Development, Validation and Cross-cultural Adaptation of a ‘Scale on Community Care Perception’ (SCOPE):
An Instrument for Measuring Nursing Students’ Perceptions of Community Care

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Preface
This article is written for the purpose of the final exam for the Master of Educational Sciences of the Open University of the Netherlands. A shorter version of this article will be submitted for publication to the journal *Medical Education* (UK).

ABSTRACT
Objective: Development, validation, and revision of an instrument to measure student nurses’ perceptions of community care (SCOPE).

Methods: Scale construction of SCOPE was based on existing literature. The evaluation of its psychometric properties included exploratory factor analysis, reliability analysis and scale- and factor correlations. Content validity was assessed by ten senior researchers in the fields of education, nursing and educational psychology. SCOPE was pilot-tested on second year bachelor nursing students \( n = 57 \). Nursing students in the first semester of their bachelor nursing program \( n = 1062 \) from six institutions of higher education in the Netherlands (response rate 81%) took part in the study.

Results: SCOPE is a 49-item scale containing: 14 items on student background; 33 items in three subscales for measuring the affective component, perception of community care as a placement and as a future profession; and 2 items on the reasons underlying the student’s preference. Internal consistency of the complete scale was (Cronbach’s \( \alpha \)) .886 and of the subscales was \( \alpha = .862, .679 \) and .799 respectively. Pearson correlations between the scales ranged from .414 to .621 \( (p < .01) \). Principal component analysis resulted in the identification of two factors in the attitude scale reflecting ‘enjoyment’ and ‘utility’, two factors in the placement scale reflecting ‘interpersonal contacts’ and ‘personal satisfaction’, and four factors in the profession scale, reflecting ‘professional development’, ‘collaboration’, ‘freedom of action’ and ‘complexity and workload’.

Conclusions: SCOPE is a new instrument for measuring students’ perceptions toward the work-field of community care, with supporting validity evidence. It contributes to an understanding of nursing students’ perceptions of community care and, by positively influencing these perceptions with targeted curriculum redesign, decrease the gap between health care needs and available workforce. As the workforce shortage in community nursing is a problem in many Western health care systems, further utilisation and validation of SCOPE in international contexts is recommended.

Keywords
Nursing students, community care, perception, scale development, instrument validation
INTRODUCTION

Health care is undergoing a change from care delivery to patients in an institutional setting to care provided to patients in their own home. Shorter hospital stays and earlier hospital discharges have resulted in increasing numbers of care-dependent clients being discharged into the community (Philibin, Griffiths, Byrne, Horan, Brady, & Begley, 2010). This is well known in Western societies as it is related to socio-demographic changes of the population. People are living longer, and the oldest population is also aging: in 2050, the percentage of the population aged over 80 years will increase from 14% (2013) to 19% (United Nations, 2013). As prevalence of one or more chronic diseases increases with age (United Nations, 2013), health care delivery based on a single disease framework will no longer be sufficient. The demands associated with this long term and complex care delivery to patients at home might pose the greatest challenge for the work-field of community care (Rushton, Green, Jaarsma, Walsh, Stromberg, & Kadam, 2015; WHO, 2008).

Despite the international shift in health care delivery, student nurses have limited interest in community care as a career, causing a discrepancy between health care developments and available workforce (Norman, 2015). Traditionally, hospitals are the preferred setting of choice by students due to their acute care profile. The hospital is perceived as an interesting and glamorous work-field utilising high levels of technology, where people can regain their health rather than being chronically ill (Kloster, Hoie, & Skar, 2007). Community care is seen as less attractive because of its more chronic care profile, where students expect to find almost no technical skills, few challenges, many untrained workers and a high workload (Kloster et al., 2007).

Students’ perceptions of community care do not adequately reflect the realities of this work-field with its challenging roles and responsibilities, so strategies to increase awareness and understanding of this field are urgently required (Norman, 2015). Placements in different work-fields during education provide experiences in clinical practice that help students to orient themselves towards a future professional career. As student nurses’ pathways vary during their education, this orientation process is complex and is influenced by a broad range of variables. The ‘Nursing Career Development Framework’ (Hickey, Harrison, & Sumsion, 2012) based on Bronfenbrenner’s ‘Socioecological Theory of Development’ (1999) is useful for understanding this process. This ‘Framework’ describes the influence of four interrelated components (i.e., process, person, context, time) on environmental systems at different system-levels (micro-, meso-, exo-, macro-system), thus explaining the complexity of the multiple factors influencing the choice for a future profession. As the ‘Framework’ emphasises individual development, it helps to understand the differences within and between groups of nursing students (Hickey et al., 2012).

