

## Paper EPO-102

# Using SAS® to Examine Relationships among Leadership Styles of College of Nursing Deans and Faculty Job Satisfaction Levels in Research Intensive Institutions

Abbas S. Tavakoli, DrPH, MPH, ME, Karen Worthy, PhD, MPH, RN

## ABSTRACT

Leadership and job satisfaction are two factors that have been regarded as fundamental for organizational success. It has been shown that employees with high job satisfaction levels are likely to be more productive and exert more effort in pursuing organizational interests. The purpose of this study was to identify perceived leadership styles of nursing deans to determine whether they correlate with nursing faculty job satisfaction. The study used many SAS® procedures to analyze descriptive, correlational data. The sample for this national study consisted of 303, out of 1626 recruited, full-time nursing faculty members from 24 public, research universities with very high research activity in the United States. The result show there is positive significant linear relationship between transformation leadership style and transactional leadership with job satisfaction. Also, the result indicated that there is negative significant relationship between passive leadership style and job satisfaction ( $r = -.43$ ). The result of multiple regression indicated that different leadership styles (transformational, transactional, and passive) are related to the job satisfaction after controlling with interaction with dean. The R square for transformational, transactional, and passive leadership on job satisfaction were .38, .13, and .26; respectively. SAS® is powerful software to analyze any types of data.

**Keywords:** leadership, job satisfaction

University of South Carolina, College of Nursing.

## INTRODUCTION

In most organizations, some form of leadership is exercised by individuals who occupy positions of power (Hulin & Judge, 2003). Leadership is a complex phenomenon involving multiple leaders, followers, and a situation or task (Bass, 1985); whether a given leader's action has its desired effect is in part determined by the perception of the followers. Effective leadership style is one of the factors that may have an impact on employee job satisfaction (Chen & Baron, 2006). If better assessments of the relationship between leadership styles and overall employee satisfaction can be made, it may be possible to formulate a nursing education leadership practice model and align best practice leadership strategies to enhance greater organizational effectiveness. Job satisfaction levels play an important role in the overall commitment and productivity of nursing education programs (Aydin, Sarier, & Uysal, 2013).

## Purpose

The purpose of this paper was to identify perceived leadership styles of nursing deans to determine whether they correlate with nursing faculty job satisfaction. Specific aims of the study were (1) to examine the leadership styles of nursing deans as perceived by nursing faculty; (2) to measure the level of faculty job satisfaction; (3) and to examine what, if any, relationships exist between perceived leadership styles of deans and nursing faculty job satisfaction

## Background

Leadership researchers have concentrated on one of three veins of research. Some have focused on the personality, physical traits, or behaviors solely of leaders. Others have investigated the relationships between leaders and followers. Still others have explored how various aspects of a situation influence a leader's reaction (Hughes, Ginnett, & Curphy, 2002). However, trait theory failed to delimit a definitive list of leadership traits. A subsequent understanding of leadership, behavioral leadership theory, shifted the focus from personal traits and characteristics to specific behaviors or actions. The roles of academic deans are multifaceted, challenging, and often ambiguous. Academic deans have more diverse responsibilities than in the past as their main role has migrated away from student affairs and moved toward administrative obligations, with a focus on the faculty leadership (Bray, 2008). Faculty perceptions of the dean and administrative decision-making in general will influence this relationship. The skills needed to effectively perform the various duties assigned to a college dean continue to change as the academic environment evolves. The literature on leadership styles and organizational commitment show that leaders greatly impact promoting job satisfaction and organizational commitment of employees (Aydin et al., 2013). This study explored faculty's responses to the leadership styles of nursing deans, levels of faculty job satisfaction, and the

influences of leadership styles on faculty job satisfaction.

### Method

A nationwide survey was administered to include full-time nurse faculty members of public, research universities with very high research activity in the United States. The instrument to measure dean leadership style in this study was the Multifactor Leadership Questionnaire 5x-Short (MLQ-5x). The MLQ-5x is a 45-item questionnaire that takes into consideration nine outcome subscales that identify and measure key leadership behaviors shown in prior research to be strongly linked to the success or failure of individuals and organizations (Bass, Avolio, Jung, & Berson, 2012). Three different leadership styles included in this paper are transformational, transactional, and passive. This study used the MSQ short form of 20 items to measure job satisfaction. Also, the survey included demographic variables. T-tests were used to test total scale and subscale differences for gender and race, ethnicity. Alpha reliability coefficient was assessed using Proc Corr. Proc Freq and Means in SAS used to describe sample. Proc Corr, T-test, GLM, and Reg used in SAS to examine the inferential statistics. All data analyses were performed using SAS/STAT® version 9.4 (SAS, 2013).

