JAANP

Development of the novice nurse practitioner role transition scale: An exploratory factor analysis

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ABSTRACT

Background: Novice nurse practitioner role transition (NNPRT) can be described as stressful and turbulent, leading to decreased job satisfaction and increased intent to leave. No published instrument exists to measure NNPRT. Thus, researchers, educators, and administrators are limited in their ability to measure the concept and therefore understand the factors that lead to a successful, or unsuccessful, role transition experience. An instrument with evidence of validity and reliability is needed to conduct large-scale and systematic examinations of NNPRT.

Purpose: The purpose of this study was to develop and examine the initial factor structure of a novel instrument that measures NNPRT.

Methods: Initial item development was guided by concept analysis, literature review, and qualitative data. Face and content validity were established from expert review. Using pilot data from 89 novice nurse practitioners (NPs), an exploratory factor analysis (EFA) was conducted to examine the instrument's internal factor structure.

Results: The NNPRT Scale includes 40 items that measure an individual's perception of their role transition experience. The EFA revealed a five-factor structure: organizational alignment, mentorship, sense of purpose, perceived competence and self-confidence, and compensation.

Implications for practice: In an evolving health care system, provider well-being is at the center of workforce, educational, and organizational conversations. Understanding how to optimize the workforce and prepare NPs for health care delivery is increasingly important. The NNPRT Scale will allow for large-scale examinations of the factors that influence NP role transition, as well as assess interventions to prepare and support novice NPs' transitions.

Keywords: Instrument development; nurse practitioner; role transition; workforce.

Introduction

Rapidly evolving care delivery, including increased provider workloads, greater complexity of patient care needs, and global pandemics place health care providers at risk for decreased well-being and poor workforce outcomes. In particular, poor nursing well-being is problematic

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because it is linked to decreased patient satisfaction and poor quality of care (McHugh et al., 2011), prompting the need to focus on supporting workforce well-being as an intervention to enhance care delivery and productivity (Klein et al., 2019; Sikka et al., 2015). It is important that providers are particularly vulnerable to poor well-being during transition to a new professional role, which can be taxing for novice clinicians (Moran & Nairn, 2018).

More specifically, nurse practitioners (NPs) are at risk for poor transition experiences when starting their first NP position (Barnes, 2015; Brown & Olshansky, 1997; Cusson & Strange, 2008; Faraz, 2019; Kelly & Mathews, 2001). Novice NP role transition (NNPRT) has been described as both stressful and turbulent, and two decades of research has found this time is rarely easy and often marked by the shift from an experienced, expert status in the registered nurse (RN) role to an inexperienced novice in the NP role. This change in professional identity often leads to decreased confidence and job satisfaction,

which can impair role development (Barnes, 2015; Brown & Olshansky, 1997; Kelly & Mathews, 2001) and lead to an increased intent to leave one's current position (De Milt et al., 2011; Faraz, 2017; Sargent & Olmedo, 2013). These negative workforce outcomes not only affect employment continuity but also the decision to remain in the profession (Cusson & Strange, 2008), affecting cost to employers, patient care continuity, and placing patients at risk for poor clinical outcomes (Chanfreau-Coffinier et al., 2019; Katz et al., 2015; Lam et al., 2020).

With these known costs to patients specifically and to the health care system generally, NNPRT is an important phenomenon to study. This is especially urgent because the NP workforce is growing, with approximately 28,000 NPs yearly entering a workforce (Salsberg, 2018) that delivers safe, high-quality, and cost-efficient patient care in the United States (Buerhaus, 2018; Swan et al., 2015). Supporting novice NPs is critical to improving the patient experience and the effectiveness and efficiency of care (Perlo et al., 2017; Sikka et al., 2015). Changes in how novice NPs are supported, whether in the form of organizational or educational interventions, are needed. To understand and empirically evaluate such interventions, a means to measure this concept is needed.

No published instrument currently exists to measure NNPRT. An instrument with evidence of validity and reliability is needed to conduct large-scale and systematic examinations of NNPRT and, subsequently, its association with NP workforce and patient outcomes. To bridge this literature gap, the authors developed a novel instrument that measures NNPRT, pilot tested it in a sample of novice NPs, and examined the internal factor structure (McCoach et al., 2013). In this article, we describe the development of the NNPRT Scale and the results of the exploratory factor analysis (EFA).

