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# Structure and Content of a New Entrance Exam to Select Undergraduate Nursing Students

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## Abstract:

**Aim** The aim of this study was to develop an evidence-based structure and content for the new nursing entrance examination. **Background** The purpose of the student selection process is to ensure that those admitted have the required aptitude, motivation and potential to successfully complete studies. **Methods** The literature reviews were collected using systematic searches in five electronic databases on the assessment of learning skills, social skills/ emotional intelligence and certainty of career choice of nursing applicants. Three focus group interviews (n = 26) were conducted. Data were analysed inductively. The structure and content of the entrance examination was formed by two data sets synthesis. **Findings** Nursing student selection should involve the assessment of five categories in learning skills, three in social skills and four categories in certainty of career choice. **Conclusion** Comprehensive assessment can ensure that those admitted are suitable for the profession and have the capability to succeed in their studies.

**Keywords:** learning skills, social skills, emotional intelligence, career choice, nursing student selection

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Nursing and midwifery personnel comprise approximately 20.7 million healthcare workers worldwide (WHO, 2016), and registered nurses (RNs) make up the largest number of health care professionals in the United States (AACN, 2017), giving some indication of the magnitude of the nursing student selection processes undertaken each year. According to available statistics, there were nearly 11,000 admissions to baccalaureate nursing programs in Canada in 2014–2015 (CASN, 2016), and in the year 2014, approximately 120,000 applicants out of a total of 266,000 were accepted to entry-level baccalaureate nursing programs in the USA (AACN, 2015). In the same year, 1,600 applicants (of 18,000) were accepted to bachelor nursing programs in Finland (Education Statistics Finland, 2014). Furthermore, although the number of applicants to nursing education programs has increased both internationally (Rankin, 2013) and nationally (Finnish National Agency for Education 2013a; 2013b; Ministry of Education, 2004), the resources available for education have diminished (Rankin, 2013). The selection and admission processes used in nursing education are a socially important research topic as students graduate into a registered profession (Ehrenfeld & Tabak, 2000) which aims to ensure people's welfare and safety (Ministry of Education, 2006). Nursing schools aim to select students who are motivated, suitable for the profession and successful in the theoretical and clinical studies (Timer & Clauson, 2011). However, there is a paucity of literature to describe or operationalize these concepts into student selection processes. For example, it is not clear what constitutes suitability into the nursing profession (Talman, Hupli, Puukka, Leino-Kilpi, & Haavisto, 2018).

According to international literature, selection to higher education nursing programs is often based on the applicant's previous academic achievement such as the grade point average (GPA). GPA has been established as a reliable predictor of academic performance in nursing studies (Talman et al., 2018). However, its use as the sole criterion in nursing student selection has been criticised, because selections should also aim to identify the applicants who are successful in clinical studies (McNelis et al., 2010) and best suited for working life (Slotte, Seppä, & Sääsä, 2002). In Finland, psychological aptitude tests have dominated the selection of students for

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health profession programs from the 1940s to the 2000s (Talman et al., 2018). However, in the European Union member states, selection of students to nursing programmes is only regulated to eligibility for admission (European Commission, 2013), and the higher education institutions decide on their selection criteria and the use of entrance examinations. In Finland, this has led to the use of a variety of different types of entrance examinations (Djupsjöbacka, 2004) and disparate student selection practices (Talman et al., 2018). Therefore, the current government programme aims to reform the existing system of student selection in higher education institutions (Ministry of Education and Culture, 2016).

In this article, the authors describe the development of a new structure and content for the nursing entrance examination as part of a larger research project called “Reforming Student Selection in Nursing Education” (ReSSNE). The purpose of the ReSSNE-project is to develop and evaluate an evidence-informed entrance examination method for undergraduate bachelor-level nursing education. Three major domains with regards to nursing student selection were identified: learning skills, social skills, and motivation (later referred to in the literature review as certainty of career choice). They were identified based on international literature (e. g. Sadler, 2003; Timer & Clauson, 2011; WHO, 2009) as well as national guidelines on aptitude assessment (Djupsjöbacka, 2004).

## Aim of the study

The aim of this study was to develop evidence-informed structure and content for the new nursing entrance examination. The research questions were:

1. What learning skills, social skills, and elements of certainty of career choice have been assessed in nursing entrance examinations according to previous literature and to experts’ point of view?
2. What is the structure and content of the new nursing entrance examination from the perspective of learning skills, social skills and certainty of career choice?

## Methods

### Design

An interpretive descriptive design was used. The study involved three parts: literature reviews, focus group interviews, and data synthesis.

### Literature reviews

Three literature reviews were conducted to summarise previous research on learning skills, social skills, emotional intelligence (Armstrong, Hall, Doyle, & Waters, 2011), and certainty of career choice (Whittemore & Knafl, 2005). The database searches conducted on the assessment of nursing applicants’ social skills did not yield any results, but several studies on the assessment of emotional intelligence (part of social skills) were identified (see Table 1). Each literature review was conducted by the investigators.

