



A Psychometric Evaluation of the Casey-Fink Graduate Nurse Experience Survey

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OBJECTIVE: The purpose of this study was to evaluate the psychometric properties of the Casey-Fink Graduate Nurse Experience Survey (CFGNES).

BACKGROUND: Transitioning from the student role to professional nurse is challenging and stressful. Accurate measurement of role transition is important because of concerns regarding retention.

METHODS: A secondary analysis of 71 919 graduate nurse responses to the CFGNES, collected 6 months into the Vizient/AACN residency program, was conducted. Psychometric testing included exploratory and confirmatory factor analysis. Internal consistency reliability was measured using Cronbach's α .

RESULTS: Analysis revealed a consistent 5-factor solution. Factors were labeled job satisfaction, support, organize/prioritize care, role confidence, and professional socialization. Results demonstrated the CFGNES is a reliable and valid instrument for measuring perceptions of role transition.

CONCLUSIONS: This study was needed to inform survey item revisions. The CFGNES continues to be valuable in providing voice to the needs of graduate

nurses and evidence for improving nurse residency program outcomes.

Transitioning from the role of nursing student to professional nurse is widely recognized as a period of stress, role adjustment, and reality shock.¹ The new nurse is often confronted with the realization of being unprepared for their role and responsibilities, which may result in job stress, job dissatisfaction, and thoughts of leaving nursing.² Healthcare organizations across the globe are facing significant nurse turnover and look for strategies to retain a pipeline of graduate nurses who are eager to join the professional nursing workforce. Assessing current difficulties new nurses face during role transition might uncover unique factors that influence retention and job satisfaction.

Background

In an attempt to retain newly graduated nurses, many healthcare institutions have followed the recommendation of the Institute of Medicine's report, *The Future of Nursing: Leading Change, Advancing Health*,³ to implement nurse residency programs to facilitate transition to practice and thus reduce nurse turnover. These programs have been developed and embraced as an innovative intervention to provide support for graduate nurses as they transition into practice, to increase clinical competency in the professional role, to improve confidence and job satisfaction, and to improve graduate nurse retention.⁴⁻⁶ Accreditation criteria have been established to assist in reducing nurse residency program variability and help ensure best practices in the development and support of newly licensed graduate nurses. These accreditation standards require current, reliable, and valid evaluation methods to demonstrate

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program quality and to measure outcomes.⁷ The appropriate selection of measurement instruments and the extent to which their reliability and validity are demonstrated have a profound influence on the strength of the findings.⁸ The measurement tool most frequently used in published studies to measure graduate nurse self-reported perceptions of the transition to practice experience is the Casey-Fink Graduate Nurse Experience Survey (CFGNES)⁹ (Supplemental Digital Content 1, <http://links.lww.com/JONA/A806>).

Development of the CFGNES

The initial CFGNES was codeveloped by Kathy Casey and Regina Fink in the spring of 1999. Informal feedback from former students and observed turnover patterns of graduate nurses motivated the authors to design this measurement instrument. Relevant theoretical concepts from Patricia Benner's¹⁰ *Novice to Expert Theory of Skill Acquisition* and Marlene Kramer's¹¹ *Reality Shock Theory* were used as the frameworks to guide item development for this measurement tool. Survey items were selected and developed as indicators of the underlying construct: role transition. Responses from 270 graduate nurses employed at 6 institutions in the Denver metro area provided testing on the original survey. Results demonstrated that graduate nurses experience role conflict and stress as they begin practice in work environments of high complexity with expectations to become competent rapidly.¹ This instrument became the primary research tool used by the University Health System Consortium (now called Vizient) to track program outcomes nationally. Findings led to the development of a 1-year graduate nurse residency program.

In 2004, items in section II of the CFGNES were subjected to exploratory factor analysis (EFA) using principal axis factoring with Varimax rotation. In this analysis, a 5-factor solution was found, accounting for 46% of the variation in total scores. The factors were labeled support, organizing and prioritizing, stress, communication/leadership, and professional satisfaction. Reliability estimates for the factors ranged from 0.71 to 0.90.¹² The instrument was originally scored by summing all of the items in section II, including the stress items, for an internal consistency estimate of $\alpha = 0.89$. Confirmatory factor analysis (CFA) was not conducted. The survey was revised in 2006 following results of a qualitative analysis that permitted converting the open-ended items in section IV to a multiple-choice format.¹³

Purpose of This Study

As the CFGNES was constructed over 20 years ago, a reevaluation is indicated given the changes in educational

programs and clinical practice over this extended time period. In addition, the length of the survey can contribute to survey fatigue when administered over 3 time periods. Thus, the purpose of this study was to evaluate the psychometric properties of the CFGNES. The specific aims of this study were to explore the factor structure, test the construct validity, and assess the reliability of the CFGNES.