Conceptual framework

The authors developed a conceptual framework to guide development of the NNPRT Scale. A concept analysis of NP role transition identified the personal and environmental factors that promote, or inhibit, a successful NP role transition experience (Barnes, 2015). More recently, Faraz (2016, 2017) expanded the concept, from the results of a literature review and qualitative study, to include contemporary workforce needs (Perlo et al., 2017; Sikka et al., 2015). This collective body of work revealed three domains driving NNPRT: 1) *educational preparedness*; 2) *role acquisition* with subdomains role ambiguity, self-confidence, perceived competence, and mentorship; and 3) *job satisfaction* with subdomains professional autonomy, quality of professional and interpersonal relationships, time to complete work, job benefits, sense of meaning, and work–life balance. This conceptual framework guided initial item generation of the NNPRT Scale (**Figure 1**).

Initial item and scale development

Instrument development was conducted in several sequential stages. Following item generation, face and content validity were assessed via expert review and feedback from a sample of recent NP graduates. Items were refined based on this feedback. Subsequently, pilot data were collected from a new sample of novice NPs working in their first NP position to support initial psychometric testing. These steps are outlined in more detail below. Institutional Review Board approval for this study was obtained before data collection.

Item generation

The process of instrument development begins with the generation of a sufficient number of items to assess content validity (McCoach et al., 2013). Guided by the NNPRT conceptual framework (**Figure 1**), the authors developed a pool of 77 items across the three domains, and six additional items were adopted with permission from an earlier NP role transition instrument that has not been published in the peer-reviewed literature (Dr. Regina Cusson, personal communication, November 26, 2018; Strange, 2015). The initial NNPRT Scale included 83 items: five under *educational preparedness*, 30 under *role acquisition*, and 48 under *job satisfaction*.

The varying proportion of items across the three domains was supported by evidence of the relative importance of each domain to NNPRT. For example, receiving a graduate-level education is described as an antecedent of NNPRT; that is, all initial NP education occurs before working as an NP (Barnes, 2015). Within the context of the actual role transition experience (i.e., after the NP starts the first position), educational background is described as a lack of feeling prepared for practice (Faraz, 2016, 2017). Item development under *educational preparedness* focused on this theoretical definition (i.e., NPs' feelings of being prepared for entry-level practice). Comparatively, evidence supports that the other two domains, *role acquisition* and *job satisfaction*, and the 10 subdomains are more influential to NNPRT because they are present during the actual experience of NNPRT (Faraz, 2019; Kelly & Mathews, 2001; Sargent & Olmedo, 2013; Zapatka et al., 2014). Therefore, item development was weighted to reflect the relative importance of these two domains to the overall concept.

Finally, we chose a 6-point Likert response scale (1 = *very strongly disagree* to 6 = *very strongly agree*). Using more response points, compared with Likert scales with five or fewer responses, can improve the sensitivity of the scale. Scales with 6 points can provide consistent responses across participants (McCoach et al., 2013).

Face and content validity

Face and content validity of the NNPRT Scale items were established via feedback from a panel of experts on NP role transition and a sample of recent NP graduates.
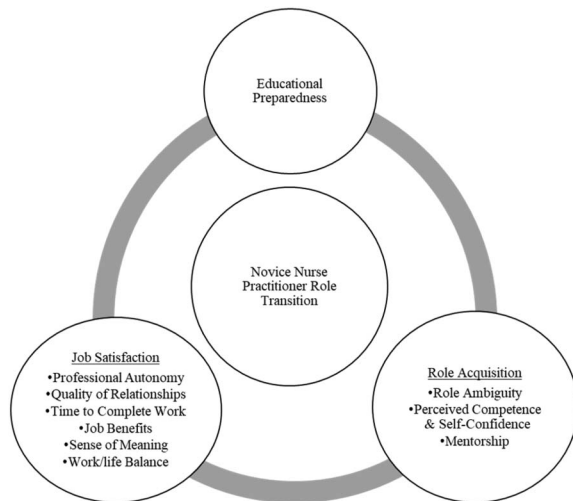
Figure 1. Novice NP role transition conceptual framework that guided item development. NP = nurse practitioner.