**Table 1:** Electronic database searches conducted for the reviews.

	Learning skills	Social skills	Emotional intelligence	Certainty of career choice
Databases	CINAHL, PubMed, melinda, Academic Search Elite, Eric, Scopus, Medic*	CINAHL, PubMed, Eric, Medic*	CINAHL, PubMed, Eric, Medic*	CINAHL, PubMed, ERIC, Medic*
Search terms	"learning readiness", "learning ability", "critical thinking", "reasoning", "cognitive", "skill, ability, thinking, "problem-solving", "health care education", "education, nursing", "students, nursing", "student selection", "applicant", "entrance requirements", "admission", "school admission criteria", "aptitude", "test", "exam"	"social abilities", "social skills", interaction, nursing", "nursing education" "emotional intelligence"	"emotional intelligence", nursing, "nursing education", "student selection", "entrance exam*", pre-admission, recruitment, student, "health care",	motivation, satisfaction, career, planning, choice, change, expectation, commitment, "nursing education", "student, nursing", nurs*, admission, selection
Limitations	years 2005–2015, Finnish and English, abstract available	years 2005–2015, Finnish and English, abstract available	years 2005–2015, Finnish and English, abstract available	years 2005–2015, Finnish and English, peer reviewed, research article
Search results total	1,801	160	2,021	623
Articles selected	13	0**	20	6

\*Medic is a Finnish database for health sciences.

\*\* 9 relevant articles of emotional intelligence were identified, and included in the emotional intelligence search results.

### Data and data collection

Electronic databases (see Table 1) and reference lists of selected full-text articles were searched manually. Search terms were formulated by identifying the key concepts of learning and social skills and certainty of career choice, followed by formulation of more accurate search terms with the help of vocabulary thesauri and dictionaries. A combination of search terms, free-text words and equivalent index terms was used. The search was limited to the past ten years, to research published in the Finnish or English language and to articles with an abstract available. The inclusion criteria were scientific publication or Finnish dissertation; Bachelor-level education, learning skills, emotional intelligence, or career choices of nursing student applicants.

### Data analysis

Within the three literature reviews conducted, the data were analysed inductively (Grove, Burns, & Gray, 2013). The analysis was started by compiling a table to gain an overview of the selected articles (Aveyard, 2007). The tables contained the authors, year, and country of publication, purpose, study design, data collection methods, target group and the main results for each study. Repeated reading was necessary to become familiar with the data. Secondly, passages answering the research questions were picked out and similar content was colour-coded and compiled into tables. Within each table, expressions with similar meanings were classified into categories (Aveyard, 2007; Whittemore & Knafl, 2005).

### Focus group interviews

Focus group interviews were used as a method to access the experiences and perspectives of the participants. There were usually between four and twelve participants in each focus group (Doody, Slevin, & Taggart, 2013). Research ethical principles (ETENE, 2001; TENK, 2012) were followed throughout the study. Permission for the study was obtained from the directors of applied sciences. Ethical approval was obtained from the Ethics Committee of the Higher Education Institution.

### Data and data collection

Focus group data were collected in a National Seminar on Nursing Student Selection in August 2015, which was arranged for all universities of applied sciences that provide nursing education and for nursing practice representatives. Seminar invitations were sent to directors (n = 22) of the universities and to hospital districts' administrative directors of nursing (n = 21). At the seminar, the attendants were informed of the research and requested to participate. All the seminar attendants volunteered to participate in the study. They came from various parts of the country and consisted of nurse educators (n = 21), directors (n = 3), students (n = 2) and a nursing association representative (n = 1). Focus group participants were allocated into three groups (n = 27), each of which contained six to ten individuals. The interviews of the three groups were conducted simultaneously in quiet settings. An interviewer and an observer were responsible for conducting, documenting, and recording the interviews. Before the interview, participants filled out a brief background questionnaire (9 items). The participants' mean age was 52 years and mean length of work experience 30.6 years. The majority had a Master's degree in health sciences (n = 17), while a few held a PhD (n = 4). The nursing educators had been involved in arranging entrance examinations from as few as two to as many as 20 times. The interviewees were asked which factors of learning, social skills, and certainty of career choice should be assessed in nursing entrance examinations. The interviews lasted 25–60 minutes per question.

### Data analysis

The recorded material was transcribed and analysed for each domain using inductive content analysis (Doody et al., 2013; Graneheim & Lundman, 2004). Data were analysed by forming concepts which described the phenomenon (Elo & Kyngäs, 2008). First, to gain an overview, the transcribed material was read through several times. The notes written by the observer were also read. The interview data were coded to make it easier to return to the original material (Polit & Beck, 2012). The unit of analysis was defined as a word, phrase, or sentence. Condensed meaning units were formed and those with similar content were grouped together as cat-

egories and named using content-characteristic words. (Elo & Kyngäs, 2008.) Three investigators participated in the analysis process.

