Seitovirta, Jaana; Lehtimäki, Aku Ville; Vehviläinen-Julkunen, Katri; Mitronen, Lasse; Kvist, Tarja

Development and Psychometric Testing of the Registered Nurses' Perceptions of Rewarding Scale

Published in:
The journal of nursing research : JNR

DOI:
10.1097/jnr.0000000000000276

Published: 01/04/2019

Document Version
Publisher's PDF, also known as Version of record

The Journal of Nursing Research ■ VOL. 27, NO. 2, APRIL 2019

OPEN

Development and Psychometric Testing of the Registered Nurses' Perceptions of Rewarding Scale

Jaana SEITOVIRTA[1]* • Aku-Ville LEHTIMÄKI[2] • Katri VEHVILÄINEN-JULKUNEN[3] • Lasse MITRONEN[4] • Tarja KVIST[5]

ABSTRACT

Background: Rewarding is a powerful way to recognize, manage, and retain staff. However, the perceptions of registered nurses (RNs) toward rewarding have not yet been extensively examined in nursing studies. It is important to identify optimal and potentially innovative ways to reward RNs by taking their perceptions into consideration.

Purpose: The aim of this study was to develop and psychometrically test the Registered Nurses' Perceptions of Rewarding Scale (RNREWS).

Methods: A cross-sectional study design was used. The scale was developed in the three phases of item generation, content validity testing, and examination of psychometric properties. Tests of the scale included evaluation of content validity, exploratory factor analysis, parallel analysis, and internal consistency tests using Cronbach's alpha. Survey participants included 402 RNs working in Finnish healthcare in Autumn 2015.

Results: The RNREWS was found to have acceptable construct validity and good internal consistency. Exploratory factor analysis indicated that a 66-item scale with a 14-factor structure fits the data best. The final scale includes two subscales. The first is "reward type preferences" with 61 items covering 13 factors, and the second is "significance of rewarding" with five items covering one factor. The two sets of items accounted for 73.1% and 58.5% of the variance in responses and earned Cronbach's α values of .90 and .80, respectively.

Conclusions: The RNREWS is a valid and reliable instrument for acquiring knowledge regarding the perspective of RNs on rewarding in the nursing context. The results enhance the understanding of the range of rewards that may be implemented in the nursing profession and may assist human resources managers and administrators to formulate effective reward systems for their RNs to improve the rewarding and retention of nursing professionals. However, cultural equivalence and linguistic differences must be considered if this scale is to be applied in other countries or environments.

KEY WORDS:
registered nurse, reward, scale development, psychometric testing.

Introduction

Rewarding is a powerful way to recognize, manage, and retain staff. Various aspects of rewarding have been addressed by scholars in a diverse spectrum of disciplines, including management science (e.g., Armstrong & Murlis, 2007) and psychology (e.g., De Gieter, De Cooman, Pepermans, & Jegers, 2010). Hence, "rewards" are called many things, depending on the disciplinary context. For example, economists may refer to the "utility" (subjective value for a decision-maker) of a good or commodity, whereas psychologists may refer to "positive reinforcers" of behaviors or goals (Schultz, 2015).

In healthcare, the McCloskey/Mueller Satisfaction Scale developed by Mueller and McCloskey (1990) has been used to measure the dimensions of rewards (safety, social, and psychological) associated with nurse job satisfaction. Moreover, the Effort–Reward Imbalance Questionnaire by Siegrist (1996) has been used to explore links between job stress and both high job demands and low professional compensation in the form of money, social status, safety, and career opportunities. The Psychological Reward Satisfaction Scale by De Gieter et al. (2010) has been applied to address the impact of satisfaction with the pay and psychological rewards received from the head nurse and physicians. However, rewarding has not yet been extensively examined in nursing studies, and there is limited knowledge regarding the rewarding perceptions of the registered nurses (RNs) in particular. Moreover, no previously published instrument has been developed for assessing their "reward type preferences" or "significance of rewarding," which must be known to formulate optimal reward

[1]*PhD, RN, Department of Nursing Science, University of Eastern Finland, Finland* • [2]*MSc, Doctoral Student, School of Business, Department of Information and Service Economy, Aalto University, Finland* • [3]*PhD, RN, Professor, Department of Nursing Science, University of Eastern Finland, Finland* • [4]*DSc, Professor, Department of Marketing, School of Business, Aalto University, Finland* • [5]*PhD, RN, Associate Professor, Department of Nursing Science, University of Eastern Finland, Finland.*

strategies and systems for RNs. This study develops and tests the Registered Nurses' Perceptions of Rewarding Scale (RNREWS), a novel instrument that addresses these important but neglected aspects of reward management, especially in the nursing context. The RNREWS has been specifically developed to gauge the subjective perceptions of RNs regarding rewarding rather than measuring nurses' job satisfaction, associations between rewards and a positive or healthy work environment, or the psychological factors underlying rewards.

According to several studies, rewarding should be developed in a working-life-oriented manner and should take into account the viewpoints of staffs (Hulkko-Nyman, Sarti, Hakonen, & Sweins, 2012; Kurtzman et al., 2011; von Bonsdorff, 2011). RNREWS is intended to facilitate the abovementioned efforts. In the context of this study, reward was operationally defined in the noun form as something given in return for or received because of completed work, a good behavior, or a particular achievement and in the verb form as giving someone a reward. It was assumed that both financial and nonfinancial rewards should be recognized and included in a total reward package (National Health Service Employers, 2017). This study is a part of a research project on RNs' rewarding in public specialized medical care, public primary, and private healthcare settings in Finland.