Expert review. We solicited feedback on the NNPRT Scale items from a panel of four NP role transition experts. Individuals were selected based on their reputations as experts and their scholarship on NP role transition, education, and training. Experts were asked to rate the relevance of each item to the concept of NNPRT using a 4-point Likert scale (1 = *not relevant* to 4 = *highly relevant*). Experts had the option to provide comments or suggest revisions for each item. Data were collected Spring 2019 via an online Qualtrics survey.

For each item, we calculated the content validity index ([CVI]; McCoach et al., 2013) by summing the number of experts that rated the item 3 (*quite relevant*) or 4 (*highly relevant*) and dividing by the number of experts (*N* = 4). The higher the CVI, the greater the agreement across experts of the item's relevancy to the concept; thus, a CVI equal to 1 indicates complete agreement among experts. Forty-seven items had CVIs equal to 1; all but one item was kept. The omitted item ("I wish I had stayed in the RN role") was removed based on reviewers' comments questioning the ability of participants without RN experience to respond to the item. Twenty-seven items had CVIs of 0.75, which is lower than the recommended 0.80 for retaining items (McCoach et al., 2013); however, given that our group consisted of four experts, agreement among three would calculate to a maximum CVI of 0.75. Thus, we evaluated each of these items individually considering the experts' comments, the item's similarity with higher scoring items, and the research team's knowledge of the concept. Based on this analysis, 11 items were removed and retained items were reworded as necessary. Of the seven items that had a CVI of 0.5, we omitted three and retained and revised four items based on reviewers' comments and alignment with the concept. The two items with a CVI of 0.25 were omitted. Based on experts'

comments and each item's CVI, we omitted a total of 17 items from the original pool of 83 items.

NP graduate review. The refined set of 66 items was administered to a convenience sample of seven recent NP graduates from the first two authors' institutions. Participants were asked to provide feedback on the items and rate each item's importance to NNPRT. All respondents received a $10 gift card for participating. Feedback was collected in the Summer of 2019 via a REDCap survey. Based on comments provided about the importance of items to NNPRT, we omitted an additional nine items. By eliciting feedback from experts and recent NP graduates, we established face and content validity of the NNPRT Scale and retained 57 items for the next stage of instrument development.

Initial psychometric testing of the novice nurse practitioner role transition scale
Sample and data collection
We used a cross-sectional, nonexperimental survey design to collect data from a convenient sample of novice NPs. Data collection occurred online via a secured, confidential Qualtrics survey over a 3-month period at the end of 2019 and early 2020. Study participants were recruited through the American Association of Nurse Practitioners (AANP) "Career Starter Membership," which is designed for new NPs within the first year of their career (AANP, 2020). Three email blasts describing the study and containing a link to the survey were delivered by the AANP to a random sample of 2,000 "Career Starter" members. A $10 gift card was offered to participants in the initial email blast and the gift card amount was increased to $25 in follow-up emails to increase the response rate. We also recruited novice NPs through snowballing efforts using our professional and academic networks.

On clicking the survey link, participants were directed to a survey landing page describing the study, their rights as a study participant, and ensuring confidentiality of responses. Participants were required to check a box indicating their decision to participate in the study ("I consent, begin the study") or not ("I do not consent, I do not wish to participate"). When an individual agreed to participate, they were directed to the next page to determine eligibility. The inclusion criteria to participate in the study were: 1) working as a NP; 2) working in the first NP position; 3) working in the first NP position for less than 12 months; and 4) 18 years or older. Participants needed to meet all eligibility requirements to proceed to the survey. If an individual agreed to participate and met the eligibility criteria, the NNPRT Scale was presented, followed by a demographic survey. The survey took approximately 15–20 min to complete. All participants who completed the survey were offered the opportunity to receive a gift card for their time by providing their name

and email address on a second secured survey that was kept separate from their study responses. No participant information was shared between the NNPRT survey and the incentive request.

Surveys

Novice nurse practitioner role transition scale. The NNPRT Scale measured an individual's perception of their NP role transition experience. Higher total scores indicated a more positive role transition experience, and lower scores indicated a less positive role transition experience. The total score is calculated by summing all items for each respondent and dividing by the number of items. The range of possible total scores is 1–6.