## Synthesis based on the results of literature reviews and focus groups

In the literature, there are different kinds of knowledge synthesis methods (Kastner et al., 2012). In this study, the results of two qualitative data sets, the literature reviews and focus group interviews, were analysed applying a meta-ethnographic approach (Munro et al., 2007). The three domains (learning skills, social skills, certainty of career choice) identified from the theoretical literature were analysed separately. First, tables were created for each domain, and the data extracted from the reviews and focus group interviews were juxtaposed. The two data sets were deemed sufficiently similar to allow reciprocal translation (Campbell et al., 2011). The categories and factors in one data set were then compared with the categories and factors in the other data set by recognising their similarities. The goal was to interpret how they relate to each other (Munro et al., 2007) (see Table 2). During the analysis, some of the categories were deleted or included in other categories. Similar themes and factors were merged into new classes and were either renamed or retained. Based on the reciprocal translation, categories and sub-categories related to student selection in nursing were constructed.

**Table 2:** Example of the synthesis based on the results of literature reviews and focus groups.

Literature Review		Focus Group		Synthesis	
Categories	Factors (narratives to explain each category)	Categories	Factors (narratives to explain each category)	Categories	Sub-categories
Language and communication skills	reading comprehension English writing skills critical reading vocabulary grammar	Language and communication skills	Swedish Finnish English oral communication written communication	Language and communication skills	critical reading oral communication written communication language of instruction foreign language

## Findings

### The literature reviews

#### Learning skills

Thirteen articles were selected based on the full-text articles describing the assessment of learning skills in nursing student selection (see Table 3). According to the analysis of the study results, the assessment of nursing applicants' learning skills has included the assessment of decision-making skills, language and communication skills, mathematical skills, and science knowledge. In all the selected studies, learning skills were assessed using standardised tests ( $n = 6$ ). The results also indicated that the total scores of standardised tests such as Test of Essential Academic Skills (TEAS), the Health Education Systems Incorporated (HESI), and the National League for Nursing (NLN) were the best predictors of academic performance in nursing studies (Stuenkel, 2006; Underwood, Williams, Lee, & Brunnert, 2013; Bremner, Blake, Long, & Yanosky, 2014, Cunnigham et al., 2014; Crouch, 2015; Hinderer, DiBartolo, & Walsh, 2014). The best single predictor of success in studies was the subscale of reading comprehension (Newton, Smith, Moore, & Magnan, 2007) whereas mathematics (Newton et al., 2007; Underwood et al., 2013) and English subscales (Wolkowitz & Kelley, 2010) were the least reliable predictors of academic performance. Two of the standardised tests (Suite of Assessments [SAT] and American College Testing [ACT]) were not found to predict success in the National Council Licensure Examination-Registered Nurses (NCLEX-RN) (McGahee, Gramling, & Reid, 2010). In one of the studies, TEAS scores were not predictive of NCLEX-RN readiness (Newton & Moore, 2009). However, it is difficult to compare the study results because of the differences in the dependent variables. To sum up, it is difficult to make conclusions on which learning skills should be assessed during the nursing student selection process. Based on the results, it

would seem that a comprehensive assessment of learning skills might be the most reliable predictor of academic performance during nursing studies.

**Table 3:** Assessment of nursing applicants' learning skills according to previous literature.

Categories	Factors (narratives to explain each category)	Studies describing the assessment of learning skills
Decision-making skills	Critical thinking <sup>2,6</sup> Reasoning skills <sup>2</sup> Reading comprehension <sup>1,3,5</sup>	Pitt, Powis, Levett-Jones, & Hunter, 2015; Crouch, 2015 Pitt et al., 2015
Language and communication skills	English <sup>5</sup>  Writing skills <sup>4</sup>  Critical reading <sup>4</sup>  Vocabulary <sup>1,3</sup>  Grammar <sup>1</sup> Mathematics <sup>1,5</sup>	Hinderer et al., 2014; Underwood et al., 2013; Crouch, 2015; Stuenkel, 2006; Bremner et al., 2014; Cunningham et al., 2014; Newton & Moore, 2009; Newton et al., 2007; Wolkowitz & Kelley, 2010 Bremner et al., 2014; Cunningham et al., 2014; Newton & Moore, 2009; Newton et al., 2007; Wolkowitz & Kelley, 2010 Stuenkel, 2006; McGahee et al., 2010; Grossbach & Kuncel, 2011 Stuenkel, 2006; McGahee et al., 2010; Grossbach & Kuncel, 2011 Hinderer et al., 2014; Underwood et al., 2013; Crouch, 2015; Stuenkel, 2006 Hinderer et al., 2014; Underwood et al., 2013 Hinderer et al., 2014; Underwood et al., 2013; Bremner et al., 2014; Cunningham et al., 2014; Newton & Moore, 2009; Newton et al., 2007; Wolkowitz & Kelley, 2010 Stuenkel, 2006; McGahee et al., 2010; Grossbach & Kuncel, 2011
Mathematical skills	Mathematical reasoning <sup>4</sup>	Stuenkel, 2006; Crouch, 2015
Science	biology <sup>3</sup> anatomy and physiology <sup>1</sup> chemistry <sup>3</sup> physics <sup>3</sup>	Underwood et al., 2013, Hinderer et al., 2014 Stuenkel, 2006, Crouch, 2015 Stuenkel, 2006, Crouch, 2015