Literature Review

Reward management

Reward management refers to the way an organization attracts competent personnel from the labor market and then motivates, leads, and commits to its staff (Armstrong & Murlis, 2007). It is crucial for healthcare organizations to design reward strategies that promote the job satisfaction and engagement of their nurses, attract recruits to nursing, and retain valuable staff members. Thus, an effective reward strategy is an important part of an efficient human resources strategy. A key component is a structured approach for setting rewards for an organization's staff. Reward systems may be used to define organizational values and norms and encompass all of the elements (e.g., policies, practices, and processes) of rewards. Many employees may not be aware of all of the rewards and benefits offered by their employer. Thus, clear formulation of a "total reward approach" may enhance employee perceptions of their rewards (National Health Service Employers, 2017). A total reward approach emphasizes the multidimensional nature of rewarding, combining various types of financial and nonfinancial reward elements. Typical financial rewards and benefits include, for example, basic pay and bonuses, performance-related pay, skill- and competency-based pay, additional pensions and holidays, and healthcare services. Nonfinancial rewards include, for example, training, ability to influence decision making, participation in workplace activities, work–life balance, work environment, responsibility, career opportunities, leadership, achievement and status, feedback, and recognition. Various reward models have been developed by scholars, but they usually include similar sets of financial and nonfinancial rewards. Generally, both financial and nonfinancial rewards, which combine all of the appreciated aspects of work, are considered valuable (Armstrong & Murlis, 2007).

Rewards in healthcare

Internationally, diverse reward types have been used in the healthcare field. Some of these include various forms of financial compensation such as salary, personal bonuses, pension benefits, access to fitness facilities (Kurtzman et al., 2011; Tourangeau, Cummings, Cranley, Ferron, & Harvey, 2010), and performance-based supplements, which have been reported to increase the quality and safety of work (Kurtzman et al., 2011). Other rewards are nonfinancial, including expressions of appreciation, written or verbal feedback (Dave, Dotson, Cazier, Chawla, & Badget, 2011; De Gieter et al., 2010), the provision of opportunities to develop professionally at work (Hulkko-Nyman et al., 2012), education (Seitovirta, Partanen, Vehviläinen-Julkunen, & Kvist, 2015; Seitovirta, Vehviläinen-Julkunen, Mitronen, De Gieter, & Kvist, 2017), and opportunities to influence and participate, for example, using one's skills in diverse ways (von Bonsdorff, 2011). Worktime arrangements such as flexible working hours (Dave et al., 2011) and personal control over work, for example, permission to take vacations when it is personally convenient (Li et al., 2011), are important complements to RNs' monthly salaries and other forms of financial compensation. Furthermore, nurses may find some aspects of their work content rewarding, for example, working in certain specialist areas such as elderly care settings (Bradbury-Jones, Irvine, Jones, Kakehashi, & Ogi, 2011; Hulkko-Nyman et al., 2012). A positive work environment, including the hospital's good reputation, is another potentially important type of nonfinancial reward (Dave et al., 2011). In addition, the provision of support from managers and the administration is meaningful (Morrison & Korol, 2014; Pasarón, 2013; Seitovirta et al., 2017) and plays an important role in retaining newly graduated nurses (Spence Laschinger, Wong, & Grau, 2012). Hence, the use of both financial and nonfinancial rewards in healthcare, coupled with a fair reward system, has been promoted by De Gieter et al. (2010) and Tourangeau et al. (2010).

There is international evidence that rewards significantly affect nursing outcomes and organizational commitment (Kurtzman et al., 2011; Morrison & Korol, 2014; Pasarón, 2013). Rewarding is seen as a contributory factor to coping with work-related stress (C. K. Chen, Lin, Wang, & Hou, 2009). Many rewards, particularly nonfinancial forms such as acknowledgement, may also reduce staff turnover, especially when nurses are supported by their managers (Dave et al., 2011; Morrison & Korol, 2014). Furthermore, praise and recognition strongly influence job satisfaction, satisfaction with nursing, and nurses' intent to leave (Duffield, Roche, Blay, & Stasa, 2011). As shown by von Bonsdorff (2011), research-based knowledge regarding the age-related reward

preferences of nurses may assist healthcare managers and policymakers to design appropriate reward systems and thus encourage their employees to work longer. Other factors such as a positive work environment that supports professional nursing practices may further promote efforts to attract and retain nurses (Spence Laschinger et al., 2012). Several studies indicate that managers may strengthen the intentions of RNs to remain employed through actions such as praise and recognition (De Gieter et al., 2010; Tourangeau et al., 2010). In addition, nurses have a more positive work attitude when they are satisfied with the level of pay and psychological rewards that they receive from head nurses (F. Chen, Yang, Gao, Liu, & De Gieter, 2015).

Methods

The scale was developed in three phases: (1) item generation, (2) content validity testing, and (3) examination of psychometric properties (Figure 1). Tests of the scale included evaluation of content validity, exploratory factor analysis (EFA), parallel analysis, and internal consistency tests using Cronbach's alpha. Following the tests and modifications that were made based on the results of the abovementioned tests, the scale was applied in a cross-sectional survey of 402 RNs working in Finnish healthcare.

Phase 1: Item Generation

An empirical approach was adopted to operationalize rewarding in this study and other studies included on the project on the rewarding of nurses mentioned previously. First, a qualitative method was applied to probe the experiences of RNs to refine our understanding of practices that nurses find rewarding in real situations. A convenience sample was recruited, including 10 RNs from public specialized medical care organizations in 2011 and 20 RNs from public primary and private healthcare organizations in 2014. RNs' views were explored by applying content analysis to the responses of participants given in tape-recorded, semistructured individual interviews. The interviewed RNs reported positive experiences of rewarding in the form of several financial and nonfinancial rewards. These two surveys are described in our previous published studies (Seitovirta et al., 2015, 2017).

