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Development of a questionnaire to measure the moral sensitivity of nursing students

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ABSTRACT

Moral sensitivity is important for both, qualified nurses and nursing students. Currently, however, the instruments to measure moral sensitivity exist for qualified nurses only. The objective of this study is to develop a valid and reliable instrument to assess moral sensitivity of nursing students and to examine the development and differentiation of this sensitivity by school year, clinical training, and other educational variables. The study comprised semi-structured focus group interviews and a survey using a self-administered questionnaire. The questionnaire was developed using data obtained from the focus groups and distributed to 1,995 nursing students in three Bachelor of Science in Nursing programs (BScN) and eight Nursing Diploma programs. Completed questionnaires were obtained from 473 nursing students. An exploratory factor analysis indicated that 11 items and 3 factors were extracted: "Moral Strength," "Sense of Moral Burden," and "Moral Responsibility." The factors each demonstrated acceptable content- and criterion-related validity with the Resilience Measurement Scale for University Students. This three-factor structure was consistent with that of the Japanese version of the revised Moral Sensitivity Questionnaire. The mean score of each item ranged from 2.75 to 4.74 (SD = 1.04 – 1.34). A comparison of inter-year scores showed that third-year students had significantly higher Moral Strength scores in both the BScN and Nursing Diploma programs. The 11-item questionnaire developed for this study was consistent with a three-factor structure of registered nurses' moral sensitivity and successfully identified differences in moral sensitivity among nursing students. Using this type of questionnaire will allow nursing programs to improve the moral sensitivity of nursing students by allowing lecturers to develop tailored moral sensitivity programs.

Keywords: moral development, moral sensitivity, nursing education, nursing students, questionnaire development

Abbreviations:
BScN: bachelor of science in nursing
CFA: confirmatory factor analysis
CFI: comparative fit index
CVI: content validity index
EFA: exploratory factor analysis
FGI: focus group interview
IFI: incremental fit index
J-MSQ: Japanese version of the revised Moral Sensitivity Questionnaire
KMO: Kaiser-Meyer-Olkin

MSQ-ST: Moral Sensitivity Questionnaire for nursing students
RMSEA: root mean square error of approximation
rMSQ: revised Moral Sensitivity Questionnair

INTRODUCTION

Ethical problems are becoming increasingly complex and diverse. Moral agency, or the ability to make moral judgments based on a notion of right or wrong, is not always easy to achieve. This is particularly the case when value conflicts occur and moral imperatives stand in opposition to one another.[1] Nurses who care for patients in increasingly complicated contexts are required to demonstrate ethical decision-making abilities and to advocate for the rights of their patients[2,3]; therefore, nurses providing high-quality professional care require critical competencies, such as knowledge of ethics and values, life experience, moral sensitivity, and reasoning abilities.[4] It is important for nursing students and registered nurses to acquire moral sensitivity to improve their nursing practices. The earlier moral sensitivity is acquired, the better their quality of nursing.[5]

Lützén et al[6] described nurses' moral sensitivity as "attention" to the moral values involved in a conflict-laden situation and self-awareness of one's role and responsibility in that situation. They proposed that the concept of moral sensitivity consists of three factors: "Moral Strength," "Sense of Moral Burden," and "Moral Responsibility;" they developed an instrument to identify the extent to which those factors are present in registered nurses. This concept is broadly accepted; the revised Moral Sensitivity Questionnaire (rMSQ)[6] demonstrates acceptable levels of reliability and validity and is widely used internationally. Even though it is well-established that registered nurses' moral sensitivity comprises three concepts, based on Lützén et al's findings,[6] the concepts underpinning the formation and structure of moral sensitivity in nursing students have not been clarified.

The available research on moral sensitivity among nursing students has yielded inconsistent results. For example, some studies indicated that moral sensitivity of nursing students improved as a result of certain educational interventions,[2,5] but others found no change.[7] Further, some studies found that moral sensitivity improved as students advanced into higher years in the program,[8,9] whereas others reported no differences in moral sensitivity by school year.[10] Some studies investigating moral sensitivity among nursing students used instruments developed for registered nurses,[2,7,8,10] the suitability of which has not been verified for students. The results of our previous studies[11] revealed that the Japanese version of the rMSQ (J-MSQ),[12] which aims to measure Japanese nurses' moral sensitivity, was ineffective for nursing students, as they were unable to grasp the constructs of moral sensitivity identified for registered nurses. Thus, we question whether the instruments developed for registered nurses can accurately measure moral sensitivity of nursing students.