Gaining insight on how students’ perceptions of the community care field develop during their education and the factors that influence this development will help understand students’ assumptions underlying this field’s limited popularity. Educators can possibly redesign the curriculum based on these insights, to positively influence students’ willingness to work in community care, correcting
misunderstandings or unrealistic expectations (Illingworth, Aranda, De Goeas, & Lindley, 2013). Many nursing schools are transitioning to a new curriculum, making community care a key focus. This revision is necessary to improve students’ in-depth knowledge about community care, and decrease the dissonance between students’ perceptions and the reality of the work-field, which may enhance positive perceptions (Bolan & Grainger, 2009). By starting early in their education, interest can be developed from the very beginning of the study.

Several recent studies have investigated nursing students’ perceptions of the nursing profession in general and the reasons to choose nursing as a career (Hickey, Sumsion, & Harrison, 2012; Jirwe & Rudman, 2012; Mooney, Glacken, & O’Brien, 2008). Development of career preferences related to different work-fields in health care and the rationale behind these preferences have also been studied (Bolan & Grainger, 2009; Happell & Gaskin, 2013; Kloster et al., 2007; McCann, Clark, & Lu, 2010), with special attention to working with older people, as working with this population is ranked low as a perceived career destination (Bleijenberg, Jansen, & Schuurmans, 2012; Haron, Levy, Albagli, Rotstein, & Riba, 2013; Koh, 2012; Liu, Norman, & While, 2013; Potter, Clarke, Hackett, & Little, 2013; Stevens, 2011). In these, primarily, survey studies, students’ perceptions and opinions were investigated with self-developed or existing questionnaires. While scales for measuring preference for nursing as a career (Matutina, Newman, & Jenkins, 2010), for mental health (Stevens & Dulhunty, 1992), and for working with older patients (Kogan, 1961; Rosencranz & McNevin, 1969) are available, no scale primarily focused on nursing students’ perceptions of community care exists. This is undesirable given the lack of understanding in the underlying factors of the perception of this work-field, and the importance to positively influence students’ willingness during their education to see community nursing as a future profession. It is against this background that a questionnaire focused on this work-field is designed and validated in this study.

The instrument contains three scales, based on the long history of support for the notion that the concept of perception consists of affective and cognitive components of attitudes (Edwards, 1990). The first scale is developed to measure the affective component of community care as a whole; the other two scales are designed with the purpose of measuring cognitive attitudes of a placement as student and a profession as graduate in community care. Based on this, the psychometric evaluation of the instrument starts at the level of the subscales, and in the next step the consistency of the instrument as a whole is assessed. Though the scales represent different constructs, it is relevant to test whether they correlate and influence each other, for example whether a negative perception of community care for a future profession is likely to affect students’ perception and willingness for a placement in this work-field.
Aim
Development and validation of an instrument to measure student nurses’ perceptions of community care (in three subscales), their preferences for placement in an area of health care practice, and the factors that determine these preferences.

METHODS
Development of the instrument
Instrument development consisted of three steps: constructing the questionnaire, pilot-testing its psychometric properties and revision. Revision included inter alia deletion of two items. The final version is a 33-item scale with 14 background variables. The 33 items are arranged in three subscales: the affective component of perception of community care (11 items), the cognitive component of perception of community care as an area for student placement (5 items), and the cognitive component of perception of community care as a future profession (17 items). The final two items explore the reasons for a current preference. The background variables are: gender, age, level of prior education, religion, country of birth (student and parents), and previous experience with community care in the role of patient, in family- or other relations working in community care, or as a (student) job.

Construction of scale 1: Attitude scale
The Semantic Differential (SeD) technique was used to measure the affective component of community care perception. This is a method for quantifying the meaning attached to certain phenomena or concepts through a series of bipolar adjectives (Osgood, Suci, & Tannenbaum, 1957). Semantic differential scales are useful for assessing the affective and cognitive properties of attitudes, as they are psychometrically stable and applicable to multiple objects (Crites, Fabrigar, & Petty, 1994). The scales have been used for measuring a range of topics in nursing, e.g., dementia (Norberg, Helin, Dahl, Hellzen, & Asplund, 2006), psychiatric patients (Ordell, Dahl, & Hellzen, 2004), and elderly patients (Zambrini, Moraru, Hanna, Kalache, & Nunez, 2008).

