmental

variables were perceived by the students to be restrictive or supportive and how they perceived these variables as influencing their academic achievement and retention in the nursing program (Jeffreys, 1993, 1998, 2001, 2002).The two variables ranked as extremely supportive were personal study skills for influencing academic achievement and faculty advisement/helpfulness for influencing retention (Jeffreys, 1998). Also of interest, students who were categorized as "supremely efficacious" had significantly lower course grades suggesting that these students did not have accurate perceptions of the academic skills necessary for the nursing education program and underestimated the need to prepare for their coursework (Jeffreys, 1998). Jeffreys (2001, 2002) then focused her research on the influence of enrichment programs (EP) on student retention in the same associate degree program. The enrichment programs were designed as empirically supported interventions to promote retention through positive academic and psychological outcomes (Jeffreys, 2001). Students who participated in the EP had better academic outcomes as demonstrated by higher pass rates, lower failure rates and lower withdrawal rates than a control group (Jeffreys, 2001). Jeffreys (2002) later used the Student Perception Appraisal with a pre-test/post-test design to evaluate the students' perceptions of variables that influence retention at the beginning and end of the semester. Students perceived the environmental variables related to finances and family as "severely restrictive" in relation to retention (Jeffreys, 2002). Academic variables (study skills, study hours) were perceived as "greatly supportive". Study hours were also influenced by environmental variables that involved the students' outside commitments, resulting in competition for time related to time, role, and other responsibilities (Jeffreys, 2002). In addition, there was a shift in perceptions from the prospective to retrospective in several items (employment hours, employment responsibilities) that were initially perceived as "largely supportive" to restrictive (Jeffreys, 2002). Jeffreys' early

work provided important insights into students' perceptions as they relate to retention and have contributed much to the need to providing ongoing holistic interventions to at-risk students.

Jeffreys later modified the model from including only nontraditional undergraduate nursing students to including all undergraduate nursing students and the name changed from the Nontraditional Undergraduate Retention and Success to its current name Nursing Undergraduate Retention and Success (NURS). The major concepts of the model are evident in the diagram (Figure 2) and associations are clearly indicated, many of which are bidirectional. A variety of sub-concepts are listed within each of the major concepts. The concepts are defined more theoretically than operationally leaving the actual measurement of the concept unclear and undefined. The boundaries of the model are fairly narrow as concepts are meant to apply only to undergraduate nursing students versus all undergraduate students. However, the model is meant to be applicable to any of the undergraduate nursing education programs (ADN, BSN, diploma, etc.).

The NURS Model appears to have logical adequacy. The assumptions of the model are logical and true for retention. The model can be predictive. If concepts and sub-concepts are considered by both the students and the nursing faculty, outcomes of retention or attrition can be predicted. Rather than exclusively predicting the outcome, the model can be used to recognize at-risk students and to intervene in order to potentiate success rather than failure at a variety of junctures. The content of this model would make sense to others in education and specifically nursing education, although outside of education, and especially in clinical practice, the model might not make sense or have relevance. This model is also useful in that it has led to expansion of the knowledge base on retention specifically within nursing education, and in addition offers insights into teaching strategies, as well as support strategies both of which will help to keep

nursing students in programs to completion. There has not been a great deal of research generated as a result of this model, although the model was used as the framework for several dissertations (Alden, 2008; Aurelien, 2011; Pence, 2010). This model is meant to be used for all undergraduate nursing students, which may on first glance indicate it would be generalizable. Comparisons among similar program types would likely yield more useful information. Results from different programs, ADN versus BSN, may be unreasonable to compare, and results gleaned from a BSN program may not be generalizable to a diploma program. The model is clear in its presentation, although it is complex with many variable sets and direct and indirect pathways for consideration, as well as multiple bidirectional relationships. The overall complexity of the model makes testability in its entirety quite difficult. However, hypotheses can be generated for smaller parts of the model and testing these hypotheses would provide valuable information about retention of undergraduate nursing students (see Table 1 for a summary of the critique of this model).

Comparing the Bean & Metzner Model and the Jeffreys' NURS Model

Jeffreys' Model of Nursing Undergraduate Retention & Success is based upon Bean and Metzner's Conceptual Model of Nontraditional Student Attrition. A comparison of the two models is summarized in Table 1. While the Bean and Metzner model focused on nontraditional undergraduate students (Figure 1), the Jeffreys model focused on the nontraditional student as well, but more specifically could be applied to all undergraduate nursing students regardless of program type (Figure 2). The models are similar in appearance and concepts. The major difference between the two models is the shift in the underlying conceptual basis from attrition of students to retention of students. This shift offers a proactive approach to keeping students in academic programs rather than a reactive approach. Junctures in the model can be identified

where interventions, if applied, could result in students remaining in a program. While Bean and Metzner have four sets of variables, Jeffreys presents five variable sets. Instead of background and defining variables, Jeffreys has chosen a more specific name for this set and calls it student profile characteristics and includes more subconcepts. In addition, she added another variable set called Student Affective Factors that consider cultural values and beliefs, as well as self-efficacy and motivation. Social Integration is absent from the Jeffreys model, and is adjunct in the Bean and Metnzer model, although important in earlier attrition models. The researchers agree that social integration is less important for the populations of students under study in each of these models. Jeffreys however included a variable set called Professional Integration Factors that may help connect students to nursing as a profession while still in school and enhance retention. The Academic Outcomes variable set has been expanded in the Jeffreys model to include nursing course grades and nursing GPA. Bean and Metzner discussed several compensatory interactions among variables, for example academic and environmental variables and academic outcomes and psychological outcomes. Jeffreys tends to show bidirectional relationships between the factors and between factors and outcomes. The Bean and Metzner model provides operational definitions for variables. Jeffreys' definitions are more theoretical and as such can be left open for interpretation.

Table 1. *Comparison between the Bean & Metzner Model and the Jeffreys NURS Model*

Walker & Avant's Criteria for Critique	Bean and Metzner Model	Jeffreys NURS Model	Additional comments
Origins	Education discipline, response to changing student demographics away from "traditional".	Based on the Bean and Metzner model, modified specifically for undergraduate nursing students.	
Meaning	*Concepts*: clearly described, relationships between concepts clearly described, direct and indirect. *Definitions*: operational. *Statement/relationships*: illustration of the model provided, relationships clearly visible, supportive research cited. *Boundaries*: neither highly abstract nor extremely narrow in focus.	*Concepts*: clearly described, relationships between concepts, clearly described, many bidirectional. *Definitions*: theoretical. *Statement/relationships*: illustration of the model provided, relationships clearly visible, supportive research cited. *Boundaries*: narrow, applicable to undergraduate nursing students in all program types.	Jeffreys includes "student affective factors" and "professional integration factors", but does not include "social integration". Jeffreys' theoretical definitions are broad, could be interpreted differently by researchers.
Logical Adequacy	Statements and predictions made from statements appear logical. This model would make sense to anyone in higher education.	Statements and predictions made from statements appear logical. This model would make the most sense to nurse educators in academia, but it would make sense to anyone in higher education.	
Usefulness	Applicable to study attrition among a variety of students, nontraditional and subsets of nontraditional (ethnic, female, academically underprepared).	Applicable to study retention of undergraduate nursing students from all types of programs.	May also inform administrative decision making, nursing education research, and policy decisions.
Generalizability/ Parsimony	Limited generalizability, based on definition of nontraditional from 1980, which is expanded today. Model is highly complex, many concepts and variable sets within concepts but clearly presented.	Likely to be most generalizable when comparisons are made between like groups (ex. ADN and ADN versus ADN and BSN). Model is highly complex, many concepts and variable sets within concepts. Many bidirectional relationships.	
Testability	Estimation study performed. Not widely used in higher education research.	Not widely used in nursing retention studies, mostly dissertation work. Complexity of model limits testability in its entirety.	

Application of NURS Model for Future Research

Earlier in this paper several conceptual models addressing retention of undergraduate students from the education literature were presented beginning with Spady and Tinto in the 1970's to Bean and Metzner in the 1980's, ending with Jeffreys work in the late 1990's through 2004. Of these models, only the Jeffreys NURS Model specifically addresses retention among undergraduate nursing students and can be applied to any type of prelicensure nursing program, for example, diploma, associate's degree, baccalaureate degree, and accelerated and second degree programs. It has expanded upon the Bean and Metzner (1985) Conceptual Model of Nontraditional Student Attrition to include factors that impact on nursing students, most notably the professional integration factors that have taken the place of social integration factors. It addresses issues that impact students in today's world versus the student of the 1980s. As such it has expanded on the student profile characteristics to recognize additional background that students bring to college and their nursing programs. Student affective factors are recognized, especially cultural values and beliefs that color the way students perceive the world and how others perceive them. Environmental factors have also been expanded to recognize more of the issues that can impact on retention of nursing students, for example child care, living arrangements and transportation. The model would be a useful foundation for nursing education research studies that address any or all of the components of this model. It would provide a common language among researchers whereby results of retention studies could be compared easily.

Although both the Bean and Metzner model and the Jeffreys model relate to undergraduate student retention/attrition, the Jeffreys' NURS Model would provide a solid conceptual basis for a retention study involving baccalaureate nursing students. In light of the

continued nursing shortage, and the need to increase the diversity of the nursing workforce, research on retention of baccalaureate nursing students utilizing such a model is especially pertinent. This model has the potential to be used widely in nursing education research, focusing studies on portions of the model. For example, a study focused on the retention of economically disadvantaged nursing students may include the effect of select environment factors (financial support through grant funding, work hours) on measures of academic factors (class attendance, study hours) and academic outcomes (nursing course grades, nursing GPA, overall GPA) and ultimately the intent to stay in a course or in the program.

Although there is not an abundance of research whose investigators have used this model as a framework, rigorous research studies should be based on a framework or model to guide the design of the study, and the concepts under study should be clearly defined. Because the focus of the NURS model is on retention of nursing students versus attrition of students, it provides a proactive rather than a reactive approach, which may enable more students to remain until program completion. Jeffreys' factors and variables are pertinent to the issues of undergraduate nursing students today and are based on more recent research than the Bean and Metzner model. The NURS Model is relevant to nursing since it was designed specifically for undergraduate nursing students. In addition it could guide research on interventions designed to admit and retain more students in nursing programs and see them through to graduation and assimilation into the nursing profession.

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Manuscript Two

The first manuscript was an abbreviated chronology of the evolution of attrition and retention models beginning in the 1970s with the education literature and moving to the nursing education literature. Earlier models do exist, however the demographic differences of students now compared to then may make those models less relevant to the current discussion. Two conceptual models were discussed in detail and their potential application for research on retention among undergraduate baccalaureate nursing students was explored.

The next section is a second manuscript submitted for publication as an integrative review of retention literature related to undergraduate baccalaureate nursing student success and/or failure both in terms of program completion and navigation of the NCLEX-RN licensure exam; literature related to NCLEX-RN predictors of success, baccalaureate nursing program completion/success, and academic and nursing aptitude; literature related to environmental variables including non-academic/non-aptitude, non-cognitive variables of interest; and lastly, the impact of finances on retention and attrition in baccalaureate nursing programs. This manuscript follows the journal's specific guidelines and includes the cover letter, abstract, manuscript, and references. Appendix A and B were included in the electronic submission of the manuscript as separate files, not as part of the manuscript section.

Cover Letter

Janis P. Bellack, PhD, RN, FAAN

Editor-in-Chief

Journal of Nursing Education

June 11, 2015

Dear Dr. Bellack,

I am submitting my manuscript entitled "Integrative Review: Select Factors Influencing Completion for Baccalaureate Nursing Students" for publication as a Major Article in Journal of Nursing Education. I have removed the Appendix A Evidence Tables from the manuscript as directed and included it as an attachment via your electronic submission system.

The manuscript will discuss various factors that influence program completion as they pertain to undergraduate baccalaureate nursing student retention and will also propose implications for nurse educators, nursing programs, and local and national funding priorities especially for economically disadvantaged students.

Retention in and progression to program completion in undergraduate baccalaureate nursing programs continues to be an issue of great importance and as such is appropriate for the readership of this journal.

I confirm that this manuscript has not been published elsewhere and is not under consideration by another journal. The work was not supported by any grant funding. The author has no conflicts of interest to declare.

Respectfully,

Karen L. O'Brien, RN, MSN, CNE

Abstract

Background

A wide range of students enter nursing programs from various backgrounds, some more prepared for the rigor of academia than others. The non-traditional students of the past have become the traditional students of the present, and as such, lead complex lives in which education is only one component.

Methods

This integrative review was conducted to synthesize literature pertaining to factors that influence retention and program completion as they pertain to baccalaureate nursing students.

Results

Four categories emerged from analysis of the literature (n = 32): Predictors of NCLEX Success; Academic/Nursing Aptitude; Program Success/Completion Factors; and Environmental Factors. This review will focus on Program Success/Completion Factors and Environmental Factors.

Conclusions

Environmental factors, particularly employment hours and financial support, are critical influences in retention of economically disadvantaged students. Need-based aid in the form of grants and scholarships that do not require repayment would free up additional time for academic pursuits by decreasing the need to work.

Introduction

Educating well-prepared nursing students at the baccalaureate level that reflect the ethnic, racial, and socioeconomic diversity of the public is the charge of schools of nursing today. The nursing shortage that was predicted for 2025 has been thwarted by an unanticipated increase in the number of young registered nurses in the workforce, and an increase in the number of nursing programs available (Auerbach, Buerhaus, & Staiger, 2011). Although this is positive news, there remains uncertainty about the long term effects of the recession on retirement of older nurses and the effects the Affordable Care Act will have on nursing workforce demand (Auerbach, Buerhaus, & Staiger, 2014; Auerbach, Staiger, Muench, & Buerhaus, 2013; Buerhaus, Auerbach, Staiger, & Muench, 2013). It is imperative that schools of nursing continue to admit and retain students to fill ongoing workforce need and educate nurses at the baccalaureate level to be prepared for the complex needs of patients in complex care environments. Answering the question of why nursing students depart early in their academic careers and what factors influence attrition and retention of nursing students remains a critical issue.

While schools of nursing need to graduate students of racial and ethnic minority backgrounds to be more reflective of the United States population as a whole, they must also be cognizant of socioeconomic diversity. As stated by Haverman and Wilson (2007), "the nation's colleges and universities appear to be an integral part of the process whereby family economic status is passed along from generation to generation" (p. 38). Socioeconomic diversity has usually been overshadowed by colleges and universities focusing more attention on racial, ethnic, and gender diversity. However, some academicians assert that class-based affirmative action can produce the still needed racial and ethnic diversity that colleges and universities are

striving for (Carnevale, Rose, & Strohl, 2014). In a study on economic segregation in American law schools, Sander (2011) found when socioeconomic status was used instead of race as a criterion for admission, African-Americans were 16 times as likely to be admitted under the socioeconomic program as under other programs, and Latinos 6.8 times as likely to be admitted. As recently as April of 2014, the Supreme Court ruled that voters in Michigan can ban racial preferences in admissions to public universities. This is an important shift from race based affirmative action to socioeconomic affirmative action with the potential to produce greater diversity than focusing on race alone (Kahlenberg, 2014) .

With the current need for baccalaureate educated nurses, the economically disadvantaged student is a potentially untapped resource to meet both ongoing demands and create the much needed diversity in the nursing workforce. It is important to investigate this particular population of at-risk students to determine what can be done to support their admission, retention, and completion of baccalaureate nursing programs.

In this integrative review of literature, I will discuss selected factors that have influenced and continue to influence program completion as they pertain to baccalaureate nursing student retention and will also propose implications for nurse educators, nursing programs, as well as local and national funding priorities especially for economically disadvantaged students.

Methods

A plethora of research exists related to attrition and retention of undergraduate nursing students. This integrative review was guided by an updated methodology proposed by Whittemore and Knafl (2005). A computer assisted search of the literature was conducted of the following databases: Cumulative Index of Nursing and Allied Health Literature (CINAHL),

Educational Resources Information Center (ERIC), Education Research Complete, and PsycINFO.