<sup>1</sup>Health Education Systems Inc, admission assessment (HESI).

<sup>2</sup>Health Sciences Reasoning Test (HSRT).

<sup>3</sup>National League for Nurses, pre-admission exam (NLN).

<sup>4</sup>Scholastic Achievement Test (SAT).

<sup>5</sup>Test of Essential Academic Skills (TEAS).

<sup>6</sup>Watson-Glaser Critical Thinking Appraisal (WGCTA).

### Social skills and emotional intelligence

The database searches of the initial review did not yield any studies on the assessment of the social skills of nursing applicants; instead, studies on the assessment of emotional intelligence of nursing applicants were identified (see Table 1). Thus, the data search was extended to any studies generally related to nursing student selection, and a less systematic search was conducted to find instruments that assess social, communication or interpersonal skills in the field of healthcare education. A literature review on emotional intelligence was undertaken, because the concept of emotional intelligence includes, for example, a range of emotional and social abilities/skills that affect the overall capacity to succeed in demanding working environments such as in nursing (Jones-Schenk & Harper, 2014). The purpose of the literature on emotional intelligence was to find out which content and methods have been used to assess emotional intelligence in health sciences students.

The data search on general studies of nursing student selection identified three studies that reported assessment on non-cognitive skills with reference to the assessment of social skills (Ehrenfeld & Tabak, 2000; Gale, Ooms, Grant, Paget, & Marks-Maran, 2016; Perkins, Burton, Dray, & Elcock, 2013) (see Table 4). Additionally, two instruments, The Liverpool Communication Skills Assessment Scale and The Interpersonal Skills Assessment tool, were identified as having been used in the assessment of social skills of undergraduate medical students (Humpries & Kaney, 2001; van Zanten, Boulet, & McKinley, 2007). One of the studies (Gale et al., 2016) reported a predictive value of social skills; more specifically, the Multiple Mini Interview (MMI) overall and numeracy marks significantly predicted academic success.

**Table 4:** Assessment of nursing applicants' social skills and emotional intelligence according to previous literature.

Categories	Factors (narratives to explain each category)	Studies describing the assessment of social skills and emotional intelligence
Interpersonal communication skills	communication skills <sup>5</sup>	Perkins et al., 2013; Gale et al., 2016
	general communication <sup>6</sup>	Humpries & Kaney, 2001
	communication skills <sup>5</sup>	Perkins et al., 2013; Gale et al., 2016
	giving information <sup>6</sup>	Humpries & Kaney, 2001
	formulation of appropriate and sensitive questions <sup>6</sup>	Humpries & Kaney, 2001
	questioning skills <sup>7</sup>	van Zanten et al., 2007
	information-sharing skills <sup>7</sup>	van Zanten et al., 2007
	rapport <sup>7</sup>	van Zanten et al., 2007
	interpersonal social awareness <sup>4</sup>	Jones-Schenk & Harper, 2014; Suliman, 2010; Wessel et al., 2008
	empathy <sup>4</sup>	Jones-Schenk & Harper, 2014; Suliman, 2010; Wessel et al., 2008
Perceiving emotions	social responsibility <sup>4</sup>	Jones-Schenk & Harper, 2014; Suliman, 2010; Wessel et al., 2008
	body language	Ehrenfeld & Tabak 2000
	eye contact	Ehrenfeld & Tabak, 2000
	expressiveness	Ehrenfeld & Tabak, 2000
	interpersonal skills <sup>5</sup>	Perkins et al., 2013; Gale et al., 2016
	interpersonal communication skills	Ehrenfeld & Tabak, 2000
	team-working skills <sup>5</sup>	Perkins et al., 2013; Gale et al., 2016
	professional manner <sup>7</sup>	van Zanten et al., 2007
	respect <sup>6</sup>	Humpries & Kaney, 2001
	empathy <sup>6</sup>	Humpries & Kaney, 2001
Managing emotions	emotion perception <sup>1</sup>	Beauvais, Brady, O'Shea, & Quinn Griffin, 2011; Beauvais, Stewart, DeNisco, & Beauvais, 2014; Codier & Odell, 2014; Brannick et al., 2009; Carr, 2009; Shanta & Gargiulo, 2014; Valadez Sierra et al., 2013
	perception of emotion <sup>2</sup>	Rankin, 2013
	managing own emotions <sup>2</sup>	Rankin, 2013
	managing others' emotions <sup>2</sup>	Rankin, 2013
	managing emotion <sup>1</sup>	
	regulation of emotion in the self and others <sup>3</sup>	Qualter, Whiteley, Morley, & Dudiak, 2009; Chan, Sit, & Lau, 2014; Por, Barriball, Fitzpatrick, & Roberts, 2011
	expression of emotion in the self and others <sup>3</sup>	Qualter et al., 2009; Chan et al., 2014; Por et al., 2011
	stress management <sup>4</sup>	Jones-Schenk & Harper, 2014; Suliman, 2010; Wessel et al., 2008
	adaptability <sup>4</sup>	Jones-Schenk & Harper, 2014; Suliman, 2010; Wessel et al., 2008
	understanding emotions <sup>1</sup>	Beauvais et al., 2011; Beauvais et al., 2014; Codier & Odell, 2014; Brannick et al., 2009; Carr, 2009; Shanta & Gargiulo, 2014; Valadez Sierra et al., 2013
Utilizing emotions	appraisal of emotions in the self and others <sup>3</sup>	Qualter et al., 2009; Chan et al., 2014; Por et al., 2011
	intrapersonal self-awareness <sup>4</sup>	Jones-Schenk & Harper, 2014; Suliman, 2010; Wessel et al., 2008
	utilisation of emotions in solving problems <sup>3</sup>	Qualter et al., 2009; Chan et al., 2014; Por et al., 2011
	using emotions <sup>2</sup>	Rankin, 2013
	facilitating emotion <sup>1</sup>	Beauvais et al., 2011; Beauvais et al., 2014; Codier & Odell, 2014; Brannick et al., 2009; Carr, 2009; Shanta & Gargiulo, 2014; Valadez Sierra et al., 2013