Here, twelve pairs of adjectives derived from Scott’s (1967) validated scales ‘Me at work’ and ‘My Job’ were used (appendix 1). Items ranged from 1 (negative adjective) to 10 (positive adjective). The items (i.e., pairs) were presented in a randomly reversed order (i.e., sometimes the positive adjective was on the left hand side and sometimes the negative). An example is:

<table>
<thead>
<tr>
<th>Item</th>
<th>Adjective</th>
<th>Scale 1</th>
<th>Scale 2</th>
<th>Scale 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>dull</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>taxing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>fascinating</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Working in community care is in my opinion**

*Figure 1. An example of semantic differential items.*
Construction of scales 2 and 3: Placement- and profession scale

A systematic literature study in PubMed, CINAHL, ERIC and PsycINFO, using the keywords ‘nursing student*’, ‘student nurse’, ‘community care’, community nurs*’, ‘image’, ‘attitude’, and ‘perception*’, was conducted in the period March-August 2014 to find articles relating to student nurses’ perceptions of placement and of the profession of community care, and the factors underlying this (appendix 2). A total of 522 articles were found. The titles and abstracts were first screened which resulted in 74 articles judged as possibly relevant. Based upon full reading, 34 articles were removed so that the final number of articles was 40 (appendix 3). The literature study resulted in the formulation of 22 aspects of community care as perceived by nursing students, related to learning opportunities, working conditions, patient characteristics and care-related factors. Of these, five were formulated on the perception of placement in community care, and 17 on the perception of a future profession in community care. Each item consisted of one construct with anchors at each end divided by a 10-point visual scale. Special attention was given to item construction in order to avoid ambiguity or incomprehensibility (Streiner & Norman, 2008). This was tested in sessions with ten senior researchers in the fields of education, nursing and educational psychology. As the cognitive aspect of perception is influenced by development of knowledge and experience (Floor & van Raaij, 2011) the option ‘I don’t know’ was added to these items.

<table>
<thead>
<tr>
<th></th>
<th>Very little variety in the caregiving</th>
<th>A lot of variety in the caregiving</th>
<th>I don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Very little contact with mentor</td>
<td>Much contact with mentor</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 2. An example of items on the perception of placement.*

The final two items measured the current placement preference in six areas of practice (i.e., medical rehabilitation, mental health care, care for mentally handicapped, community care, elderly care and general hospital), and three aspects named in the earlier subscale that primarily determined this preference.

50. Which three items from questions 32 to 48 do you consider to be the most important for you in your positive choice for the above apprenticeship? Please fill in the three numbers on the spaces provided below. The order is not important.

  First item:     Second item:     Third item:  

*Figure 3. Items determining areas of practice.*
Validation process

Ethical considerations

The Ethical Review Board (cETO [commissie Ethische Toetsing Onderzoek]) of the Open University of the Netherlands approved the study (reference number U2014/07279/HVM [appendix 4]). Students were informed about the research project via their institutions’ digital learning environments with information about the project’s purpose and procedure. They were also informed that, although student ID-numbers were registered, the data were processed anonymously and that all information was confidential. Finally, students were assured that they and their studies would in no way be impacted by non-participation.

Pilot-testing

The questionnaire was evaluated for face validity by asking an expert in communication sciences and three experts in community care to critically scrutinise the scales on completeness, and the items in terms of understanding, possible misunderstanding, and ambiguity. In this process, two items were added to the profession scale.

The scale then was piloted in a group of second year bachelor nursing students at a University of Applied Sciences not involved in the present study (n = 57). Data from the scale were statistically analysed using IBM SPSS® version 20 (IBM Corporation, Armonk, NY [appendix 5]). There were no missing values as the option ‘I don’t know’ was recoded to the neutral value 6 (which is discussed in detail in the description of the statistical analysis of the final version of the instrument). Reliability of the total scale was calculated using a measure of internal consistency. The Cronbach’s α was .914. A reliability analysis was also performed on the three subscales. Cronbach’s α of the attitude scale was .885, of the placement scale α was .761 and of the profession scale was .809.

In a feedback session, students remarked that they identified no inappropriate questions. They also suggested clarifying the headline of a subscale, as it was not clear whether it was to measure perception of working in a present part-time job, or in a - to them more serious - future profession. The time required to complete the questionnaire was noted, and it was decided that its administration should allow for a maximum of 10 minutes. All items were retained. After determining face validity- and pilot-testing, the slightly modified scale was administered to nursing students in six institutions of higher education in the Netherlands involved in the initial phase of their education.

Population

Nursing students from six Dutch higher education institutions in the first semester of their 4-year bachelor nursing program took part in the period October-December 2014. Maximal variation sampling was conducted in selecting the institutions on differences in possibly influential characteristics (Creswell, 2008) such as: urbanisation, religious identity and geographic distribution. In
total, 1062 first-year nursing students completed the paper-and-pencil questionnaire. The survey was administered in class and had a response rate of 81%.

**Statistical analysis**

All data of the questionnaires were manually entered by double data entry to catch any input errors and then analysed using IBM SPSS® version 20 (IBM Corporation, Armonk, NY [appendix 6]). The five reverse-scored items in the attitude scale were recoded and formulated as new variables.