The following search terms were included: baccalaureate nursing students, predictors, NCLEX-RN success, program completion, attrition, retention, aptitude, non-cognitive variables, economically disadvantaged, economic diversity, and low-income students. The inclusion criteria consisted of full-text articles, published in English between 2003 and 2014, except for the inclusion of several classic works. Articles related to research of accelerated baccalaureate and non-baccalaureate nursing programs (ADN, Diploma) were excluded. Reference lists in articles were also reviewed for additional relevant research. A search of ProQuest Dissertations & Theses was conducted using the same search terms. The search was limited to the years 2010 to present, published in English, and focused on baccalaureate nursing programs. The search yielded well over 2,000 studies and dissertations. Abstracts were reviewed for content; articles were excluded if they were not applicable to area of focus of this review and did not meet the search criteria. A total of 32 were included in this integrative review that were based on quantitative research methods or were reports of projects. Qualitative studies were not included.

The articles were carefully analyzed and data extracted and entered into evidence tables (see Appendix A). The information in the tables was then reviewed for variables of interest and overarching themes or categories. Four categories emerged as follow: 1. Predictors of NCLEX Success; 2. Academic/Nursing Aptitude; 3. Program Success/Completion Factors; and 4. Environmental Factors. Next, a matrix was created from the identified articles and each article was given a unique code and placed into the cells of the matrix according to variables identified in the article (see Appendix B). Some articles were found to cross over into more than one

category and were included in each. This review will focus only on Program Success/Completion Factors and Environmental Factors.

Findings

Nursing Program Success and Completion

Both nationally and internationally, there is interest in identifying the influence of characteristics of students and the institutions they attend on students' decisions to leave and not complete a program of study. In addition, there is interest in identifying reasons students are successful and remain in a program until completion. For baccalaureate nursing programs, this is of vital interest since students must first be successful in their nursing course work and graduate from an accredited program prior to taking the licensing exam. Rather than just identifying characteristics that would influence student attrition, programs of research are now focusing on identifying students early in their academic careers who may be at risk for leaving and provide interventions to enhance their ability to stay and complete. This section will focus first on research that describes factors influencing and /or predicting early academic success; and then a discussion of specific programs, some locally funded, most federally funded, designed to enhance retention of specific cohorts of nursing students will follow.

Early academic achievement, specific courses, GPA. Nursing programs typically require a student to achieve a particular pre-nursing GPA prior to starting the nursing major. This can encompass a variety of courses and varies by institution but usually involves many of the prerequisite science courses. Early academic achievement has also been operationalized as success with the first semester nursing courses that also tend to vary by institution. Newton, Smith, Moore, and Magnan (2007) used first semester grades in four didactic nursing courses (*n* = 164) as an indicator of early academic achievement and found that pre-nursing GPA and

scores on the Assessment Technologies Institute (ATI) Test of Essential Academic Skills (TEAS) preadmission entrance exam were significant predictors of variance in first semester nursing GPA. Newton, Smith, Moore and Magnan (2007) in their study of the effect of admission policies on academic outcomes comparing two cohort of students, one admitted in the fall (n = 103), the other in winter (n = 70), found pre-nursing GPA, consisting of final grades from seven required courses, and TEAS entrance exam best predicted first semester GPA for the fall cohort of students. The fall cohort had significantly higher mean pre-nursing GPAs, mean TEAS composite scores, and first semester nursing GPAs than the cohort of students who were admitted in the winter. This finding could have an impact on admission policies for the nursing program, admitting students once per academic year versus twice.

Wolkowitz and Kelley (2010) used the TEAS as an indicator of academic preparedness and the ATI Fundamentals Assessment as an indicator of early nursing program success. Using multiple regression, they found for BSN students (n = 4,105) that early program success was best predicted by the TEAS science subscale, with the reading subscale second, followed by written/verbal, and then math. However, the results showed only a low to moderate correlation between the TEAS science subscale score and the ATI Fundamentals Assessment. Reading comprehension was found to be a strong predictor of early program success in the findings reported by Wolkowitz and Kelly (2010). Similarly, Symes, Tart, and Travis (2005) found reading comprehension to be a significant factor for retaining students (n = 373) through to graduation. Reading comprehension measured by the Nurse Entrance Test (NET) was highly correlated with graduation. Recognition of early academic achievement provides some promising information related to program completion. Retention programs can provide additional support to aid program completion through specific interventions and will be the focus of the next section.

Retention programs influence on program completion. As researchers continue to support identification of student characteristics that contribute to early nursing program success, specific interventions and retention programs have been put into place to foster early and continued program success. Many retention programs have targeted a specific at-risk student population or those considered to be from disadvantaged backgrounds. Most often programs are directed at a specific ethnic or racial group in order to increase diversification of the student population in the nursing program and ultimately the nursing workforce. Many of these retention programs are funded by the Health Resources and Services Administration (HRSA) Nursing Diversity Workforce Grants or the Basic Nurse Education and Practice Grants and as such have limited funding. A number of retention projects have been federally funded by the HRSA Nursing Workforce Diversity Grants (Anders, Edmonds, Monreal, & Galvan, 2007; Degazon & Mancha, 2012; Igbo et al., 2011; Nnedu, 2009; Sutherland, Hamilton, & Goodman, 2007). The purpose of these grants was to increase nursing education opportunities for individuals who are from disadvantaged backgrounds, including racial and ethnic minorities that are underrepresented among registered nurses. These grants support projects that provide student stipends or scholarships, stipends for diploma or associate degree nurses to enter a bridge or degree completion program, student scholarships or stipends for accelerated nursing degree programs, pre-entry preparation, advanced education preparation, and retention activities (Health Resources and Services Administration, 2014).

Sutherland, Hamilton, and Goodman (2007), using a quasi-experimental design, implemented a voluntary retention program and invited students who were from ethnic or minority background, first generation college students, and students currently receiving a grade of C in a nursing course or currently failing a nursing course to participate in the program (*n* =

64). A comparison group (n = 265) was drawn from the university database. The program consisted of student-faculty advising and mentoring, focused tutoring, success seminars, as well as providing students with a laptop computer with supportive software. This program achieved its intended outcomes of better program retention rates, graduation rates, and NCLEX-RN success for the minority or educationally disadvantaged students.

Anders, Edmonds, Monreal, and Galvan (2007) targeted their retention project to economically disadvantaged Hispanic nursing students in west Texas. At the time of publication, the 8 students who participated in the project had graduated and passed the NCLEX-RN on their first attempt. Forty-three students remain enrolled in the project. The project included financial support, academic support and an outreach program manager. Nnedu (2009) targeted her project to minority and/or disadvantaged individuals from Alabama and Georgia. Recruitment activities focused on middle and high school age students to increase awareness of nursing. Retention strategies included faculty development of cultural awareness of minority students' educational needs as well as a monthly stipend to students for financial support to alleviate unmet financial needs. The project increased enrollment in the nursing major and change of majors to nursing at this university and the school of nursing was able to retain all students. More recently, Igbo et al. (2011), with collaboration among three Texas campuses, implemented a project to enhance success of students described by federal criteria as being at risk including: first in family to attend college, incoming grade point average, and financial need. This program utilized academic support, oral and written communication support, and support in socializing into the role of nursing student. For the 105 students enrolled in the program, the overall completion rate was 76.8% and higher than the state average. Similarly, Degazon and Mancha (2012) implemented a program in New York to increase representation of individuals from minority and

educationally disadvantaged backgrounds as baccalaureate prepared nurses. The program consisted of outreach to high school and college students, as well as a retention program for nursing students. The project provided academic support, a cultural competence component, monthly counseling sessions, and financial support by way of stipends or scholarships. Of the 87 students participating, 95% graduated on time, and 97% passed NCLEX-RN. Most graduates of the project secured employment in New York City health care institutions.

Symes, Tart, and Travis (2005) and Gardner (2005) both utilized local funding for their retention projects. Symes et al. (2005) developed a successful retention program focused on reading comprehension with program participants, more than half being from underrepresented groups in nursing. The participants were able to graduate at the same rate as the traditional students. Gardner (2005), from an older yet often cited project report, reported 100% retention of students enrolled in her project, however the number of participants was not indicated. The project included a retention coordinator, establishment of a mentoring network, language development for English as a second language students, family events, and faculty involvement.

Many red flags have been identified that place students at risk for not completing their nursing programs: grades in nursing courses, repeating nursing courses, and scores on commercial testing products. Retention programs have been developed targeting many of these identified issues, but there are problems with sustainability. The retention programs discussed above are federally or locally funded and as such have a defined funding period based upon the grant. Typically when the funding period ends, the institution that implemented the program could no longer sustain it without further funding. Many programs disappear unless the university can provide the needed budget and resources. Many of these programs are time

intensive for the faculty involved and with the current nurse educator shortage, many school of nursing faculty are pushed to the limit and cannot manage the additional workload.

Environmental Factors

Environmental factors can positively or negatively influence a student's ability to be retained and successful in a nursing program. Newton and Moore (2009) suggest that environmental factors have more of a moderating effect on predictor variables like attrition or NCLEX-RN success versus a direct effect. Bean and Metzner (1985) in their model of Non-Traditional Student Attrition described environmental factors as those aspects that the institution has little control over but may cause the student to leave the institution. This set of variables includes finances, hours of employment, outside encouragement, family responsibilities, and a perceived opportunity to transfer from the institution. Jeffreys' (2004) model of Nursing Undergraduate Retention & Success (NURS) described environmental factors as those that are external to the academic process but can influence performance and retention. These factors can include: financial status, financial support from the family, emotional support of the family, family obligations and responsibilities, child care issues, crisis within the family, hours of employment and employment responsibilities, encouragement by friends outside the academic setting, living arrangements, and transportation issues (Jeffreys, 2004). For the purposes of this review, the focus will be on finances, financial support, and employment and their effects on retention and success in baccalaureate nursing programs.

Employment, work hours, and financial support. The American Council on Education (King, 2006) reported that a majority of students work while enrolled in college with part-time students, older students, low-income students, and students of underrepresented minority groups working more hours than others. The primary reasons given by students for working are to pay

for tuition and fees, as well as living expenses. Most independent students must work to support themselves and their families, while as many as 66% of low income dependent students work to pay tuition, fees, and living expenses. This report distinguishes between "students who work" and "employees who study". For students who work, increasing work hours has a negative impact on grades earned. Employees who study tend to be older, work full time, attend college part time, and tend to have higher GPAs than students who work or those with no jobs.

General education literature as well as nursing education literature is replete with studies whose authors examined the effects of non-cognitive variables on academic performance and program completion. Of these, student employment is looked at in terms of hours worked, type of employment (full-time versus part-time and nursing related versus non-nursing related), and reasons for working. Holmes (2008), in a study of undergraduate students (n = 42) and work, reported that 22% of students work to cover basic costs of living, while an additional 36% work in order to contribute to the basic costs of living, so over half of students in this study depended on work for basic living needs. Interestingly though, only 5% of students questioned were working to gain future work experience. Torres, Gross, and Dadashova (2011) found the average undergraduate student (n = 281) under the age of 21 typically works more than 31 hours per week while enrolled in a full-time course load. They also found a negative relationship between hours worked and academic success. With an outcome variable of persistence, they cautiously suggest that work may have a moderating effect on persistence through GPA.

The majority of nursing students engage in some form of employment during the academic year. In both national and international studies, student employment has been shown to have a consistent negative effect on academic performance, which can impact retention in nursing programs. In Australia, Salamonson and Andrew (2006) found that more than 16 hours

of employment per week were negatively associated with academic performance, with the amount of time spent working being the strongest predictor in a pathophysiology and nursing practice course (n = 267). In addition, nursing related employment was not a positive influence on academic performance, even for nursing-practice based courses. In a later longitudinal study, Salamonson, Everett, Koch, Andrew, and Davidson (2012) found that over the three years of the nursing program, students (n = 182) changed type of employment from no employment to non-nursing employment to nursing employment. Consistent with the previous study (Salamonson & Andrew, 2006), those who worked more than 16 hours per week during the academic term had lower GPAs even after controlling for age, type of employment, and ethnicity. Similarly in the U.K., Rochford, Connolly, and Drennan (2009) in their regression model found that students (n = 179) who worked more hours per week had worse outcomes in course performance, overall college experience, and grades achieved. Reyes, Hartin, Loftin, Davenport, and Carter (2012) had similar findings in the U.S. with a significantly negative relationship between students (n = 161) who worked at least 16 hours per week and academic performance in select high-attrition nursing courses. They noted a decrease in student GPAs as number of work hours increased. Schoofs, Bosold, Slot, and Flentje (2008) found that the group of students (n = 135) who worked more than 20 hours per week took fewer credits and had lower quiz/exam scores. While students verbalized that employment had a negative impact, the authors found no significant impact of employment on overall GPA. While looking at intention to stay among minority nursing students, Evans (2013) discovered academic development, peer interaction, faculty concern, and working less than 15 hours per week to have a positive impact on the students' intention to complete the nursing program (n = 407). In terms of hours worked, 16 hours appears to be a

consistent threshold for number of hours worked before negative effects are experienced by students as reflected by lower course grades and GPAs.

The need to balance work and academic course load can create financial stress for students and their families. This stress can negatively impact the students' progression through to graduation and degree completion. Joo, Durband, and Grable (2008) in their study of characteristics of students who dropped out or reduced course loads due to financial stress (n = 504), discovered students often engage in a cycle of needing money, then engaging in work that results in poor academic outcomes, which can then lead to academic interruption by reduced course loads or dropping out of school completely. Students who were working full- or part-time were more likely to experience decreased course loads or drop out. A 13-item financial stress scale was developed by Northern, O'Brien, and Goetz (2010) in order to identify students who are financially at risk. They foresee the scale being used by college educators and advisors to develop appropriate strategies or interventions at various points in students' college careers to better manage and cope with financial stress. Seago, Wong, Keane, and Grumbach (2008) in their work on developing a measure that could be useful in better understanding retention of nursing students, determined that the subscales of work issues and financial issues met the criteria for construct validity, cross loadings, and internal consistency reliability. These subscales may be useful to nursing researchers interested in further explicating the relationships between work and financial issues and nursing student retention and academic success.

The above mentioned research studies have some limitations in common. Many lack clearly defined variables, or operational definitions. Most lack a theoretical model as the basis for the study and are often post hoc program descriptions. It is interesting to note that Levin and Levin (1991) in their examination of retention programs for minority college students nearly 25

years ago encountered many of the same problems evident in today's nursing education literature: research reports that are general descriptions of the program, small effect sizes, publication bias toward positive results, lack of or inappropriate comparison groups, lack of data, unequal treatment size, and potential student and investigator effects.

Nursing students, like most college students, need to work. Environmental factors such as financial support, financial stress, employment, and work hours can have a detrimental effect on nursing students' academic performance which can hinder program success and completion. The ever increasing cost of higher education forces students to work to cover basic living expenses, in addition to taking out loans to cover cost of tuition. Work hours take students away from much needed study time. What can be done to improve retention rates among nursing students who need to work to pay for the educational opportunity? Retention projects, as previously mentioned, often times have a financial support component beyond the institution's aid package, but these programs are often short lived and available to only small numbers of students. Gillis, Powell, and Carter (2010) recommend expansion of government programs to support entry level nursing students versus the many programs that now exist for advanced practice nurses. Evans (2013) recommended increasing financial aid and grant opportunities for nursing students as a way to decrease work hours. The American Council on Education (King, 2006) stated "…additional grant aid would limit the amount of time low-income and academically disadvantaged students must spend away from their studies" (p. 6). Need-based aid in the form of grants and scholarships that do not require repayment would ease the financial burden incurred by many who are forced to take out loans and would allow students more time to study.

Summary

This integrative review of literature investigated various factors that have influenced and continue to influence program completion as they pertain to undergraduate baccalaureate nursing student retention. While researchers investigated the use of standardized testing, GPA/NGPA, specific courses, and end of program products on first time NCLEX-RN success, a specific combination of variables consistently predictive of NCLEX-RN success remains elusive. As such, rather than looking to the end outcome of NCLEX-RN success, others researchers have addressed early academic achievement and success in specific nursing and non-nursing courses as critical to nursing program success. Many retention programs have been designed to intervene at select points in nursing program progression, while others have been designed to target specific populations of at-risk students. Retention programs are expensive and tend to be time limited, and not sustainable beyond the grant funding period.

More recently, researchers have given more attention to influences of various environmental factors such as employment and work hours, as well as financial support or financial burden on student success and retention in higher education. Nursing education research focusing attention on economically disadvantaged nursing students is an area ripe for research. The complexity and multi-faceted nature of retention may never allow for an exact model predicting success for all students. Perhaps the best we can do as nursing education researchers is to construct well designed studies that continue to investigate students and the multitude of factors that impact on their success.

