

# Results From the Perceived Value of Certification Tool-12 Survey: Analysis of the Perceived Value of Certification Among Stroke and Neuroscience Nurses



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## ABSTRACT

**AIM:** The purpose of this study was to explore the perceived value of certification among those with a neuroscience or stroke nursing certification. **METHODS:** The Perceived Value of Certification Tool-12 (PVCT-12) consists of 12 value statements related to the benefits of certification, using a 4-point Likert scale ranging from strongly disagree to strongly agree. Descriptive statistics were used to determine the percentage of agreement among respondents with each of the PVCT-12 items. A generalized linear model approach was then used to estimate the associations between age, sex, race, experience, certification, highest degree earned, primary responsibility, and primary work setting with intrinsic and extrinsic values. An exploratory factor analysis was performed to identify factors on which related variables were found. **RESULTS:** The 632 certificants were predominantly female (90%) with a mean age of 54 years. Approximately 80% were White, followed by Asian (11%), Hispanic (4%), and Black (3%). Certification included certified neuroscience registered nurse (34%), stroke certified registered nurse (47%), or both (20%). Approximately 57% of the certificants work in critical care/medical-surgical units. Work setting included academic (46%) and community (42%). Responses indicated lower levels of agreement with the value statements regarding certification challenges, professional autonomy, being listened to, and monetary gain. Those in administration had statistically significant higher intrinsic and extrinsic value scores ( $P = .005$ ) as compared with those in nonadministrative roles. There was no significant difference on perceived intrinsic or extrinsic values for those who work in an academic environment versus those who work in a community environment ( $P = .25$ ). After factor analysis, the PVCT-12 was found to have 3 factors that accounted for 53.4% of the total variation in the data: recognition of specialization, personal achievement, and professional accomplishment.

**CONCLUSION:** The PVCT-12 incorporated a Likert-type scale to provide levels of agreement for intrinsic and extrinsic values among stroke certified registered nurses and certified neuroscience registered nurses. To complement these findings, further research using open-ended questions is needed to improve our understanding of participant responses regarding complex values such as “autonomy” and the “extent of being listened to.”

**Keywords:** autonomy, certification, CNRN, extrinsic values, intrinsic values, neuroscience nurse, perceived value of certification, SCRN

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Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's Web site ([www.jnnonline.com](http://www.jnnonline.com)).

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<https://doi.org/10.1097/JNN.0000000000000667>

Nursing certification is recognized as an important component of quality patient care.<sup>1–3</sup> Specialty certified nurses have higher rates of patient satisfaction and lower rates of patient-related errors.<sup>4</sup> Credentialing is recognized as a means to protect the public by improving the quality of care and providing professional accountability.<sup>5</sup> In 2011, the Institute of Medicine, (now the National Academies of Sciences, Engineering, and Medicine), released the *Future of Nursing Report*.<sup>4</sup> In response, the American Association of Neuroscience Nurses (AANN) published a white paper outlining how the organization would integrate recommendations set forth by the Institute of Medicine into the AANN strategic plan.<sup>6,7</sup> As a sister organization to the AANN, the American Board of Neuroscience Nursing (ABNN), the certification organization for the Certified Neuroscience Registered Nurse (CNRN) and Stroke Certified Registered Nurse (SCRN) certifications, looked at certification in support of lifelong learning and scope of practice.<sup>8</sup> Certification is voluntary, and participation in certification programs by hospital organizations and staff nurses is dependent on the perceived value of the certification.<sup>9</sup> Given this, ABNN distributed the Perceived Value of Certification Tool-12 (PVCT-12) to certificants.

The PVCT-12 survey consists of 12 questions that are sorted into intrinsic (6 items) and extrinsic (6 items) values, summed, and then interpreted separately. Intrinsic values relate to certification refer to personal accomplishments that are related to empowerment, improved work effectiveness, commitment to the nursing profession, and higher levels of clinical competence.<sup>10–12</sup> Extrinsic values relate to certification refer to employer and community recognition resulting in more collaboration and recognition by others.<sup>9–11</sup> Studies have demonstrated the perceived value of certification among several nursing specialties<sup>9,13–15</sup>; however, no studies have evaluated the perceived value of certification among SCRN or CNRN.

## Purpose

The purpose of this study was to identify the perceived value of certification among CNRN and SCRNC certificants. An understanding of what certified neuroscience and stroke nurses value in certification may result in organizational changes that lead to increases in specialty certification.