Next, to broaden our understanding of RNs' rewarding, we examined the treatment of rewarding in previous nursing research that was published in English during the period of 2009–2014 and listed in the CINAHL (EBSCO), Business Source Complete (EBSCO), Google Scholar, MEDLINE, and PubMed databases. The search terms used were "reward*," "nurs*," "incentive*" (the truncation operator * was used to list documents containing variations on a search term), "Nursing Manpower+" (the plus operator [+] collected extensions of its subordinate concepts), "exp reward" and "exp nurses" (expanding), and "nursing reward systems." Issues of the most relevant journals were also searched manually. After reviewing the titles, abstracts, and full texts of the hits obtained, 13 original studies that either examined nurses' rewarding or mentioned the reward concept in a nursing context were chosen for this study, together with the two previously mentioned interview studies. Eleven "reward types" (financial compensation, benefits, appreciation, feedback, opportunity to develop professionally at work, education, opportunity to influence and participate, worktime arrangements, work content, work environment, and managerial support) and the "significance of rewarding" were first identified and synthesized (Table 1) and then oper-

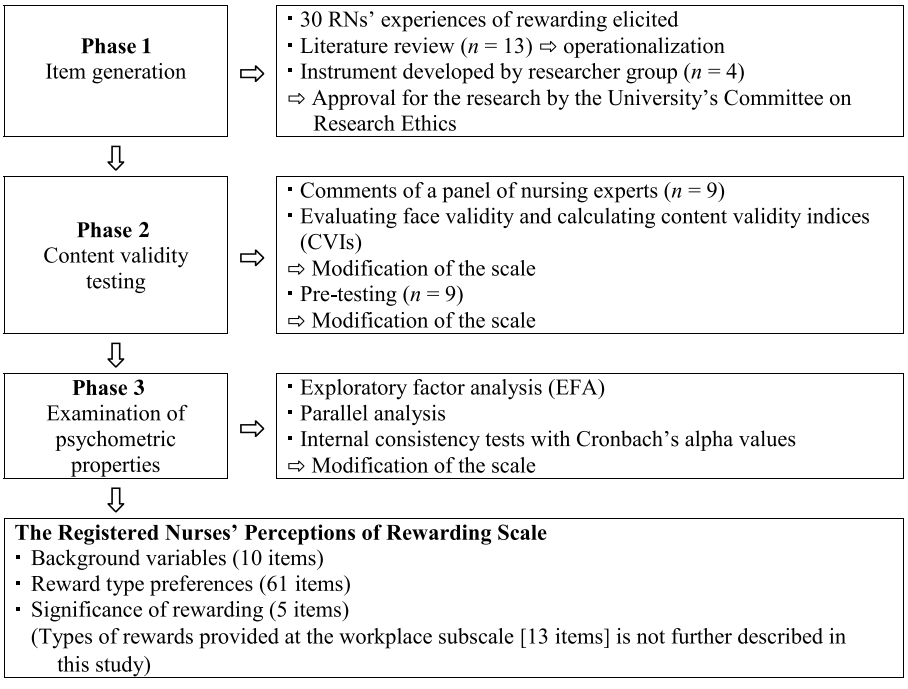

Figure 1. Developmental phases of the Registered Nurses' Perceptions of Rewarding Scale.

TABLE 1.
The Types of Rewards and Significance of Rewarding Derived From the Literature

Reward Types	Source Reference
Financial compensation	Tourangeau et al. (2010), Dave et al. (2011), von Bonsdorff (2011), Kurtzman et al. (2011), Hulkko-Nyman et al. (2012), Seitovirta et al. (2015, 2017)
Benefits	Tourangeau et al. (2010), Hulkko-Nyman et al. (2012), Seitovirta et al. (2015, 2017)
Appreciation	De Gieter et al. (2010), Tourangeau et al. (2010), Dave et al. (2011), von Bonsdorff (2011), Li et al. (2011), Hulkko-Nyman et al. (2012), Morrison & Korol (2014), Seitovirta et al. (2015, 2017)
Feedback	De Gieter et al. (2010), Tourangeau et al. (2010), von Bonsdorff (2011), Hulkko-Nyman et al. (2012), Seitovirta et al. (2015, 2017)
Opportunity to develop professionally at work	De Gieter et al. (2010), Li et al. (2011), Pasarón (2013), Seitovirta et al. (2015, 2017)
Education	Hulkko-Nyman et al. (2012), Seitovirta et al. (2015, 2017)
Opportunity to influence and participate	Tourangeau et al. (2010), von Bonsdorff (2011), Hulkko-Nyman et al. (2012), Seitovirta et al. (2015, 2017)
Worktime arrangements	Dave et al. (2011), Li et al. (2011), von Bonsdorff (2011), Hulkko-Nyman et al. (2012), Seitovirta et al. (2015, 2017)
Work content	C. K. Chen et al. (2009), Bradbury-Jones et al. (2011), Li et al. (2011), von Bonsdorff (2011), Hulkko-Nyman et al. (2012), Seitovirta et al. (2015, 2017)
Work environment	Dave et al. (2011), von Bonsdorff (2011), Spence Laschinger et al. (2012), Morrison & Korol (2014), Seitovirta et al. (2015, 2017)
Managerial support	De Gieter et al. (2010), Tourangeau et al. (2010), Spence Laschinger et al. (2012), Pasarón (2013), Morrison & Korol (2014), Seitovirta et al. (2015, 2017)
Significance of rewarding	C. K. Chen et al. (2009), De Gieter et al. (2010), Tourangeau et al. (2010), Dave et al. (2011), Duffield et al. (2011), Kurtzman et al. (2011), von Bonsdorff (2011), Hulkko-Nyman et al. (2012), Spence Laschinger et al. (2012), Pasarón (2013), Morrison & Korol (2014)

ationalized as items in the first version of the RNREWS. This first version, developed by our group of four researchers, included three subscales in total, entitled "reward type preferences" (57 items), "significance of rewarding" (six items), and "types of rewards provided at the workplace" (11 items). It also included eight items covering background variables. The last subscale was modified from a Finnish instrument (Nurmela, Hakonen, Hulkko, Kuula, & Vartiainen, 1999). Although this subscale was not judged to be entirely suitable for our study, we received permission from one of the cited authors to apply its content and associated information in the item design stage.