Demographic survey. Demographic information included personal characteristics (e.g., age, gender, race, income), professional characteristics (e.g., initial NP education and licensing, national NP certification, years of prior RN experience), and current employment characteristics (e.g., practice setting and specialty, receiving a formal orientation, and hours worked).

Data analysis

Analyses were conducted using STATA-15.1/SE. Data were cleaned and seven items were reversed coded. We removed participants who did not meet inclusion criteria or had incomplete NNRPT Scale data. We retained responses with complete NNPRT Scale data regardless of the completeness of the demographic survey responses. We examined response patterns for any aberrant response behaviors, such as response set bias (e.g., "very strongly agreeing" with all items regardless of the item's content) (Polit & Beck, 2017). If response bias was a concern, the participant was removed. The final sample included 89 novice NPs. Sample characteristics were calculated using frequencies, percentages, ranges, mean values, and standard deviations.

Item analysis and reliability. Item analysis included calculating descriptive statistics (e.g., histograms, mean, median, SD, range) for each item and the total NNPRT Scale score. An initial total score was calculated using 57 items. Using a correlation matrix, correlations between each item and the total score were evaluated (McCoach et al., 2013). Items that were correlated with each other at 0.85 or greater were identified as high correlations may indicate redundancy among the items. In the event of two highly correlated items, we reviewed the item stems and decided which of the pair to retain and which to omit (McCoach et al., 2013). To assess the instrument's internal reliability, we calculated Cronbach alpha for the total score along with a leave-one-out analysis to identify whether the reliability coefficient improved with the removal of any single item (Cronbach, 1951).

Exploratory factor analysis. Exploratory factor analysis is an important and necessary stage in instrument development to explore the underlying factor structure and identify the smallest number of factors that explain how items correlate with each other (McCoach et al., 2013). Although a conceptual framework guided item generation, an EFA does not impose an a priori theoretical structure on the items and allows the unknown factor structure to emerge from the data (Browne, 2001; McCoach et al., 2013). Given our small sample size, we used a principle axis factor analysis because it can handle potentially nonnormal data and has a greater ability to recover weak factors (Briggs & MacCallum, 2003; Cudeck, 2000). Additionally, to assess sampling adequacy, we ran a Kaiser–Meyer–Olkin (KMO) test; a KMO value greater than 0.60 suggests data are adequate for conducting an EFA (Kline, 1994).

To determine the appropriate number of factors to extract from the data, we used five approaches: Kaiser's (1960) criteria, scree plot (Cattell, 1966), parallel analysis (Horn, 1965), Velicer's (1976) minimum average parcels (MAP), and interpretability (Fabrigar et al., 1999; Gorsuch, 1983). Using Kaiser's (1960) criteria, we identified factors with eigenvalues greater than 1.0. However, this approach often overestimates the number of factors (McCoach et al., 2013); thus, we employed the additional approaches listed above. The scree plot involved plotting the eigenvalues from our observed data on a curve, and the point at which the curve stops decreasing and flattens suggests the number of factors to retain (Cattell, 1966; McCoach et al., 2013). We then ran a parallel analysis, which calculates eigenvalues from simulated data (Horn, 1965; McCoach et al., 2013). We ran the parallel analysis using 1,000 random data sets and then overlaid the results onto a single plot with the scree plot. Factors with eigenvalues in the observed data that are larger than the simulated data suggest "true" factors (McCoach et al., 2013). We also calculated the MAP, which is the average squared partial correlation between items and identifies the smallest value associated with the fewest number of factors (McCoach et al., 2013; Velicer, 1976). The final step, interpretability, included coupling the collective results from these approaches with our knowledge and understanding of the theoretical expectations of NNPRT to decide on the final number of factors to extract in our EFA (Fabrigar et al., 1999; Gorsuch, 1983).

Using the extracted factor structure, we estimated an oblique rotation (promax) that allowed the extracted factors to correlate (McCoach et al., 2013). The rotated factor matrix was examined and items with pattern coefficients of 0.40 or greater were identified as contributing to a factor and retained. Items were removed if the pattern coefficient was less than 0.40 on all factors or if the item cross-loaded on two or more items with values of 0.32 or greater, and anytime an item was removed from the instrument, we reran each step of the EFA (Cabrera-Nguyen, 2010).