<sup>1</sup>The Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT) developed by Mayer, Salovey, and Caruso (2000, 2002), Mayer, Salovey, Caruso, and Sitarenios (2003).

<sup>2</sup>Assessing Emotions Scale (AES) developed by Schutte, Malouff, and Bhullar (2009).

<sup>3</sup>The Schutte Emotional Intelligence Scale (SEIS) developed by Schutte et al. (1998).

<sup>4</sup>The Emotional Quotient Inventory (EQ-i); developed by Bar-On (2004).

<sup>5</sup>Multiple Mini Interview method.

<sup>6</sup>The Liverpool Communication Skills Assessment Scale (LCSAS) developed by Humpries and Kaney (2001).

<sup>7</sup>The Interpersonal Skills Assessment tool (IPS) developed by van Zanten et al. (2007).

Furthermore, 20 studies were selected for the literature review of the assessment of emotional intelligence. Emotional intelligence had mostly been studied in nursing ( $n = 11$ ) and medical ( $n = 3$ ) education. According to the analysis of the review results, social skills of applicants to health sciences have been assessed using five categories, namely: communication and interpersonal skills, as well as perceiving, managing, understanding, and utilising emotions (see Table 4).

The most commonly used instruments to assess emotional intelligence include the Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT), the Emotional Quotient Inventory (EQ-i) and the Schutte Emotional Intelligence Scale (SEIS) (see Table 4). However, these instruments have not been used in the student selection context, and only one study on nursing student selection has dealt with the predictive relationship between emotional intelligence and study performance (Rankin, 2013). Emotional intelligence has mainly been associated with clinical and theoretical performance (Beauvais et al., 2014; Codier & Odell, 2014; Shanta & Gargiulo, 2014), study progress (Jones-Schenk & Harper, 2014), withdrawal from the course (Qualter et al., 2009), leadership skills (Wessel et al., 2008), ability to care for others (including understanding of self and others, courage, and patience) (Wessel et al., 2008), coping, well-being, perceived nursing competency (Por et al., 2011) and conflict management skills (Chan et al., 2014). In conclusion, there seem to be several reliable instruments that measure emotional intelligence that have demonstrated relationships with several factors that describe success in nursing studies. However, the evidence remains scarce regarding the assessment of social skills of nursing applicants.

### Certainty of career choice

Six articles describing the career choice of nursing applicants or the career choice of nursing students in the beginning of their studies were included for the review (see Table 1). The assessment of the career choice of nursing applicants was only reported in one study (Timer & Clauson, 2010). Other studies ( $n = 5$ ) reported the different motives of nursing students for choosing nursing as a career (Jirwe & Rudman, 2012) and reasons for new students to choose nursing as career (Crick, Perkinton, & Davies, 2014; Mooney, Glacken, & O'Brien, 2008; Price, McGillis Hall, Angus, & Peter, 2013; Wilkes, Cowin, & Johnson, 2015). According to the analysis of the study results, the following categories were identified to describe certainty of career choice: perception of nursing profession, desire to help and care, desire for guaranteed work, characterising self as a nurse, career versatility, nursing as a positive career choice and valued work in society (see Table 5).