Although no instrument to measure nursing students' moral sensitivity exists, an instrument to measure ethical sensitivity of nursing students does[13]; however, ethical sensitivity refers to knowledge of ethical theory and principles, while moral sensitivity relates to personal agency within interpersonal relationships and can be expressed as a genuine concern for the welfare of others.[6] As a result, we consider the development of instruments specifically designed to measure the moral sensitivity of nursing students. Developing an instrument that can quantitatively measure nursing students' moral sensitivity would offer numerous benefits. The scores would allow students to gain awareness of their levels of moral sensitivity, as well as identify weak points where moral sensitivity is lacking. This would provide guidance for nursing instructors

regarding the areas of moral sensitivity where further development is needed.

The present study aims to:

1. Develop a questionnaire to accurately evaluate nursing students' moral sensitivity;
2. Use that questionnaire to investigate whether nursing students' moral sensitivity is composed of the same three factors as that of registered nurses based on the J-MSQ;
3. Examine how nursing students' moral sensitivity develops as they advance in their school years; and
4. Clarify what differences in nursing students' moral sensitivity based on gender and clinical training experience.

MATERIALS AND METHODS

This study consisted of the following two steps: 1) semi-structured focus group interviews (FGIs) were conducted to develop the questionnaire; and 2) the questionnaire was self-administered to nursing students to determine its validity and reliability.

Step 1: Development of the Moral Sensitivity Questionnaire for Nursing Students

At the time of this study, the only available questionnaire to measure nurses' moral sensitivity was the rMSQ. Its Japanese version (J-MSQ) has previously shown acceptable validity and reliability. We adapted the J-MSQ items for nursing students based on the following principles:

1. Retention of the meaning of the J-MSQ items;
2. Substitution of items concerning clinical situations with items referring to clinical practical training situations that could be better understood by nursing students; and
3. Simplification of the expressions used in the items so that they could be better understood by nursing students.

Knafl et al[14] noted that content validity was enhanced when students' experiences as research participants were reflected in the content of the question items; therefore, we planned FGIs with a sample of nursing students. Participants were recruited using purposive sampling referencing the level of clinical training experiences in order to assess the three points regarding the questionnaire. The selected participants were one group (n=6) of second-year students and one group (n=7) third-year students from a Nursing Diploma program. The three points concerning items of the questionnaire adapted for nursing students from the J-MSQ were as follows:

1. Whether or not they can understand the meanings of the items;
2. If the meaning cannot be understood, participants were asked to identify why the items were difficult to understand; and
3. Whether or not the items reflected any of the three factors representing the concepts of moral sensitivity.

As shown in Figure 1, following the FGIs, we prepared a 13-item questionnaire based on the J-MSQ nine-item questionnaire. In 2015, we conducted a pilot survey using that questionnaire on 354 nursing students, selected from all grades in four Nursing Diploma programs and three Bachelor of Science in Nursing (BScN) programs; however, after an exploratory factor analysis (EFA; 98.6% valid responses), only two factors were extracted. That pilot survey demonstrated that nursing students understood the items and content differently depending on subtle differences in expression. Therefore, we added the following to the aforementioned three adaptation principles:

4. The addition of several new item options for each original item with modified expressions or keywords to facilitate understanding.
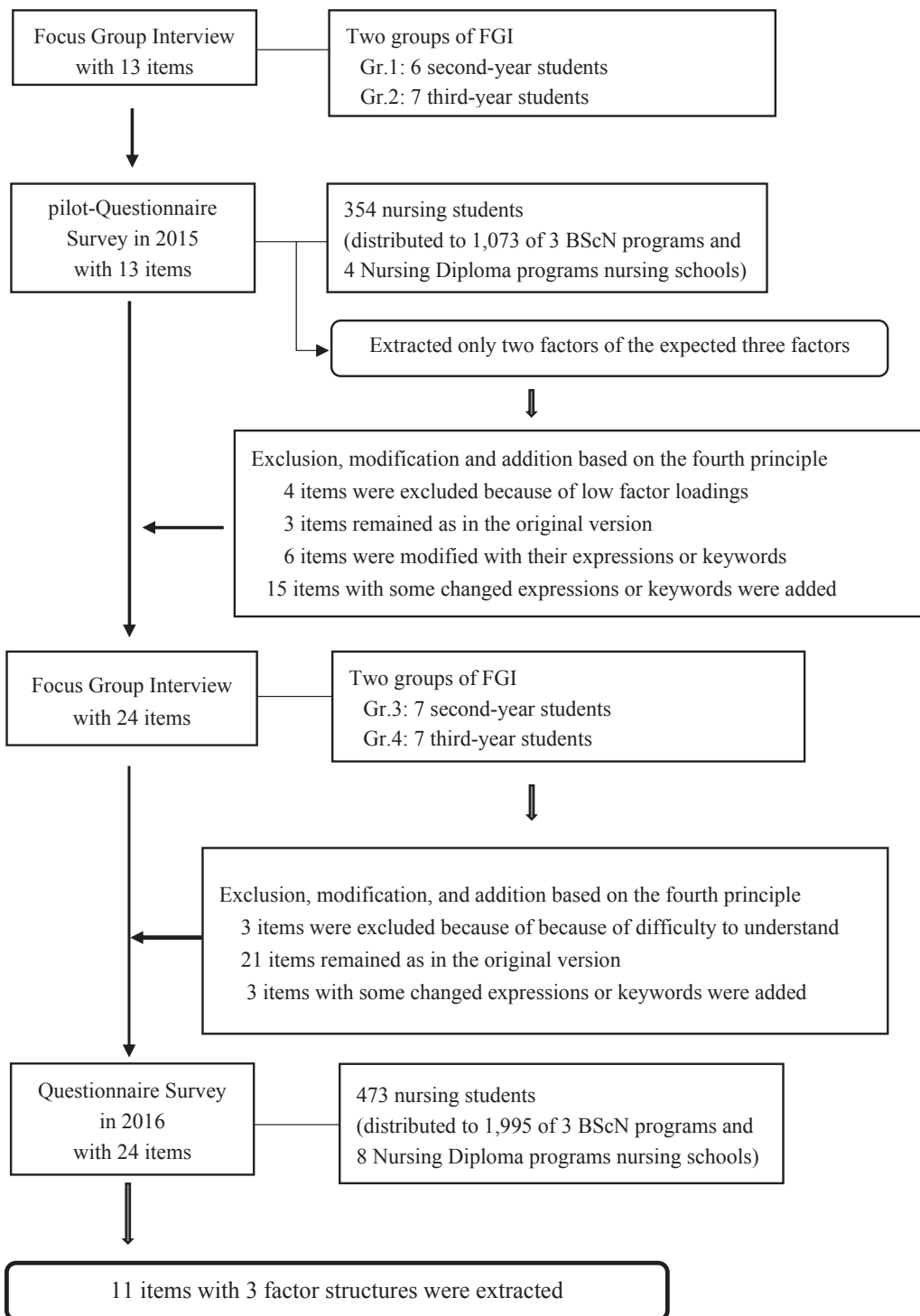
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┌─────────────────────┐     ┌──────────────────────────────────┐
│ Focus Group Interview│─────│ Two groups of FGI                │
│   with 13 items     │     │   Gr.1: 6 second-year students   │
└─────────────────────┘     │   Gr.2: 7 third-year students    │
         │                  └──────────────────────────────────┘
         ▼
┌─────────────────────┐     ┌──────────────────────────────────────────┐
│ pilot-Questionnaire │─────│ 354 nursing students                     │
│   Survey in 2015    │     │ (distributed to 1,073 of 3 BScN programs │
│    with 13 items    │     │  and 4 Nursing Diploma programs nursing  │
└─────────────────────┘     │  schools)                                │
         │                  └──────────────────────────────────────────┘
         │                  ┌──────────────────────────────────────────┐
         │           └─────▶│ Extracted only two factors of the        │
         │                  │ expected three factors                   │
         │                  └──────────────────────────────────────────┘
         │                                   ⇓
         │  ┌────────────────────────────────────────────────────────────┐
         │  │ Exclusion, modification and addition based on the fourth     │
         │  │ principle                                                    │
         │  │    4 items were excluded because of low factor loadings      │
         ◀──│    3 items remained as in the original version               │
         │  │    6 items were modified with their expressions or keywords  │
         │  │   15 items with some changed expressions or keywords were    │
         │  │   added                                                      │
         │  └────────────────────────────────────────────────────────────┘
         ▼
┌─────────────────────┐     ┌──────────────────────────────────┐
│ Focus Group Interview│─────│ Two groups of FGI                │
│   with 24 items     │     │   Gr.3: 7 second-year students   │
└─────────────────────┘     │   Gr.4: 7 third-year students    │
         │                  └──────────────────────────────────┘
         │                                   ⇓
         │  ┌────────────────────────────────────────────────────────────┐
         │  │ Exclusion, modification, and addition based on the fourth    │
         │  │ principle                                                    │
         │  │    3 items were excluded because of because of difficulty    │
         ◀──│    to understand                                             │
         │  │   21 items remained as in the original version               │
         │  │    3 items with some changed expressions or keywords were    │
         │  │   added                                                      │
         │  └────────────────────────────────────────────────────────────┘
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┌─────────────────────┐     ┌──────────────────────────────────────────┐
│ Questionnaire Survey│─────│ 473 nursing students                     │
│      in 2016        │     │ (distributed to 1,995 of 3 BScN programs │
│    with 24 items    │     │  and 8 Nursing Diploma programs nursing  │
└─────────────────────┘     │  schools)                                │
         │                  └──────────────────────────────────────────┘
         ⇓
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│   11 items with 3 factor structures were extracted                │
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Fig. 1 Number of participants and items in each step