### Result

Three-hundred- and three out of 1848 surveys responded in this study. Ninety-six percent of the sample was women, 81% were white, 89% were single, and 58% work. The majority of participants were female (89.4 %) and 51 years or older (62.4 %). About seventy-eight percent participants have doctorate degree and 36.6 % were assistant professor. Only 2% have less than one year interaction with dean. (See table 1).

**Table 1. Frequency tables of selected demographic variables**

| What is your gender |           |         |                      |                    |
|---------------------|-----------|---------|----------------------|--------------------|
| sex                 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
| Male                | 32        | 10.60   | 32                   | 10.60              |
| Female              | 270       | 89.40   | 302                  | 100.00             |

| What is your age range |           |         |                      |                    |
|------------------------|-----------|---------|----------------------|--------------------|
| age                    | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
| 21-30                  | 2         | 0.67    | 2                    | 0.67               |
| 31-40                  | 35        | 11.74   | 37                   | 12.42              |
| 41-50                  | 75        | 25.17   | 112                  | 37.58              |
| 51 and above           | 186       | 62.42   | 298                  | 100.00             |

| What is your highest degree earned |           |         |                      |                    |
|------------------------------------|-----------|---------|----------------------|--------------------|
| edu                                | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
| Masters                            | 66        | 22.37   | 66                   | 22.37              |
| Doctorate                          | 229       | 77.63   | 295                  | 100.00             |

| What is your primary job |           |         |                      |                    |
|--------------------------|-----------|---------|----------------------|--------------------|
| job                      | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
| Instructor               | 56        | 18.98   | 56                   | 18.98              |
| Assistant Professor      | 108       | 36.61   | 164                  | 55.59              |
| Associate Professor      | 81        | 27.46   | 245                  | 83.05              |
| Professor                | 50        | 16.95   | 295                  | 100.00             |

| How long have you worked dean been in his/her deanship role |           |         |                      |                    |
|-------------------------------------------------------------|-----------|---------|----------------------|--------------------|
| wdean                                                       | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
| Less than 1 year                                            | 36        | 12.12   | 36                   | 12.12              |
| 1-3 years                                                   | 127       | 42.76   | 163                  | 54.88              |
| 4-6 years                                                   | 84        | 28.28   | 247                  | 83.16              |
| 7-10 years                                                  | 38        | 12.79   | 285                  | 95.96              |
| More than 10years                                           | 12        | 4.04    | 297                  | 100.00             |

| How would you characterize your amount of interaction with the dean |           |         |                      |                    |
|---------------------------------------------------------------------|-----------|---------|----------------------|--------------------|
| interact                                                            | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
| Less than 1 year                                                    | 6         | 1.98    | 6                    | 1.98               |
| 1-3 years                                                           | 85        | 28.05   | 91                   | 30.03              |
| 4-6 years                                                           | 113       | 37.29   | 204                  | 67.33              |
| 7-10 years                                                          | 70        | 23.10   | 274                  | 90.43              |
| More than 10years                                                   | 29        | 9.57    | 303                  | 100.00             |

**Table 2. N, Means, Standard Deviations, Minimum, and Maximum for Leadership and Job Satisfaction Scales**

| Label                             | N   | Mean  | Std Dev | Minimum | Maximum |
|-----------------------------------|-----|-------|---------|---------|---------|
| Total satisfaction                | 302 | 75.57 | 14.30   | 12.00   | 100.00  |
| TRANSFORMATIONAL LEADERSHIP STYLE | 300 | 66.36 | 21.27   | 5.00    | 100.00  |
| TRANSACTIONAL LEADERSHIP STYLE    | 296 | 20.26 | 6.82    | 2.00    | 39.00   |
| PASSIVE LEADERSHIP STYLE          | 299 | 16.25 | 7.63    | 1.00    | 38.00   |

Table 2 showed the means of leadership and job satisfaction subscales. The mean for total job satisfaction scale was 75.57 with standard deviation of 14.30. The mean for transformational, transactional, and passive leadership were 66.36, 20.26, and 16.25; respectively.