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Chapter 2 consisted of two manuscripts that were submitted to the Journal of Professional Nursing and the Journal of Nursing Education, respectively. Chapter 3 follows with a presentation of the study design and methods.

CHAPTER 3

Chapter 3 consists of a description of the study design; setting, population and sample; variables included; data collection procedures; proposed data analysis; and consideration of data security and protection of human subjects.

Study Design

This study was a quasi-experimental design utilizing secondary analysis of existing data from available university databases as well as data obtained from a questionnaire developed by the student principal investigator in collaboration with the director of Institutional Research and Planning at the focus university.

Setting

The setting for this study was a mid-sized, faith-based, private university located in the Midwest, serving approximately 5,000 students with 43 undergraduate majors and 40 graduate program options. Approximately one third of the entire undergraduate student population consists of under-represented ethnic backgrounds and one third of all undergraduates have high financial need. Approximately 48% of the undergraduate students at this institution are Pell Grant recipients (Saint Xavier University, 2014). The School of Nursing was established in 1935 and was the first accredited baccalaureate program in Illinois. The undergraduate pre-licensure program consists of a traditional four-year program with 55 credit hours of required nursing courses. Also offered is a 15-month accelerated program for students already holding a previous bachelor's degree outside of nursing. The traditional pre-licensure program was the focus of this research study. The nursing program received funding to support students through a HRSA program described in the following section.

HRSA Scholarships for Disadvantaged Students. The Health Resources and Services Administration (HRSA) offers grant funding to U.S. health professions schools, including schools of nursing, for disadvantaged students in pursuit of health profession education to increase the diversity of the health professions workforce as well as increase the number of providers working in underserved communities (Health Resources and Services Administration, 2013). Scholarships for Disadvantaged Students (SDS) is one such grant funded program. For this program HRSA defines disadvantaged as coming from an environment that has inhibited the individual from obtaining the knowledge, skills, and abilities required to enroll in and graduate from a health professions school, or coming from a family with an annual income below a level based on low-income thresholds according to family size published by the U.S Bureau of Census, adjusted annually for changes in the Consumer Price Index, and adjusted by the Secretary of the Department of Health and Human Services (Health Resources and Services Administration, 2014).

Health profession schools must apply for this funding. If selected to receive the funding, the schools are then responsible for initiating the selection process, determining student need, and subsequently dispersing scholarship monies not to exceed the cost of attendance including tuition, reasonable educational expenses, and reasonable living expenses. Funded schools must provide annual performance/progress reports including the following information: number of students enrolled, number of students receiving SDS, racial/ethnic background of recipients, gender, and age, in addition to information about graduates including employment in underserved communities (Health Resources and Services Administration, 2014). For the current study, the School of Nursing received SDS grant funding for four years beginning in the academic year of 2012. The SDS grant has provided 112 undergraduate nursing students with

$15,000 per year to offset unmet need of tuition costs and living expenses with no obligation for repayment.

Sample

The sample for this research project consisted of three groups of undergraduate pre-licensure students from the traditional undergraduate nursing program who met the eligibility requirements outlined by HRSA for Scholarships for Disadvantaged Students (SDS) as discussed previously. The financial aid department screened all potential candidates for eligibility using the HRSA criteria and identified those students who still had unmet financial need. These students were invited to apply for the SDS program. Group A- SDS (n = 112) comprised the students who met the HRSA requirement for disadvantaged and, after review by the university financial aid department, still showed unmet need and were eligible for and received SDS grant funding from academic year 2012 through 2015. Group B-non-SDS (n = 82) was a comparison group of students who met the HRSA requirement for disadvantaged and, after review by the university financial aid department, still showed unmet need and were eligible for SDS funding but either did not apply for SDS funding or applied for but did not receive SDS funding during academic year 2012 through 2015. Group C-pre-SDS (n = 180) was a historical comparison group matched for similar characteristics including socioeconomic status, financial need, dependent/independent status, and race/ethnic background from academic year 2010, prior to the start of the grant funding.

Sample characteristics. The total sample size was 351 undergraduate students currently or previously enrolled in the baccalaureate program at the researcher's institution. The majority of the sample was female, not married, financially independent, and were first generation to attend college. Not surprisingly, the majority of the sample was white; however, there was

moderate diversity among other groups. There were almost equal numbers of students of each admission category. There were similar numbers of junior and senior level students with the least number of sophomores. A summary of the demographic data can be found in tables 2 and 3 below.

Table 2

Sample Characteristics by Group

	Group			
	Total Sample	SDS/ GRP A	Non-SDS/ GRP B	Pre-SDS/ GRP C
Variable	n=351	n=112	n=82	n=157
Gender	n / %		n /%	n /%
Female	317/90.3		69/84.1	143/91.0
Male	34/9.7		13/15.8	14/8.9
Age				
≤ 23 Years	191/54.4		46/56.0	88/56.0
≥ 24 Years	160/45.6		36/43.9	69/43.9
Race				
White	170/48.4		34/41.4	78/49.6
Afr-Amer	72/20.5		13/15.8	31/19.7
Hispanic	69/19.7		24/29.9	28/17.8
All other	40/11.4		11/13.4	20/12.7

Sample Characteristics by Group

	Group			
Variable	Total Sample n=351	SDS/ GRP A n=112	Non-SDS/ GRP B n=82	Pre-SDS/ GRP C n=157
Marital Status				
Not Married	307/87.5	99/88.5	71/86.5	137/87.2
Married	44/12.5	13/11.6	11/13.4	20/12.7
Financial Status				
Independent	191/54.1	64/57.1	44/53.6	83/52.8
Dependent	160/45.6	48/42.8	38/46.3	74/47.1
First Generation[a]				
Yes	282/80.3	107/95.5	75/91.4	100/63.9
No	69/19.7	5/4.5	7/8.5	57/36.3
Admission Type				
Traditional	120/34.2	39/34.8	20/24.3	61/38.8
Transfer-Trad	114/32.5	38/33.9	30/36.5	46/29.2
Transfer-Adult	117/33.3	35/31.2	32/39.0	50/31.8
EFC				
$0	154/43.8	52/46.5	32/39.0	70/44.5
$1-1000	41/11.6	16/14.2	12/14.6	13/8.0
$1001-5000	84/23.9	26/23.2	14/17.0	44/28.0

Sample Characteristics by Group

	Group			
Variable	Total Sample n=351	SDS/ GRP A n=112	Non-SDS/ GRP B n=82	Pre-SDS/ GRP C n=157
>$5000	72/20.5	18/16.0	24/29.2	30/19.1
Program Level[b]				
Soph II	26/7.4	3/2.6	23/28	0/0
Junior I	85/24.2	24/21.4	20/24.3	41/26.1
Junior II	84/23.9	28/25	27/32.9	29/18.4
Senior I	86/24.5	32/28.5	10/12.2	44/28
Senior II	70/19.9	25/22.3	2/2.4	43/27.3

Note. EFC indicates Estimated Family Contribution
[a]Denotes significant difference among groups. X^2=50.342, p<.001
[b]Denotes significant difference among groups. X^2=91.453, p<.001

Table 3

Means and Standard Deviations for Estimated Family Contribution (EFC) and Age by Group

	Group		
	SDS	Non-SDS	Pre-SDS
Variable	Group A	GRP B	GRP C
Age in Years			
Mean	22.33	25.74	25.21
SD	5.37	6.94	6.19
EFC			
Mean	1996.77	3246.73	2246.72
SD	347.22	5176.11	2842.07

Measures/Instruments. The variables in this study were based upon a modification of the Jeffreys (2004) NURS model. See Figure 1in Chapter 1 for the modified NURS Model.

Demographic data were obtained through existing University records and included the following student profile characteristics: age, gender, ethnicity, language, marital status, and origin of admission (traditional, transfer, or adult college). The academic outcomes of nursing GPA and overall GPA were obtained from University databases. The outcome variable of this study (retention) was also obtained from existing records and included academic transcripts to

see progression of students to the next semester of the nursing program or to program completion and graduation.

In addition, participants self-reported the environmental factor—employment hours—as the average number of hours worked per week during the semester and the academic factor—study hours—as the average number of hours spent studying per week during the semester through a questionnaire developed by the student principal investigator. Additional survey information was collected as part of a larger study. See Appendix D for the full survey.

Procedures. University IRB approval was obtained prior to beginning the survey process. In conjunction with the Executive Director of the Department of Institutional Research & Planning, names and contact information were obtained for each potential participant for the three groups. An email was sent to each participant with an explanation of the study; consent to participate in the study, and a link to the actual on-line survey. A second query was sent out approximately four weeks later, accounting for a summer holiday, and a final query sent out a week later. The University's REMARK Software was used for the online survey. The REMARK Software is not a commercial product and is securely housed within the University server. Student identification numbers were embedded in the online survey to link the survey responses to specific participants.

Each survey was then linked to the specific participant's file and the student name removed, thus de-identifying the data. The master file of names and identification numbers were kept in a locked file in the Executive Director's office. All data collected from the university databases were accessed from the Executive Director's office and were maintained in that office.

Data management. Data collected were maintained in the Executive Director's office. Data were collected through the University databases were password protected and accessible

only to faculty and administrators. Data inputted into SPSS or Excel included students' identification codes (no student names) and were maintained on the student principal investigator's password protected computer.

Data analysis. Prior to analysis, data were entered into a data file. The data were cleaned, looking for outliers and wild codes. Next, the data were assessed for missing values. The pattern and distribution of missing data determined which procedure was used to handle the missing data, either deletion or imputation. Some participants did not include a correct student ID so those cases were not able to be matched directly to their survey data.

After data cleaning was completed, initial data analysis began. The level of variable measurement determined the type of analysis used. Analysis consisted of descriptive statistics and correlation statistics. Descriptive statistics were used to identify the characteristics of Group (SDS) A, (non-SDS) B, and (pre-SDS/comparison) C, including age, gender, ethnicity, marital status, ESL status, and first generation. Groups were assessed for differences in demographic characteristics using analyses appropriate for level of measurement. See Table 4 for research questions, hypotheses, descriptions of variables, and data analysis.

Table 4

Explanation of Study Variables

Research Question 1: After accounting for differences in demographic characteristics, is receipt of SDS financial support associated with a reduction in hours worked per week, an increase in study hours per week, higher nursing GPA and overall GPA, and higher rates of retention in and progression through to program completion in a baccalaureate nursing program?

Hypothesis	Variables/Type	Analytic Tests
Hypothesis 1: After accounting for differences in demographic characteristics, students receiving SDS financial support will report a reduction in number of hours worked per week compared to students who did not receive SDS financial support.	SDS Support (IV), categorical/dichotomous Hours worked per week (DV), continuous Survey Question #1: *"On average, how many hours per week do you work?"*	ANOVA or ANCOVA Differences among SDS/non-SDS/pre-SDS in hours worked per week
Hypothesis 2: After accounting for differences in demographic characteristics, students receiving SDS financial support will report an increase in study hours per week compared to students who did not receive SDS financial support.	SDS Support (IV), categorical, dichotomous Hours studying per week (DV), continuous Survey Question #2: *"On average, how many hour per week do you study?"*	ANOVA or ANCOVA Differences among SDS/non-SDS/pre-SDS in study hours per week
Hypothesis 3: After accounting for differences in demographic characteristics, students receiving SDS financial support will show better nursing GPA and overall GPA compared to students who did not receive SDS financial support.	SDS Support (IV), categorical, dichotomous NGPA (DV), continuous GPA (DV), continuous	ANOVA or ANCOVA Differences among SDS/non-SDS/pre-SDS in NGPA/GPA
Hypothesis 4: After accounting for differences in demographic characteristics, students receiving SDS financial support will show higher rates of Retention by progression to next semester or program completion compared to students who did not receive SDS financial support.	SDS Support (IV), categorical, dichotomous Retention(criterion), categorical/dichotomous: yes/no	Chi-square Differences among SDS/non-SDS/pre-SDS in Retention percent or Progression to next semester

Table 4. *Explanation of Study Variables* (cont.)

Research Question 2: After accounting for differences in demographic characteristics, to what in extent and in what manner is retention and progression in a baccalaureate nursing program predicted by SDS financial support, hours worked per week, study hours per week, nursing GPA and overall GPA?		
Hypothesis	**Variables/Type**	**Analytic Tests**
	SDS Support (predictor), categorical/dichotomous	Hierarchical Logistic Regression
	Hours worked per week (predictor), continuous	
	Hours studying per week (predictor), continuous	
	NGPA (predictor), continuous	
	GPA (predictor), continuous	
	Retention (criterion),categorical/ dichotomous	

Ethical Considerations

This study received approval from the University Institutional Review Board prior to data collection. There was no coercion or undue influence used to recruit participants and they had the right to refuse to participate and were able to withdraw at any time. Participants were informed of the purpose and nature of the research study, as well as potential benefits and risks, prior to obtaining informed consent. Participants were reminded that all data, including surveys, would be identified by code number only and that privacy of participants would be protected to the greatest extent possible. Although there were no direct potential benefits of participating in this study for the participants, the outcomes could potentially lead the University to securing

additional grant funding for BSN students in the future. Potential risks of participating in this study were minimal. The information contributed by participants had no impact on their standing in the School of Nursing, or in current or future courses. Non-participation in this study had no effect on the student's SDS award.

Data required matching to individual participants, so anonymity was not possible. Student data was matched to the student identification number and was maintained in locked file cabinets and on password protected computers and only shared on a need to know basis. Research data were reported in the aggregate. Current students may have encountered the student principal investigator in the classroom; however, the student prinicpal investigator would not be aware of the students' responses or identity. There were no vulnerable groups participating in this study; however, women and minorities were included.

Chapter 3 was a discussion of the study design and methods. Chapter 4 follows with a presentation of the study results.

CHAPTER 4

Results

In Chapter 4 data cleaning procedures, preliminary analyses, and primary results are described. The primary results for the research questions evaluating the selected outcomes of grant support from the HRSA Scholarships for Disadvantaged Students program on students in this baccalaureate nursing program are presented as well as a summary of the findings. Finally, a manuscript intended for publication is included at the end of the chapter.

Preliminary Data Analysis

The computer software used for data analysis was IBM SPSS Statistics Version 22. Descriptive statistics were used for analysis of demographic data; ANOVA and logistic regression were used to answer Research Questions 1 and 2. Data were screened for the range of values, correct coding, as well as outliers.

Surveys were sent to students via email in three waves over eight weeks. The response rate for Group A (SDS) was 68.7% (77/112), Group B (non-SDS) was 64.6% (53/82), and Group C (pre-SDS) was 44.5% (70/157). Groups A and B were current or recent students which could account for the excellent return. Group C had a lower rate which could be a result of the students being separated from the institution for a longer period of time and outdated email addresses.

Descriptive statistics were used to identify group characteristics. All data were reviewed for deviations from normality and skewness; no significant deviations were noted (Table 5). Inferential statistics were used to identify group differences among the three study groups. Pearson's Chi-Squared revealed only two demographic variables showing significant differences among groups: Group C (pre-SDS) had fewer First Generation students than Groups A (SDS) and B (non-SDS) ($X^2 = 50.34$, $df = 2$, $p < .05$). Group C also differed from the other groups in

having no Sophomore II level students (X^2 = 91.45, df=8, p< .05). These variables were not used as covariates since they were determined to not be conceptually meaningful to the analyses.

The variables number of hours worked per week and number of hours studied per week were obtained from the surveys. Not all of the survey data could be matched to the correct student since some surveys had incorrect student ID numbers or no ID number at all. Across all three groups, the number of usable cases was 170 for number of work hours per week and 166 for number of hours studied per week. If the respondents reported the number of hours as a range, for example from 5 to 10 hours per week, the median of the range of hours was entered in the database (Table 6).

Although the number of hours worked per week and number of hours studied per week yielded useful information, these variables did not fully reveal the intended relationship between the work and study time concepts. A new variable was created called Study to Work calculated as the number of hours studied per week minus the number of hours worked per week. This new variable better represented how work and study hours were related to each other. This resulted in an additional hypothesis to Research Question 1.