Specific aims include analyzing responses from the PVCT-12 to evaluate which intrinsic and extrinsic values among stroke and neuroscience nurses have the highest levels of agreement, to determine whether any significant differences in perceived value of certification exist between certificants based on practice role (administrative vs nonadministrative) or practice

## Peer support is an important component of certification.

setting (university vs nonuniversity), and to evaluate interrelationships among the 12 value statements to determine factor structure based on certificant responses.

## Methods

Approval for this study was obtained through the West Virginia University Institutional Review Board as exempt. This was a cross-sectional, descriptive, exploratory study using secondary data analysis. The sample for this study was selected from a cohort of 8097 ABNN-certified nurses from a database of current certificants maintained by ABNN. Data were obtained via an online PVCT-12 survey between December 17, 2020 and January 15, 2021. This first part of the survey was composed of demographics including participant's age, sex, race, years of experience in neuroscience nursing, certification, highest degree earned, primary work responsibility, and primary work setting (see Supplemental Digital Content 1, Demographics, available at <http://links.lww.com/JNN/A427>). The second part of the survey was the PVCT-12, which is a 12-item self-report instrument that asks nurses the degree to which they agree with statements regarding the benefits of certification. The 12 questions include 2 subscales (6 questions each) to evaluate an extrinsic value score (questions 3–5 and 9–11) and an intrinsic value score (questions 1, 2, 6–8, and 12). The PVCT-12 subscales were treated as interval-level data using the 4-point Likert-type scale, and the following scores were applied: 1, strongly disagree; 2, disagree; 3, agree; and 4, strongly agree. Thus, the maximum points for each subscale was 24. The PVCT-12 has been reported to have a stable factor structure, measurement model fit, and adequate reliability (intrinsic range of reliability  $\alpha = .74-.83$ ; extrinsic range of reliability  $\alpha = .83-.86$ ) across a variety of nursing credentialing organizations, providing evidence of its concurrent validity.<sup>14</sup>

Descriptive statistics were calculated for age, sex, race, years in neuroscience nursing, certification, highest degree earned, primary responsibility, and primary work setting (see Supplemental Digital Content 1, Demographics, available at <http://links.lww.com/JNN/A427>). To describe the percentage of agreement, the researchers collapsed responses of the value statements to agree (for those who agreed or strongly agreed) and disagree (for those who disagreed and strongly disagreed) for clarity in interpretation and describing the results. The

following set of factors were modeled to estimate the association with intrinsic and extrinsic values through a general linear model approach: age group, sex, race, years in neuroscience nursing, certification, highest degree earned, primary responsibility, and primary work setting. Parameter estimates were reported (see Supplemental Digital Content 2, Results of Generalized Linear Model of Intrinsic and Extrinsic Values, available at <http://links.lww.com/JNN/A428>). Exploratory factor analysis was performed to identify which underlying factors are measured by a number of variables. The method for factor extraction is principal component analysis, and the specific method for orthogonal rotation is varimax. An eigenvalue shows the amount of variance captured by a given factor. The eigenvalue-one criterion (eigenvalue  $\geq 1$ ) is commonly used to decide how many factors to be retained.<sup>16</sup> Any factor that accounts for at least 5% of the total variance can be retained. A scree plot (see Supplemental Digital Content 3, Scree Plot, available at <http://links.lww.com/JNN/A429>) was used as a visual graphic display of the eigenvalues. The factors in the steep curve before the first point that starts the flat line trend were retained. Second, variables with an  $r^2$  value larger than 0.4, which indicates that the proportion of variance accounted by the selected components is larger than 40%, were determined as underlying factors to account for all 12 variables. Third, an identification of which items measure which factors were performed based on the Pearson correlations from the component matrix. Fourth, to address potential cross-loading that may have occurred in the previous step, meaning a variable has more than 1 substantial factor loading, rotation was performed to redistribute the factor loadings over the factors.