Theoretical Foundation

Four theoretical frameworks provided a foundation for defining the constructs being measured by the CFGNES in this research study. Schumacher and Meleis¹⁴ *Theory of Nursing Transitions* proposed that assisting people to manage life transitions is a key function of nursing. A transition is defined as a passage or movement from one fairly stable state, condition, or place to another fairly stable state and is a process triggered by change.¹⁵ According to Meleis, transitions often require a person to incorporate new knowledge, to alter behavior, and therefore to change the definition of self in a new social context. Meleis further states that outcomes of successful transition are developing confidence, coping, feeling connected, and skill mastery.

Benner's¹⁰ *Novice to Expert Theory of Skill Acquisition* articulates stages of clinical competence in nursing practice. According to this model, graduate nurses entering the nursing profession are usually at the advanced beginner stage and develop knowledge and acquire skills in an incremental manner while moving along the continuum from novice to advanced beginner. The advanced beginner nurse demonstrates marginally acceptable nursing performance and gains experience in specific and actual situations.¹⁰ Advanced beginners benefit from having a preceptor or an experienced nurse to provide guidance and mentoring and to explain recurring and meaningful components of situations.¹⁰

Kramer¹¹ outlined a theory of graduate nurse transition that identified specific stages, characteristics of role transition, and proposed strategies for providing support. The term "reality shock" was used to describe the phenomenon and the specific shock-like reactions of new nurses when they found themselves in a work situation for which they thought they were prepared and then suddenly found they were not.¹¹ Kramer was the 1st to call for structural changes to better support graduate nurses during the role transformation process and outlined an effective program of socializing new nurses into the attitudes, expectations, and behaviors of the professional work setting so the new nurse learned to perform their role effectively.

Duchscher's¹⁶ *Theory of Transition Shock* built on Kramer's¹¹ *Reality Shock Theory*. Using a grounded theory process, Duchscher described graduate nurse role transition as progressing through 3 main stages: doing, being, and knowing. According to Duchscher, the healthiest transition experiences for graduate nurses were facilitated when they had personal and professional lives characterized by stable and supportive relationships, were afforded roles and responsibilities commensurate with their stage of transition, received consistent workplace support and constructive feedback, were familiar with care delivery and skill performance, were provided opportunities to be supported by experienced nurses about increasingly complex clinical decisions and judgments, and were supported in their workplace environments.¹⁶

Methods

Design and Sample

A descriptive, cross-sectional study design was used to evaluate the psychometric properties of the CFGNES. The study sample comprised 71 919 graduate nurses who completed the CFGNES at 6 months postentry into the Vizient/American Association of Colleges of Nursing¹⁷ 12-month Nurse Residency Program. The data were collected using nonprobability, convenience sampling from 2008 to 2018, while study participants worked in more than 450 hospitals in the United States. The data file of 71 919 responses was split into 3 samples divided randomly from the entire 6-month data sample to represent the sample population. The 1st sample was 33% (n = 23 489) of the total sample and was used for the EFA. The 2nd sample labeled CFA-1 was 33% (n = 24 378) of the total sample and was used for the CFA. The 3rd sample labeled CFA-2 was 34% (n = 24 052) of the total sample and was used to cross-validate the findings found in the CFA-1 analysis. A data use agreement was signed for the release of these data to the researcher. Approval from the University of Northern Colorado's institutional review board was obtained for this study.

Data Analysis

IBM SPSS version 26 (Armonk, New York) was used to complete the statistical analysis. Descriptive statistics, including frequencies and percentages, were computed on the demographic information of the sample. Negatively worded items were reverse coded prior to factor analysis. Psychometric testing included EFA and CFA. Items comprising each subscale were summed and analyzed by demographic factors. The extent of missing data was evaluated on all samples. Missing data were not imputed as there was a small percentage (1.8%) of missing data, and the conclusion

was that the missing data were completely at random or when participants skipped over questions on the survey. Following the factor analyses, internal consistency reliability was computed for each subscale using Cronbach's α .