Table 1. Sample characteristics

Age (n = 83) (years)	
Mean (SD)	37.8 (8.1)
Range	25–57
Gender (n = 88), n (%)	
Female	82 (93.2)
Male	5 (5.7)
Race (n = 88), n (%)	
Asian	4 (4.6)
Black or African American	6 (6.8)
Hispanic or Latino	10 (11.4)
White	61 (69.3)
Initial NP education, n (%)	
Master's degree	74 (83.2)
Post-Master's certificate	7 (7.9)
Doctor of Nursing Practice	7 (7.9)
NP Education delivery mode, n (%)	
In-person	15 (16.9)
Online	42 (47.2)
Combination (in-person/online)	32 (36.0)
National NP certification, n (%)[a]	
Primary care	79 (88.8)
Acute care	4 (4.5)
Pediatrics	4 (4.5)
Psychiatric-mental health	2 (2.3)
Prior RN experience, n (%)	
Yes	87 (97.8)
No	2 (2.3)
Years of prior RN experience (n = 86), n (%)[b]	
1–4	11 (12.8)
5–8	37 (43.0)
9+	38 (44.2)
Current practice setting, n (%)	
Private NP/physician practice	30 (33.7)
CHC/FQHC	14 (15.7)
Inpatient setting[c]	11 (12.4)
Participated in NP residency program (n = 88), n (%)	
Yes	7 (8.0)
No	81 (92.1)

Table 1. Sample characteristics, *continued*

Received orientation (n = 82), n (%)[d]	
Yes	51 (62.2)
No	31 (37.8)
No. work hours per wk (n = 88), n (%)	
<20	1 (1.1)
21–30	13 (14.8)
31–40	38 (43.2)
>40	36 (40.9)
Income (n = 88), n (%)	
<$90,000	25 (28.1)
$90,000–99,999	35 (39.3)
$100,000–109,999	16 (18.0)
>$110,000	13 (14.6)

Note: N = 89 unless otherwise noted. Selected response categories provided. Percentages may not equal 100 due to rounding. CHC = community health clinic; FQHC = federally qualified health center; NP = nurse practitioner; RN = registered nurse.
[a]Primary care: family, adult-gerontology primary care. Acute care: adult-gerontology acute care, certified RN anesthetist. Pediatrics: pediatric primary care, pediatric acute care.
[b]Of those respondents who reported prior RN experience.
[c]Inpatient: intensive care unit, medical/surgical inpatient unit.
[d]Of those respondents who did not participant in a NP residency program.

Results

Sample characteristics

Participant demographics for the final sample (*N* = 89) are shown in **Table 1**. The sample was 93.2% female, 69.3% White, and was on average 38 years old (range: 25–57 years). The majority of participants (88.8%) held a national NP certification in primary care. A Master's degree was the highest reported degree for initial NP education (83.2%). Almost half of participants (47.2%) completed their didactic NP coursework (not clinical) primarily online, with 36.0% completing a program that delivered didactic content via a combination of online and face-to-face delivery methods. Among participants who reported prior RN experience (97.8%), 87.2% reported working as a RN for more than 5 years. Eight percent of participants reported participating in a NP residency or fellowship program; however, almost two thirds of those who did not, received a formal orientation in their first position (62.2%). There are currently no national data sources with characteristics of novice NPs. However, characteristics of the novice NPs in our sample were similar to samples recruited for two recent studies on the novice NP workforce (Faraz, 2019; Faraz & Salsberg, 2019).

Preliminary item analysis and reliability

From the correlation matrix (57 items), we identified four item pairs with correlations greater than 0.85. After reviewing the item stems, we removed three items from the NNPRT Scale leaving 54 items. The reliability (Cronbach alpha) of the 54-item NNPRT Scale was 0.96. Total reliability did not improve with the removal of any item. Individual item analysis and correlation matrix results are available on request from the authors.

Exploratory factor analysis

Using the set of 54 items, an EFA was performed to examine the internal factor structure of the NNPRT Scale. The KMO test was 0.80, which suggested the data adequate for conducting an EFA (Kline, 1994). Kaiser's criteria (eigenvalues >1) revealed 11 factors. The scree plot, parallel analysis, and MAP suggested extracting five factors. Based on the results of these factor extraction approaches, we decided to extract five factors, which agreed with our knowledge of the conceptual underpinnings of NNPRT. Using the five-factor structure, we ran the oblique rotation (promax) and removed items based on the factor loading criteria discussed above. We iterated this process four times until no items were identified for removal. In total, we removed 14 items leaving 40 items across five factors.