## Results

Of the 8097 certified nurses who received the survey, 632 (8%) completed both the demographic and PVCT-12 questionnaires (see Supplemental Digital Content 1, Demographics, available at <http://links.lww.com/JNN/A427>). Approximately 90% of the participants were female. The mean age was 54 years, and the ethnicity of the participants was predominantly White (80%), followed by Asian (11%), Hispanic (4%), and Black (3%). Years of experience in neuroscience nursing included 1 to 5 (25%), 6 to 10 (20%), 11 to 15 (17%), and more than 15 (38%). Twenty percent of the certificants held both SCR/N and CNRN certifications, whereas 47% and 34% held only the SCR/N or CNRN, respectively. Approximately 50% of the certificants held either a Bachelor of Science or Bachelor of Science in Nursing or equivalent followed by a Master of Science in Nursing (30%). The participants reported areas of responsibility were highest in critical care/medical surgical (57%), administration (12%), and outpatient/

perioperative (11%). Reported primary work settings were highest in the academic/university/teaching hospital (46%) and community/hospital/rehabilitation (42%) settings.

Agreement with PVCT-12 value statements was evaluated among those with a CNRN, SCR/N, or both (Table 1). A higher percentage of all certificants highly agreed with each of the value statements associated with the intrinsic value of certification (80%–99%) in all areas but one. The lowest level of agreement (60%–67%) among certificants was associated with the value statement that certification is the most challenging aspect of the nursing profession (Table 1). For extrinsic values of certification, a higher percentage of all certificants agreed with the value statements for greater professional recognition, consumers more confident in certified nurses, and employers favor hiring certified nurses (60%–75%). In comparison, lower levels of agreement were reported for the value of professionals being more likely to listen to a certified nurse (45%–55%) as well as those values for professional autonomy and certified nurses making more money (29%–34%) (Table 1).

Using a general linear model mean scores for both intrinsic and extrinsic value statements were reported for age, sex, race, primary responsibility, highest degree earned, years of neuroscience nursing, primary work setting, and type of certification (Supplemental Digital Content 2, Results of Generalized Linear Model of Intrinsic and Extrinsic Value, available at <http://links.lww.com/JNN/A428>). There was no significant difference on perceived intrinsic or extrinsic values for highest degree earned, years in neuroscience, type of certification held, or work setting.

When comparing value statement responses for age, there was a significant main effect for perceived intrinsic value outcomes ( $P = .03$ ) but not for perceived extrinsic value outcomes ( $P = .36$ ). Value statement responses from certificants who were 30 to 39, 40 to 49, and 50 to 59 years old were associated with a 1.21, 0.90, and 0.75 decrease in intrinsic value, respectively, when compared with those aged 60 to 70 + years. Alternatively, responses for certificants in the 20- to 29-year age group were only marginally associated with a 1.43 decrease in extrinsic value ( $P = .06$ ). When comparing value statement responses for race, there was a significant main effect for perceived extrinsic value outcomes ( $P = .003$ ). Value statement responses from Asian and Black certificants were associated with a 1.79 and 2.46 increase in extrinsic value, respectively, when compared with White. When comparing value statement responses for primary work responsibilities, there was a significant main effect for perceived intrinsic value outcomes ( $P = .005$ ) and perceived extrinsic value outcomes ( $P = .005$ ).

**TABLE 1.** Agreement With PVCT-12 Value Statements Among CNRNs and SCRNs

Specialty Value Statement	CNRN Only, n (%)		SCRN Only, n (%)		Both CNRN and SCRN, n (%)	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
Intrinsic values						
Certification validates specialized clinical knowledge.	199 (95.7)	9 (4.3)	279 (95.9)	12 (4.1)	121 (96.8)	4 (3.2)
Certified nurses are more competent.	169 (80.5)	41 (19.5)	221 (75.9)	70 (24.1)	108 (86.4)	17 (13.6)
Nurses who have obtained certification feel a strong sense of accomplishment.	206 (98.6)	3 (1.4)	283 (97.6)	7 (2.4)	121 (97.6)	3 (2.4)
Certified nurses have more confidence in their abilities.	173 (82.4)	37 (17.6)	233 (80.9)	55 (19.1)	109 (87.9)	15 (12.1)
<b>Obtaining certification is one of the most challenging aspects of the nursing profession.</b>	134 (64.4)	74 (35.6)	172 (59.7)	116 (40.3)	84 (67.2)	41 (32.8)
Obtaining certification shows that a nurse is committed to the nursing profession.	199 (94.8)	11 (5.2)	270 (93.1)	20 (6.9)	120 (96.8)	4 (3.2)
Extrinsic values						
Nurses who have obtained certification receive greater professional recognition from peers.	140 (66.7)	70 (33.3)	207 (71.1)	84 (28.9)	93 (74.4)	32 (25.6)
<b>Other medical professionals are more likely to listen to a certified nurse.</b>	94 (44.8)	116 (55.2)	144 (49.7)	146 (50.3)	69 (55.2)	56 (44.8)
Consumers are more confident in certified nurses.	128 (61.0)	82 (39.0)	184 (63.7)	105 (36.3)	76 (60.8)	49 (39.2)
<b>Certified nurses are given more professional autonomy.</b>	61 (29.2)	148 (70.8)	97 (33.6)	192 (66.4)	40 (32.3)	84 (67.7)
Employers tend to favor hiring certified nurses over noncertified nurses.	146 (69.9)	63 (30.1)	217 (75.1)	72 (24.9)	85 (68.5)	39 (31.5)
<b>Certified nurses generally make more money than noncertified nurses.</b>	81 (38.9)	127 (61.1%)	105 (36.3)	184 (63.7)	44 (35.5)	80 (64.5)