**Table 5:** Assessment of certainty of career choice in nursing applicants according to previous literature.

Categories	Factors (narratives to explain each category)	Studies describing the assessment of certainty of career choice
Perception of nursing profession	Nursing awareness	Timer & Clauson, 2010
	Caring for others	Jirwe & Rudman, 2012
Desire to help and care	Desire to care	Crick et al., 2014
	Inherent desire to care	Mooney et al., 2008
	Wanted a job that involved caring	Mooney et al., 2008
	Helping others	Jirwe & Rudman, 2012, Price et al., 2013
	Desire to help	Crick et al., 2014
Desire for guaranteed work	guaranteed work	Price et al., 2013
	financial security	Price et al., 2013
	lifelong profession	Price et al., 2013
	worthwhile profession	Mooney et al., 2008
	stable employment	Price et al., 2013
	compassionate	Price et al., 2013
Characterising self as a nurse	interpersonal skills	Price et al., 2013
	attentive	Price et al., 2013
	kindness	Price et al., 2013
	thoughtfulness	Price et al., 2013
		Price et al., 2013

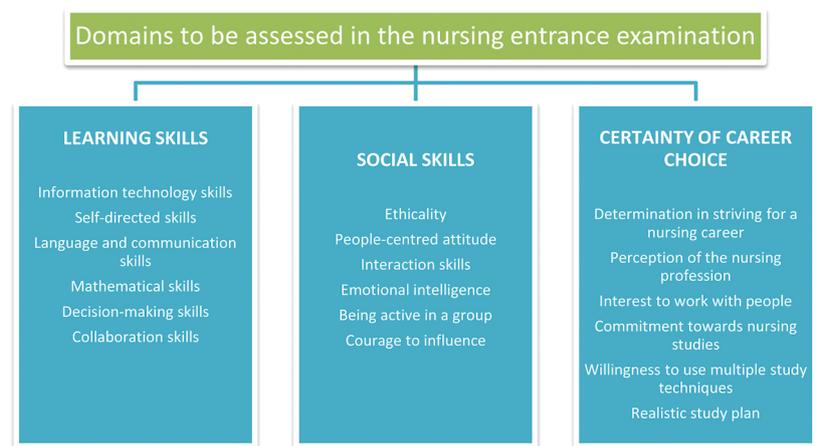
	belief in overcoming potential burnout	Price et al., 2013
Career versatility	caring was their forte	Mooney et al., 2008
	broad opportunities	Wilkes et al., 2015
	diverse fields or work offers variety	Wilkes et al., 2015
	diverse profession	Mooney et al., 2008
	diverse work tasks and areas	Price et al., 2013
Nursing as a positive career choice	flexible	Jirwe & Rudman, 2012
	calling	Price et al., 2013
	rewarding	Price et al., 2013
	passion for profession	Price et al., 2013
	motivation	Crick et al., 2014
	chance	Timer & Clauson, 2010
	meaningful career	Jirwe & Rudman, 2012
	loving aspect of nursing	Price et al., 2013
	liking aspect of nursing	Wilkes et al., 2015
	enjoying aspect of nursing	Wilkes et al., 2015
Valued work in society	making a difference	Wilkes et al., 2015
	destiny	Price et al., 2013
	honourable profession	Price et al., 2013
	noble profession	Price et al., 2013
	noble	Price et al., 2013

According to the previous literature, a well-informed career choice has been connected with student retention (Price et al., 2013). In conclusion, research on the topic is very scarce; for example, the connection between the certainty of nursing applicants’ career choice and study success has not been investigated. Additionally, there were no existing instruments identified in this review.

## Focus group interviews

### Learning skills

The interviewees noted six categories of learning skills that should be assessed as part of nursing entrance examinations (see Figure 1). The interviewees had a wide-ranging, prolific discussion about language and communication skills. Mathematical skills were regarded as essential in nursing, especially for dosage calculation. It was declared that information-seeking skills were necessary throughout the studies. Information processing skills were seen to be associated with reading comprehension, information literacy, and the ability to apply, understand, produce, analyse, and synthesise information. Logical reasoning and problem solving skills were important, particularly in decision-making situations. Information technology (IT) skills were considered vital because of the constantly increasing amount of virtual studies. Self-evaluation, which was part of the self-directed skills, involved self-awareness, self-critique and a realistic perception of one’s knowledge. Self-management skills were described as an ability to study independently and to manage one’s studies with the help of organisation and time management skills. Responsible action in a group and various teamwork skills were included in collaboration skills.



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**Figure 1:** Domains and categories to be assessed in the nursing entrance examination.