**Missing values.** Four cases had no values in the three subscales and were, therefore, removed from the analysis. The sample size of $n = 1058$ is adequate as there is general agreement that a sample of at least 340 cases (based upon the rule of 10 respondents per item) is suitable for factor analysis methods (Bryant & Yarnold, 1995, as cited in Beavers, Lounsbury, Richards, Huck, Skolits, & Esquivel, 2013). Cases were listwise deleted, and the maximum number of missing values in the analysis was 117 = 11% in analysing the total scale.

**Recoding the value ‘I don’t know’.** Cases with the value ‘I don’t know’ in the subscales placement and profession were recoded to the neutral value 6. The choice to recode this instead of considering it to be a missing value was made because the number of missing values otherwise was 535 = 51%. This is more than the acceptable limit of 25% (De Vet, Adèr, Terwee, & Pouwer, 2005), besides the fact that these values can not be considered to be missing at random (De Vet et al., 2005). The next step was to choose for the value 5 or 6 since the scale had an even number of choices and, thus, there is no ‘middle’ value. The value 6 was chosen instead of 5 because it was closer to the mean of all items (being 6.72) with the value ‘I don’t know’ being used as a missing value. For comparison, another analysis was performed with the option ‘I don’t know’ as a value 6, and value 6 recoded as 7, 7 recoded as 8, and so on. Here the option ‘I don’t know’ with value 6 was placed exactly in the middle of the range of 1-11. The two analyses differed only slightly in the reliability analysis and produced the same factor structure, so the results of the analysis with only the value ‘I don’t know’ recoded as 6, and with a range of values 1-10, are presented here.

**Reliability and item analysis.** To evaluate item fit with the scales and the subscales, item-total correlations were calculated. Cronbach’s α was calculated to determine the internal consistency of the total scale and each of the three subscales. A correlation between .2 and .8, and a Cronbach’s α value of ≥ .70 for each scale was considered as suitable (Field, 2009). The line between a reliable and unreliable scale is usually drawn at .70, although a slightly lower α is deemed acceptable in constructs that are more psychological in nature (Field, 2009).

**Construct validity.** To decide whether a factor analysis was appropriate, the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was calculated, identifying whether factor analysis should yield distinct and reliable factors, and the Bartlett’s test of sphericity was used to identify whether the correlations between the variables were (overall) significantly different (Beavers et al., 2013; Field,
Exploratory Factor Analysis (EFA)\(^1\) by Principal Component Analysis (PCA) with oblique promax rotation was conducted to identify the underlying constructs in each of the three scales of the questionnaire. EFA, a hypothesis generating technique, is used when the relationships among the variables are unknown (Streiner & Norman, 2008). Oblique promax rotation allows for correlations between components, and is therefore more suitable for psychological constructs than orthogonal rotation (Field, 2009). The loadings were compared with an analysis conducted with varimax rotation, producing independent components. The pattern of component loadings differed minimally between these two rotations. A factor loading of \(\geq 0.40\) was considered acceptable as this cut-off point is appropriate for interpretative purposes, and the Kaizer criterion was used to retain components with eigenvalues > 1.0 (Field, 2009). The number of factors was based upon eigenvalues and if necessary a scree plot. Reliability for each factor was evaluated by calculating the Cronbach’s \(\alpha\).

Scale correlations. Pearson’s correlation coefficient \(r\) was calculated to assess to what extent the three subscales measured an overarching construct, and to calculate the correlation between the factors within each scale.

RESULTS

Item analyses. Corrected item-total correlations of the items in the three scales were evaluated to assess their fit with the scale. Correlations in the attitude scale ranged from .024 to .769. With the item ‘taxing-effortless’ deleted, the lowest correlation measured was .350. Correlations in the placement scale ranged from .330 to .553. In the profession scale, correlations varied from .029 to .522. Without the item ‘elderly patients’ which correlated .029, the lowest correlation measured was .194.

Construct validity subscale 1: Attitude scale

A principal component analysis (PCA) was conducted on the 12 items with promax rotation. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .874. Bartlett’s test of sphericity \(\chi^2\) (66) = 5522.471, \(p < .001\), indicated that correlations between items were sufficiently large for PCA.

PCA of the attitude scale resulted in two factors with eigenvalues > 1.0, which accounted for 56.5% of the variance in the data. The loadings of the eight items on the first factor appeared to reflect ‘enjoyment’ accounting for 40.2% of the variance. The loadings of the three items on the second factor appeared to reflect ‘utility’ and accounted for 16.3% of the variance. The scale item ‘taxing-effortless’ required consideration as it did not load on either. As this item’s relevance was limited, and it was also found to decrease the overall reliability of the attitude scale, it was removed. The two

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\(^1\) The article for the journal 'Medical Education' will describe a cross-validation: an exploratory factor analysis and a confirmatory factor analysis, conducted by splitting the sample in half with the stratified split sample method.
factors were subjected to an item analysis which produced a Cronbach’s α of .878 for factor 1 and .810 for factor 2. Pearson’s correlation r between the two factors was .311 (p < .01).