Phase 2: Content Validity Testing

The content validity of the first version of the scale was assessed in January 2015 by calculating content validity indices (CVIs; Polit & Beck, 2012) for the individual items (I-CVI) and the entire scale (S-CVI) using evaluations of face validity conducted by a panel of nine nursing experts. The panelists were RNs working in various healthcare organizations in Finland covering a wide range of nursing areas, who were selected to match those of participants in the main survey, as far as possible, in a small sample. The voluntary panelists were asked to rate the relevance (1 = *not relevant*, 2 = *somewhat relevant*, 3 = *quite relevant*, and 4 = *highly relevant*) of the 82 items. Following Polit and Beck (2012), I-CVIs were computed for items by summing the total number of 3 and 4 scores (quite relevant and highly relevant, respectively) and dividing by the total number of nursing experts (9). All of the nine panelists considered 81 of the 82 items to be highly relevant, so the I-CVI for each of these 81 items was 1.00, which is regarded as "excellent" (Polit & Beck, 2012). Three felt that the other item was only somewhat relevant, so the I-CVI for this item was .67, which is regarded as "fair." The experts were also asked to rate the clarity of each of the 82 individual items in advance (1 = *not at all clear*, 2 = *not very clear*, 3 = *quite clear*, and 4 = *very clear*). None of the 82 items was given a score of 1 by any of the experts, but 16 of the items were given a score of 2 by at least one of the experts. Thus, I-CVIs were 1.00 for 66 of the 82 items, .89 for 14 items, and .78 for two items. Earning an I-CVI of .78 or higher is deemed evidence of good content validity (Polit & Beck, 2012). In addition, we calculated the

average I-CVIs for the relevance and clarity of all the items as indicators (S-CVI) of the content validity of the entire scale (Polit & Beck, 2012). Both of these S-CVIs were acceptable (.99 and .97, respectively).

In addition, the panelists gave oral and written comments. The scale was modified after the panel evaluation as follows: The order of the subscales was changed, two items were added (task-related supplement and well-functioning work environment), and three items were removed (nurse manager's oral support for my self-chosen education, access to paid-leave benefits, and rewards increase the good reputation of my employer). Thus, the modified second version of the scale included 81 items in total.

In the next phase, this 81-item version of the scale was pretested in paper-and-pencil format on a voluntary group of nine RNs working in the focal sectors of the planned survey (Rattray & Jones, 2007). The participants were recruited with the help of university researchers. The pretest was held at a Finnish university in April 2015. The participants were first asked to complete the questionnaire and record how long they took to answer. They were then asked to assess the questionnaire in terms of the intelligibility of the items, background variables, answer options, and instructions. In total, 38 written comments were received, most of which indicated that the scale was highly intelligible and that the instructions were clear. Frequencies and percentages of the scores for each question were calculated, and the variation in participant responses was examined to identify sources of measurement error. The written comments were carefully analyzed, and the scale was modified by adding five items under "reward type preferences," two items under "types of rewards provided at the workplace," and two items under "background variables." Thus, the third version included 90 items.

The final version of the RNREWS, reported here, included 67 positively worded items in total, covering "reward type preferences" (62 items) and "significance of rewarding" (five items). A 5-point Likert scale was used to score each item (1 = *strongly disagree*, 2 = *partly disagree*, 3 = *neither agree nor disagree*, 4 = *partly agree*, and 5 = *strongly agree*). In addition, an "I do not know" alternative (0) was included to avoid inappropriate use of the neutral point. The subscale "types of rewards provided at the workplace" (covered by 13 items, e.g., task-related supplements, employment stability, opportunity to develop professionally at work, and feedback, and scored using a trichotomous scale: *yes*, *no*, and *I don't know*) is not further described here because it will be used in a further planned study.

The final background variables (10 items) were gender, age (years), healthcare sector (public specialized medical care/public primary/private), working experience in the current organization (years or months), working experience as an RN (rounded to the nearest half-year), service type (permanent/fixed term), employment type (full/part time), working hours (day/shift work), assessment of current job satisfaction (Levels 1–10), and assessment of current quality of care (Levels 1–10).

Phase 3: Examination of Psychometric Properties

All data analyses were performed using SPSS Version 21.0 (IBM, Armonk, NY, USA). Assessments based on histograms and stem-and-leaf plots indicated that the model residuals were distributed sufficiently closely to normality for the applied statistical tests. EFA (principal axis factoring with varimax rotation) was applied rather than confirmatory factor analysis because we wanted to search for explanatory factors rather than confirm a presumed structure for the observed variables (Ramirez, Ford, Stewart, & Teresi, 2005). More specifically, principal axis factoring with varimax rotation was applied to decrease the number of variables, followed by Kaiser–Meyer–Olkin (KMO) and Bartlett's sphericity tests, with a cutoff point of .30 for the correlations and loadings (Green, Levy, Thompson, Lu, & Lo, 2012). The "reward type preferences" subscale was also subjected to parallel analysis using the 95th percentile rule (O'Connor, 2000). Cronbach's alpha values of all the resulting factors were calculated to evaluate internal consistency. "I don't know" responses were recorded together with missing responses as missing values.

Sample Description and Data Collection

A convenience sample totaling 596 voluntary RNs working in several clinical areas in one public specialized medical care organization (university hospital; n = 300), one public primary healthcare organization (n = 150), and two private healthcare organizations (n = 146) were invited to participate in a cross-sectional survey using the scale. The participants were anonymous and covered a wide range of clinical areas. Our choice of organizations was influenced by existing contacts and the possibility of collecting data from nurses in diverse clinical areas at the organizations' sites during Autumn 2015. The criteria for including participants were that they were working as an RN at one of the organizations during the time of the research, understood the Finnish language, and were not in a leadership position. Nurse leaders from the participating organizations informed their nurse managers about the study, who disseminated research invitation flyers and a paper-and-pencil format questionnaire with a postage-paid return envelope to nurses in their units during September 2015. There were 402 responses in total (188, 107, and 107 from RNs working in the public specialized medical care, public primary, and private healthcare organizations, respectively), with a response rate of 67.5%. In the current study, the RNREWS was developed and tested as a Finnish version. However, RNREWS was translated into English for dissemination purposes through a translation/back-translation comparison procedure by a Finnish–English bilingual expert.

