Understanding the Effects of Technology Acceptance in Nursing Faculty: A Hierarchical Regression

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Introduction

Nursing faculty prepare new nurses to work in complex, technological environments which creates an urgency to integrate new clinical technology into curricula at a rapid pace. Faculty are also expected to use technology in teaching to stimulate and facilitate learning. Pressure for faculty to teach traditional courses in non-traditional ways has increased in response to student demand and trends in nursing education. Technology and its integration can create stress, called technostress, which affects the attitudes and use of technology.

The resulting stress may undermine job satisfaction and faculty role retention. It is important to recognize the effects of technostress in nursing faculty and manage effectively to improve both the quality of work life and retention. Burgeoning technology with varied levels of administrative support poses a challenge to academic stability. Increasing expectations for nursing faculty to embrace and incorporate new technology is occurring at the same time faculty members are teaching growing numbers of students who must be prepared to work with technology in high stakes health care arenas. How much these issues create technostress and influence their attitudes, use of technology, job satisfaction, and intent to stay is unclear. This study aimed to fill that gap.

The purpose of this study was to examine the effects of nurse faculty technostress, perceived usefulness, ease of use, and attitude toward using technology on use, job satisfaction, and intent to leave the profession.

Methods and Measurements

Below you will find bulleted the methods used for this study:

- Purposive, non-probability sampling of Southern Regional Education Board (SREB) member nursing schools. 121 schools of nursing located across the south eastern United States were included in this study and associate, baccalaureate and graduate nurse faculty (N = approximately 4,511) were invited to participate.
- Of the 4,511 emails sent, 1161 faculty participated (26% response rate). Data were cleaned and missing data reduced the sample size to 1017.
- Study data were converted to an electronic data set and analysis of variables was performed using SPSS Version 23. Exploratory data analysis was done using histograms, skew, and kurtosis to evaluate normality and Levene’s test to evaluate homogeneity of variance. Transformations were done for data that were not normally distributed but did not yield better results.
- Descriptive statistics such as age, gender, educational level, and academic rank were used to characterize the sample. Hierarchical regression analysis was used to test three hypotheses with variable entry based upon the model.
- Nurse Educator Technostress Scale (NETS) yielded an internal consistency reliability of α = 0.94.
- Technology Acceptance Model (TAM) yielded the following for internal consistency reliability:
  - Perceived usefulness α = .96, Perceived ease of use α = .97, Behavioral intent to use α = .92, and Actual system use α = .96.
- Attitudes Toward E-Learning (ATEL) yielded an internal consistency reliability of α = .89.
The Job in General Scale (JIG) had an internal reliability in this study of $\alpha = .90$.

**Results:**

Mean substitution was performed via recoding missing data with the average instrument mean ($N = 1017$) for all models.

**Ha1:** Technostress, perceived usefulness, perceived ease of use, attitude toward using, and behavioral intention to use technology explain variation in technology use. The model was statistically significant, $R^2 = .80$, $F(5,1011) = 815.81$, $p < .000$. **The five variables explain 80% of the variation in technology use indicating a strong model.** Technology use was predicted by lower levels of technostress and higher levels of perceived usefulness, perceived ease of use, attitude toward using, and behavioral intention to use. **Technostress entered as step 1 had the best chance of explaining variance yet only accounted for 4.3% of the variation in use.**

**Ha2:** Technostress, perceived usefulness, perceived ease of use, attitude toward using, behavioral intention to use, and use of technology explain variation in job satisfaction. The model was statistically significant, $R^2 = .10$, $F(6,1010) = 19.460$, $p < .000$, **which demonstrates the six variables explain 10% of the variation in job satisfaction.** Job satisfaction was predicted by lower levels of technostress and higher levels of perceived usefulness, behavioral intent, and system use. Neither attitude nor perceived ease of use were significant predictors of job satisfaction.

**Ha3:** Technostress, perceived usefulness, perceived ease of use, attitude toward using, behavioral intention to use, use of technology, and job satisfaction explain variation in intent to stay in the profession. The model was statistically significant, $R^2 = .04$, $F(7,1009) = 7.383$, $p < .000$, which demonstrates the **seven variables explain 4% of the variation in intent to stay.**

**Discussion**

The first study model validated the TAM model with the addition of technostress and explained 80% of the variation in system use. The second model added job satisfaction as an outcome variable after technology use. While the goal was to see if the TAM model fostered better understanding of job satisfaction, it did not perform well; and perceived ease of use and attitude toward using technology were not significant predictors of job satisfaction. Thus, **perceived usefulness, attitude toward using, and system use positively predicted job satisfaction, while technostress negatively impacted job satisfaction.** The 3rd model sought to evaluate whether it fostered understanding of nursing faculty intent to stay in the job. On average the faculty intended to stay 9 years with a $SD$ of 6.81, range of 0 to 40 years. 40% intended to stay 5 years or less. Technostress, attitude toward using, behavioral intention to use, and use of technology were insignificant predictors of intent to stay. Therefore, **perceived usefulness, perceived ease of use, and job satisfaction predicted intent to stay in the profession.** This model was the lowest performing of the three studied with only 4% of prediction. The assumption driving this study was that technostress would be a strong predictor of technology use, job satisfaction, and intent to stay in the profession. Surprisingly, technostress was found to be a weak predictor for technology use and job satisfaction and irrelevant with intention to stay in the profession. Although surprising, the large sample size and addition of technostress did provide strong study results with 80% explained variance in the TAM model.