Table 1
**Attitude scale: Principal component analysis with promax rotated solution**

<table>
<thead>
<tr>
<th>Item nr.</th>
<th>Item</th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>stupid-fun</td>
<td>.876</td>
<td>.001</td>
</tr>
<tr>
<td>15</td>
<td>dull-interesting</td>
<td>.865</td>
<td>-.103</td>
</tr>
<tr>
<td>25</td>
<td>unattractive-attractive</td>
<td>.825</td>
<td>-.110</td>
</tr>
<tr>
<td>18</td>
<td>unpleasant-pleasant</td>
<td>.825</td>
<td>.030</td>
</tr>
<tr>
<td>19</td>
<td>annoying-agreeable</td>
<td>.815</td>
<td>.017</td>
</tr>
<tr>
<td>17</td>
<td>boring-fascinating</td>
<td>.689</td>
<td>.033</td>
</tr>
<tr>
<td>20</td>
<td>uncomfortable-comfortable</td>
<td>.492</td>
<td>.066</td>
</tr>
<tr>
<td>21</td>
<td>old fashioned-modern</td>
<td>.455</td>
<td>.086</td>
</tr>
<tr>
<td>22</td>
<td>unimportant-important</td>
<td>.005</td>
<td>.878</td>
</tr>
<tr>
<td>23</td>
<td>bad-good</td>
<td>.071</td>
<td>.874</td>
</tr>
<tr>
<td>24</td>
<td>useless-meaningful</td>
<td>.101</td>
<td>.718</td>
</tr>
<tr>
<td>16</td>
<td>taxing-effortless</td>
<td>.249</td>
<td>-.388</td>
</tr>
</tbody>
</table>

| Eigenvalues | 4.824 | 1.951 |
| % of variance | 40.2% | 16.3% |
| Cronbach’s α | .878 | .810 |

**Construct validity subscale 2: Placement scale**

A principal component analysis (PCA) was conducted on the 5 items with promax rotation. The KMO was .698, and Bartlett’s test of sphericity was χ² (10) = 885.752, p < .001. PCA of the placement scale resulted in two factors with eigenvalues > 1.0, which accounted for 64.7% of the variance in the data. The loadings of the three items on the first factor appeared to reflect ‘learning opportunities’ and accounted for 44.6% of the variance. The loadings of the two items on the second factor, appeared to reflect ‘personal satisfaction’, accounting for 20.1% of the variance. Cronbach’s α of factor 1 was .617 and α of factor 2 was .596. Pearson’s correlation r between the two factors was .395 (p < .01).
Table 2

*Placement scale: Principal component analysis with promax rotated solution*

<table>
<thead>
<tr>
<th>Item nr.</th>
<th>Item</th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>mentor will have time to evaluate</td>
<td>.879</td>
<td>-.185</td>
</tr>
<tr>
<td>28</td>
<td>contact with mentors</td>
<td>.772</td>
<td>.038</td>
</tr>
<tr>
<td>31</td>
<td>possibilities to plan learning activities</td>
<td>.539</td>
<td>.245</td>
</tr>
<tr>
<td>27</td>
<td>variety in the caregiving</td>
<td>-.181</td>
<td>.955</td>
</tr>
<tr>
<td>29</td>
<td>opportunities to learn new things</td>
<td>.314</td>
<td>.645</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Eigenvalues</strong></th>
<th>2.231</th>
<th>1.003</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>% of variance</strong></td>
<td></td>
<td>44.6%</td>
<td>20.1%</td>
</tr>
<tr>
<td><strong>Cronbach’s α</strong></td>
<td></td>
<td>.617</td>
<td>.596</td>
</tr>
</tbody>
</table>

Construct validity subscale 3: Profession scale

A principal component analysis (PCA) was conducted on the 17 items with promax rotation. The KMO was .852 and Bartlett’s test of sphericity was $\chi^2 (136) = 3420.849$, $p < .001$.