Ethical Considerations

The research was approved by the Finnish University Committee on Research Ethics (Statement 2/2015). As ethical

considerations based on human rights influenced all decision making throughout the research process, research permission was requested from all participating organizations in May 2015. All of the participating organizations were asked to designate contact persons to maintain participant anonymity. The cover letter of the study stated that participation was voluntary, that respondents' personal data would not be gathered, and that it would not be possible to identify any individual respondent at any point. Data security precautions and methods for scoring and reporting results were applied consistently.

Results

The number of participants (N = 402) met the recommended criteria, including a satisfactory subject-to-item ratio (6:1), for applying EFA to reduce item dimensionality and identify underlying latent structures. Characteristics of the RNs are presented in Table 2.

Construct Validity of the Registered Nurses' Perceptions of Rewarding Scale

The RNREWS was found to have acceptable construct validity and good internal consistency (Table 3). In the EFA of the structure of the scale, solutions with 10–14 factors were examined for the "reward type preferences" subscale (62 items), with 13 factors providing the best solution. Hence, 13 factors were computed in accordance with the groups formed using Kaiser's rule that factors with eigenvalues greater than 1 should be retained. However, principal axis factoring with the 95th percentile rule has been shown to generate results with a relatively high level of accuracy. Thus, a parallel analysis using the 95th percentile rule was performed (O'Connor, 2000). Eigenvalues obtained from both analyses (around the intersection point) are compared in Figure 2, showing that the 11th factor was the last factor for which the eigenvalue obtained using the 95th percentile rule was lower than the value obtained using Kaiser's rule. This indicates that the 11-factor solution is the most suitable. However, the primary aim of this study was to develop a psychometric scale, so every item should ideally be associated unequivocally with only one factor. Therefore, we adopted the 13-factor solution.

Following these analyses, the "reward type preferences" subscale was reduced from 62 to 61 items, covering the 13 factors of appreciation and feedback from work community; opportunity to develop, influence, and participate; patient/customer work; benefits; work content; performance-based pay; basic salary and supplements; education; managerial support; support for professional development; worktime arrangements; work environment and working atmosphere; and employers' values and reputation (Table 3). All of the 13 factors extracted had eigenvalues greater than 1, and the solution explained 73.13% of the total variation in responses. The KMO and Bartlett's sphericity tests yielded

TABLE 2.
Characteristics of the Participants (N = 402)

Characteristic	*n*	%
Gender		
Female	354	88.1
Male	43	10.7
Missing	5	1.2
Age (years)		
< 30	45	11.2
30–39	106	26.4
40–49	112	27.9
50–59	107	26.6
≥ 60	21	5.2
Missing	11	2.7
Place of work		
Public specialized medical care	188	46.8
Public primary healthcare	107	26.6
Private healthcare	107	26.6
Work experience in the current organization (years)		
< 1	39	9.7
1–3	93	23.1
4–9	119	29.6
10–19	117	29.1
≥ 20	32	8.0
Missing	2	0.5
Experience as an RN (years)		
< 1	11	2.7
1–3	52	12.9
4–9	59	14.7
10–19	157	39.1
≥ 20	121	30.1
Missing	2	0.5
Service type		
Permanent	338	84.1
Fixed term	63	15.7
Missing	1	0.2
Employment		
Full time	362	90.1
Part time	39	9.7
Missing	1	0.2
Working hours		
Daywork	103	25.6
Shift work	294	73.1
Missing	5	1.3
Assessment of current job satisfaction		
Total	397	98.8
Missing	5	1.2
Assessment of current quality of care		
Total	397	98.8
Missing	5	1.2

Note. RN = registered nurse.

TABLE 3.

Results of the 14-Factor Exploratory Factor Analysis Solution for the "Reward Type Preferences" and "Significance of Rewarding" (N = 402)

Subscale (Factor)/Item (66 Items)	*n*	Loading	α	Eigenvalue
Reward type preferences (Factors 1–13)				
1. Appreciation and feedback from work community	375		.91	1.06
• Appreciation from the work community		.57		
• Appreciation from the nurse manager		.73		
• Appreciation from senior management		.71		
• Nurses' appreciation in the society		.48		
• Feedback from the work community		.53		
• Feedback from the doctors		.66		
• Feedback from the nurse manager		.74		
• Feedback from the senior management		.73		
2. Opportunity to develop, influence, and participate	372		.88	1.17
• Adequate human resources		.38		
• Opportunity to develop professionally at work		.44		
• Employer's support (with worktime arrangements) for spontaneous training		.50		
• Opportunity to influence one's own work		.60		
• Opportunity to influence the functioning of the work community		.77		
• Opportunity to participate in making decision related to work		.85		
• Opportunity to participate in developing work		.80		
3. Patient/customer work	389		.88	1.09
• Work with patient/customer		.50		
• Appreciation from patients/customers		.81		
• Appreciation from relatives of the patients/customers		.81		
• Feedback from the patients/customers		.87		
• Feedback from relatives of the patients/customers		.85		
4. Benefits	323		.90	3.01
• Extensive occupational health services offered by the employer (healthcare)		.33		
• Exercise benefits offered by the employer		.52		
• Cultural benefits offered by the employer		.50		
• Commuting cost benefits offered by the employer		.74		
• Housing benefits offered by the employer		.70		
• Dining benefits offered by the employer		.73		
• Recreational/well-being days during working hours		.51		
• Christmas/birthday/years of service or other gifts given by the employer		.60		
5. Work content	384		.83	1.44
• Employment stability		.29		
• Present job description		.57		
• Responsibility at work		.75		
• Independence of work		.72		
• Variety of work		.67		
• Quality of work		.49		
• Teamwork		.49		
6. Performance-based pay	321		.89	4.46
• Initiative or other similar lump-sum payment		.72		
• Personal payment for student tutoring		.74		
• Personal performance-based pay		.74		
• Common performance-based pay of a work unit		.56		
7. Basic salary and supplements	360		.77	21.19
• Basic salary		.42		
• Personal supplement		.64		
• Experience-related supplement		.63		
• Task-related supplement		.61		

(continues)

TABLE 3.