The reliability of the final 40-item NNPRT Scale was 0.96. The KMO test increased to 0.85, again supporting adequate data with the smaller set of items. Kaiser's criterion suggested seven factors. The scree plot and parallel analysis again identified five factors (**Figure 2**), and the MAP also suggested a five-factor structure. The final set of items, pattern coefficients, and factors can be seen in **Table 2**. Correlations between the five factors ranged from 0.18 to 0.65, suggesting the rotation technique was appropriate (McCoach et al., 2013).
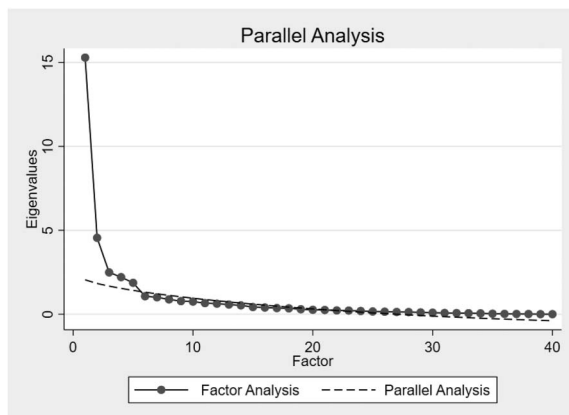
Figure 2. Novice NP role transition scale EFA scree plot and parallel analysis. EFA = exploratory factor analysis; NP = nurse practitioner.

The final NNPRT scale

On average, the novice NPs in our sample reported moderate role transition experiences; the mean 40-item NNPRT Scale total score was 4.45 (SD: 0.64; range: 2.38–5.60). The five factors extracted from the data included (**Figure 3**): 1) organizational alignment (14 items); 2) mentorship (four items); 3) sense of purpose (12 items); 4) perceived competence and self-confidence (eight items); and 5) compensation (four items). Of the five factors that emerged from the data, two of the factors measure intrinsic concepts (sense of purpose; perceived competence and self-confidence) and three measure extrinsic concepts (organizational alignment, mentorship, and compensation).

Organizational alignment. Factor 1 measures the fit of the NP with their employment setting. Many of the items included in this factor measure organizational structures, such as professional autonomy, quality of relationships, feeling respected by others, and those structures that contribute to work–life balance. One item ("I belong in my practice setting") was originally developed under the domain *role acquisition* (**Figure 1**). However, the item loaded with other items focused on the organization in which the NP works, suggesting that the factor is not just about job satisfaction, but more about how well the NP feels welcome and integrated into the organization.

Mentorship. Factor 2 measures the availability and perceived quality of mentorship in the first NP position. Mentorship is a critical aspect and is cited as a facilitator of NNPRT (Faraz, 2019; Sargent & Olmedo, 2013; Zapatka et al., 2014). It has been theorized that mentorship of novice NPs may lead to increased self-efficacy, improved job satisfaction, and retention (Barnes, 2015; Harrington, 2011; Hill & Sawatzky, 2011). Mentorship has been described as an environmental factor or form of extrinsic support (Barnes, 2015); however, the emergence of mentorship as a factor separate from measures of the NP's organizational fit demonstrates its importance to the larger concept of NNPRT. It may also reflect that mentorship does not need to come from the organization, and NPs may find mentorship outside of their practice settings.

Sense of purpose. Factor 3 measures the NP's internal feelings about caring for patients and reflected engagement within the NP role (Barnes, 2015). This concept was originally included as a subdomain under *job satisfaction* (referred to in **Figure 1** as *sense of meaning*) as a concept related to the NP position. Having a sense of purpose and finding meaning in their work by helping patients and making a difference in their communities has been cited by novice NPs as positive factors (De Milt et al., 2011; Faraz, 2019; Kelly & Mathews, 2001).