PCA of the profession scale resulted in four factors with eigenvalues > 1.0, which accounted for 50.2% of the variance in the data. The loadings of the four items on the first factor appeared to reflect ‘professional development’, and accounted for 25% of the variance. The loadings of the four items on the second factor appeared to reflect ‘collaboration’, accounting for 11.8% of the variance. The items on the third factor appeared to reflect ‘freedom of action’, loading most highly by five items, accounted for 6.9% of the variance. The fourth factor, loading most highly by three items, accounted for 6.5% of the variance. It appeared to reflect ‘complexity and workload’. The item ‘technical nursing skills needed’ did not load high enough on any factor and was used in interpretation of component 4, in which it loaded most highly. The item correlated well with the other items, did not decrease the Cronbach’s α of the profession scale, and as its content is of importance, it was decided not to remove it from the scale. Cronbach’s α of factor 1 was .711, of factor 2 α was .653, of factor 3 was .640 and of factor 4 was .588. Pearson’s correlation $r$ between factors 1 and 2 was .524 ($p < .01$), between 2 and 3 was .237 ($p < .01$), between 1 and 3 .366 ($p < .01$), between 1 and 4 .432 ($p < .01$), between 2 and 4 .237 ($p < .01$) and between 3 and 4 .564 ($p < .01$).
<table>
<thead>
<tr>
<th>Item nr.</th>
<th>Item</th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
<th>Component 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>variety in the caregiving</td>
<td>.701</td>
<td>-.133</td>
<td>.165</td>
<td>.117</td>
</tr>
<tr>
<td>45</td>
<td>possible health improvement for the patient</td>
<td>.615</td>
<td>.040</td>
<td>.139</td>
<td>-.065</td>
</tr>
<tr>
<td>48</td>
<td>opportunities for advancement</td>
<td>.599</td>
<td>.270</td>
<td>-.067</td>
<td>.061</td>
</tr>
<tr>
<td>44</td>
<td>high status work</td>
<td>.568</td>
<td>.227</td>
<td>-.009</td>
<td>.034</td>
</tr>
<tr>
<td>34</td>
<td>collaboration with colleagues</td>
<td>-.028</td>
<td>.843</td>
<td>-.169</td>
<td>-.022</td>
</tr>
<tr>
<td>35</td>
<td>collaboration with other disciplines</td>
<td>.014</td>
<td>.652</td>
<td>.000</td>
<td>.165</td>
</tr>
<tr>
<td>46</td>
<td>enthusiastic colleagues</td>
<td>.198</td>
<td>.568</td>
<td>.271</td>
<td>-.150</td>
</tr>
<tr>
<td>39</td>
<td>good occupational health work</td>
<td>.258</td>
<td>.430</td>
<td>.063</td>
<td>-.254</td>
</tr>
<tr>
<td>40</td>
<td>individual responsibility</td>
<td>.114</td>
<td>-.178</td>
<td>.681</td>
<td>.084</td>
</tr>
<tr>
<td>37</td>
<td>freedom of action</td>
<td>.339</td>
<td>-.271</td>
<td>.673</td>
<td>-.132</td>
</tr>
<tr>
<td>43</td>
<td>elderly patients</td>
<td>-.529</td>
<td>.108</td>
<td>.578</td>
<td>.077</td>
</tr>
<tr>
<td>32</td>
<td>enjoyable relationships with the patients</td>
<td>.033</td>
<td>.215</td>
<td>.551</td>
<td>-.016</td>
</tr>
<tr>
<td>47</td>
<td>contact with family/kin</td>
<td>-.034</td>
<td>.194</td>
<td>.507</td>
<td>.130</td>
</tr>
<tr>
<td>41</td>
<td>feelings of work pressure</td>
<td>.135</td>
<td>-.088</td>
<td>.008</td>
<td>.767</td>
</tr>
<tr>
<td>33</td>
<td>physically demanding work</td>
<td>-.246</td>
<td>-.015</td>
<td>.202</td>
<td>.644</td>
</tr>
<tr>
<td>42</td>
<td>complex patient care needs</td>
<td>.426</td>
<td>.035</td>
<td>-.157</td>
<td>.589</td>
</tr>
<tr>
<td>36</td>
<td>technical nursing skills needed</td>
<td>.189</td>
<td>.162</td>
<td>.264</td>
<td>.268</td>
</tr>
<tr>
<td></td>
<td><strong>Eigenvalue</strong></td>
<td>4.249</td>
<td>2.004</td>
<td>1.181</td>
<td>1.100</td>
</tr>
<tr>
<td></td>
<td><strong>% of variance</strong></td>
<td>25%</td>
<td>11.8%</td>
<td>6.9%</td>
<td>6.5%</td>
</tr>
<tr>
<td></td>
<td><strong>Cronbach’s α</strong></td>
<td>.711</td>
<td>.653</td>
<td>.640</td>
<td>.588</td>
</tr>
</tbody>
</table>