Results of the 14-Factor Exploratory Factor Analysis Solution for the "Reward Type Preferences" and "Significance of Rewarding" (N = 402), Continued

Subscale (Factor)/Item (66 Items)	*n*	Loading	α	Eigenvalue
8. Education	389		.86	1.27
• Training organized by the employer		.63		
• External training paid for by the employer		.66		
• Access to desired training		.67		
9. Managerial support	368		.83	1.93
• Senior management's leadership style		.49		
• Nurse manager's leadership style		.75		
• Nurse manager's presence/visibility in daily work		.61		
• Nurse manager's nursing background		.37		
10. Support for professional development	352		.74	1.40
• Opportunity to advance in one's career		.34		
• Regular development discussions with one's nurse manager		.47		
• Professional literature and magazines at work		.70		
• Receiving work supervision		.61		
11. Worktime arrangements	377		.77	1.74
• Opportunity to participate in work shift planning		.44		
• Flexibility of working hours		.64		
• Opportunity to get unpaid leave		.58		
12. Work environment and working atmosphere	397		.88	2.58
• Well-functioning work environment		.72		
• Working atmosphere in the workplace		.73		
13. Employer values and reputation	378		.77	2.27
• Values represented by the employer		.37		
• Good reputation of the employer		.46		
Significance of rewarding (Factor 14)	393		.80	2.93
• To work enjoyment		.69		
• To work motivation		.77		
• To coping at work		.78		
• To commitment to employer		.63		
• To staying in the RN profession		.59		

Note. $N = 402$: number of missing values, including both missing data and "I don't know" responses.

values of .9 and $p < .001$, respectively. The final number of items was 61 because one item, "nurse manager's background in a field other than nursing," earned an overly low communality value of .169 and was thus dropped. In the 13-factor solution, 60 of the 61 items had loadings exceeding .30 on multiple factors (and every item correlated with at least one other item with a correlation coefficient exceeding .30), with the exception of "employment stability," which had a loading of .29. However, this item was retained because it matched the corresponding factor ideally. The "significance of rewarding" subscale (five items) yielded only one factor with an eigenvalue greater than 1. The rotated factor loadings varied from .59 to .78 (Table 3). The solution explained 58.5% of the variation in responses and yielded KMO and Bartlett's sphericity test values of .8 and $p < .001$, respectively.

Internal Consistency of the Registered Nurses' Perceptions of Rewarding Scale

The RNREWS was found in the evaluation of reliability to have good internal consistency, with Cronbach's α values ranging from .74 to .91 for the 61 items of the "reward type preferences" subscale and .80 for the five items of the "significance of rewarding" subscale (Table 3).

As shown in Table 3, fewer than 10% of the values were missing for each of the variables except for three: initiative or other similar lump-sum payment (13.7%), personal performance-based pay (11.7%), and housing benefits offered by the employer (11.4%). Data are assumed to be missing completely at random within the variables, following Hair, Black, Babin, and Anderson (2014).

Discussion

This study respected the strict procedures advocated by Streiner and Kottner (2014) for scale development. A review of multidisciplinary scientific articles and a wide-ranging approach to the phenomenon of RNs' rewarding deepened the understanding of researchers of this subject during the

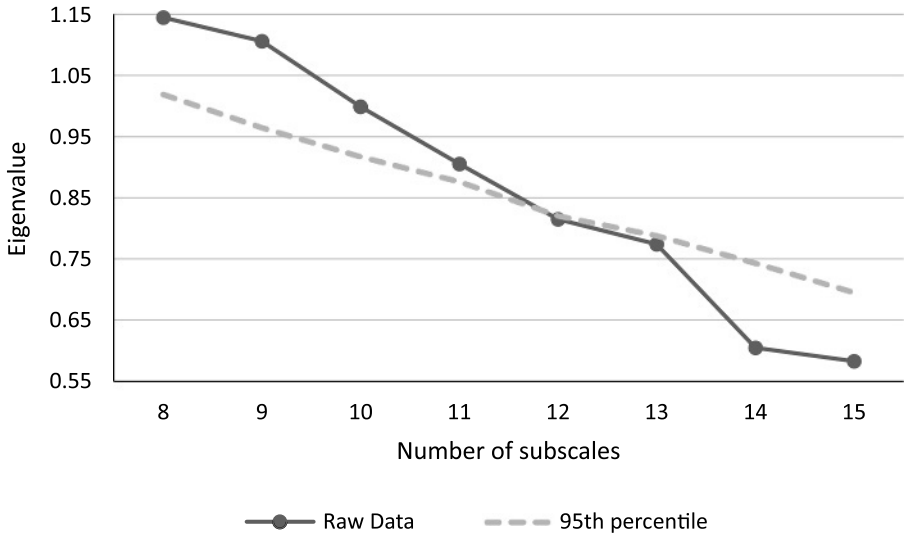

Figure 2. Comparison of eigenvalues obtained from principal axis factoring using Kaiser's rule (raw data) and parallel analysis (95th percentile) for the "reward type preference" subscale.

instrument development process. The success of the operationalization was assessed using reliability and validity tests (Rattray & Jones, 2007), the results of which indicate that the developed scale measures the issue that it is intended to measure. Face validity assessments are subjective and thus the weakest measure of validity (DeVon et al., 2007). However, in this study, these assessments provided insights into how potential participants may interpret and answer the items and evidence that the scale truly measures the types of reward that RNs prefer and the significance of rewarding RNs in their work settings. A panel of nursing experts (n = 9; DeVon et al., 2007) and CVIs (Polit & Beck, 2012) were used to further evaluate the validity of the scale and its individual items. Furthermore, the questionnaire was subjected to a pretest (n = 9) to assess it in terms of the intelligibility of the items, background variables, answer options, and instructions (Rattray & Jones, 2007).