As a result, although the construction of three items were retained as in the original version, six items were modified with expressions or keywords, fifteen items with changed expressions or keywords were added, and four items with low factor loadings for each factor were excluded. Thus, we prepared the first version of a questionnaire with a total of 24 items. Next, based on the comments by participants in FGIs, additional items were included. For example, the following questions were added to original Item No. 2: "My ability to notice the feelings of patients well has always been useful during clinical practice," "My strength of being able to notice the feelings of patients well has always been useful during clinical practice," and "My ability to notice the needs of patients well has always been useful during clinical practice." Another round of FGIs was conducted using two groups: one group of seven second-year students and another of seven third-year students from a Nursing Diploma program; this round was independent from the first round. The participants were asked to assess the newly added and modified items. Based on their comments, several items were replaced (excluded and added) as shown in Figure 1. Finally, we compiled a questionnaire with a total of 24 items for the second step. Items were rated on a 6-point Likert-type scale, with 1 indicating "*completely disagree*," and 6 indicating "*completely agree*." Several negatively worded questions were included to check the reliability of the responses during later analyses. Higher scores indicated higher levels of moral sensitivity.

Step 2: Questionnaire survey
Procedure and participants

Both the Nursing Diploma and BScN programs follow a curriculum of similar specialized subjects, but the period during which students take practical training courses in each specialty differs between the two programs. For the BScN program, much of the practical training is conducted between the second semester of the third year and the first semester of the fourth year. In the Nursing Diploma program, practical training in each specialty is received from the second semester of the second year to the second semester of the third year. The BScN program lasts four years, while the Nursing Diploma program lasts three years; since the time period for gaining clinical experience differs between the two programs, we assumed that the pattern of moral sensitivity development would also differ.

The target population for the survey was Japanese first- to fourth-year students in a four-year BScN program and first- to third-year students in a three-year Nursing Diploma program. We invited 25 nursing schools in the central area of Japan, including eight BScN programs and 17 Nursing Diploma programs, to participate in the survey. As shown in Figure 1, questionnaires (N=1,995) were mailed to 11 nursing schools, including three BScN programs and eight Nursing Diploma programs, with the invitation letter indicating the research purpose and declaration of protection of privacy. We asked the staff and teachers of each program to distribute these to their students, being careful not to force the staff and teachers. Participant responses were received via postal mail. The survey was conducted in November and December 2016.

Questionnaire survey details

The survey included: 1) respondent characteristics, such as educational program enrolled in, year of study, sex, and clinical practice experience; 2) the questionnaire; and 3) the Resilience Measurement Scale for University Students.[15] This scale investigates a concept similar to Moral Strength, one of the three concepts of moral sensitivity, and was used to assess criterion-related validity of the questionnaire. The Resilience Measurement Scale for University Students[15] comprised 36 items assessed on a 5-point Likert scale, with 1 indicating "*completely disagree*" and 5 indicating "*completely agree*." The validity of each questionnaire item was assessed by four nursing experts and five PhD students who belonged to the same seminar as the two co-authors

of this study. All of them had rich experiences in nursing ethics education and nursing research, and voluntarily participated with consent. The number of recruited panels was set to nine as indicated by Lynn,[16] who argued that expert panels with five to ten people can calculate a sound Content Validity Index (CVI).[16] The experts examined whether each questionnaire item reflected one of the factors of the J-MSQ for nurses. Lynn's[16] method for quantifying content validity was followed. The CVI was calculated on a 4-point Likert scale ranging from "*not relevant*" to "*very relevant*." The content validity criterion was established at 0.78, if there were seven or more approvals, as judged by the nine experts.