Results

A total of 71 919 graduate nurse responses, collected at the 6-month time period, were analyzed. Most participants were female (87.8%), and their mean age was 26.4 (SD, 6.1) years. Table 1 provides a summary of the sample's demographic characteristics. EFA using principal axis factoring extraction, Promax rotation, and specifying 5 factors to be extracted was conducted on the combined 33 items in sections II and III of the CFGNES to examine construct validity. Each of the items in section II and III of the CFGNES was measured using a Likert response scale. Responses to the 6 questions asking for causes of stress were measured using a yes/no (binary format). These 6 questions (CF 25a-f) were not included in the EFA analysis as the binary response format was found to be problematic.

The Kaiser-Meyer-Olkin index of sampling adequacy was 0.915, exceeding the recommended value of 0.80.¹⁸ Bartlett's test of sphericity reached statistical significance, supporting the use of factor analysis

Table 1. Characteristics of the Sample

Characteristic	Total 6-mo Sample (N = 71 919) %
Age, y	Mean, 26.4 (SD, 6.1)
Gender	
Female	87.8
Male	12.2
Ethnicity	
African American	8.7
American Indian	0.2
Asian	7.3
Caucasian	74.0
Hispanic or Latino	5.6
Pacific Islander	0.2
Unknown	2.6
No response	1.5
Nursing degree received	
Diploma	1.1
Associate degree	20.6
BSN	61.6
Accelerated BSN	14.3
Master's	2.0
No response	0.4
Previous nonnursing degree	
Associate degree	7.1
Baccalaureate	27.3
Master's	1.9
Doctorate	0.3
No previous degree	63.4

for the data.¹⁸ The EFA analysis resulted in 5 factors that explained 49.49% of the extracted common variance. Criteria for inclusion of an item on each factor included recommended minimum loadings of 0.40 and no cross-loadings greater than 0.32. Five items were removed as they did not load on a specific factor. This suggests that these items were not measuring what they intended to measure. After examining the items, it seemed like these items were trying to measure more than one aspect of the transition experience. Items on each factor are listed in the order of the magnitude of their corresponding loadings (Table 2). This 5-factor EFA solution with 28 items provided the basis for the CFA model testing.

CFA was conducted using AMOS 7.0 (SPSS, Chicago, Illinois) statistical software, on the 28 items to test the fit to the data. The CFA model fit results are as follows: comparative fit index = 0.897, normed fit index = 0.874, and root mean square error of approximation = 0.066. The CFA indices indicated a good fit to the data, suggesting that the 5-factor structure, which included a combination of items in sections II and III, was acceptable. During CFA, 4 items CF2 (“I am comfortable knowing what to do for a dying patient”), CF26b (“Satisfaction with vacation”), CF26d (“Satisfaction with hours worked”), and CF26h (“Satisfaction with amount of encouragement and feedback”) were removed. The final factor structure of 24 items was confirmed with an adequate fit using the CFA-2 data. Results are provided in Table 3 including reliability and validity. All modifications made during CFA were based on theoretical expertise along with using empirical guidelines. The 5 factors (subscales) were named job satisfaction, support, role confidence, ability to organize/prioritize care, and professional socialization. These names were drawn from the 4 theoretical foundations to capture the essence of the items.

Reliability estimates for the 24 items in the final 5-factor solution were assessed in SPSS. Cronbach's α 's for the 5 subscales were conducted on the EFA sample ($n = 23\ 489$), the CFA-1 sample ($n = 24\ 378$), the CFA-2 sample ($n = 24\ 052$), and the total sample ($N = 71\ 919$). Subscale results ranged from 0.73 to 0.94, indicating adequate reliability; further analysis showed that removing any of the items from the scale did not cause an increase in the α value. Results are presented in Table 3 for the identified 5 factors in the final solution. The total scale reliability estimate using Cronbach's α was 0.86.

