

Examining Attitude Toward Statistics Among Graduate Nursing Students

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INTRODUCTION

While the integration of statistics is an important component of nursing education, many students find statistics difficult. However, graduate nursing students are often excluded from most studies of attitudes toward statistics. The purpose of this descriptive study is to characterize the progression of graduate nursing students' attitude toward statistics from the beginning to course completion.

METHODS

Sample

The convenience sample (n = 42) of graduate nursing students was obtained from two sections of a master's level statistics course at a four-year Midwestern university.

Instrument

SATS-36 (Schau, Stevens, Dauphinee, & Del Vecchio, 1995) is a 36 item scale, which measures six components of affect, cognitive competence, value, difficulty, interest and efforts with a 7-point Likert scale (e.g., 1 = *Strongly disagree* to 7 = *Strongly agree*).

Analysis

All data were analyzed in SPSS 20.0. Descriptive statistics were used to describe the six component of SATS-36 from the beginning to course completion. Wilcoxon-signed rank tests were utilized to characterize the progression of students' attitude toward statistics. Data were also divided into two groups based on the median number of statistics courses taken in the past and analyzed with Mann-Whitney test. All statistical significance were reported at $p \leq .05$.

RESULTS

Table 1. Descriptive characteristics of the sample (N =42)

Variable	N (%)	M (SD)
Gender	Male 3 (7.1%) Female 39 (92.9%)	
Degree seeking	Master's 27 (64.3%) PhD 15 (35.7%)	
Age		35.83 (9.02)
Current GPA		3.81 (0.20)
Number of high school mathematics/statistics course completed		4.12 (1.45)
Number of college mathematics/statistics course completed		3.07 (2.21)
Number of hours spend outside of class studying statistics		3.58 (4.06)

Cronbach's α for each component was computed for both pre and post data and most were reported within what was reported in the literature (Table 2).

Table 2. Range of Cronach's α for components of SATS-36

Component	Previously reported Range of Cronbach's α	Cronbach's α in the current study	
		Pre	Post
Affect	.74 - .90	.73	.77
Cognitive Competence	.64 - .81	.81	.67
Value	.80 - .90	.72	.72
Difficulty	.80 - .89	.90	.76
Interest	.77 - .88	.85	.94
Effort	.76 - .91	.54	.68

While this sample showed more positive attitudes (yet non-significant) towards statistics, they showed a significant decrease in *Effort* between the beginning of the course ($Mdn = 7.00$) and the end of the course ($Mdn = 6.75$), $z = -2.30$, $p = .021$, $r = 0.24$.

When the sample was divided by the amount of exposure to statistics, the results of Mann-Whitney tests found students who took 7 or more had more positive attitudes about their intellectual knowledge and skills when applied to statistics (*Cognitive Competence*) than those who took less than 7 courses in the beginning.

Table 3. Attitude component scores of SATS-36 by the number of courses taken in the past

	Seven or less Courses (n = 18)	More than 7 courses (n =13)	Z	Sig.	Between group effect size r
Affect (Pre)	3.64 (0.90)	4.22 (0.96)	-1.93	.056	
Affect (Post)	3.94 (0.72)	4.05 (1.47)	-0.68	.514	
Change	-0.30	0.17	-1.12	.275	-.20
Within group effect size r	-.26	-.08			
Cognitive Competence (Pre)	4.57 (0.91)	5.32 (0.76)	-2.35	.018*	
Cognitive Competence (Post)	5.01 (0.73)	4.91 (1.09)	-.20	.859	
Change	-0.44	0.41	-1.72	.089	-.31
Within group effect size r	-.31	-.14			
Value (Pre)	5.40 (0.78)	5.39 (0.55)	0.90	.921	
Value (Post)	5.50 (0.79)	5.27 (0.80)	-0.78	.441	
Change	-0.10	0.12	-0.48	.650	-.08
Within group effect size r	-0.06	-.08			
Difficulty (Pre)	2.67 (1.07)	3.24 (1.14)	-1.33	.196	
Difficulty (Post)	3.26 (0.61)	2.69 (0.97)	-1.73	.089	
Change	-0.59	0.55	0.09	.007**	-.47
Within group effect size r	-0.40	-.31			
Interest (Pre)	5.46 (0.94)	5.35 (0.81)	-0.38	.708	
Interest (Post)	5.30 (1.26)	5.29 (1.60)	-0.32	.767	
Change	0.16	0.06	0.61	.622	-.09
Within group effect size r	-.12	-.02			
Effort (Pre)	6.93 (0.19)	6.55 (0.33)	-3.41	.002**	
Effort (Post)	6.54 (0.52)	6.42 (0.71)	-0.33	.767	
Change	0.39	0.13	0.20	.211	-.23
Within group effect size r	-.49	-.06			

Note. ** $p < .01$ and * $p < .05$

However, they had less amount of work they are willing to invest in learning statistics (*Effort*) than those who took less than 7 courses. All other components in the pre-test and all in the post-test showed no significant differences between the groups.

CONCLUSIONS

Findings indicated that students generally felt positive about their attitudes about their intellectual knowledge and skills when applied to statistics and valued the importance of statistics in their personal and professional life. However, statistics still remain as a difficult subject to learn and their willingness to make efforts to learn statistics was significantly reduced at course completion. Further important strategies to make statistical materials easier and to constantly motivate students in learning statistics should be considered.