Statistical analyses

IBM SPSS Statistics Ver. 24.0 for Windows and IBM SPSS Amos Ver. 24.0 were used for statistical analysis. After an exploratory factor analysis (EFA), a confirmatory factor analysis (CFA) was performed to assess the model fit. Cronbach's α coefficients for internal consistency were calculated for the full questionnaire, as well as for each factor extracted in the EFA. Criterion-related validity was examined using the correlation coefficients generated between the scores for "Moral Strength" and the scores on the Resilience Measurement Scale for University Students.[15] Unpaired t-tests were used to compare moral sensitivity scores between the groups for sex and clinical practice experience. One-way analysis of variance was used to compare the scores between the groups for school years and multiple comparisons using Tukey's *HSD* method were applied for subsequent post hoc tests. A *p* value of <0.05 was considered statistically significant.

Ethical considerations

All surveys were approved by the Institutional Review Board of Chubu University and the Bioethics Review Board of Nagoya University. The study was carried out in accordance with the Declaration of Helsinki. FGIs were conducted with participants' informed consent after explaining confidentiality and ethical considerations verbally and in writing. These were explained in writing in the questionnaire forms, and a completed questionnaire returned by mail was considered to indicate consent.

RESULTS

Respondents

Questionnaires were distributed to 1,995 nursing students in three BScN and eight Nursing Diploma programs. Questionnaires were returned by 480 nursing students (including seven questionnaires without any answers), resulting in a response rate of 24.1%, with 98.5% valid responses. As shown in Table 1, the 473 respondents who returned completed questionnaires included 181 BScN program students (38.3% of valid responses) and 292 Nursing Diploma program students (61.7% of valid responses). The majority of respondents were female, comprising 161 (34.0%) and 257 (54.3%) students from the BScN and Nursing Diploma programs, respectively. By contrast, there were only 20 male respondents (4.2%) from the BScN programs and 35 (7.4%) from the Nursing Diploma programs. In terms of school year, respondents constituted 25 BScN first-year students (5.3%), 40 second-year students (8.5%), 57 third-year students (12.1%), and 59 fourth-year students (12.5%). From the Nursing Diploma programs, respondents included 76 first-year students (16.1%), 99 second-year students (20.9%), and 117 third-year students (24.7%). The overall mean age of all respondents was 21.5 (SD = 3.7; range 18 to 42) years.

Table 1 Respondents' demographic characteristics (N = 473)

Characteristics	Educational course				
	BScN program students		Diploma program students		Total
	Number of distributes	Number of respondents	Number of distributes	Number of respondents	
School year					
First-year	326	25 (5.3%)	214	76 (16.1%)	101 (21.4%)
Second-year	327	40 (8.5%)	261	99 (20.9%)	139 (29.4%)
Third-year	327	57 (12.1%)	238	117 (24.7%)	174 (36.8%)
Fourth-year	302	59 (12.5%)	–	–	59 (12.5%)
Total	1,282	181 (38.3%)	713	292 (61.7%)	473 (100%)
Sex					
Female		161 (34.0%)		257 (54.3%)	418 (88.4%)
Male		20 (4.2%)		35 (7.4%)	55 (11.6%)

Exploratory factor analysis

An item analysis was done to check the normality of distribution and I-T correlation[17] of the data. The Kaiser-Meyer-Olkin (KMO) sample adequacy resulted in a KMO value of 0.72.[18] The Bartlett sphericity test resulted in $p < 0.001$.[18] Five items were excluded before the EFA was conducted. EFA was conducted using the maximum likelihood (promax rotation) method with eigenvalues extraction set to ≥1.00. Items with a factor loading of ≥0.40, without loadings on more than one factor, were selected. Multiple similar questions with modified expressions and keywords to facilitate understanding by the nursing students were sequentially deleted according to the levels of factor loadings and their effects on the reliability coefficient (Cronbach's α). Ultimately, a three-factor structure consisting of four items for "Moral Strength," five items for "Sense of Moral Burden," and two items for "Moral Responsibility" were obtained (Table 2). These matched the three-factor structure of the J-MSQ for registered nurses, as well as the rMSQ.