**Social skills**

The interviewees defined six categories of social skills that should be assessed as part of nursing entrance examinations (see Figure 1). According to the interviewees, factors that represent applicants’ ethical action and thinking and their world of values should be assessed in the entrance examination. Their interaction skills should be extensively assessed, including their skills in multicultural contexts. The interviewees found it important that courage to speak even in unfamiliar company and an open attitude in a group should be assessed, alongside with discussion and listening skills, eye contact, and good manners. Emotional intelligence was seen to involve empathy, situational awareness, and presence. Applicants should also assume an active role in group situations and have courage to influence as part of a group.

**Certainty of career choice**

The interviewees defined six categories of certainty of career choice that should be assessed as part of nursing entrance examinations (see Figure 1). According to the results, applicants’ certainty of career choice might become apparent in their determination to strive for a career in nursing, in their realistic perception of the profession, and in their interest and commitment towards the work and studies. Preparation for the entrance examination was regarded by the interviewees as an indication of a determined aim to secure a study place. A realistic perception of nurses’ work was considered one of the most essential factors in certainty of career choice. The interest to work with people was seen to involve an ability and will to listen, to encounter illness and suffering, and to comfort the patient. Finally, the interviewees described several attributes which indicated certainty of career choice during the studies. Students’ commitment towards nursing and nursing studies can be apparent in their orientation towards future, even when faced with difficulties. The applicants should signal a willingness to use multiple learning techniques and a careful plan of study, designed to fit the applicant’s life situation, would also indicate certainty of career choice.

**Literature Review Synthesis and Focus Group Results – The Structure and Content of the Nursing Entrance Examination**

The three domains collectively include 12 categories: five categories within learning skills, three within social skills, and four within certainty of career choice (see Figure 2 and Table 6). The five categories within the learning skills domain include language and communication, mathematical, clinical reasoning, information technology, and self-directed skills (see Figure 2 and Table 6).



**Figure 2:** The structure and content of the nursing entrance examination. Copyright© Haavisto, Talman, Hahtela, Heikkilä, Huovila, Hupli, Moisio, Yli-Koivisto

**Table 6:** The content of nursing entrance examinations based on synthesis of the literature review and focus group.

Domain	Categories	Sub-categories
Learning skills	Language and communication skills	Oral communication Written communication Critical reading Language of instruction Foreign language

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	Mathematical skills	Basic numeracy skills
	Clinical reasoning skills	Applied numeracy Information processing Logical reasoning Problem solving
	Information technology skills	Basic computer skills Web-based skills
	Self-directed skills	Self-evaluation Self-management
Social skills	Ethicality	Ethical values Ethical action
	Interpersonal communication	Social awareness
	Emotional intelligence	Empathy Acting responsibly in a team Courage to influence Perceiving emotions Managing emotions Understanding emotions Utilising emotions
Certainty of career choice	Realistic perception of nursing profession	Perception of nursing profession in reality
	Desire to work in nursing	Knowledge about the topical issues in healthcare Nursing awareness Working with people Desire to care and help
	Characterising self as a nurse	
	Imaging nursing as an ideal career	Career versatility  Nursing as a positive career choice Valued work in society

The Social skills domain consists of three categories: ethicality, interpersonal communication and emotional intelligence (Figure 2; Table 6). Ethicality consists of ethical action and thinking related to values. Interpersonal communication includes empathy, situational awareness and acting responsibly in a team, which describes commitment to responsible activities and the ability to assess different views. According to the review, assessment of emotional intelligence has been the most commonly used and tested method to assess social skills in recent years. It involves several factors related to the ability to recognise one's own and other people's emotions and presenting social competence.

The domain Certainty of career choice is characterised by four categories: realistic perception of nursing profession, desire to work in nursing, characterising self as a nurse, and imaging nursing as an ideal career (Figure 2; Table 6). The category "commitment towards nursing studies" was not included in the structure because it is about studying. The category "desire for guaranteed work" was also left out. There is neither a need nor possibility to assess these attributes during the student selection process.

## Strengths and Limitations

The reliability of the literature reviews was evaluated stage by stage (Whittemore & Knafl, 2005), and there are some limitations to the literature reviews. No Finnish or English language definition was found for learning skills as a concept, which may have decreased the reliability of the information search. The search limitations (articles published in 2005–2015 in the Finnish or English language) may also have excluded some studies essential to the review, reducing its reliability. However, the reliability of the data search was enhanced by utilising an information specialist, the data selection was guided by pre-defined inclusion and exclusion criteria, and two to three investigators participated in the selection. In *reporting*, special attention was paid to critical examination of the review results and conclusions (Whittemore & Knafl, 2005).