Table 5

Means and Standard Deviations for Work, Study Hour, Study to Work by Group

	Group		
	SDS	Non-SDS	Pre-SDS
Variable	GRP A	GRP B	GRP C
Work Hours[a]			
Mean	16.96	20.63	21.14
SD	10.15	12.40	12.38
Study Hours[b]			
Mean	22.82	19.75	18.95
SD	9.41	10.23	11.66

Table 6 (cont.)

Study to Work[b]			
Mean	4.97	-0.88	-2.55
SD	13.56	16.45	17.02

[a] n = 170, based on number of survey responses
[b] n = 166, based on number of survey responses

During the initial screening of the variables to be used in the regression attempting to predict progression to the next semester or program completion, it was noted that the number of students who completed both the nursing program and had usable survey data was only 30 cases. Instead of using the limited amount of matched data, all available unmatched data were used.

In addition, logistic regression is sensitive to high correlations among the predictor variables. As expected, all GPA variables were found to be highly correlated (multicollinearity) (Table 6). Conceptually and chronologically, the students' baseline or beginning GPA in the first semester under consideration for SDS funding (CUMGPA1) was identified as an appropriate predictor. The other GPA variables were more appropriate as outcomes.

Table 6

Intercorrelations for Work Hours, Study Hours, Study to Work Hours, and GPAs

Measure	Shape					
	1	2	3	4	5	6
1. Work Hours	---					
2. Study Hours	-.05	---				
3. Study to Work	-.75*	.69*	---			
4. CUMGPA1	-.13	-.11	.04	---		
5. Final GPA	-.15	-.09	.07	.92*	---	
6. Final NRSGGPA	-.19*	-.12	.07	.65*	.81*	---

*Correlation is significant at .01 level.

Table 7

Means and Standard Deviations for GPA Variables by Group

Variable	Group		
	SDS	Non-SDS	Pre-SDS
	GRP A	GRP B	GRP C
First GPA			
Mean	3.208	3.083	3.162
SD	0.330	0.311	0.324
Last GPA			
Mean	3.20	3.012	2.895
SD	0.290	0.312	0.382
Last NGPA			
Mean	3.055	2.773	2.895
SD	0.303	0.480	0.382

Primary Results

The primary results for each research question are presented next.

Research Question 1

After controlling for differences in demographic characteristics, is receipt of SDS financial support associated with (a) a reduction in hours worked per week, (b) an increase in study hours per week, (c) higher nursing GPA and overall GPA, and (d) higher rates of retention in and progression through to program completion in a baccalaureate nursing program?

Research Question 1 originally had four hypotheses subsumed within the main question. After preliminary data analysis, an additional hypothesis was added and the results are presented. The hypothesis is referred to as *Additional Hypothesis*. There were no demographic variables identified that were appropriate to be used for control variables. Therefore, no analyses reported in the next section include covariates.

Hypothesis 1. Students receiving SDS financial support will report a reduction in number of hours worked per week compared to students who did not receive SDS financial support.

This hypothesis addressed the number of hours per week which average students worked during the semester. There was no significant difference among groups (Table 8).

Table 8

One-Way ANOVA for Grant on Number of Work Hours per Week (n = 170)

Source	df	SS	MS	F	p	η^2
Between-group	2	610.25	305.12	2.24	.109	.026
Within-group	167	22658.98	135.68			
Total-corrected	169	87970.25				

Hypothesis 2. Students receiving SDS financial support will report an increase in study hours per week compared to students who did not receive SDS financial support.

This hypothesis addressed the number of hours per week on average students studied during the semester. There was no significant difference among groups (Table 9).

Table 9

One-Way ANOVA for Grant on Number of Study Hours per Week (n = 166)

Source	df	SS	MS	F	p	η^2
Between-group	2	476.62	238.31	2.16	.118	.026
Within-group	163	17962.77	110.20			
Total-corrected	165	18439.40				

Additional Hypothesis. Students receiving SDS financial support will show more hours studied per week than hours worked per week compared to students who did not receive SDS financial support.

The Study-to-Work variable was added in order to reveal the relationship between study hours and work hours. There were significant differences among the groups (Table 10). Multiple Comparisons showed a significant difference between Group A (SDS) and Group C (pre-SDS). The Study-to-Work variable revealed students receiving SDS on average studied 5 more hours per week than they worked while the pre-SDS students worked 2 more hours per week than they studied.

Table 10

One-Way ANOVA for Grant on Study to Work Hours per Week (n = 166)

Source	df	SS	MS	F	p	η^2
Between-group	2	17778.06	889.03	3.59	.030	.042
Within-group	163	40363.84	247.63			
Total-corrected	166	42191.25				

Hypothesis 3: Students receiving SDS financial support will show higher nursing GPA and overall GPA compared to students who did not receive SDS financial support.

This hypothesis addressed the final nursing GPA (final NGPA) on record and final overall GPA (final GPA) on record. The NGPA and final GPA were based on the data last recorded as of September 15, 2015 (n = 351). There were two analyses conducted, one for each GPA outcome. There was a significant difference among groups for the final GPA on record (Table 11). Multiple Comparisons showed a significant difference between Group A (SDS) and Group B (non-SDS); and Group B (non-SDS) and Group C (pre-SDS). Students with SDS support had higher final GPAs (3.20) than students who did not receive SDS support (3.01) and those before SDS support was available (3.13).

Table 11

One-Way ANOVA for Grant on Final Overall GPA on Record

Source	df	SS	MS	F	p	η^2
Between-group	2	1.796	0.89	10.50	.000	.057
Within-group	348	29.74	0.08			
Total-corrected	350	3466.30				

For the second GPA outcome, final nursing GPA (final NGPA) there was a significant difference among groups (Table 12). Multiple Comparisons indicated significant differences between Group A (SDS) and B (non-SDS) and Group A (SDS) and C (pre-SDS). Students who received SDS support had significantly higher final NGPAs (3.05) than students who did not received SDS support (2.77) and those before SDS support was available (2.89).

Table 12

One-Way ANOVA for Grant on Final NGPA on Record

Source	df	SS	MS	F	p	η^2
Between-group	2	3.90	1.95	13.12	.000	.070
Within-group	348	51.78	0.14			
Total-corrected	350	3045.13				

Hypothesis 4: Students receiving SDS financial support will show higher rates of retention by progression to next semester or to program completion compared to students who did not receive financial support.

This hypothesis addressed *retention* defined as progression to the next semester or program completion. The last nursing GPA on record as of September 15, 2015 was used for this analysis. A nursing GPA above 2.3/4.0 was used as the cutoff value for progression to the next semester. A NGPA of 2.3/4.0 is the minimum GPA required in nursing courses, thus students meeting this requirement were eligible for progression to the next semester. For Group A (SDS), all students progressed to the next semester or completed their program (Table 13). Pearson Chi-Squared indicated a significant difference among groups ($X^2 = 11.03$, df =2, $p<.05$).

Table 13

Progression to Next Semester

	No		Yes	
	n	%	n	%
Group A (SDS)	0	0.0	112	100
Group B (non-SDS)	8	9.8	74	90.2
Group C (comp)	7	4.5	150	95.5

Program completion was defined as On Time Graduation Rates. The program is five semesters in length, beginning at the second semester of sophomore year. Only students who completed the nursing program at the time of data collection (n = 288) were included in this

analysis (Table 14). Pearson's Chi-Squared indicated a significant difference among groups (X^2 = 58.24, df =2, p< .05).

Table 14

On-Time Completion in Five Semesters (n = 288)

	No		Yes	
	n	%	n	%
Group A (SDS)	3	3.7	78	96.3
Group B (non-SDS)	29	58.0	21	42.0
Group C (comp)	27	17.2	130	82.8

Research Question 2

After accounting for differences in demographic characteristics, to what extent and in what manner is retention and progression in a baccalaureate nursing program predicted by SDS financial support, hours worked per week, study hours per week, nursing GPA and overall GPA?

A series of logistic regressions were conducted using different combinations of variables, to determine which variables (SDS financial support, demographic variables, work hours per week, study hours per week, final cumulative GPA on record, and final nursing GPA on record) were able to predict retention and progression to next semester or program completion. No covariates were used in the analyses. After several model iterations, the best and most parsimonious predictor of on-time graduation included SDS grant status and initial GPA

(CUMGPA1). See Appendix C for the tables describing the logistic regressions for each of the models mentioned below.

All models included SDS grant status (received or not) and the dependent variable indicating graduating in five semesters representing program completion (ONTIME). The first model included the demographic variables of race, first generation status, estimated family contribution, and age. SDS grant status was the only variable to contribute significantly to the model. When the initial GPA (CUMGPA1) was added, it contributed significantly to the model; however none of the demographic variables contributed.

The next set of regressions included combinations of work hours, study hours, and initial GPA (CUMGPA1). Neither work nor study hours contributed to the model. When initial GPA was added, it did contribute but not significantly. A regression was then conducted using initial GPA and study hours; initial GPA contributed but not to a significant level. The same was true when Study to Work Hours was used in place of study hours. The final and most parsimonious predictor of on-time graduation included only SDS grant status and initial GPA (CUMGPA1) (Table 15). It is interesting to note that receipt of the SDS grant contributed significantly to each of the models identified above.

Table 15

Logistic Regression Analysis: SDS Grant Status, CUMGPA1, On Time Completion

Variable	B	SE	OR	95% CI	Wald	p
SDS	2.31	0.61	10.12	[3.03, 33.76]	14.17	.000
CUMGPA1	2.12	0.55	8.36	[2.80, 24.89]	14.55	.000

The model with these predictor variables was statistically significant (X^2 = 41.642, *df* =2), indicating the model was able to distinguish between students who would complete on time and those who would not. The model explained between 13.5% (Cox & Snell R Square) and 21.1% (Nagelkerke R Square) of the variance in on-time completion and correctly classified 78.8% of cases. Both predictor variables made a statistically significant contribution to the model. The strongest predictor of on-time graduation was the SDS grant with an odds ratio of 10.12. This indicated that the students who received the SDS grant were 10 times more likely to graduate on time than those who did not receive the grant. GPA at the time of consideration for the grant was also a strong predictor of on-time graduation recording an odds ratio of 8.362 indicating that for every one point gained in GPA at time of consideration for the grant, students were eight times more likely to graduate on time.

Summary of Findings

This study examined the effects of financial support provided by HRSA Scholarships for Disadvantaged Students (SDS) on selected outcomes for undergraduate students in one

baccalaureate nursing program. Group A were students who received the SDS grant, Group B were students who were eligible but either did not apply or did not receive the grant and Group C were a historical comparison group from the year prior to the availability of the grant funding. SDS grant recipients studied more hours per week than they worked compared to the comparison group (Study-to-Work). Students receiving the grant also had higher GPAs and NGPAs than the other groups. All SDS grant recipients progressed to the next semester and a high proportion completed the nursing program on time in five semesters. The logistic regression model predicting on-time graduation using SDS grant status and GPA at the time of consideration was statistically significant.

The next section includes a third manuscript to be submitted for publication to the Journal of Nursing Education.

Manuscript 3

Cover Letter

Janis P. Bellack, PhD, RN, FAAN
Editor-in-Chief
Journal of Nursing Education
January 24, 2016

Dear Dr. Bellack,

I am submitting my manuscript "Predicting On-Time Program Completion for Economically Disadvantaged BSN Students: Effects of a Federal Grant Program" as a Research Brief in the Journal of Nursing Education.

This manuscript contains the results of my dissertation study that evaluated selected outcomes of grant support from the Scholarships for Disadvantaged Students program on students in a baccalaureate nursing program and prediction of on-time program completion when considering different GPAs, work hours and study hours. Retention in and progression to program completion in undergraduate baccalaureate nursing programs continues to be an issue of great importance especially for underrepresented groups like the economically disadvantaged, and as such is appropriate for the readership of this journal.

I confirm that this manuscript has not been published elsewhere and is not under consideration by another journal. The work was not supported by any grant funding. The author has no conflicts of interest to declare.

Respectfully,

Karen L. O'Brien, RN, MSN, CNE

Abstract

Background

Economically disadvantaged nursing students are often underprepared for the rigors of academia and nursing and typically must work full or part time to finance their education, reducing the time available to study and complete assignments. There is little research on this population of students, and the effect of financial assistance in the form of grant funding that is not required to be paid back has not been studied.

Methods

This study was a retrospective quasi-experimental design utilizing secondary analysis of existing data as well as survey data from three groups of economically disadvantaged BSN students (n = 351) to examine the predictive ability of Scholarships for Disadvantaged Students (SDS) grant, hours worked per week, study hours per week, nursing GPA, and overall GPA on retention to the next semester and program completion.

Results

The most predictive model of on time program completion included SDS grants funding and the students' initial GPA and was statistically significant (X^2 = 41.642, df =2, p< .000), indicating the model was able to distinguish between students who completed on time and those who did not. The strongest predictor of on-time graduation was the SDS grant with an odds ratio of 10.12 (95% CI, 3.03-33.76). This indicated that the students who received the SDS grant were 10 times more likely to graduate on time than those who did not receive the grant. GPA at the time of consideration for the grant was also a strong predictor of on-time graduation recording an odds ratio of 8.36 (95% CI, 2.80-24.89) indicating for every 1 point gained in GPA from the time

of consideration for the grant, students were 8 times more likely to graduate on time. In addition, 96.3% of the students receiving the SDS grant completed the program on time.

Conclusions

This study provides evidence that financial support in the form of grant funding can positively influence retention and program completion for economically disadvantaged undergraduate nursing students.

Predicting On-Time Program Completion for Economically Disadvantaged BSN Students: Effects of a Federal Grant Program

Retention of students in undergraduate baccalaureate nursing programs is essential to fulfill the needs of the nursing workforce. Much of the research related to retention in undergraduate nursing programs focuses on projects designed to recruit and retain minority and underrepresented groups, however there is little research related to economically disadvantaged nursing students. When admitted to nursing programs, these students may be underprepared for the rigors of academia and nursing, through no fault of their own, but related to coming from educational systems offering less rigorous preparation. In addition, these students often must work full or part time to finance their education, reducing the time available to study and complete assignments. For these students, financial assistance is most beneficial in the form of grant funding that is not required to be paid back to the provider. One such grant funded program is the HRSA Scholarships for Disadvantaged Students (SDS). Programs such as SDS can impact the retention of economically disadvantaged students in baccalaureate nursing programs by providing much needed tuition assistance as well as monies that can be used beyond academic costs for child care services, rent, and basic living expenses. Retention of economically disadvantaged students can potentially increase the diversity of the nursing workforce since many economically disadvantaged students also come from ethnically diverse backgrounds.

The purpose of this study was to evaluate the extent and the manner in which retention and program completion in a baccalaureate nursing program was predicted by SDS financial support, hours worked per week, study hours per week, nursing GPA and overall GPA.

Methods

This study was a retrospective quasi-experimental design utilizing secondary analysis of existing data from available university databases as well as data obtained from a survey developed by the student principal investigator in collaboration with the director of Institutional Research and Planning. The conceptual model underpinning the design of this study was Jeffreys' Nursing Undergraduate Retention and Success model (Jeffreys, 2004, 2012).

The setting for this study was a mid-sized, faith-based, private university located in the Midwest. Approximately one third of the entire undergraduate student population consists of under-represented ethnic backgrounds and one third of all undergraduates have high financial need. Approximately 48% of the undergraduate students at this institution are Pell Grant recipients.

The sample consisted of three groups of undergraduate pre-licensure students from the traditional undergraduate nursing program who met the eligibility requirements outlined by the SDS program. The financial aid department screened all potential candidates for eligibility and identified those students who still had unmet financial need. These students were invited to apply for the SDS program. Group A (SDS, n = 112) comprised the students who met the requirements for disadvantaged and, after review by the university financial aid department, still showed unmet need and were eligible for and received SDS grant funding from academic year 2012 through 2015. Group B (non-SDS, n = 82) was a comparison group of students who met the requirements for disadvantaged and, after review by the university financial aid department, still showed unmet need and were eligible for SDS funding but either did not apply for SDS funding or applied for but did not receive SDS funding during academic year 2012 through 2015. Group C (pre-SDS, n = 180) was a historical comparison group matched for similar characteristics

including socioeconomic status, financial need, dependent/independent status, and race/ethnic background from academic year 2010, prior to the start of the grant funding. Grant funding required continuous enrollment, therefore there were no students who were considered "stopouts".