**Table 3. Pearson Correlation for Leadership and Job Satisfaction Scales**

| Pearson Correlation Coefficients<br>Prob >  r  under H0: Rho=0<br>Number of Observations |                |                          |                          |                           |
|------------------------------------------------------------------------------------------|----------------|--------------------------|--------------------------|---------------------------|
|                                                                                          | tsat           | tm                       | tS                       | PA                        |
| <b>tsat</b><br>Total satisfaction                                                        | 1.00000<br>302 | 0.61440<br><.0001<br>300 | 0.30851<br><.0001<br>296 | -0.43077<br><.0001<br>299 |
| <b>tm</b><br>TRANSFORMATIONAL LEADERSHIP STYLE                                           |                | 1.00000<br>300           | 0.55748<br><.0001<br>296 | -0.33653<br><.0001<br>298 |
| <b>tS</b><br>TRANSACTIONAL LEADERSHIP STYLE                                              |                |                          | 1.00000<br>296           | 0.10175<br>0.0805<br>296  |
| <b>PA</b><br>PASSIVE LEADERSHIP STYLE                                                    |                |                          |                          | 1.00000<br>299            |

Table 3 showed the Pearson correlation for job satisfaction and leadership scales. The result show there is positive significant linear relationship between transformation leadership style and transactional leadership with job satisfaction. Also, the result indicated that there is negative significant relationship between passive leadership style and job satisfaction ( $r=-.43$ ).

**Table 4. Regression Models Leaderships on Job Satisfaction**

| Label                                                               | DF | Parameter Estimate | Standard Error | t Value | Pr >  t | Standardized Estimate | Squared Semi-partial Corr Type II |
|---------------------------------------------------------------------|----|--------------------|----------------|---------|---------|-----------------------|-----------------------------------|
| Intercept                                                           | 1  | 47.17909           | 2.45872        | 19.19   | <.0001  | 0                     | .                                 |
| TRANSFORMATIONAL LEADERSHIP STYLE                                   | 1  | 0.38176            | 0.03245        | 11.77   | <.0001  | 0.58426               | 0.28787                           |
| How would you characterize your amount of interaction with the dean | 1  | 1.07411            | 0.70060        | 1.53    | 0.1263  | 0.07613               | 0.00489                           |

| Label                                                               | DF | Parameter Estimate | Standard Error | t Value | Pr >  t | Standardized Estimate | Squared Semi-partial Corr Type II | Squared Partial Corr Type II |
|---------------------------------------------------------------------|----|--------------------|----------------|---------|---------|-----------------------|-----------------------------------|------------------------------|
| Intercept                                                           | 1  | 57.55566           | 2.81152        | 20.47   | <.0001  | 0                     | .                                 | .                            |
| TRANSACTIONAL LEADERSHIP STYLE                                      | 1  | 0.41614            | 0.12565        | 3.31    | 0.0010  | 0.20384               | 0.03242                           | 0.03609                      |
| How would you characterize your amount of interaction with the dean | 1  | 3.15427            | 0.86954        | 3.63    | 0.0003  | 0.22326               | 0.03889                           | 0.04298                      |

| Label                                                               | DF | Parameter Estimate | Standard Error | t Value | Pr >  t | Standardized Estimate | Squared Semi-partial Corr Type II | Squared Partial Corr Type II |
|---------------------------------------------------------------------|----|--------------------|----------------|---------|---------|-----------------------|-----------------------------------|------------------------------|
| Intercept                                                           | 1  | 75.76889           | 2.79736        | 27.09   | <.0001  | 0                     | .                                 | .                            |
| PASSIVE LEADERSHIP STYLE                                            | 1  | -0.76235           | 0.09131        | -8.35   | <.0001  | -0.41660              | 0.17312                           | 0.19060                      |
| How would you characterize your amount of interaction with the dean | 1  | 3.99286            | 0.70684        | 5.65    | <.0001  | 0.28188               | 0.07925                           | 0.09731                      |

Note: R square for model 1 .38, model 2 .13, and model 3 .26.