**Total scale and subscale analyses: reliability and correlations**

Reliability of the total scale was calculated using a measure of internal consistency. The Cronbach’s α was .886 (n = 941). Reliability for the three subscales attitude, placement and profession was measured, and deleting item ‘taxing-effortless’, increased the reliability of the attitude scale from .844 to .862. As described earlier, the item loaded less than 0.4 in the PCA as well and was removed from the scale.
Table 4

<table>
<thead>
<tr>
<th>Scale</th>
<th>Items</th>
<th>n</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td>attitude</td>
<td>11 (12)</td>
<td>1008</td>
<td>0.862 (0.844)</td>
</tr>
<tr>
<td>placement</td>
<td>5</td>
<td>1033</td>
<td>0.679</td>
</tr>
<tr>
<td>profession</td>
<td>17</td>
<td>986</td>
<td>0.799</td>
</tr>
</tbody>
</table>

The correlation between the three subscales was significant. Pearson’s correlation $r$ between the subscales attitude and placement was 0.414 ($p < 0.01$), the subscales attitude and profession 0.480 ($p < 0.01$), and the subscales placement and profession 0.621 ($p < 0.01$).

CONCLUSION

The validation and revision of SCOPE (Dutch version, English version and translation procedure in appendices 7 & 8) indicates that, with the deletion of two items as described, the reliability and validity of the instrument is more than acceptable. The choice for an Exploratory Factor Analysis (EFA) was related to the fact that this was the first validity check of the newly developed instrument, and KMO measures and Bartlett’s tests of sphericity justified this approach. Factor analysis of each of the three scales led to factors with high loadings, accounting for at least 5% of the variance, which is a requirement to consider a factor to be meaningful (Polit & Beck, 2008). Given the phase of development of SCOPE, the reliability of all factors is good or at least acceptable. Item analyses, correlations between the three scales and between the factors in each scale, and reliability analyses of the attitude, placement and profession scale contribute to the positive results of scale validation. The attitude, placement and profession scale form a coherent whole which shows they measure an overarching construct. This is confirmed by the significance value of the correlations although each scale, as the correlations are lower than 0.8, also contributes some unique information on its own (Field, 2009).

EFA was employed because it is a hypothesis generating technique, and whether relationships existed between the variables and what they may have been was not known beforehand. The analysis was useful for clustering groups of items, with each cluster tapping different aspects of respectively the affective component, perception of a placement, and of a future profession in community care. The clusters as factors are used to summarise the larger number of variables, which is helpful in interpretation of the factors by relating them to the existing literature. The next phase of the validation process will include a cross-validation via confirmatory factor analysis (CFA), which means that the results of the factor analysis (EFA) of one part of the data set are tested on another part of the data set (CFA). This is possible because of the large sample size, and will give an insight of the stability of the factor structure (De Vet et al., 2005).
SCOPE is a tool developed to measure nursing students’ perceptions of community care as well as changes in their perceptions in the course of their study. The rationale for its development was twofold. The first reason was help in the design and development of a new curriculum for nursing with as goal bridging the gap between home care and institutional care. The second reason was to determine, across time, whether the new curriculum was successful. The analyses in a large sample of first year Dutch nursing students, as described in this study, indicate the SCOPE is a psychometrically sound instrument for both of these purposes. It can contribute to both understanding and evaluation of perceptions of community care and work-field preference of nursing students. As the workforce shortage in community nursing is a problem in many Western health care systems (WHO, 2008) the relevance of the content of the instrument is high. It is for this reason recommended for potential future use also in international contexts.

DISCUSSION

This study describes the development of SCOPE, and provides validity evidence for interpretation of its factors as they are related to existing literature. The factor analysis of the attitude scale revealed two factors (i.e., ‘enjoyment’ and ‘utility’). The literature on the perception of work-fields in health care supports these findings, as most students have been found to prefer a challenging and interesting environment which reflects the enjoyment students experience in a high level of action (Happell, 1999). This explains the popularity of a placement in an acute care setting in a general hospital where students are required to have and exhibit high standards of care and complex technical skills (Happell, 1999; McCann et al., 2010). ‘Utility’ as operationalized in the items underlying this label can be seen as altruism, the meaning students give to caring about the needs of others, which is one of the reasons for students’ interest in the nursing profession in general (Mimura, Griffiths, & Norman, 2009). A combination of these two factors is evident in students’ preference for working with patients who are considered to be able to regain their health (i.e., acute treatable health problems), which also explains the low popularity of the specialty of gerontology (Lovell, 2006). The factors ‘learning opportunities’ and ‘personal satisfaction’ are found the placement scale. ‘Learning opportunities’ reflects the importance students give to both personal contact with a mentor and a structured approach to learning activities (Bjørk, Berntsen, Brynildsen, & Hestetun, 2014). ‘Personal satisfaction’ is represented on the one hand by their feelings of having responsibilities in the work, and on the other by freedom of action and the ability to perform which is afforded them in the role of nurse, confirming their feeling of self-confidence (Anderson & Kiger, 2007; Zurmehly, 2007). The first factor in the profession scale ‘professional development’ refers to the importance students give to working in an area of practice with high work status, variety in care, and technical nursing skills (McCann et al., 2010). Factor 2, ‘collaboration’, reflects the import students give to the wide variety of people they meet and work with during their studies in the context of practice. ‘Freedom of action’ can be seen as the opportunity to work independently, thus building confidence in performing different roles of nursing (Anderson &
Kiger, 2008). The fourth and final factor ‘complexity and workload’ refers to perceived stressful work situations that are or will be encountered in community nursing, where the role of the nurse often is described as a ‘Jack of all trades’: a varied scope of practice and responsibilities (Philibin et al., 2010). This possibly leads to negative experiences during placements: physical mentorship can be limited in time, leading to fear of making mistakes in –sometimes- unfriendly atmospheres (Baglin & Rugg, 2010).