Note. Statements that are in bold represent the values least endorsed by certificants.

Specifically, critical care/medical-surgical value statement responses were associated with a 1.30 decrease in extrinsic value as compared with those in administration, whereas those in the outpatient/perioperative group were associated with a 1.60 decrease in extrinsic value and a 1.78 decrease in intrinsic value as compared with those in administration.

Factor analysis was performed for the 12 variables. Three factors were found to be suitable based on their eigenvalue (3.267, 2.168, and 0.971) and the scree plot indicated by the sharp drop between the first 3 factors and all remaining factors (Supplemental Digital Content 3, Scree Plot, available at <http://links.lww.com/JNN/A429>). The proportions of variation explained by these 3 factors were 27.2%, 18.1% and 8.1%, respectively. The first 3 factors could explain approximately 53.4% of the total variation in the data. On the basis of the loading values (>0.5) from rotated component matrix, the first factor represents *recognition of specialization* (professionals likely to listen to a certified nurse, greater professional recognition, consumers more confident in certified nurses, given

more professional autonomy, employers favor hiring certified nurses, and certified nurses make more money), the second factor represents *personal achievement* (specialized clinical knowledge, feel a strong sense of accomplishment, more confidence in abilities, and nurse is committed), and the third factor represents *professional accomplishment* (certified Nurse is more competent, and certification is most challenging; Table 2).

## Discussion

The ABNN provides 2 certifications for registered nurses (CNRN and SCRNs). Both credentials formally recognize the attainment and demonstration of a unique body of knowledge necessary for the practice of specialized neuroscience or stroke nursing. The findings of this study demonstrate that stroke and neuroscience nurses perceive value in certification that contributes to *recognition of specialization*, *personal achievement*, and *professional accomplishment*.

In this study, higher levels of agreement for intrinsic benefits were reported by CNRNs/SCRNs for validation of specialized clinical knowledge, competence,



**TABLE 2.** Factor Loadings for Value Statements

PVCT Value Statements	Scale Factors		
	1	2	3
Recognition of specialization			
Greater professional recognition	0.599 <sup>a</sup>	0.182	0.203
Professionals likely to listen to a certified nurse	0.771 <sup>a</sup>	−0.071	0.108
Consumers more confident in certified nurses	0.653 <sup>a</sup>	0.013	0.253
Given more professional autonomy	0.712 <sup>a</sup>	−0.137	0.042
Employers favor hiring certified nurses	0.619 <sup>a</sup>	0.261	0.065
Certified nurses make more money	0.567 <sup>a</sup>	0.081	−0.526
Personal achievement			
Specialized clinical knowledge	−0.136	0.746 <sup>a</sup>	0.105
Feel a strong sense of accomplishment	0.035	0.809 <sup>a</sup>	0.040
More confidence in abilities	0.148	0.509 <sup>a</sup>	0.464
Nurse is committed	0.154	0.749 <sup>a</sup>	0.152
Professional accomplishment			
Certified nurse is more competent	0.192	0.318	0.603 <sup>a</sup>
Certification is most challenging	0.225	0.075	0.617 <sup>a</sup>

<sup>a</sup>A factor loading of 1 variable is considered as large if its absolute value exceeds 0.5.

sense of accomplishment, greater confidence, and commitment to the nursing profession. Lower levels of agreement were associated with the value statement that certification is the most challenging aspect of the nursing profession. Higher levels of agreement for extrinsic benefits included greater professional recognition, consumer confidence, and favored hiring of certified nurses. The previously mentioned findings are similar to outcomes of perceived value statements among plastic and aesthetic nurse certificants.<sup>14</sup> Intrinsic and extrinsic values motivate nurses who pursue certification, and the above demonstrates both intrinsic and extrinsic motivating values specific to certified stroke and neuroscience nurses.<sup>14</sup>