Perceived competence and self-confidence. Similar to factor 3, factor 4 measures intrinsic concepts related to NNPRT. Factor 4 measures the NP's feelings surrounding their ability to meet the demands of the position and the

Table 2. Factor structure of the NNPRT scale	
Items	**Pattern Coefficient**
Factor 1: organizational alignment	
There is a lack of respect for NPs in my practice setting.[a]	1.06
Administration has negative attitudes toward NPs.[a]	1.04
I feel support by administration.	0.87
I have a voice in the organization.	0.85
My suggestions for improving practice are respected.	0.81
Administration understands the NP role.	0.79
I am treated as a professional by my colleagues.[b]	0.78
I am given independence to manage my patients.	0.67
My physician colleagues understand the NP role.	0.65
I understand what is expected of me in my role as an NP.	0.63
NP role expectations were clearly communicated to me when I started.	0.62
I belong in my practice setting.	0.50
I am satisfied with my benefits.	0.41
I am able to schedule time off when needed.	0.41
Factor 2: mentorship	
My mentor is invested in my professional growth.	0.97
A mentor is available to me.[b]	0.93
My mentor is a good role model.	0.89
My mentor understands my needs as a new NP.	0.87
Factor 3: sense of purpose	
I feel that I am appreciated by my patients.	0.87
I enjoy helping patients.	0.83
The work I do is important.	0.78
Patient satisfaction is important to me.	0.77
I enjoy working with my patient population.	0.74
I feel accepted by my patients.	0.71
I am excited by the work I am doing.	0.62

Table 2. Factor structure of the NNPRT scale, *continued*	
Items	**Pattern Coefficient**
I make a difference in the community I serve.	0.61
I belong in the NP role.	0.58
I have good relationships with physicians.	0.57
I have a sense of purpose.	0.56
I am pleased with my NP education.	0.51
Factor 4: perceived competence and self-confidence	
I feel comfortable managing my patient load.[b]	0.90
I am comfortable in my role.[b]	0.74
I feel overwhelmed in my role.[a]	0.72
I am able to meet the demands of my NP position.	0.66
I am able to meet my patients' clinical care needs.	0.57
I need more time than I am scheduled to complete my responsibilities.[a,b]	0.49
Factor 5: compensation	
I feel that my compensation is fair for the work I do.	0.95
I feel underpaid for the work I do.[a]	0.86
I am satisfied with my compensation.	0.81
I am pleased with the pay raise structure in my practice setting.	0.67

Note: Exploratory factor analysis rotated pattern matrix; NP = nurse practitioner.
[a]*Reversed coded item.*
[b]*Adapted with permission (Dr. Regina Cusson, personal communication, November 26, 2018; Strange, 2015). Adaptations are themselves works protected by copyright. So in order to publish this adaptation, authorization must be obtained both from the owner of the copyright in the original work and from the owner of copyright in the translation or adaptation.*

needs of their patients, as well as feelings that they are performing well in their job. This is a well-established concept, beginning with the seminal "From Limbo to Legitimacy" framework (Brown & Olshansky, 1997) and confirmed by other researchers (Kelly & Mathews, 2001; Faraz, 2016, 2017).

Compensation. The final factor 5 measures the NP's satisfaction with their financial compensation. Low wages and a lack of benefits compared with colleagues and prior

RN compensation have been cited as negative factors for novice NPs (Faraz, 2019). It is important to distinguish that NPs have reported dissatisfaction with a lack of parity in compensation as compared with their peers for similar work and are more interested in fair rather than high salaries (Faraz, 2019).

Discussion

We developed the NNRPT Scale to measure the concept of novice NP role transition. The NNPRT conceptual framework, informed by our combined programs of research, guided initial item development. Face and content validity were established from panels of NP role transition experts and recent NP graduates. Using data from a pilot sample of novice NPs (N = 89), we conducted initial psychometric testing to obtain evidence of reliability and examine the internal factor structure of the instrument. The results of the pilot EFA revealed five factors: 1) organizational alignment; 2) mentorship; 3) sense of purpose; 4) perceived competence and self-confidence; and 5) compensation (**Figure 2**). The final NNPRT Scale includes 40 items that measure an individual's perception of the role transition experience.