The majority of the sample was female, not married, financially independent, and were first generation to attend college. The sample was 48% white: over 50% were African American, Hispanic and other. There were almost equal numbers of students of each admission category. There were similar numbers of junior and senior level students with the least number of sophomores.

Surveys were sent to each of the three groups of students via email in three waves over an eight week period of time. The email included an explanation of the study, consent to participate, and a link to an on-line survey. Students were asked to self-report on average how many hours they worked per week and how many hours they studied per week. Student identification numbers were embedded in the online survey to link the survey responses to specific participants. Return rates for Group A, Group B and Group C were 68.7%, 64.6% and 44.5% respectively. As surveys were returned, each was then linked to the specific participant's file and the student name removed, thus de-identifying the data. Demographic and academic data were obtained from existing University databases.

Findings

A series of seven logistic regressions were run using different combinations of variables to determine which variables (SDS financial support, demographic variables, work hours per week, study hours per week, cumulative GPA, and nursing GPA) were able to predict program completion.

Each regression model included grant status (received or not) and the dependent variable of ONTIME indicating program completion and graduation in five semesters. The first model included the demographic variables of race, first generation status, estimated family contribution, and age; however none of the demographic variables contributed significantly to the model. SDS grant status was the only variable to contribute significantly. When the initial GPA at time of consideration for the grant (CUMGPA1) was added, it also contributed significantly to the model.

The next set of regressions included combinations of work hours, study hours, and the initial GPA at the time of consideration for the grant (CUMGPA1). Contrary to what was expected, neither work nor study hours contributed to the model. When CUMGPA1 was added, it did contribute but not significantly. A regression was then run with CUMGPA1 and study hours; CUMGPA1 contributed but not to a significant level. The same was true when Study to Work Hours was used in place of study hours. Study to work hours was the number of study hours minus the number of work hours. The final and most parsimonious predictor of on time graduation included only SDS grant status and CUMGPA1. It is interesting to note that receipt of the SDS grant contributed significantly to each of the models discussed above.

The most predictive model of on time program completion with these two variables was statistically significant (X^2 = 41.642, df =2, p< .000), indicating the model was able to distinguish between students who completed on time and those who did not. The model explained between 13.5% (Cox & Snell R Square) and 21.1% (Nagelkerke R Square) of the variance in on-time completion and correctly classified 78.8% of cases. Both predictor variables made a statistically significant contribution to the model (Table 1). The strongest predictor of on-time graduation was the SDS grant with an odds ratio of 10.12 (95% CI, 3.03-33.76). This indicated that the

students who received the SDS grant were 10 times more likely to graduate on time than those who did not receive the grant controlling for GPA at the beginning of the grant period. GPA at the time of consideration for the grant was also a strong predictor of on-time graduation recording an odds ratio of 8.36 (95% CI, 2.80-24.89) indicating for every 1 point gained in GPA from the time of consideration for the grant, students were 8 times more likely to graduate on time, controlling for grant status.

Table 1

Logistic Regression Analysis: SDS Grant Status, CUMGPA1, On Time Completion

Variable	B	SE	OR	95% CI	Wald	p
SDS	2.31	0.61	10.12	[3.03, 33.76]	14.17	.000
CUMGPA1	2.12	0.55	8.36	[2.80, 24.89]	14.55	.000

Discussion

The most significant finding of this study was that the best and most parsimonious model included only SDS grant funding and student GPA at the time of consideration for the grant. In terms of predictive ability, demographic variables, study hours, work hours, cumulative NGPA, and final GPA did not produce a model that could predict program completion. However, SDS grant funding and GPA at the time of consideration for SDS grant support were both statistically significant contributors to the model, indicating that students who received the SDS grant were

10 times more likely to graduate on time than those who did not receive the grant, controlling for GPA at the beginning of the grant period. In addition, for every 1 point gained in GPA from the time of consideration for the grant, students were 8 times more likely to graduate on time, controlling for grant status. In addition, receipt of the SDS grant was a significant predictor in every model analyzed.

The grant funding was not enough to eliminate the need to work, but it may have been enough to allow grant recipients to reduce the number of hours worked per week, allowing more time to study. This is consistent with King's (2003) findings that although low-income students typically face a lower average net price for attendance compared to middle- and upper-income students, they have fewer resources and as such their unmet need is more than three times that of middle- and upper-income students. These students typically borrowed money in the form of student loans and worked part-time (one to fourteen hours per week (King, 2003).

There were several limitations of this research study. First, the retrospective quasi-experimental design prevents establishing causal associations. In addition, this was a purposive sample drawn from SDS grant recipients, non-SDS recipients, and a similar comparison group, so the inclusion criteria dictated group membership and all had unmet financial need. The total sample (n = 351) was of adequate size; however approximately half the subjects were white (48.4%) and the majority were female (90.3%). The survey response rates were quite robust with responses from 68% of the SDS group and 64.6% of the non-SDS group. The response rate for the comparison group was 38%. The lower response rate for this group could be explained by students being out of the program for a longer time and lack of current contact information. A larger sample of data that could be matched to the surveys was anticipated, however, not all the survey data could be matched to the student data since some identification numbers were

incorrect or omitted. Another limitation was that survey data regarding number of work and study hours per week was self-reported. Self-reported data has the potential for either unconscious or intentional misrepresentation, overestimated or underestimated (Polit & Beck, 2008). Lastly, this study involved only one university, so the findings may not be able to be generalized more broadly.

There may be other factors that could have contributed to the success of the grant funded students or inhibited the success of the other groups of students, as indicated by Jeffreys' model. Study skills and class attendance are other academic factors that could positively or negatively influence the students' success. In addition, other environmental factors could have influenced the students in this sample. Family and work responsibilities, experiencing a family crisis, or perhaps living arrangements could influence the students' ability to be successful in this nursing program. Could receipt of the grant funding lower stress levels, impacting on academic performance or could the ability to use the grant money for non-academic purposes (child care, car repair) have a significant effect on academic outcomes?

Implications

This study provides evidence that financial support in the form of grant funding can positively influence retention and program completion for economically disadvantaged undergraduate nursing students. This may be the first study to look at the impact of SDS federal grant funding and undergraduate nursing program completion.

Economically disadvantaged students can be successful in a baccalaureate nursing program when provided with grant funded financial support. Although economically disadvantaged students are considered at risk, they should not be considered incapable of being

successful in a nursing program. Nursing faculty are poised to play a role in further retention and progression of this at-risk population. Yosso (2005) encourages us to shift the lens away from a deficit view of socially marginalized and underrepresented groups and instead focus on and learn from the cultural knowledge, skills, abilities, and contacts they possess. From this perspective faculty could focus more attention on the positive attributes these students bring to the institution, in addition to providing academic and professional support. Providing early mentoring and advising especially in terms of the study hours involved with a baccalaureate nursing program along with encouraging and setting realistic work schedules would be beneficial to the economically disadvantaged who as a majority have to work.

Retention of baccalaureate nursing students continues to be an area of interest for further investigation to fulfill the continued needs of the nursing workforce. Nurse educators may never find the perfect predictive model for both academic and NCLEX licensure success. Students of today lead complex lives of which academics are only one part. There are myriad factors that contribute to the success of nursing students: student characteristics, environmental factors, affective factors, professional integration factors, and academic factors (Jeffreys, 2004, 2012). Economically disadvantaged students deserve more research attention; the students investigated in this study were very capable of progressing through and completing this nursing program. However, more information about this student population could be gleaned from further studies.

In the future it may be useful to implement a prospective study and follow students longitudinally through each semester in terms of impact of the grant on academic and psychosocial outcomes as well as on additional environmental, affective, academic, and professional integration factors as depicted in the Jeffreys NURS model. For example, the number of hours students work per week and number of study hours per week could be measured

prior to receiving the grant funding and then every semester after. Future studies delineating how, where, and when students study may also be beneficial. It may also be useful to track the grant recipients further in terms of job positions, professional certifications, and advanced education as long term effects of the funding. Multi-site studies could be designed to collect data from other institutions receiving SDS grant funding allowing for larger sample sizes and data sets. Qualitative methods might enhance understanding of issues or impacts of grant funding on economically disadvantaged students that researchers are not currently aware of, for example, examining the indirect effects of the grant funding on confidence, self-efficacy, or motivation that may have impacted the students' ability to be successful. This type of qualitative study could then inform the research questions for further quantitative study.

In light of the current financial crisis experienced throughout the country cuts affecting educational programs at the institutional, state, and federal level have been felt deeply. In addition to the SDS program, federal Pell grants and state monetary awards programs face an uncertain future. This will translate to an uncertain future for economically disadvantaged students in terms of attaining post-secondary education.

Grant funded education dollars will need to continue to be allocated where they can produce positive effects like the SDS grant program. Rumberger (2010) points out that education serves as a mechanism for allocating economic rewards, and should not be dependent on one's social origins but more dependent on individual interest and effort. If there is equal opportunity to acquire education based on personal interest and effort, then education serves to break the link of transmission of economic privilege from one generation to the next (Rumberger, 2010). Economically disadvantaged students can be denied this opportunity if such funding disappears.

At the federal level, there is an ongoing need for the Nursing Workforce Development Programs under Title VIII of the Public Health Service Act to fund educational advancement of the nursing workforce to the baccalaureate level. In addition to SDS, there are several other ways to assist economically disadvantaged students. Suggestions include:

- Provide financial assistance for second-degree students pursuing undergraduate baccalaureate education. These students are often considered financially independent and thus not eligible for the usual sources of financial support for education.
- Provide stipends for economically disadvantaged students in order to further offset the need to work increased hours to pay for tuition.
- Allow part-time options for economically disadvantaged students without financial penalty. Many tuition discount programs, scholarships, or other forms of financial aid require students to be enrolled full-time.

Gladieux (2004) stresses the importance of need-based principles for financing students in higher education. This type of aid is likely to make the biggest difference to economically disadvantaged students. Offering need-based scholarships and grants versus merit-based scholarships would benefit economically disadvantaged students. With the sky-rocketing cost of tuition, it is difficult for the economically disadvantaged to manage the growing gap between cost of attending and financial aid available. Federal and State legislators should be mindful of this point when allocating educational resources.

Conclusions

This study contributes to the body of nursing education research by enhancing the understanding of the academic experiences of undergraduate baccalaureate nursing students who are economically disadvantaged. Financially supporting this population through grant funded

programs like HRSA's Scholarships for Disadvantaged Students can impact the retention in and completion of baccalaureate nursing programs for students coming from economically disadvantaged backgrounds. This will fulfill the need of the nursing workforce for well-educated nurses and at the same time contribute to increasing the ethnic and racial diversity of the nursing workforce. The economically disadvantaged student is capable of success if given the opportunity and financial support.

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Chapter 5 follows with a discussion of the findings as well as implications for nursing education, policy change, and future research.

CHAPTER 5

Discussion

In Chapter 5 discussion of the major findings that were reported in Chapter 4 is presented. The findings are discussed in relation to the literature and how these findings support, contradict, or add to what is known about economically disadvantaged students and the effects of grant funded financial support. Jeffreys' NURS model will be revisited to discuss its relevance to this study; in addition the limitations of the study are discussed. Finally, implications for nursing education, policy, and future research are presented.

Major Findings

The purpose of this retrospective study was to evaluate selected outcomes of SDS grant support on economically disadvantaged students in a baccalaureate nursing program. The conceptual model underpinning this study was Jeffreys' NURS model, a complex, multidimensional interaction of factors that influence undergraduate nursing student retention and success. The effects of SDS grant funding on the environmental factor of work hours, the academic factor of study hours, academic outcomes of NGPA/GPA, and ultimately the end outcome of retention and/or program completion, were investigated. The sample consisted of three groups of economically disadvantaged students: (1) students who received SDS grant funding not required to be paid back; (2) students who qualified for the funding and did not apply or did not receive the funding; and (3) a comparison group matched for similar characteristics from a time period before the grant funding was available to students at this institution.

Perhaps the most significant finding of this study was the outcome of the logistic regression. The best and most parsimonious model included only SDS grant funding and student GPA at the time of consideration for the grant. In terms of predictive ability, demographic

variables, study hours, work hours, final nursing GPA, and final overall GPA did not produce a model that could predict program completion. However, SDS grant funding and initial GPA at the time of consideration were both statistically significant contributors to the model, indicating that students who received the SDS grant were ten times more likely to graduate on time than those who did not receive the grant. In addition, for every one point gained in GPA from the time of consideration for the grant, students were eight times more likely to graduate on time. In addition, receipt of the SDS grant was a significant predictor in every model analyzed.

Another significant finding in this study was that students who received grant funding had an average cumulative GPA of 3.2/4.0, which was slightly higher than the GPA of the other groups, a significant difference among groups. For overall nursing GPA, grant recipients again had a higher average, 3.05/4.0, which was significantly higher than the other groups. Despite the continued need to work, these students were successful in maintaining their NGPA and cumulative GPA, in contrast to findings of previous studies (Salamonson & Andrew, 2006; Salamonson, Everett, Koch, Andrew, & Davidson, 2012; Reyes, Hartin, Loftin, Davenport, & Carter, 2012).

Economically disadvantaged students typically must meet financial obligations by working. Employment, work hours, and financial stress can have detrimental effects on academic performance and hinder program success. Several studies involving undergraduate nursing students support 16 hours as the threshold for work hours before negative effects are reflected in lower course grades and overall grade point averages (Salamonson & Andrew, 2006; Salamonson, Everett, Koch, Andrew, & Davidson, 2012; Reyes, Hartin, Loftin, Davenport, & Carter, 2012). In this study, the grant funding was not enough to eliminate the need to work, but it may have been enough to allow them to reduce the number of hours worked per week,

allowing more time to study. The Study to Work hours was calculated for each of the three groups. Grant recipients studied on average five hours more than they worked per week. Those who did not receive the grant worked on average about as much as they studied per week. The comparison group on average worked almost 3 hours more than they studied per week. Study Hours to Work Hours did show a significant difference among groups. This is consistent with King's (2003) findings that although low-income students typically face a lower average net price for attendance compared to middle- and upper-income students, they have fewer resources and as such their unmet need is more than three times that of middle- and upper-income students. These students typically borrowed money in the form of student loans and worked part-time (one to fourteen hours per week) (King, 2003).

The grant recipients were able study more hours per week than they worked and this factor may have yielded favorable outcomes in terms the overall final GPA and the final nursing GPA, leading to progression to the next semester and or program completion. All of the grant recipients were retained in the nursing program and progressed to the next semester; this was higher than for the other groups, a statistically significant difference. Program completion was reflected as On Time Graduation Rates; 96.3% of the grant recipients completed the program in the five semesters, and this was higher than for the other groups—also a significant difference.

Study Limitations

A limitation of this research was the retrospective descriptive design which prevents establishing causal associations. In addition, this was a purposive sample drawn from one private faith-based institution that applied for and received one of these HRSA grants. The sample was predetermined based on students who were SDS grant recipients, non-SDS recipients, and a similar comparison group, so the inclusion criteria dictated group membership.

The total sample (n = 351) was of adequate size; however the majority of the subjects were white (48.4%) and female (90.3%). The survey response rates were quite robust with responses from 68% of the SDS group and 64.6% of the non-SDS group. The response rate for the comparison group was 38%. The lower response rate for this group could be a result of these students being out of the program for a longer time and lack of current contact information. Another limitation is that survey data regarding number of work and study hours per week was self-reported. The number of hours could be overestimated or underestimated. Self-reported data has the potential for either unconscious or intentional misrepresentation (Polit & Beck, 2008). In addition, respondents were not given a definition of study hours in the survey. Jeffreys indicates study hours should include positive study behaviors and attitudes (adaptive, self-directed, planned, realistic, and appropriate) (Jeffreys 2012), these parameters were not specified in the survey question. Students were only asked to indicate on average how many hours per week they studied. A larger sample of data that could be matched to the surveys was anticipated; however, not all the survey data could be matched to the student data since some identification numbers were incorrect or omitted. Lastly, this study involved only one university, so the findings may not be able to be generalized more broadly.

Referring back to the Jeffreys model (Figure 2), the focus of the NURS model is on retention of nursing students versus attrition of students; this model proposes a proactive rather than reactive approach, and posits variables that influence students to remain until program completion. Retention is a complex interaction of many factors, and of these only a few were considered in this study. Because of its size and complexity, Jeffreys recommends using portions of the model to guide research questions and studies rather than testing the model in its entirety. This study on the retention of economically disadvantaged nursing students focused on the effect

of financial support through SDS grant funding on: one environmental factor (employment hours); one academic factor (study hours) and two academic outcomes (nursing GPA, overall GPA); and ultimately retention to the following semester or through to program completion.