Discussion

Previous factor analysis work^{12,19,20} on the CFGNES has shown that different factor solutions could be obtained. This study aligned with previous work; however,

a different portrait of the factor structure and items retained was drawn. Differences in this factor structure compared with the structure developed by Lynn¹² might be due to a difference in time period for the assessment and number of graduate nurses evaluated. This study and Lynn's report used data gathered from graduate nurses who participated in the 1-year Vizient/AACN nurse residency program. Differences in this study's results might reflect the larger sample size, larger number, and geographic location of participating healthcare organizations and a possible difference in the demographics and unit of employment that comprised the sample participants. Differences in this study's factor structure compared with Hallaran's¹⁹ study might be due to differences in educational preparation for professional nursing practice, demographic characteristics, use of data at the 6-month time period, and type of residency programs offered in Canada.

Major Findings

The combination of the 24 items in section II and 9 items from section III proved to be reflective of the constructs underlying role transition. During the EFA analysis, 4 negatively worded items (CF5, CF8, CF16, and CF17) all loaded on the same factor, organize/prioritize care. The intent of wording items negatively was to avoid agreement bias. This may have been confusing to respondents. Future item revisions for this construct need to consider any sources of ambiguity in the wording of the items. The 5 items eliminated (CF10, CF21, CF22, CF23, CF24) during the EFA analysis also provide evidence to support survey item revisions. These questions relate to encouragement and feedback provided by the manager, opportunities to practice skills and procedures more than once, and feelings of satisfaction and excitement with work in the chosen nursing specialty. In addition, the stress items were problematic in this analysis for a variety of reasons. Graduate nurses encounter multiple work-related stressors that can have serious consequences such as turnover and dissatisfaction with the profession. Understanding stressors for graduate nurses is essential to retaining and nurturing this vital workforce entering the nursing profession. Having a single question (CF24) related to concerns about experiences with stress was not sufficient to support the construct of stress in the workplace. Therefore, additional items are needed to better measure this aspect of role transition.

Of the 4 items deleted from the final CFA model structure, comfort with caring for a dying patient and amount of feedback and encouragement from the unit manager were single questions on aspects of transition that needed further exploration. The

Table 2. Factor Loadings in EFA Solution for the CFGNES

Scale Item	Factor 1 Job Satisfaction	Factor 2 Support	Factor 3 Role Confidence	Factor 4 Organize, Prioritize Care	Factor 5 Professional Socialization
26b. Job satisfaction: vacation	0.684				
26d. Job satisfaction: hours worked	0.641				
26g. Job satisfaction: opportunities for career advancement	0.639				
26c. Job satisfaction: benefits package	0.604				
26f. Job satisfaction: work responsibilities	0.602		0.215		
26a. Job satisfaction: salary	0.595				
26e. Job satisfaction: weekends off per month	0.559				
26i. Job satisfaction: opportunity for choosing shifts worked	0.541				
26h. Job satisfaction: encouragement and feedback	0.518				
9. I feel supported by the nurses on my unit		0.845			
18. There are positive role models for me to observe on my unit		0.814			
7. I feel staff is available to me during new situations and procedures		0.699			
4. I feel at ease asking for help from other RNs on the unit		0.668			
20. I am supported by my family/friends		0.599			
14. I feel prepared to complete my job responsibilities			0.772		
15. I feel comfortable making suggestions for changes to the nursing plan of care			0.706		
12. I am able to complete my patient care assignment on time				0.643	
13. I feel the expectations of me in this job are realistic	0.238		0.591		
1. I feel confident communicating with physicians				0.587	
11. I feel comfortable communicating with patients and their families		0.224	0.535		
2. I am comfortable knowing what to do for a dying patient			0.493		
3. I feel comfortable delegating tasks to the nursing assistant			0.452		
16. I am having difficulty organizing patient care needs				0.749	
5. I am having difficulty prioritizing patient care needs				0.712	
17. I feel I may harm a patient due to my lack of knowledge and experience				0.519	
8. I feel overwhelmed by my patient care responsibilities and workload	0.226			0.457	
6. I feel my preceptor provides encouragement and feedback about my work					0.947
19. My preceptor is helping me to develop confidence in my practice					0.936
10. <i>I have opportunities to practice skills and procedures more than once</i>		0.306	0.392		
21. <i>I am satisfied with my chosen nursing specialty</i>	0.257	0.305	0.211		
22. <i>I feel my work is exciting and challenging</i>	0.215	0.356	0.209		
23. <i>I feel my manager provides encouragement and feedback about my work</i>	0.311	0.207			
24. <i>I am experiencing stress in my personal life</i>				-0.210	

Note. Extraction method: principal axis factoring. Rotation method: Promax. Bolded entries represent items that were retained on each factor. Italicized items were removed because of factor loading or a high cross loading. Loadings less than 0.20 are not presented.

other 2 items removed were amount of vacation and hours worked, which relate to elements of job satisfaction. Additional items related to frustrations with

the work environment could provide clarity and understanding of what influences graduate nurse job satisfaction.