The extrinsic value statements least endorsed included professionals likely to listen to a certified nurse, given more professional autonomy, and certified nurses making more money. Similar findings have been reported among other groups of specialized nurses.<sup>13,14</sup> In a study evaluating pediatric nurse responses to perceived value, pediatric nurses did not agree that certification increases salaries.<sup>13</sup> Furthermore, studies have reported that only 18.6% of nurse respondents declared that their hospitals offered an increase in salary after certification and, even greater, 21.4% of nurses reported no incentives at all for certification.<sup>17</sup>

The mean age of the participants was 54 years, and those in the age group of 60 to 70+ years demonstrated a higher intrinsic value as compared with the younger age groups. Approximately 50% of the certificants

held a Bachelor of Science/Bachelor of Science in Nursing followed by a Master of Science in Nursing. The largest number of respondents reported working more than 15 years in neuroscience nursing (38.4%). In a previous study on the characteristics of certified nurses, participants were more likely to become certified if they had a Bachelor of Science in Nursing or higher degree, were older, and more experienced.<sup>18</sup> In addition, medical-surgical areas were less likely to have certified nurses, whereas a high percentage of certified nurses worked in the operating room or oncology. In contrast, this study demonstrated that more than 50% of stroke and neuroscience nurses worked in critical care/medical-surgical areas.

In this study, those in administration had higher intrinsic and extrinsic value scores. Similarly, in a study of administrative perioperative nurses, findings also demonstrated that those in administrator/manager roles perceived significantly greater value in certification than did certificants in staff nurse roles.<sup>15</sup> In a systematic review, the level of agreement with intrinsic and extrinsic value statements between nurse managers and certified nurses was evaluated.<sup>19</sup> Responses of the nurse managers indicated a higher level of agreement than nonmanagerial certified nurses for increased marketability, promoting peer recognition, promoting recognition from other healthcare professionals, and promoting recognition from employers. The previously mentioned findings are also supported by a qualitative study that analyzed nurse managers'

responses regarding development of nurses through specialization.<sup>20</sup> Nurse managers stated that supporting specialization offers opportunities for career development, establishes an environment of lifelong learning, provides well-balanced support for the needs of organizations and individual nurses, and supports career development.

### Limitations

The low response rate (8%) may limit the generalizability of the findings to all ABNN certificants. Approximately 90% of the certificants were female, and 80% were White, which limits generalizability in terms of sex and race. Finally, questions in the PVCT-12 survey were limited to Likert-style responses. Given that the survey addresses intrinsic and extrinsic principles, open-ended questions would increase the value of certificant responses and fully address the complexities of these concepts.<sup>21</sup> For example, value statement responses from Asian and Black certificants were higher when compared with White certificants. Open-ended questions would provide data needed to understand why these groups responded differently. In addition, certificants did not agree with the value statements for professional autonomy and being listened to. Further research is needed to understand how nurses define “autonomy” and the extent “of being listened to.”

### Implications

These findings shed light on the values that CNRN and SCRNs certificants highly endorse. Results of this survey indicate that certificants do not consider certification as the most challenging aspect of their career. Peer support is an important component of certification and could be helpful in assuring nurses that they can take and pass the examination. In addition, administrators perceived value in certification, and findings demonstrated statistically higher scores for both intrinsic and extrinsic values. Supportive administrators may be able to offer incentives to nursing staff to obtain certification. However, for those organizations that do not have the resources, certification organizations offer programs that can provide support to administrators who want to promote certification. For example, ABNN offers the hospital registration program that provides discounts for nurses who are unsuccessful in the first attempt for certification. Finally, certificants in this study were less likely to agree with the values that certified nurses are given more professional autonomy and medical professionals are more likely to listen to certified nurses. These responses may be based on the fact that other medical professionals lack an understanding of the rigor and knowledge required for certification. Certificants and certifying bodies may need

to better communicate the knowledge needed to successfully obtain certification.

### Conclusions

This study demonstrates the degree to which CNRN and SCRNs value certification. Further research is needed to evaluate how noncertified stroke and neuroscience nurses as well as administrators value certification. Inclusion of open-ended questions may increase the meaning of certificant responses and provide further data on how to best promote certification among stroke and neuroscience nurses.

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