The validation process showed the instrument to measure an overarching construct, so the affective and cognitive components (i.e., placement and profession) of community care are interrelated; in particular the perception of placement and of profession correlate relatively high. An explanation could be that these two concepts reinforce each other in two directions. A positive affective and/or cognitive perception of the work-field for a future career will likely encourage the student to see the work-field as attractive for a placement. If the perception is negative, the student will not likely aspire a placement in community care, thus leading to a missed chance to correct possible (negative) misconceptions. This mechanism is also seen in the work-field of psychiatry, where nursing students’ negative attitudes to mental health nursing is a long-term and constant factor (Happell & Gaskin, 2013). If ‘unknown is unloved’, improving perception of a placement is thus a key-factor for the ability to meet the challenges community care offers.

SCOPE is of importance for the work-field of community care as well as for educational institutions. Students use placements in different areas in health care to explore the pros and cons of each field, so as to make informed decisions for their future career (McCann et al., 2010). Gaining a deeper insight into students’ perceptions gives care managers and student mentors the opportunity to create challenging and interesting placements. Community care is a field which is becoming, although slowly and to a still limited degree, increasingly popular during the period of education, and students’ perceptions and experiences vary from “challenging, self-directed and meaningful” to “lack of time” and “few challenges” (Kloster et al., 2007, p. 159). If the work-field is able to decrease the aforementioned impediments and enhance positive placement experiences in a supportive and welcoming environment, it is likely that more students will see community care as being a desirable choice. Detailed information on how students perceive this field can support the process of placement improvement.

To influence students’ perceptions of the work-field, nursing schools are working on curriculum redesign, shifting their focus from preparing the student for work in the hospital environment to preparation for the advanced nursing roles in the community. Curriculum redesign can offer a structured approach to acquiring the in-depth knowledge and practical skills needed for providing care in patients’ homes and reveal possible misperceptions about the work-field. Students have only a limited idea of community nursing, often underestimating the complexity of the field, being less visible than in the technical environment of acute care. SCOPE can disclose these
misperceptions giving substance to themes in education, and be helpful in designing effective pre-placement orientation.

There are some limitations which need to be noted. First, some factors, especially in the placement- and perception scale, show a moderate reliability having a Cronbach’s $\alpha$ between .59 and .70. Although this is considered to be adequate, especially since it not being used for high- or even low-stakes testing, consideration should be given to adding one or more items in a subsequent round of testing. Second, there are technical problems in scale validation with dimensions having three or fewer items (Polit & Beck, 2008). This is an additional reason for adding items in the placement scale. Third, developing evidence regarding the psychometric adequacy of an instrument takes more steps than just one validation study. Gathering new data and repeating the validation process with the refined version of SCOPE will give new information about the worth of the instrument.

Opportunities for future study include further exploration of the latent variables in the instrument for generating new items, especially in the placement scale. This will enrich the content of this scale and improve the validation process for this part of the instrument. Items with high factor loadings presumably correlate strongly with the latent variable and this can be helpful to generate new items (Polit & Beck, 2008). Further research on the theme of the item ‘technical nursing skills needed’ is also recommended, as it did not load on any factor in the profession scale. The extent to which technical skills are performed is of importance in exploring work field perceptions, as students consider performing these skills as ‘real nursing’ and see it as the core of the profession (Murphy, Rosser, Bevan, Warner, & Jordan, 2012). If students prefer to work in more technical oriented care, it is to be expected that their idea about the extent to which this is shown in community care has an effect on their perception of the work-field in general.

References


APPENDICES

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Article Scott (1967), underlying literature attitude scale

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   b. Information for participants
   c. Example of approval educational institution

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