According to the model, the academic factors interact and affect academic outcomes, either in a positive or negative way. In this study, the students receiving the SDS grant were able to study more hours per week than they worked; this may have had a positive effect on their overall GPA and final nursing GPA. However, the model also indicates in addition to academic factors, professional integration factors and psychological outcomes also influence academic outcomes, which were not addressed in this study but could have an effect on overall outcomes. For example, could receipt of the grant funding lower stress levels, impacting on academic performance. The model also shows a relationship between environmental factors and academic factors. In this study, work hours were investigated. Students receiving the grant funding were able to study more than they worked. It seems logical that if students can work less that would allow more time to study. The model does not show a direct relationship between environmental factors and academic outcomes, but environmental factors can influence academic outcomes through indirect means not considered in this study. The ability to use the grant money for other non-academic purposes (child care, car repair) may also have a significant effect on academic outcomes.

The multitude of factors and the complex bi-directional relationships may be one of the limiting aspects of this model. There are so many direct and indirect relationships; it may be difficult to tease out which factors are affecting which outcomes. For example, there are many other factors that could have contributed to the success of the grant-funded students or inhibited the success of the other groups of students. Study skill and class attendance are other academic

factors that could positively or negatively influence the students' success. In addition, other environmental factors could have influenced the students in this sample. In addition, family and work responsibilities, experiencing a family crisis, or perhaps living arrangements could influence these students' ability to be successful in this nursing program.

The many factors and outcomes described in Jeffreys model are pertinent to the issues of undergraduate nursing students today and to nursing education research. This model can continue to inform nursing education research on interventions designed to admit and retain more students in nursing programs and see them through to graduation and assimilation into the nursing profession.

Study Implications

This study provides evidence that financial support in the form of grant funding can influence retention and program completion for economically disadvantaged undergraduate nursing students by impacting the students' ability to study more hours per week than they work. This may be the first study to look at the impact of SDS federal grant funding and undergraduate nursing program completion. The student receiving the grant funding all progressed to the next semester and 96% completed the nursing program in the prescribed five semesters.

Implications for Undergraduate Nursing Education

Results of this study provide evidence that economically disadvantaged students can be successful in a baccalaureate nursing program when provided with grant-funded financial support and no expectation of repayment. Although economically disadvantaged students are considered at risk, they should not be considered incapable of being successful in a nursing program. Nursing faculty are poised to play a role in further retention and progression of this at-risk population. Yosso (2005) encourages us to shift the lens away from a deficit view of socially

marginalized and underrepresented groups and instead focus on and learn from the cultural knowledge, skills, abilities, and contacts they possess. From this perspective faculty could focus more attention during advising sessions on providing mentoring in terms of the study hours involved with a baccalaureate nursing program along with encouraging realistic work schedules.

Implications for Future Research

Retention of baccalaureate nursing students continues to be an area of interest for further investigation to fulfill the continued need for nurses throughout the country. Perhaps nurse educators will never find the perfect predictive model for both academic and NCLEX licensure success. As indicated by the NURS Model (Jeffreys, 2004, 2012) there are myriad factors that contribute to the success of nursing students: student characteristics, environmental factors, affective factors, professional integration factors, and academic factors. This study touched on only a few of those factors: work hours, study hours, NGPA and GPA. Students lead complex lives of which academics are only one part. Economically disadvantaged students deserve more research attention; the students investigated in this study were very capable of progressing through and completing this nursing program. However, more information about this student population could be gleaned from further studies. In addition, a subset of the economically disadvantaged population—those students who are financially independent—is a population that might warrant further investigation.

This research was a retrospective look at the relationship of SDS grant funding to number of study and work hours per week and the impact on program progression and completion. In the future it may be useful to implement a prospective study and follow students longitudinally through each semester in terms of impact of the grant on academic and psychosocial outcomes as well as on additional environmental, affective, academic, and professional integration factors as

depicted in the Jeffreys NURS model. For example, the number of hours students work per week and number of study hours per week could be measured prior to receiving the grant funding and then every semester after. Future studies delineating how, where, and when students study may also be beneficial. It may also be useful to track the grant recipients further in terms of job positions, professional certifications, and advanced education as long term effects of the funding; many respondents provided this information anecdotally via email. Multi-site studies could be designed to collect data from other institutions receiving SDS grant funding allowing for larger sample sizes and data sets, offering a greater chance of capturing a more diverse population to study. Future studies investigating economically disadvantaged students and grant funding might include qualitative methods to enhance understanding of issues or impacts that researchers are not currently aware of, for example, examining the indirect effects of the grant funding on confidence, self-efficacy, or motivation that may have impacted the students' ability to be successful. This type of qualitative study could then inform the research questions for further quantitative study.

Implications for Policy

The HRSA-funded Scholarships for Disadvantaged Students provides grant funding to students from economically disadvantaged backgrounds, a program providing financial support not requiring repayment. In light of the current financial crisis experienced throughout the country, fiscal responsibility is a necessity. At the institutional, state, and federal level, cuts affecting educational programs have been felt deeply. In addition to the SDS program, federal Pell grants and Illinois Monetary Award Program (MAP grants) face an uncertain future. This will translate to an uncertain future for economically disadvantaged students in terms of attaining post-secondary education.

Grant-funded education dollars will need to be allocated where they can produce positive effects. Rumberger (2010) points out education serves as a mechanism for allocating economic rewards, and should not be dependent on one's social origins but more dependent on individual interest and effort. Economically disadvantaged students can be denied this opportunity if such funding disappears. If there is equal opportunity to acquire education based on personal interest and effort, then education serves to break the link of transmission of economic privilege from one generation to the next (Rumberger, 2010).

At the federal level, there is an ongoing need for the Nursing Workforce Development Programs under Title VIII of the Public Health Service Act to fund educational advancement of the nursing workforce to the baccalaureate level. Building on the successfully outcomes related to the receipt of the SDS grant at this nursing program, further assistance to economically disadvantaged students could be provided by stipends in order to further offset the need to work increased hours to pay for tuition.

In the interest of equity as well as efficient allocation of both public and private funding resources, Gladieux (2004) stresses the importance of need-based principles for financing students in higher education. This type of aid is likely to make the biggest difference to economically disadvantaged students. At the state level, like the federal level, offering need-based scholarships and grants versus merit-based scholarships would benefit economically disadvantaged students. With the sky-rocketing cost of tuition, it is difficult for the economically disadvantaged to manage the growing gap between cost of attending and financial aid. Federal and state legislators should be mindful of this point when allocating educational resources.

Academic institutions should focus not only on recruiting students to the institution, but on providing resources for students to be successful at the institution through to degree completion. Most institutions have freshman transition programs to ease students into academic life. Perhaps programs that support economically disadvantaged students through each academic level providing student-centered interventions that are tailored to meet each student's specific needs would be beneficial, rather than a one-size-fits-all approach. Most economically disadvantaged students work to offset tuition costs as well as to provide for basic living needs. Initiating off hours educational support systems or programs may benefit students who need to work by giving them access to help during the hours they have available to study.

Conclusion

This study illustrates the value of grant funding not requiring payback on the odds of on time nursing program completion. Although economically disadvantaged students are considered part of at-risk populations for non-completion of academic programs, results of this study provide evidence that economically disadvantaged students can be successful in a baccalaureate nursing program when provided with grant funded financial support. Need-based financial aid like the Scholarships for Disadvantaged Students gives economically disadvantaged students the opportunity to pursue baccalaureate nursing education without the ongoing burden of loan repayment and giving them the opportunity to become contributing members of the nursing workforce.

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APPENDIX A:

Variables of Interest Tables

Table 1.

Variables of Interest: Predictors of Success

	Citation	Purpose/ Research Question	Study Design/ program type	Major Concepts	Sample Description	Variables studied	Instrument used	Analysis	Study Outcomes	Comments
1-1	Breckenridge, Wolf &Roszkowski (2012)	Investigate predictive potential of criterion-based instrument to predict NCLEX success or failure of program completers	Retrospective, predictive	Academic success, NCLEX success	*N* = 255, 133 passed, 62% full time, ave age 28, 85% women, 61% white	Language, Work, marital status, child care, retaking sciences, standardized tests (SAT/ACT, TEAS), science GPA, pre-nsg GPA, first gen, family income, college algebra/bio/chem grades	RAPSS-Risk Assessment Profile Strategies for Success: demographic and academic risk factors	Logistic regression, univariate relationships: 13 predictors	Best single predictor was science GPA. Strong: family income, pre-nrg GPA, repeating science courses. RAPSS was able to differentiate between completer's who pass and those who fail NCLEX. Three item efficient model: family income, science GPA, repeat science courses-correctly identified 93% pass, 63% failed	**Predictive power of poverty was striking and has not received much attention in previous studies r/t NCLEX success

1-2	Grossbach &Kuncel (2011)	Examine key admission and nursing school variables to predict success on NCLEX	META-ANALYSIS BSN	Predictors of performance	31 independent samples; 7, 159 participants	SAT/ACT, grades during BSN program, pre-nursing GPA, overall GPA. 13 predictors		Correlations	Standardized admission test and grades earned in nursing courses best predictors of NCLEX success	NCLEX, not program, identify students by grades earned for interventions
1-3	Wolkowitz & Kelley (2010)	What academic areas are the best predictors of early success in a nursing program	Multiple regression, TEAS subscales to predict success ATI RN Fundamentals assessment BSN and ADN used, but results separated out	Early program success	*N* = 4,105 all *N* = 2,000 BSN Nationwide	Reading, math, science, English subscales of TEAS, and the Fundamentals score	ATI TEAS and RN Fundamentals assessment	Multiple regression	Science subscale score strongest predictor of success on Fundamentals assessment, reading second strongest predictor	Early program success versus NCLEX success
1-4	Newton & Moore (2009)	Does pre-nursing scholastic aptitude predict late attrition, nursing aptitude predict late attrition, pre-nursing or scholastic aptitude predict NCLEX readiness	Exploratory descriptive BSN	Attrition, nursing and scholastic aptitude	*N* = 94, one Midwestern state BSN program	Attrition, NCLEX readiness (Comp predictor, scholastic aptitude (pre-nursing GPA), nursing aptitude(TEAS composite)	ATI TEAS, RN Comp predictor	Logistic regression	Scholastic and nursing aptitude not predictive of long-term student attrition. Scholastic aptitude and first semester nursing success were predictive of NCLEX readiness.	Aptitude should be a 'core variable', CEF-conceptual environmental factors maybe more moderating variables

1-5	Fowler & Norrie (2009) **UK**	Identify factors influencing leaving nursing program, identify lesson to reduce attrition rates, identify student coping	Researcher developed questionnaire, interviews, lead to development of Student Support Requirement-Prediction Tool	Attrition, retention, multifactorial approach	*N* = 605, UK 10 f/u interviews	Outcome V=Likely to resign	Researcher developed	Multiple regression, interview themes identified	Based on the questionnaire and interviews, then regression models, an attrition prediction tool was developed that can be scored either by student or faculty and addition support services implemented.	Finances identified with factors associated with thoughts of resigning
1-6	Newton, Smith, Moore, & Magnan (2007)	Whether and to what extent do scholastic aptitude and nursing aptitude predict early academic achievement	Exploratory descriptive BSN	Aptitude	*N* = 164, sophomores, Midwestern BSN	Academic achievement (first nursing semester GPA, 4 courses), scholastic aptitude (pre-nursing GPA, 7 courses), nursing aptitude (TEAS composite score)	ATI TEAS	Hierarchical regression	Both scholastic (15.4% variance) and nursing aptitude (additional 4.8% variance)are useful predictors of early academic achievement	Early program success, admission, progression policies
1-7	Newton, Smith, Moore (2007)	Describe and compare two cohorts of students admitted under rolling admission policy	Exploratory descriptive BSN	Admission policies affecting success	*N* = 184, two cohorts, fall admission and winter admission	Pre-nursing GPA, TEAS composite, success in first nursing semester, attrition(included probation and dismissal)	ATI TEAS	*t*-test, regression, calculation of attrition	The winter admissions cohort had lower mean pre-nursing GPA, mean TEAS composite scores, and mean first semester NGPA. Had higher attrition	Rolling admission policies may accept less prepared students who will have more difficulties and higher attrition

1-8	Crow, Handley, Morrison, & Shelton (2004)		Descriptive correlational, NATIONAL survey BSN	Predictors and interventions for NCLEX success	*N* = 160, 38 states, response rate 31.8%	Admission, progression, graduation requirements, interventions	Researcher developed survey instrument, sent to 513BSN programs nation-wide	Descriptive, parametric, non-parametric	Focused on program outcomes versus individual results	Programs may want to use standardized entrance exams, content area exams. Programs should determine what works best for specific population
1-9	Seldom-ridge & DiBartolo (2004)	Identify the best model for predicting NCLEX success and failure at three points: preadmission, after first year nrsg and prior to graduation	Retrospective descriptive BSN	NCLEX success/ failure	*N* = 186 from 1998-2002, 93% female, 51% native, 49% transfer. 80.6% passed NCLEX first time	NCLEX success. Preadmission: grades in patho, A/P, chem, stats, number of C's, GPA. Junior year: number of C's in junior courses, test ave in two med/surg courses. Senior year: number of C's in all nursing, CATBS score	NLNCATBS	Correlations, t-tests, logistic regression	CATBS score highest correlation with NCLEX success, followed by patho grade, test ave in adv med/surg, test ave in intro med/surg. Low grades in prerequisite courses and nursing courses negatively correlated with NCLEX success. CATBS, grade in patho most predictive.	NCLEX failure: higher number of C's in nursing courses, C in patho, sciences grades

1-10	Daley et al., (2003)	Identify demographic variable associated with NCLEX success. Identify nursing program variables associated with NCLEX success. Compare the predictability of Mosby AssessTest and HESI for	Ex post facto, retrospective BSN	Predictors of NCLEX success , at-risk identification, remediation	*N* = 224 seniors from two cohorts. First cohort Mosby, second cohort HESI. Mosby: 82% female, 93% white, 8% AA, ave age 22.7. HESI 93% female, 94% white, 4% AA, ave age 22.5	Demographic: age gender, ethnicity, PGPA, ACT. Program: grades for prerequisite courses (Chem, anatomy, sociology, zoology-physiology. Nursing grades: patho, senior med/surg course, senior clinical course, final cum GPA	MosbyAssessTest, HESI Exit Exam	t-test, chi squared. Sensitivity, specificity, pos and neg predictive ability and test efficiency calculated for Mosby and HESI	Mosby: students who were older and had higher PGPA, and ACT were more successful. HESI: 33% non-white students were not successful. Mosby: cum GPA and higher grades in anatomy, patho and both m/s course were more successful. HESI: higher grade in senior didactic and higher cum GPA were more successful	HESI greater S&S, pos and neg predictive value. Late remediation prior to NCLEX

1-11	Campbell & Dickson **(1996)** **Classic**	Describe and evaluation nrsg ed research on predictors of retention, graduation, NCLEX success using integrative review and meta-analysis (1981-1990)	Integrative review, meta-analysis		IR: *N* = 47 studies, 43 descriptive, 3 experimental, 1 quasi-experimental Mean sample size= 178; quality of study score range 1.45-3.00, mean = 2.43 (out of 3.0). MA: 3 experimental, 1 quai-experimental.	Cognitive: GPA-college, pre-nrsg, nrsg. ACT, SAT, NLN exams. Preadmission: HS GPA. Credit hours. Self-enhancement: learning style, self-concept/ esteem, test anxiety, social support, *situational variables* Demographic: age, ethnicity, finance, gender, ed level of parents Interventions: support grps, CAI.		Most descriptive using convenience samples. Most not reporting use of conceptual framework, operational definitions, val/rel of instruments used. Quant variables; GPA some significant correlation to grad , NCLEX success	IR: Type of institution, age, sociocultural, educational level under-reported in most studies. Grades in sciences predict success, interventions geared toward pre-nrsg science courses.	Unable to consistently identify student charactertistics to predict retention, grad, NCLEX success. Limited generalizability r/t descriptive, small samples. Single effort intervention studies. Need for QUAL studies.