The number of participants in our survey (N = 402, response rate = 67.5%) met the recommended criteria, including a satisfactory subject-to-item ratio (6:1), for applying the EFA to evaluate a scale's psychometric properties (Rattray & Jones, 2007). Moreover, the KMO and Bartlett's sphericity tests indicated that the data set was suitable for factor analysis. In addition, satisfactory internal consistency (Cronbach's α) values were obtained, indicating that all of the items measure the same thing and are strongly intercorrelated (DeVon et al., 2007). In addition, we cooperated with an expert statistician during the analytical process to identify and evaluate sources of measurement error, thereby increasing the reliability of the study. The literature suggests that parallel analysis provides an approach to determining the optimal number of factors that is superior to Kaiser's simple rule of retaining factors with an eigenvalue exceeding 1 (e.g., Green et al., 2012). However, no available method specifies precisely how many factors should be formed, and the final decision is influenced by the research problem. Therefore, if the initial scale and chosen EFA method conflict, a compromise between the best factor solution and usability is needed. Following the recommendations by Rattray and Jones (2007), we attempted to minimize the missing data problem through careful planning and pretesting as well as by offering a neutral point option and the alternative option "I don't know" to avoid respondent irritation and nonresponse bias. Nevertheless, any scale that addresses abstract concepts will always include a certain degree of bias, as they are unable to measure the focal concept perfectly. Our newly developed scale appears to fit its intended purpose because it showed acceptable construct validity and good internal consistency. In addition, the use of a panel of nursing experts, pretesting, and a sufficiently large sample allowed us to assess its research utility rigorously and to show that it provided sufficient validity and reliability.

Limitations and Future Studies

This research is affected by several limitations. First, RNREWS was developed and tested in a Finnish healthcare context. Thus, cultural equivalence and linguistic differences must be considered if the scale is to be applied in another country or environment (Ramirez et al., 2005). Notably, we were not able to use a subsample to explore the test–retest relationship because of participant anonymity, and we found no suitable validated and standardized scale in the literature. Nevertheless, the criterion-related validity should be tested in the future (Polit & Beck, 2012). Moreover, the presented RNREWS reliability and validity statistics inevitably apply solely to the particular set of study participants and circumstances under which the scale was administered (Streiner & Kottner, 2014). Finally, RNREWS was used for the first time in this study, and although it appeared to have good reliability, it should be further validated using confirmatory factor analysis to confirm the factor structure of the modified scale.

Conclusions

The findings provide preliminary evidence that the 66-item RNREWS is a valid and reliable scale for acquiring knowledge on the rewarding of RNs in the nursing context in Finland. The results highlight the potential to harmonize RN rewarding policies using a rigorously evaluated scale rooted in interviewed RNs' experiences of rewarding, a relevant literature review, an evaluation by an expert panel, pretests, and a survey with a sufficiently large sample. The use of these phases allowed the rigorous assessment of research utility and showed that the developed scale provides sufficient validity and reliability. In addition, the wide-ranging approach to the phenomenon of rewarding used in this study deepened the scholarly understanding of this issue during the scale development process. Finally, RNREWS has the potential to enhance understanding of the range of rewards that may be implemented in the nursing profession and to assist human resources managers and administrators to formulate effective reward strategies and systems for their RNs. This may represent an important initial step toward effective rewarding in the nursing profession.

Acknowledgments

We thank those who participated in this study in the public specialized, public primary, and private healthcare organizations as well as the nursing staff, nurse managers, nurse leaders, head nurses, and senior management who made this study possible.

Accepted for publication: January 3, 2018

*Address correspondence to: Jaana SEITOVIRTA, Department of Nursing Science, University of Eastern Finland, P. O. Box 1627, Kuopio 70211, Finland.
Tel: +358 50 5687714; E-mail: jaana.seitovirta@uef.fi

The authors declare no conflicts of interest.

Cite this article as:
Seitovirta, J., Lehtimäki, A. V., Vehviläinen-Julkunen, K., Mitronen, L., & Kvist, T. (2019). Development and psychometric testing of the registered nurses' perceptions of rewarding scale. *The Journal of Nursing Research*, *27*(2), e13. https://doi.org/10.1097/jnr.0000000000000276

References

Armstrong, M., & Murlis, H. (2007). *Reward management. A handbook of remuneration strategy and practice* (Rev. 5th ed.). London, England: Kogan Page Limited.

Bradbury-Jones, C., Irvine, F., Jones, C., Kakehashi, C., & Ogi, A. (2011). A comparison of elderly care nursing in the UK and Japan. *Nursing Older People*, *23*(9), 31–35. https://doi.org/10.7748/nop2011.11.23.9.31.c8781

Chen, C. K., Lin, C., Wang, S. H., & Hou, T. H. (2009). A study of job stress, stress coping strategies, and job satisfaction for nurses working in middle-level hospital operating rooms. *The Journal of Nursing Research*, *17*(3), 199–211. https://doi.org/10.1097/JNR.0b013e3181b2557b

Chen, F., Yang, M., Gao, W., Liu, Y., & De Gieter, S. (2015). Impact of satisfactions with psychological reward and pay on Chinese nurses' work attitudes. *Applied Nursing Research*, *28*(4), e29–e34. https://doi.org/10.1016/j.apnr.2015.03.002

Dave, D. S., Dotson, M. J., Cazier, J. A., Chawla, S. K., & Badget, T. F. (2011). The impact of intrinsic motivation on satisfaction with extrinsic rewards in a nursing environment. *Journal of Management and Marketing in Healthcare*, *4*(2), 101–107. https://doi.org/10.1179/175330311X12943314049493