The trustworthiness of the second and third parts of this study was assessed by addressing its credibility, dependability and transferability (Grove et al., 2013). One of the key issues in *credibility* is a relevant data collection method, selection of informants and data analysis (Graneheim & Lundman, 2004). Data were collected by using focus group interviews. Compared to an individual interview, a focus group interview has the benefits of producing more multidimensional data and of recalling things to mind (Kruger & Casey, 2009). The partic-

ipants were selected purposively because the aim was to find informants with the most knowledge about the subject (Elo et al., 2014). Not all interviewees had such experience; however, all had experience of supervising nursing students.

The interviewees were divided into three groups in an attempt of making them geographically and professionally representative. Most of the informants were from the southern part of the country, however. Each group had an interviewer and an observer who recorded the observations. The data were analysed using inductive content analysis. Three researchers analysed the focus group data and made the synthesis so that one was responsible for the categorization while the two others checked the adequacy of the analysis. The researchers discussed any divergent opinions related to categorisation. (Elo et al., 2014.)

*Dependability* refers to the consistency of the research process and method (Lincoln & Guba, 1985). To establish dependability, the themes (domains) of the interviews were based on literature, and they were pre-tested at the 1st National Seminar for Nursing Student Selection. Dependability was verified through an exact description of the research process. An appropriate description of the research context allows an assessment of how and where the results could be *transferable* (Graneheim & Lundman, 2004). The results are partly generic in that they could be applied to any healthcare student selection. The results can also be used, as appropriate, in other European countries, because the same EU directives on nursing education are applied in the member states.

## Discussion

The idea of developing a new entrance examination for nursing education in Finland emerged from the need to create an evidence-informed and cost-effective examination which can be used nationally to ensure equal treatment of the applicants. As a result of this study, the structure and content of a new entrance examination was presented, involving three domains and 12 categories (see Figure 2). These three domains, namely learning skills, social skills, and certainty to career choice are directly linked to indicators on which nursing programs are often evaluated. For example, in Finland the main indicators are study progress (the amount of credit points), discontinuation of studies (most often due to wrong career choice or unrealistic image of the profession) and study success. Prior literature has emphasised the assessment of learning skills in nursing entrance examinations. More specifically, the assessment of language and communication skills as well as mathematical skills and clinical reasoning (Newton, Moore, Harris, & Pittiglio, 2010; Stuenkel, 2006; Underwood et al., 2013; Wolkowitz & Kelley, 2010) confirm the use of these specific categories in the new entrance exam. In addition, the assessment of clinical reasoning skills was considered important in the focus group interviews conducted in this study, although few studies were found in the literature review. Clinical reasoning skills should be investigated further and redefined to operationalise these concepts for further instrument development.

The importance of social skills was highlighted in the focus group interviews but hardly any studies were identified in the literature review on the assessment of social skills as part of nursing student selection. This may be due to the difficulty of assessing social skills in an objective and reliable way. Nonetheless, several studies were discovered on the assessment of emotional intelligence, which often includes the assessment of social competence, for example. Emotional intelligence has been reported to correlate with nursing students' clinical practice performance (Rankin, 2013), which indicates its potential importance in the student selection process.

Furthermore, there seem to be no reports on the certainty of career choice as a criterion in nursing student selection, although a well-informed career choice has been connected with student retention (Price et al., 2013; Sabin, Taylor, & Tilley, 2012). Even though no research evidence was found for ethicality in this review, the authors highlight the importance of this category, which is an essential element in the legislation and codes of the nursing profession (European Commission, 2013; Nursing and Midwifery Council, 2015). Further work will need to be undertaken to establish the factors that can be operationalised in the selection process to assess social skills.

This study revealed a scarce amount of literature on nursing student selection. We argue that, at least in Finland, student selection has not been prioritised in nursing education research. The majority of the selection criteria and methods have been developed in short-term projects and based on expert opinions or mutually agreed protocols, without any evidence base. Furthermore, the autonomy of higher education over student selection processes in Finland and in most European countries has led to a variety of selection criteria and methods. It is the opinion of these authors that more guidance or research data should be provided.

All in all, the results of this study suggest a multi-faceted approach in the nursing student selections as supported by the literature (O'Donnell, 2011; Perkins et al., 2013). However, it is acknowledged that the results of this study do not give any indication of the relative weight of the identified themes. From a societal perspective,

the assessment of applicants' learning skills, social skills and certainty of career choice can prevent misguided choices and student withdrawals.

## Conclusion

When selecting students for nursing education programs, a variety of factors have to be assessed. Comprehensive assessment can ensure that those admitted are suitable for the profession and have the capability to succeed in their studies. Even though further work will need to be undertaken to confirm the structure of the new nursing entrance examination, a new student selection method has been developed for nursing education utilising the structure reported in this paper. Furthermore, the new student selection method has been piloted in four Universities of Applied Sciences. Further research will include the evaluation of the validity of the new student selection method, which will be evaluated as a follow-up study to determine, for example, the predictive value of the selection method to study success in the Bachelor of Nursing program.

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