Table 2.

Variables of Interest: Retention Programs

	Citation	**Purpose/ Research Question**	**Study Design/ program type**	**Major Concepts**	**Sample Description**	**Variables studied**	**Instrument used**	**Analysis**	**Study Outcomes**	**Comments**
2-1	Degazon & Mancha (2012)	BEST project-HRSA Nursing Diversity Workforce grant: Assist students from minority and educationally disadvantaged backgrounds to complete baccalaureate nrsg program New York City	Report of project and outcomes	Retention strategies: academic support, professional counseling, cultural competence, financial support (scholarships/stipends based on unmet need)	Minority, disadvantaged, underrepresented. *N* = 87 over 6 years, 75% under age 25, mostly first or second generation immigrants, 10% AA. %% of 61 passed NCLEX first time.	Number/% of students who were admitted, graduated, passed NCLEX at end of each project year. Effectiveness of academic support, counseling, financial support and cultural competence.	Mentions Bessent, but not directly using Model of Institutional Support		Retained 97% of students, 95% graduated on time, nearly all practice in NYC	Holistic support. Financial support key role. Has program continued beyond grant funding?
2-2	Igbo, Straker, Landson, Symes, Bernard, Hughes, & Carroll (2011)	CANDO project-HRSA Nursing Diversity Workforce grant: Increase the number of baccalaureate prepared nurses from diverse racial and cultural backgrounds. Texas	Report of project and outcomes	Recruitment, pre-entry, retention phases. Interdisciplinary, intradisciplinary.Study skills, writing, communication, critical thinking, career coaching, socialization	*N* = 105, 15 Asian, 21 Hispanic, 55 AA, 14 white. Met federal criteria for disadvantaged. , 3 schools		Based on "best practices"		Overall completion rate 76.8% for 3-year period.	Suggest social work componemt

2-3	Gilliss, Powell & Carter (2010)	Review lit r/t evidence of workforce diversity and health outcomes/disparities, services	Policy implications	Diversity, health disparities, recruitment, retention					Little evidence to support service pattern, concordance, trust, professional advocacy hypotheses specifically in NRSG. Assume SOCIAL GOOD of nrsg workforce that matches population	Recommend target funding for careers in nrsg, particularly entry programs (already exist for adv practice) esp for those w/ financial need-need based aid
2-4	Nnedu (2009)	HRSA Nursing Diversity Workforce grant: increase nrsg education opportunities for racial/ethnic minorities underrepresented in nrsg.	Report of project and outcomes	Recruitment: high schools in AL and GA. Retention: study skills, contracts, seminars, counseling. Pre-entry: middle school, high school summer program. Faculty development: cultural competence. Stipend support: need based, 200$/month		Enrollment 72, 102, 163, 186 from 2001-2004	No model or framework mentioned		Increased enrollment	No completion, graduation. NCLEX results.

2-5	Anders, Edmonds, Monreal& Galvan (2007)	HRSA funded project: recruit and retain economically disadvantaged Hispanic nrsg students in BSN program In conjunction with Project ARRIBA Texas-UTEP	Financial support thru stipends/scholarships. Orientation and counseling, case manager, tutoring, socialization, cultural consultant. Pre-nrsg recruitment in HS and CC, and SON		Pell grant recipients, Hispanic, males, or other ethnic minority. Total *N* = 43 over three years. 8 graduated and passed NCLEX	Program completion, graduation, NCLEX success	No model or framework mentioned		Increased enrollment in program, retention to completion	Use of outreach manager for students in program
2-6	Sutherland et al., (2007)	HRSA Basic Nurse Education and Practice Program:Identify at risk minority students prior to program entry, increase number of minority and disadvantaged in the program and retained in program, expand recruitment to primary/secondary schools, develop structured recruitment plan, increase graduation rates and NCLEX pass rates, develop retention plan Texas	Experimental, ARMS versus non-ARMS BSN	Retention rates, graduation rates, NCLEX success-addressed in this article	*N* = 64 in ARMS program, ethnic or minority, first generation college, rural community, students receiving a C or failing a nursing course. 84% women, 42% white, 42% Hispanic, 8% Asian/PI, 8% AA. 77% single/widowed/divorced, 13% married with children *N* = 265 non-ARMS from database at CON	Final nursing course grades, NCLEX pass rate, satisfaction surveys	Likert-type scales for evaluating mentoring, tutoring, seminars and program evaluation. No model or framework	Descriptive statistics, unpaired t-test	No significant difference in course grades in ARMS vs non-ARMS expect in capstone course. White Anglo scored higher than All Other group. In ARMs, All Other group similar to White Anglo o pass rate. ARMS greater benefit to All Other than White Anglo	T-test should be used with smaller sample size. Not sure if there was normal distribution, or homogeneity of variance-would invalidate findings

2-7	Gardner (2005)	Minority Retention Project-Northern CA Faculty Development Grant-1 year	Description of project	Retention coordinator, mentoring program, language assistance, family events, cultural awareness, support groups	N is not given, nor who was considered "minority". Article mentions, Hispanic and Hmong		Tinto's model of Student Retention: faculty contact, Based on literature of barriers to success for minorities		States 100% retention for the academic year	
2-8	Symes, Tart & Travis (2005)	Nursing Success Program (NSP); Identify students at risk based on reading comp scores, direct into intervention program TWU, Texas	Detailed info about program cited elsewhere. Used reading comp scores (NET) to place in mandatory program. Included 3 semester course, advising	Reading comprehension, retention to graduation	2 cohorts: *N* = 213 pre-NSP, 28% low scores, 80% minority *N* = 160 during NSP 30% low scores, in NSP, 67% minority	Reading comp scores, graduation rates, admission GPA, science GPA,	None, no model	Correlation between cohort 1 &2	Reading comp significant for determining retention to graduation. Cohort 2 with lower scores in NSP graduating at similar rates to those with higher scores	Suggest using reading comp as tool for program selection or intervention, also suggest if used could significantly change complexion of program if underrepresented minorities would be not admitted r/t low reading scores.
2-9	Levin & Levin (1991) **Classic**	Review and critical examination of retention of "at-risk" minority college students		Retention programs, at-risk, minority		Components of successful programs: proactive interventions, small group tutoring, study & test-taking skills, quality instruction	ROL		Difficulties with research: no or inappropriate comparison groups, assignment of students to treatment groups, unequal treatment duration, data. Need for better controlled research studies	

Table 3.

Variables of Interest: Non-Academic Variables

	Citation	Purpose/ Research Question	Study Design/ program type	Major Concepts	Sample Description	Variables studied	Instrument used	Analysis	Study Outcomes	Comments
3-1	Evans (2013)	Examine predictive value of select noncognitive variables of age, race, gender academic development, faculty interaction, peer interaction, hours worked and faculty concern on program completion	Exploratory survey	Non-cognitive variables, intention to leave, attrition	*N* = 407, 92% female, 70% white, 13% AA, 5.6% Hispanic, 6% Asian. UNC system 8 schools	Age, race, gender to predict intention of minority students to complete program. Academic development, faculty interaction, peer interaction, hours worked, faculty concern	Survey-Undergrad nursing intention survey (UNIS), included 30-items from Institutional Integration Scale (pacsr& terre)	Factor analysis, logistic regression	Females lower intentions cores, minorities higher scores, less than 15 hours work/week positive impact.	Not know if students actually did complete. ** suggest financial aid and/or grant opportunities to decrease work hours
3-2	Reyes, Hartin, Loftin, Davenport, & Carter (2012)	Examine the relationship between academic performance and student employment	Descriptive, correlational design	Attrition, academic performance & employment	*N* = 151, 83% women, majority white	Hours worked /week: > 16hrs or < 16 hrs, GPA, high attrition GPA	26 item researcher developed instrument: employment status, demographic data, study habits	Correlations	Significant negative relationship for students who worked 16> hrs/week and academic performance esp in high attrition course and decrease in overall GPA	Does not include students that did not complete before final semester

3-3	Salamonson & Andrew (2006) **Australia**	Influence of part-time employment, age and ethnicity (ESL) on academic performance	Prospective, quantitative	Academic performance, employment, age, other language spoken at home	*N* = 267, second year nursing students Mean age= 24.87 Women = 90% Part-time employed= 78% ESL=23%	Type of part-time employment(nrsg vs non-nrg), hours spent in part-time employment(1-16hrs/wk vs >16 hrs/wk) Age, gender, ethnicity. Grades in patho and nrsg practice.	Researcher developed questionnaire, used previously	ANOVA, post hoc Scheffe test, Multiple regression	Higher grades for students not employed, next highest for nrsg-related employment, non-nrsg employment lower scores than not employed. More than 16 hrs, lowers scores. Strongest predictor in regression was hrs spent in part-time employment. Not employed had BEST outcomes.	16 hours was mean for group and threshold. Nursing employment not necessarily beneficial to nrsg course work.
3-4	Salamonson, Everett, Koch, Andrew, & Davidson (2012) **Australia**	Determine the change in work status, type of work, number of hours worked between first and final year of study. Relationship between hours worked and academic performance (GPA)	Descriptive, correlational survey with longitudinal f/u	Academic performance: final GPA, hours worked in paid employment, number of students in paid employment	*N* = 182/566 survey in the third/final year. Mean age= 24.3 Female= 86% Paid employment=70% Ave hours= 12.2 (0-56)	Work status, hours worked, GPA	Researcher developed questionnaire, f/u to previous study, linked surveys to final academic grade, linked to year 1 survey	Descriptive, ANOVA, multiple regression	Sign. Increase in % of students in paid work(70-84%), type of work, non-nrsg to nrsg, increase in mean hours worked /week(13.7-21.1). Inverse relationship with hours worked to mean GPA, regression: hours worked sign. Negative predictor of GPA in Year 3 students	16 hr/wk threshold may be lower if more participants in f/u. Greater than 16hrs/wk detrimental to academic performance
3-5	Rochford, Connolly &	Explore incidence in term-								

	Drennan (2009) **UK-Ireland**	employment and relationship of employment on academic achievement and experience in higher ed								
3-6	Schoofs, Bosold, Slot & Flentje (2008)	Is there a relationship between number of hours worked and academic performance	Descriptive, survey and qualitative f/u, Self-report of grade	Number of work hours, most recent exam/quiz, paper or grade in a current nursing course	*N* = 135 in 7 different nursing courses. 94% female/white, 77% first-degree	Work hours: (20 or less vs 20 or more), grades in current course on most recent work. Nrsg vs non-nrsg Qual: reason for employment	Assuming researcher developed survey and qual Qs.	Between group comparison and demographics	Grp 2 (20 hrs or more) fewer credits taken, lower mean score grades, more second degree students. Students reported difference, but no significant difference whether students employed or not, except on quiz/exam score mean. Qual: income main reason for employment.	2 page write up, no info about survey or qual Qs. Details of the study not very clear. No tables presented.
3-7	Holmes (2008) Non-nrsg **Belfast, Ireland**	Why students work during term, what influences type of employment, students perception of their ability to balance work and study	Descriptive	Working patterns, reasons for work, negative effects of work, balance of work and study	*N* = 42, first, second year students (3 year program)	Working patterns, reasons for work, negative effects of work, balance of work and study	Researcher developed questionnaire	Within and between group comparisons	83% of students work during term, 58% to cover or contribute to basic cost of living. 84% thought they could balance work and study, 50% felt working could have negative impact	Students should not be considered full time students, should consider dual roles—student/ employee, w/support of the institution.

3-8	ACE Brief May 2006 (King) American Council on Education	Student employment and its impact on the college experience	Data from 2003-4 NPSAS by DOE						70-80% work while enrolled. Part-time, older, low-income and under-represented work more than others. Primary reason to pay tuition, fees and living expenses. 66% of lowest-income dependent students work to pay tuition, fees, living expenses	Most students work jobs not connected to academic program or career goals, may detract from academic experience and jeopardize completion. **Grant aid would limit the amount of time low-income and academically disadvantaged students spend away for study.**
3-9	Torres, Gross & Dadashova (2011) Non-nrsg	What factors regarding work for pay may contribute to an average college student becoming at risk?	Exploratory, Secondary data (SIS)	Work hours, finance, GPA, persistence	*N* = 281 Cohort 1: *N* = 159, under 21 Cohort 2: *N* = 122 21-24 All <21 working, 60% > 21 hrs/wk. Mostly white, female. 20% income between 30-70,000, and 22% above 70,000. Half from 2nd & 3rd quartile for class rank, half "regular" diploma, 88% mid-low range SAT	SAT, GPA, credits attempted, persistence	Research-er designed survey, secondary data	Between group compari-sons, Regres-sion: academic prep, working, academic success	Negative relationship between hours worked and academic success. 40 hrs/wk was negatively associated with credits attempted, credit ratio, GPA. For Cohort 1, working> 40 hrs, associated w/ 0.^) point decrease in GPA, 30 hrs/wk a 0.43 point decrease in GPA	No direct relationship between hours worked and persistence, but GPA positively predicted persistence , work hours may have moderating effect on persistence thru GPA.

3-10	Joo, Durband & Grable (2008) Non-nrsg	Examine the characteristics of student who dropped out of college or reduced credit hours d/t financial reasons	Survey, descriptive	Financial stress, academic interruption	*N* = 503, SW US, public university, 9 colleges, same system. 55% female, 96% single, 78% white, 40% freshman, 60% arts & sciences.	Course load, drop out. Demographic, financial: satisfaction, stress, knowledge, parent's credit use, credit problems. Student self-esteem/self-acceptance	Web-based survey, researcher developed using previous research, 61 item	Descriptive, ANOVA, t-tests. Comparison group of financially strained vs non-strained	38% worried about debt load. 5% financial issues interfere with academic performance. 25% never pay credit balance.	Fin strain interfered with school performance more than non-strained, tended not to pay credit balances, more likely to dropout. Strained had lower levels of self-esteem/acceptance. Students who reduced course load or dropped out were more likely to work part or full time.
3-11	Seago, Wong, Keane & Grumbach (2008)	Describe the psychometric properties of an instrument related to retention if UG nursing students.	Analysis of survey	Retention, institution characteristic, educational processes, individual characteristics	Four community colleges, two state universities in CA. Two rounds of surveys. *N* = 581, 58% response rate	Dispositional , situational, career values, and institutional constructs. Situational: financial, social support, missed classes, work issues	Researcher developed based on work by Cross and Pascarella	Confirmatory factor analysis	Supported use of dispositional subscales of math and science ability, career values subscale of job characteristics and work style, situational subscale of work and financial issues, institutional subscale of diversity and faculty.	Financial issues r/t difficult to afford, adequate tuition, adequate living aid. Work issues r/t hours working, job interferes.

3-12	Riggert, Boyle, Petrosko, Ash & Rude-Parkins (2006) Non-nrsg	Review of employment related liturature								
3-13	Northern, O'Brien & Goetz (2010)	To generate and evaluate a measure of "financial stress" for UG students	Instrument development, psychometric evaluation and testing of a measure of financial stress.	Financial stress, health behaviors, mental health and well-being	*N* = 177 undergraduates, large Midwestern university, self-selected-required for psychology course, mostly white, female, mean age 19.97 years, 3.41/5 financial reliance on others.	Demographics, Daily Stress Inventory, Short Form 36 Health Survey, Multidimensional Index of Life Quality-Financial Status subscale, Financial Stress Scale-College Version	Researcher developed and tested scale includes measures of demographics, general stress, and health	Item analysis, reliability/validity, factor analysis	Good reliability and convergent validity with other stress and health measure.	Suggest use to identify students financially at risk and provide interventions appropriate at different points of college career to reduce negative consequences of financial stress.