De Gieter, S., De Cooman, R., Pepermans, R., & Jegers, M. (2010). The Psychological Reward Satisfaction Scale: Developing and psychometric testing two refined subscales for nurses. *Journal of Advanced Nursing*, *66*(4), 911–922. https://doi.org/10.1111/j.1365-2648.2009.05199.x

DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J., … Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship*, *39*(2), 155–164. https://doi.org/10.1111/j.1547-5069.2007.00161.x

Duffield, C. M., Roche, M. A., Blay, N., & Stasa, H. (2011). Nursing unit managers, staff retention and the work environment. *Journal of Clinical Nursing*, *20*(1–2), 23–33. https://doi.org/10.1111/j.1365-2702.2010.03478.x

Green, S. B., Levy, R., Thompson, M. S., Lu, M., & Lo, W. J. (2012). A proposed solution to the problem with using completely random data to assess the number of factors with parallel analysis. *Educational and Psychological Measurement*, *72*(3), 357–374. https://doi.org/10.1177/0013164411422252

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis* (7th ed.). Harlow, England: Pearson Education Limited.

Hulkko-Nyman, K., Sarti, D., Hakonen, A., & Sweins, C. (2012). Total rewards perceptions and work engagement in elder-care organizations: Findings from Finland and Italy. *International Studies of Management and Organization*, *42*(1), 24–49. https://doi.org/10.2753/IMO0020-8825420102

Kurtzman, E. T., O'Leary, D., Sheingold, B. H., Devers, K. J., Dawson, E. M., & Johnson, J. E. (2011). Performance-based payment incentives increase burden and blame for hospital nurses. *Health Affair*, *30*(2), 211–218. https://doi.org/10.1377/hlthaff.2010.0573

Li, J., Galatsch, M., Siegrist, J., Müller, B. H., & Hasselhorn, H. M.; European NEXT Study Group. (2011). Reward frustration at work and intention to leave the nursing profession—Prospective results from the European longitudinal NEXT study. *International Journal of Nursing Studies*, *48*(5), 628–635. https://doi.org/10.1016/j.ijnurstu.2010.09.011

Morrison, K. B., & Korol, S. A. (2014). Nurses' perceived and actual caregiving roles: Identifying factors that can contribute to job satisfaction. *Journal of Clinical Nursing*, *23*(23–24), 3468–3477. https://doi.org/10.1111/jocn.12597

Mueller, C. W., & McCloskey, J. C. (1990). Nurses' job satisfaction: A proposed measure. *Nursing Research*, *39*(2), 113–116.

National Health Service Employers. (2017). *Total reward in the NHS*. Retrieved from http://www.nhsemployers.org/your-workforce/pay-and-reward/reward/the-business-case-for-reward

Nurmela, K., Hakonen, N., Hulkko, K., Kuula, T., & Vartiainen, M. (1999). *How does results oriented pay function in Finland?* Espoo, Finland: Laboratory of Work Psychology and Leadership, Helsinki University of Technology. (Original work published in Finnish)

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instruments, and Computers*, *32*(3), 396–402. https://doi.org/10.3758/BF03200807

Pasarón, R. (2013). Nurse practitioner job satisfaction: Looking for successful outcomes. *Journal of Clinical Nursing*, *22*(17–18), 2593–2604. https://doi.org/10.1111/j.1365-2702.2012.04331.x

Polit, D. F., & Beck, C. T. (2012). *Nursing research: Generating and assessing evidence for nursing practice* (9th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.

Ramirez, M., Ford, M. E., Stewart, A. L., & Teresi, J. A. (2005). Measurement issues in health disparities research. *Health Services Research*, *40*(5, Pt. 2), 1640–1657. https://doi.org/10.1111/j.1475-6773.2005.00450.x

Rattray, J., & Jones, M. C. (2007). Essential elements of questionnaire design and development. *Journal of Clinical Nursing*, *16*(2), 234–243. https://doi.org/10.1111/j.1365-2702.2006.01573.x

Schultz, W. (2015). Neuronal reward and decision signals: From theories to data. *Physiological Reviews*, *95*(3), 853–951. https://doi.org/10.1152/physrev.00023.2014

Seitovirta, J., Partanen, P., Vehviläinen-Julkunen, K., & Kvist, T. (2015). Registered nurses' experiences of rewarding in a Finnish University Hospital—An interview study. *Journal of Nursing Management*, *23*(7), 868–878. https://doi.org/10.1111/jonm.12228

Seitovirta, J., Vehviläinen-Julkunen, K., Mitronen, L., De Gieter, S., & Kvist, T. (2017). Attention to nurses' rewarding—An interview study of registered nurses working in primary and private healthcare in Finland. *Journal of Clinical Nursing*, *26*(7–8), 1042–1052. https://doi.org/10.1111/jocn.13459

Siegrist, J. (1996). Adverse health effects of high-effort/low reward conditions. *Journal of Occupational Health Psychology*, *1*(1), 27–41.

Spence Laschinger, H. K., Wong, C. A., & Grau, A. L. (2012). The influence of authentic leadership on newly graduated nurses' experiences of workplace bullying, burnout and retention outcomes: A cross-sectional study. *International Journal of Nursing Studies*, *49*(10), 1266–1276. https://doi.org/10.1016/j.ijnurstu.2012.05.012

Streiner, D. L., & Kottner, J. (2014). Recommendations for reporting the results of studies of instrument and scale development and testing. *Journal of Advanced Nursing*, *70*(9), 1970–1979. https://doi.org/10.1111/jan.12402

Tourangeau, A. E., Cummings, G., Cranley, L. A., Ferron, E. M., & Harvey, S. (2010). Determinants of hospital nurse intention to remain employed: Broadening our understanding. *Journal of Advanced Nursing*, *66*(1), 22–32. https://doi.org/10.1111/j.1365-2648.2009.05190.x

von Bonsdorff, M. E. (2011). Age-related differences in reward preferences. *The International Journal of Human Resource Management*, *22*(6), 1262–1276. https://doi.org/10.1080/09585192.2011.559098