Table 3. Reliability Estimates for the Final Five Subscales

Sample	Factor 1- Job Satisfaction	Factor 2- Support	Factor 3- Role Confidence	Factor 4- Organize, Prioritize Care	Factor 5- Professional Socialization
EFA	.72 (M = 22.0)	.83 (M = 17.33)	.82 (M = 21.98)	.73 (M = 11.9)	.94 (M = 6.84)
CFA-1	.73 (M = 22.0)	.83 (M = 17.33)	.82 (M = 22.0)	.72 (M = 11.9)	.93 (M = 6.83)
CFA-2	.73 (M = 22.0)	.83 (M = 17.35)	.82 (M = 21.96)	.73 (M = 11.9)	.94 (M = 6.83)
Total 6-Month	.73 (M = 22.0)	.83 (M = 17.34)	.82 (M = 21.98)	.73 (M = 11.9)	.94 (M = 6.84)

Only 2 items on the survey asked about the preceptor's role in encouraging and supporting the socialization of graduate nurses into the work unit. These 2 items loaded strongly on a single factor following factor rotation, which demonstrated that they were highly correlated. Empirically, many theories support the role of a preceptor, especially in the first few months of clinical practice, as a key aspect of successful role transition.^{10,11,15} Reliability of this subscale was high at 0.94, reflecting better internal consistency. The 2 items on this subscale are very important contributors to the content of the scale and are relevant to the construct of role transition, which justified why they were not dropped from the survey. Also problematic was the number of missing values on these 2 items at the 6-month time period, which was possibly due to respondents who skipped this question as they were not actively working with a preceptor at the time of the survey data collection period.

Limitations

These research findings were limited to participants from a single nurse residency program curriculum. Convenience samples can suffer from both sampling bias and coverage error. Sampling bias might occur when there are difficulties in getting all the graduate nurses to participate in the study. Coverage error can occur when the sample does not fit the characteristics of the target population. Therefore, securing new populations of graduate nurses from a variety of practice settings and geographic areas is needed to increase the generalizability of study findings and to obtain perceptions from nonproprietary nurse residency programs and from graduate nurses working in a variety of clinical practice environments.

Another limitation of this study involved the use of a self-report instrument, which could have led to bias.

Implications

As with all survey instruments, the CFGNES must be refined and updated to measure new concepts and competencies required for graduate nurses to practice safely. Items that address perceptions of work

environment issues such as workload, safety concerns, role expectations, teamwork, confidence using evidence in clinical decision making, managing conflict and incivility, and peer support are all aspects that closely match the transition experience and that might not be represented in the current survey items. More research is needed on what factors affect graduate nurses' job satisfaction as they might differ from those of experienced nurses.

The importance of a preceptor or mentor to guide the graduate nurse during this advanced beginner stage of entry into practice is clear from Benner's¹⁰ work. Mentoring involves a relationship between an experienced nurse and new nurse. Assessing the use of mentors to guide skill development and professional growth beyond the preceptor relationship is needed. Workplace incivility threatens graduate nurses' health and well-being. Graduate nurses can be targets of incivility because of their lack of confidence and experience. Incivility has been linked to burnout, turnover intentions, and job dissatisfaction. Questions need to be developed to measure the concept of incivility and resiliency behaviors that may protect the new nurse and enhance well-being. Establishing content validity on these new items, using a panel of expert judges, would provide more evidence that the revised instrument truly reflects current concepts related to role transition.

Conclusions

Conducting a psychometric evaluation study using a large sample size previously collected from graduate nurses provided an opportunity to test and confirm the factor structure of the CFGNES and to demonstrate trustworthiness of the findings. Measurement of role transition, using a reliable and valid instrument, is a significant area of study because it affects nurse retention and allows healthcare organizations to compare their results with other organizations using the same population of interest. The CFGNES continues to be valuable in the evaluation and design of many worldwide nurse residency programs. This study was needed to inform survey item revisions and demographic updates to the CFGNES.

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