The United States health care system is challenged with ensuring the delivery of safe, effective, and efficient patient care. Over the next 10 years, empirical evidence will be required by administrators, clinicians, and researchers to optimize preparedness and performance of the NP workforce to improve access to care, patient outcomes, and costs (Buerhaus et al., 2019). Optimizing care delivery and efficiency, however, can only be achieved if provider well-being is also addressed (Perlo et al., 2017; Sikka et al., 2015). Additionally, the forthcoming Future of Nursing 2020–2030 committee identifies nurses' well-being as important to the delivery of high-quality patient care (National Academy of Medicine, 2020). Thus, there is a critical need to understand novice NP transition to practice. Without an instrument with evidence of validity and reliability, conducting large-scale examinations of NNPRT to identify interventions or approaches that can support successful development of novice NPs is limited.

Future research includes collecting data with a different sample of novice NPs for further psychometric testing. The current five-factor structure will provide the theoretical structure for additional testing and an a priori hypothesis of the factor structure for use in a confirmatory factor analysis (Cabrera-Nguyen, 2010; McCoach et al., 2013). Additionally, we encourage the use of the NNPRT Scale in future studies and practice change projects aimed at increasing our collective understanding of NNPRT, as well as developing and testing interventions that will support NPs' entry into the workforce.
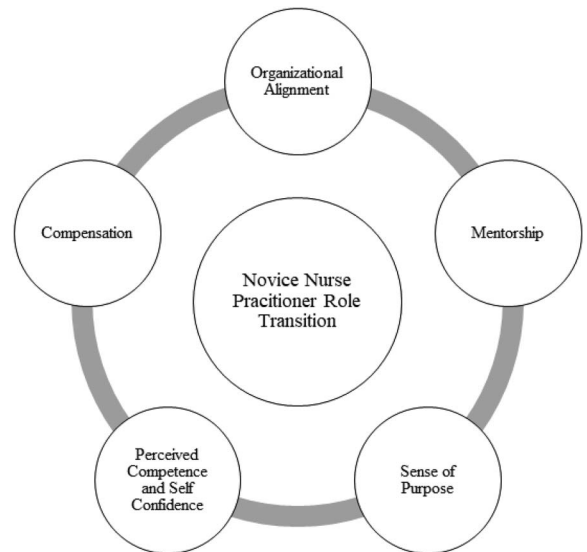
Figure 3. Factor structure of the NNPRT Scale. NNPRT = novice nurse practitioner role transition.

Limitations

The study is not without limitations. As with any self-report survey, there is the potential for sampling error or bias (Polit & Beck, 2017). For the pilot study, we did not achieve the recommended minimum sample size of 5–10 participants per item (Cabrera-Nguyen, 2010; McCoach et al., 2013). However, our data were considered adequate for an EFA via the KMO test. Collecting data from novice NPs is challenging and researchers have used indirect methods (i.e., snowballing) to augment participant recruitment (Faraz, 2017; Faraz & Salsberg, 2019). Our data collection relied on both direct recruitment (i.e., emails to AANP members) and snowballing methods. Additionally, we were unable to target the AANP email blasts to NPs who met our inclusion criteria. Thus, we were unable to calculate a response rate because we cannot confirm how many NPs meeting the inclusion criteria received a link to the study.

Conclusions

Studying NNPRT in today's health care environment is critical as the number of NP graduates has increased by over 200% since 2008 (Salsberg, 2018), and NP employment across settings is growing (Barnes et al., 2018; Martsolf et al., 2018). Additionally, the current global COVID-19 pandemic, coupled with an already increasingly complex health care system, is underscoring the importance of rapid and successful transition during this critical time in NPs' professional role development (Wolfe, 2020). We anticipate the NNPRT Scale will be useful to organizations, employers, and educators needing evidence to guide development of interventions to support novice NPs. Ensuring that

researchers, educators, and administrators have an instrument with strong psychometric properties to measure NNPRT will improve examination of the concept across practice settings, educational experiences, and regulatory environments.

Authors' contributions: *H. Barnes and A. Faraz Covelli conceptualized the study, generated scale items, collected the data, and interpreted the results. H. Barnes performed the data analyses and was primarily responsible for writing the manuscript. A. Faraz Covelli contributed substantially to the intellectual content of early drafts of the manuscript. J. D. Rubright guided the processes of instrument development, data analysis, and results interpretation. All authors read and revised the manuscript.*

Competing interests: *The authors report no conflicts of interest.*

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