APPENDIX B:

MATRIX FOR INTEGRATIVE REVIEW

Academic Factors/Outcomes: NCLEX Predictors: Standardized test: SAT/ACT: 1-1, 1-2, 1-8 NGPA: 1-2 Cum GPA:1-10 Pre-Nsg GPA Specific courses: Science: 1-1, 1-9, 1-10 Nursing: 1-9, 1-10 ATI Comp Pred: 1-4 Mosby, HESI: 1-10	**Retention vs Attrition: Non-NCLEX: Program Completion/Success** Specific course: Fundamentals: 1-3 Reading comp: 2-8 TEAS (science): 1-3, 1-7 Student support services: 1-5 Early academic achievement: 1-6 Pre-nrsg GPA: 1-7 NGPA: 1-7, 3-2, 3-3, 3-4, 3-6 Retention programs: 2-1 thru2-9 Retention: 3-10 GPA: 3-9
Nursing Aptitude/Academic Aptitude TEAS: 1-3, 1-6 SAT/ACT Pre-Nrsg GPA: 1-4, 1-6 Specific course: 1-6	**Environmental Factors: Non-Academic/Non-Aptitude,** Reason for Employment: 3-7, 3-6, 3-7, 3-8 Work hours: 3-1, 3-2, 3-3, 3-4, 3-6, 3-9 Type of work: 3-1, 3-2, 3-3, 3-4, 3-7, 3-8 Financial support: stipends, scholarships, grant: 2-1,2-3, 2-5, 3-8 Finances: 1-5, 3-10, 3-11, 3-12, 3-13 Conceptual Environ Factors (CEF): 1-4

APPENDIX C:

Logistic Regression Analysis

Logistic Regression Analysis: SDS Grant, Demographic Variables

Variable	B	SE	OR	95% CI	Wald	p
SDS	2.37	0.61	10.79	[3.21, 36.29]	14.78	.000
Dependent Status*	1.01	0.67	2.76	[0.73, 10.39]	2.25	.133

*Only demographic variable to contribute

Logistic Regression Analysis: SDS Grant, Demographic Variables, CUMGPA1

Variable	B	SE	OR	95% CI	Wald	p
SDS	2.38	0.62	10.81	[3.17, 36.84]	14.49	.000
Dependent Status	1.30	0.69	3.68	[0.94, 14.36]	3.52	.060
				[2.93, 30.63]		
CUMGPA1	2.25	0.59	9.48		14.14	.000

Logistic Regression Analysis: SDS Grant, Work Hours, Study Hours

Variable	B	SE	OR	95% CI	Wald	p
SDS	2.30	1.05	9.98	[1.26, 78.81]	4.77	.029
Work Hours	0.005	0.02	1.00	[0.96, 1.04]	0.05	.812
Study Hours	0.007	0.22	1.00	[0.96, 1.05]	0.09	.757

Logistic Regression Analysis: SDS Grant, Work Hours, Study Hours, CUMGPA1

Variable	B	SE	OR	95% CI	Wald	p
SDS	2.17	1.06	8.77	[1.09, 70.24]	4.18	.041
				[0.88, 17.82]		
CUMGPA1	1.37	0.76	3.96		3.23	.072
Work Hours	0.013	0.02	1.01	[0.97, 1.05]	0.35	.553
Study Hours	0.015	0.24	1.01	[0.96, 1.06]	0.41	.521

Logistic Regression Analysis: SDS Grant, Study Hours, CUMGPA1

Variable	B	SE	OR	95% CI	Wald	p
SDS	2.15	1.06	8.66	[1.08, 69.22]	4.14	.042
CUMGPA1	1.29	0.75	3.65	[0.83, 16.03]	2.94	.086
				[0.96, 1.06]		
Study Hours	0.01	0.24	1.01		0.38	.537

Logistic Regression Analysis: SDS Grant, CUMGPA, Study to Work Hours

Variable	B	SE	OR	95% CI	Wald	p
SDS	2.25	1.05	9.49	[1.19, 75.21]	4.53	.033
CUMGPA1	1.22	0.75	3.39	[0.77, 14.78]	2.65	.104
				[0.97, 1.03]		
Study to Work	0.00	0.01	1.00		0.00	.997

APPENDIX D:

NURSING SURVEY AND EMAIL

TO PROSPECTIVE RESEARCH STUDY SUBJECTS

GROUP A

Hello «FIRST» «LAST»

This is Professor Karen O'Brien from Saint Xavier University School of Nursing. I am writing to ask you to help me by being an active participant in the research process.

I am working on my dissertation project for a PhD degree in Nursing and I am asking that you fill out a short 43 item survey asking questions about study habits, work hours, and things that helped or were barriers to course or program completion. Please click on the following link to access the survey. You will need your SXU ID **«ID»** to complete the survey: Nursing Survey

This survey is not going to all nursing students; you have been specially selected to receive this.

I would enjoy hearing from you, what you are doing, and where you are working.

If you have already received this email and filled out the survey, thank you again for doing so, and please ignore this second request.

Sincerely,

Karen

Nursing Student Survey

Saint Xavier University
Consent to Participate in a Research Study

"SDS Grants to BSN Students: Impact on Retention, Degree Completion, and Quality of Life"

The School of Nursing at Saint Xavier University received a three year grant, Scholarships for Disadvantaged Students (SDS), from the federal government beginning in 2012. The purpose of this study is to see how this grant program impacted on the experiences of SDS students. In order to assess the impact of SDS Grants, we need to hear from current and graduated students in the School of Nursing, grant recipients and non-grant recipients alike. Everything you contribute to this study will be strictly confidential and will have no bearing on your present or future standing at the University. Your participation potentially will pave the way for further grants for BSN students in the future.

Thank you for your time.
Respectfully,

Karen L. O'Brien, RN, MSN, CNE

I recognize that my identity will remain confidential and that the information will be used for educational purposes related to student learning and outcomes in classroom and outside environments. I understand that my participation is voluntary and that I can withdraw from this study at any time. I also understand that compensation will not be awarded.

Yes No

I understand and agree to participate in this study.	○	○

Student ID: _____

Age: _____

Gender:

○ Female ○ Male

Race:

○ Nonresident Aliens

○ Hispanic/Latino

○ Black or African American

○ White

○ American Indian or Alaska Native

○ Asian

○ Native Hawaiian or other Pacific Islander

○ Two or more races, Non-Hispanic

○ Unknown

Student Status:

○ Current Student ○ Graduated

Did/do you live on campus?

○ Yes

○ No

1. On average, how many hours per week did/do you work during the semester? _____

2. On average, how many hours per week did/do you study during the semester? _____

Please indicate the extent to which your weekly study activities (outside of class) involved the following:

	Never	Sometimes	Usually	Always
3. Using/reading textbook assigned by instructors.	○	○	○	○

4. Using online resources that accompany textbooks required for the course.				
5. Using ATI hardcopy or online ATI resources.				
6. Studying alone.				
7. Studying in groups.				
8. Studying at home in spaces shared by others(livingroom, kitchen).				
9. Studying at home in a dedicated homework space (office, desk).				
10. Studying while at work.				
11. Studying at the SXU library or other on campus study space.				
12. Studying at another library or quiet space.				
13. Studying in public venues, like Starbucks or Panera.				
14. Asking my instructor questions outside of class by email or face to face.				
15. Using laptop, electronic notebooks or other devices.				

Going to school is one part of your life. Certain factors may have restricted or supported YOUR successful goal achievement. Evaluate each item in terms of how it affected YOUR ability to remain in nursing courses this past semester or during your last semester.

	Did Not Apply	Severely Restricted	Moderately Restricted	Did Not Restrict or Support	Moderately Supported	Greatly Supported
16. Personal study skills						

17. Faculty advisement and helpfulness.						
18. Transportation arrangements.						
19. Financial status.						
20. Class schedule.						
21. Family financial support for school.						
22. Nursing student peer mentoring and tutoring.						
23. Hours of employment.						
24. Personal study hours.						
25. College library hours.						
26. Nursing skills laboratory.						
27. Family emotional support.						
28. Family crisis.						
29. Nursing professional events.						
30. Employment responsibilities .						
31. Nursing student support services.						
32. College tutoring services.						

33. College counseling services.						
34. Living arrangements.						
35. Family responsibilities .						
36. Membership in nursing club or organization.						
37. Financial aid and/or scholarship.						
38. Academic performance.						
39. Encouragement by friends outside of school.						
40. Encouragement by friends within classes.						
41. College computer laboratory service.						
42. Child-care arrangements.						

43. Upon reflection, is there anything you would like to suggest or comment upon?

Reset Submit

APPENDIX E:

NURSING STUDENT RETENTION LICENSE

2-17-15

Karen L O'Brien

15435 Hollywood Dr.

Orland Park, IL 60462

This letter is to confirm the purchase of a 1 year license in the amount of $250 for your use of the **Nursing Student retention license**, beginning Feb 5th, 2015. The license will expire on Feb 5th, 2016. Should you wish to renew it for a second year, you will need to renew this license and remit $350.00. Purchase of this license enables the user to implement the tool for research and educational purposes.

Details are as follows:

This toolkit consists of three sets of tools and a total of 21 distinct tools. The three sets of tools are: Resources for Academic Settings; Resources for Health Care Institutions; and Resources for Professional Associations. Taken together, the tools provide a comprehensive set of materials for planning, implementing, and evaluating cultural competence education strategies and programs. These tools may be used alone or in conjunction with other tools and will be of use to a broad range of readers at all levels: nurses, educators, administrators, association leaders, managers, researchers, students, and other health care providers. The tools and this book will enable you to achieve optimal cultural competence.

Access is through WWW.Springerpub.com/Jeffreystoolkit

Thank you for your purchase. If you have any questions, please contact us at

212-431-4370 Sincerely,

Jeffrey Meltzer

Chief Financial Office

CURRICULUM VITAE

KAREN L. O'BRIEN, RN MSN, CNE
obrien@sxu.edu, klobrien@uwm.edu

EDUCATION

- Doctoral Student, University of Wisconsin-Milwaukee
  - Completed Preliminary Comprehensive Examinations, September 2013
  - Dissertation Proposal Defended, May 2015
  - Projected completion of degree February 2016
- Master of Science, Clinical Nurse Specialist-Adult Health, December 2005, Saint Xavier University, Chicago, Illinois
- Bachelor of Science, Nursing Major, January 1986, Loyola University of Chicago, Chicago, IL
- Dissertation Title: Relationship Between Financial Support and Retention of Economically Disadvantaged Students in an Undergraduate Baccalaureate Nursing Program

ACADEMIC APPOINTMENTS

- Full-time faculty appointment-Assistant Professor, School of Nursing, Saint Xavier University, Chicago, IL Fall 2010- present
- Full-time faculty appointment-Lecturer, School of Nursing, Saint Xavier University, Chicago, IL Spring 2006-2010
- Courses taught:
  - NURS 344 Nursing Care of the Adult
  - NURS 345 Nursing Care of the Adult Practicum
  - NURSL 368 Advanced Therapeutics Lab
  - NURS 302 PLUS Seminar
  - NURS 326 Health Assessment
  - NURSL 326 Health Assessment Lab
  - NURS 328, 329, 338, 339 Mentoring
- Adjunct Faculty-Clinical Instructor, School of Nursing, Saint Xavier University, Chicago, IL, 1999-2005
- Courses taught:
  - NURS 337 Introduction to Nursing Therapeutics and Illness Management Practicum: Fall 2002, Fall 2004, Spring 2005, Fall 2005
  - NURS 393 Management in Nursing, Practicum: Fall 2001, Spring 2002
  - NURS 371 Nursing Care of Adults III: Fall 2000, Spring 2001
  - NURS 391 PLUS Seminar: Fall 1999, Spring 2000

CERTIFICATIONS

- NLN Certified Nurse Educator, September 2012

OTHER APPOINTMENTS

- Graduate Assistant, Chicago Institute for Nursing Education, Center for Nursing Scholarship, Saint Xavier School of Nursing, Chicago, IL , 1999-2003

MILITARY EXPERIENCE- U.S. ARMY RESERVE

- Lieutenant Colonel, Army Nurse Corps, retired January 2009
- Senior Nurse Observer Controller/Trainer, 7302nd Medical Training Support Battalion 2004-2009
- Operations Officer for 326 bed Combat Support Hospital, Battalion sized element October 2003-2004
- Staff Nurse, Major, Neurological/Surgical Intensive Care Unit, Baghdad, Iraq (Active Duty), April 2003-May 2003
- Operations/Security Officer for 120 personnel, 60 bed Combat Support Hospital, Camp Wolf, Kuwait (Active Duty) May 2002-April 2003
- Nursing Education/Staff Development Officer, developed and implemented training for nursing personnel, organized annual Nursing Seminar Education Day 2000-2002
- Officer-in-Charge and clinical instructor of Critical Care Sustainment Training at Chicago's Cook County Hospital in Neuro Intensive Care Unit 1994-2000

CLINICAL EXPERIENCE

- Staff Nurse, Dr. Raymond W. Vahl, MD, Worth, IL, 1990-1998
- Staff Nurse, Womack Army Community Hospital, FT. Bragg, NC, Adult MICU/CCU, February 1989-November 1989
- Staff Nurse, Womack Army Community Hospital, Ft. Bragg, NC, Pediatric Unit, August 1987-October 1988
- Staff Nurse, Evans Army Community Hospital, Ft. Carson, CO, Medical/Surgical Unit, February 1986-August 1987

AWARDS/RECOGNITONS

- Illinois Board of Higher Education 2015 Nurse Educator Fellowship Program
- 2010 Alpha Omicron Chapter of Sigma Theta Tau International Excellence in Nursing Education Award
- 2012,2009 Nominated for the AAUP Saint Xavier University Teaching Excellence Award
- Student Selected Faculty Guest Speaker for School of Nursing Pinning Ceremony: Fall 2007, Spring 2009, Fall 2010, Fall 2011
- 2001 Award for Outstanding Graduate Student, presented by Alpha Omicron Chapter of Sigma Theta Tau International

PUBLICATIONS

- Kostovich, C., Wood, K., Poradzisz, M., & O'Brien, K. (2007). Learning style preference and student's aptitude for concept maps. *Journal of Nursing Education*, 46 (5), 225-31.
- O'Brien, K. (2000). Coming This Summer, Third Annual Nursing Education Conference, *Nursing Spectrum*, 13 (11).

PRESENTATIONS

- "The Relationship Between Learning Style Preference and Students' Aptitudes for Concept Maps and Case Studies," Partnerships for the Future: National Conference on Professional Nursing Education and Development, Chicago, IL, November 21, 2002.
- "The Relationship Between Learning Style Preference and Students' Aptitudes for Concept Maps and Case Studies," 9th Annual Nursing Research Conference, Northwest Indiana Nursing Research Consortium, November 2, 2001.

POSTER PRESENTATIONS

- "Figure It Out!" Changing Student Thinking in the Classroom and Clinical Environments. ATI National Nurse Educator Summit, Las Vegas, NV, April 7-10, 2013.
- "Early Identification of At-Risk Students Using the ATI Test of Essential Academic Skills (TEAS)," Midwest Nursing Research Society 35th Annual Research Conference, Columbus, OH, March 24-27, 2011.
- "Short-term and Long-term Outcomes of Group-Mentoring Courses in a Baccalaureate Nursing Curriculum," NLN Education Summit 2007, Phoenix, AZ, September 26-29, 2007.
- "Learning Style Preference and Students' Aptitudes for Concept Maps and Case Studies," poster presented at 26th Annual Research Conference of the Midwest Nursing Research Society, March 3, 2002.

SERVICE TO THE SCHOOL OF NURSING

- Undergraduate Curriculum Committee, 2012-present, Chair 2013-present
- University Assessment Committee 2010-2012
- Chair, Undergraduate Admission, Retention, and Progression Committee Fall 2008-Fall 2010
- Sigma Theta Tau International, Alpha Omicron Chapter, Faculty Counselor 2008-present
- Undergraduate Admission, Retention, and Progression Committee 2005-2012
- Library Liaison 2006-2007
- Evaluation and Research Committee 2005-2008
- Evaluation and Research Committee, Graduate Student Representative 1999-2002

PROFESSIONAL ORGANIZATIONS

- American Nurses Association
- Sigma Theta Tau International, Alpha Omicron Chapter
- Midwest Nursing Research Society
- Reserve Officers Association
- American Association of University Professors

SERVICE TO THE COMMUNITY

- Participant in award winning Veteran Matters (2012) a 10-episode WXAV radio series examining the firsthand experiences of American veterans from World War II, Korea, Vietnam, Iraq and Afghanistan. Each episode contains the raw and personal accounts about the veterans' time in the service, life after war.
- Participated as a reader for the Commemorative Prayer Service for the 2010 International Year of the Nurse and the Florence Nightingale Centennial April 25, 2010
- Organized and presided over Community Prayer Service on behalf of Mary Ann Freitag August 31, 2009

RESEARCH GRANTS

- Summer 2013, Student Survey NURS 326 Sim Chart experience: $300.00