Table 4 showed the results of multiple regressions of leadership styles on job satisfaction. The results indicated different leadership styles are significant job satisfaction. The interaction with dean was significant with transactional and passive leadership styles but not significant with transformational leadership. The R square for transformational, transactional, and passive leadership on job satisfaction were .38, .13, and .26; respectively.

### Conclusion

Several procedures in SAS® used to examine the relationship between different leadership styles on job satisfaction. Proc Freq, Means, Corr, GLM, and Reg used to analyze this study. The result of multiple regression indicated that different leadership styles (transformational, transactional, and passive) are related to the job satisfaction after controlling with interaction with dean. SAS® is powerful software to analyze any types of data.

### References

- Aydin, A., Sarier, Y., & Uysal, S. (2013). The effect of school principals' leadership styles on teachers' organizational commitment and job satisfaction. *Educational Sciences: Theory & Practice*, 13(2), 806-811.
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York: Free Press.
- Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2012). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology*, 88(2), 207-218. doi: 10.1037/0021-9010.88.2.207
- Chen, H. C., & Baron, M. (2006). Nursing directors' leadership styles and faculty members' job satisfaction in Taiwan. *Journal of Nursing Education*, 45(10), 404-411.
- Hulin, C. L., & Judge, T. A. (2003). Job attitudes. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), *Handbook of psychology* (Vol. 12): Industrial and organizational psychology (pp. 255-276). Hoboken, NJ: Wiley.
- SAS Institute Incorporated. (2013). *SAS for Windows 9.4*. Cary, NC: SAS Institute Inc.

### Contact Information

Abbas S. Tavakoli, DrPH, MPH, ME  
 Clinical Associate Professor/ Director of Statistical Lab  
 College of Nursing  
 University of South Carolina  
 1601 Greene Street  
 Columbia, SC 29208-4001  
 Phone: (803) 777-2978  
 E-mail: [abbas.tavakoli@sc.edu](mailto:abbas.tavakoli@sc.edu)

Karen Worthy, PhD, MPH, RN  
 College of Nursing  
 University of South Carolina  
 1601 Greene Street  
 Columbia, SC 29208-4001

Phone: (803) 576-7954  
 E-mail: [kworthy0@mailbox.sc.edu](mailto:kworthy0@mailbox.sc.edu)

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Other brand and product names are trademarks of their respective companies

## Attachment A

### SAS Syntax

```
ods rtf; ods listing close;
```

```
proc freq data =ONE;
tables sex age edu job teach ldean wdean interact;
title 'Frequency tables / ' ; run;
```

```
proc means data=two maxdec=2;
var tsat tm ts PA ; TITLE1 'Mean'; run;
```

```
ods rtf close; ods listing; quit; run;
```

```
ods rtf; ods listing close;
%macro avg(Q);
proc means data=two maxdec=2;
class &q; var tsat tm ts PA ; title ' means by group';
%mend avg;
%avg (sex); %avg (age); %avg (edu); %avg (job); %avg (teach); %avg (ldean); %avg (wdean); %avg (interact); run;
ods rtf close; ods listing; quit; run;
```

```
ods rtf; ods listing close;
proc CORR Data=two ;
var tsat tm ts PA ;
TITLE1 'CORREALTION'; run;
ods rtf close; ods listing; quit; run;
```

```
ods rtf; ods listing close;
%macro glm (d,i);
```

```
proc glm data=two; class &i;
model &d = &i ; lsmeans &i / pdiff cl adjust=tukey ; title ' glm'; %mend glm;
%glm (tsat ,sex); %glm (tsat ,age); %glm (tsat ,edu); %glm (tsat ,job); %glm (tsat ,interact); run;
ods rtf close; ods listing; quit; run;
```

```
ods rtf; ods listing close;
%macro reg (d,i,t);
```

```
proc reg data=two; model &d = &i / stb pcorr2 scorr2; title ' Regression model' &t;
```

```
%mend reg;
%reg (tsat,tm interact, transformational leadership);
%reg (tsat,ts interact, transcational leadership);
%reg (tsat,pa interact, passive leadership); run;
ods rtf close; ods listing; quit; run;
```