**Conclusion**

Findings revealed that technostress undermines job satisfaction and technology use in nurse faculty, while supporting many other variables that positively influenced technology use, job satisfaction, and intent to stay in teaching. This study along with future research should propel administration and nursing programs toward engagement to create support of faculty struggling with technology issues to reverse technostress and recognize key variables that promote job satisfaction and influence faculty intent to stay.
Title:
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References:


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Abstract Summary:

Technology is widely used in nursing academia, but little is known about the effects of technostress on technology acceptance. Participants will learn about the effects of nurse faculty technostress, perceived usefulness, ease of use, and attitude toward using technology related to technology use, job satisfaction, and intent to leave.

Content Outline:

1. I. Introduction
   1. Technology Effects on Nurse Faculty; Nurse Faculty Experience Stress when they are unable to adapt and use technology in a healthy manner
   2. Resultant stress may undermine job satisfaction and result in faculty leaving the profession. Recognition of the Effects of Technostress in nursing faculty is imperative to know. Current demands that face faculty: Teaching/service/research paradigm; Heavy Workloads; Personal Life; Maintenance of Clinical Competence; Pressure To Teach Traditional Courses In A Non-traditional Manner; Rapid Changes In Technology
   3. The purpose of this study was to examine the effects of nurse faculty technostress, perceived usefulness, ease of use, and attitude toward using technology related to technology use, job satisfaction, and intent to leave the profession.

2. II. Body
   1. Main Point #1 Implications that contribute to the problems facing nurse faculty
      1. Supporting point #1 Faculty Shortages
         1. Aging Faculty
         2. Job Competition (compensation & practice)
      3. Supporting point #2
         1. Strategies to retain, replenish, and expand nurse faculty
2. Main Point #2 (Ha1) Technostress, perceived usefulness, perceived ease of use, attitude toward using, and behavioral intention to use technology explain variation in technology use.
   1. Supporting point #1
      1. The model was statistically significant, $R^2 = .80$, $F(5,1011) = 815.81$, $p < .000$. Thus, the hypothesis was accepted, which demonstrates the five variables explain 80% of the variation in technology use indicating a strong model.

3. Main Point #3 (Ha2) Technostress, perceived usefulness, perceived ease of use, attitude toward using, and use of technology explain variation in job satisfaction.
   1. Supporting point #1
      1. The model was statistically significant, $R^2 = .10$, $F(6,1010) = 19.460$, $p < .000$, which demonstrates the six variables explain 10% of the variation in job satisfaction. Job satisfaction was predicted by lower levels of technostress and higher levels of perceived usefulness, behavioral intent, and system use. Neither attitude nor perceived ease of use were significant predictors of job satisfaction.

4. Main Point #4 (Ha3) Technostress, perceived usefulness, perceived ease of use, attitude toward using, behavioral intention to use, use of technology, and job satisfaction explain variation in intent to stay in the profession.
   1. Supporting point #1 The third and final prediction model contained seven predictors reached in seven steps. Mean substitution was performed via recoding missing data with the average instrument mean ($N = 1017$). The model was statistically significant, $R^2 = .04$, $F(7,1009) = 7.383$, $p < .000$, which demonstrates the seven variables explain 4% of the variation in intent to stay. Intent to stay in the profession was primarily predicted by higher levels of perceived usefulness, perceived ease of use, and job satisfaction. Neither technostress, attitude, behavioral intent, nor use were significant predictors of job satisfaction.

   1. III. Conclusion
      1. The first study model validated the Technology Acceptance Model (TAM) with the addition of technostress and explained 80% of the variation in system use. The second model added job satisfaction as an outcome variable after technology use. While the goal was to see if the TAM model fostered better understanding of job satisfaction, it did not perform well; and perceived ease of use and attitude toward using technology were not significant predictors of job satisfaction. Thus, perceived usefulness, attitude toward using, and system use positively predicted job satisfaction, while technostress negatively impacted job satisfaction. The 3rd model sought to evaluate whether it fostered understanding of nursing faculty intent to stay in the job. On average the faculty intended to stay 9 years with a SD of 6.81, range of 0 to 40 years. 40% intended to stay 5 years or less. Technostress, attitude toward using, behavioral intention to use, and use of technology were insignificant predictors of intent to stay. Therefore, perceived usefulness, perceived ease of use, and job satisfaction predicted intent to stay in the profession. This model was the lowest performing of the three studied with only 4% of prediction. The assumption driving this study was that technostress would be a strong predictor of technology use, job satisfaction, and intent to stay in the profession. Surprisingly, technostress was found to be a weak predictor for technology use and job satisfaction and irrelevant with intention to stay in the profession. Although surprising, the large sample size and addition of technostress did provide strong study results with 80% explained variance in the TAM model.

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