In order to clarify whether the results presented in Table 2 could be reproduced for each school year, we confirmed the factor structure by performing further factor analyses (Table 3). Since analysis by school year was not possible owing to the small sample size, we divided the participants into two groups: upper-year and lower-year students. For the BScN program, all first- and second-year students who took basic nursing courses and basic clinical training courses were regarded as lower-year students, while third- and fourth-year students who took several applied nursing courses and applied clinical training courses were regarded as upper-year students. Similarly, for the Nursing Diploma programs, first-year students who completed basic nursing clinical training were regarded as lower-year students, while second- and third-year students who took applied clinical training courses were regarded as upper-year students. Regarding the upper-year students, we were able to reproduce the three-factor structure comprising the same 11 items as in the EFA results shown in Table 2. On the other hand, for the results pertaining to the lower-year students (first- and second-years) from the BScN programs, we were able to extract the "Moral Strength" and the "Sense of Moral Burden" factors, but an appropriate extraction could not be accomplished for "Moral Responsibility." However, regarding the results for the lower-year students (first-year) in the Nursing Diploma programs, the three factors could be reproduced. Since the sample size necessary for effective factor analysis[19] was not obtained

for lower-year students in the BScN programs or Nursing Diploma programs, the findings of this study require further consideration and replication.

Table 2 Results of the exploratory factor analysis of the moral sensitivity questionnaire for nursing students

Item No.	Question	n	Score Mean (SD)	Factor I Moral Strength	Factor II Sense of Moral Burden	Factor III Moral Responsi-bility	Reliability coefficient Cronbach's α (Total scale =0.62)
10	My ability to notice the **needs** of patients well has always been useful during clinical practice.	426	3.30 (1.06)	0.86	−0.12	0.04	
2	My ability to notice the **feelings** of patients well has always been useful during clinical practice.	443	3.46 (1.18)	0.78	−0.04	0.08	
5	I believe that I have excellent ability to notice when patients are not receiving adequate care.	449	3.05 (1.04)	0.56	0.08	−0.16	0.76
3	When explaining difficult things, or things that are hard to talk about with a patient, I have a good understanding of what kind of consideration is required as a nurse after understanding the situation at that time.	446	3.83 (1.04)	0.43	0.05	−0.07	
6	When caring for a patient who is suffering, I feel terrible because of feeling helpless.	451	3.66 (1.31)	0.07	0.84	0.05	
11	When I see a patient suffering, it makes me feel terrible.	461	3.65 (1.34)	0.02	0.80	0.08	
8	If I notice a patient's need, I feel downcast because they might have other needs as well.	449	3.11 (1.19)	−0.14	0.52	−0.13	0.75
4	When I notice something about a patient's feelings, I do not think I can leave things as they are.	461	4.74 (1.09)	0.17	0.44	0.05	
7	When providing care for patients, I always keep on wondering whether my care was good for the patient.	457	4.26 (1.23)	−0.11	0.43	−0.02	
9*	If I do clinical practice in accordance with rules, I believe that I have adequately fulfilled my responsibility.	463	3.10 (1.22)	−0.13	−0.07	0.67	
1*	I do not think that it is my responsibility if the best care cannot be provided, because the instructor is sometimes not there and clinical practice time is limited.	468	2.75 (1.31)	0.04	0.09	0.43	0.44

SD: standard deviation
KMO = 0.72, IFI = 0.91, CFI =0.91, RMSEA = 0.08.
Cumulative contribution ratio: 42.8%. Item correlation coefficients: 0.31 to 0.65 among items 10, 2, 5, and 3; 0.30 to 0.73 among items 6, 11, 8, 4, and 7; 0.28 among items 1 and 9 (reverse-scored items).
This English version was translated according to the authentic back-translation method.
*: No. 1 and No. 9 are reverse-scored items. Each score shows original value without reverse processing.

Table 3 Exploratory factor analysis results for all students, upper-year and lower-year students in the BScN and nursing diploma programs

	Item No.	All students n=385	BScN program students		Diploma program students	
			Upper-year students n=110	Lower-year students n=45	Upper-year students n=192	Lower-year students n=38
Factor I	10	0.86*	0.70*	1.01*	0.91*	1.01*
	2	0.78*	0.77*	0.65*	0.78*	0.54*
	5	0.56*	0.71*	0.75*	0.51*	0.57*
	3	0.43*	0.65*	–	0.39	–
Factor II	6	0.84*	0.90*	0.64*	0.86*	0.93*
	11	0.80*	0.89*	0.83*	0.76*	0.76*
	8	0.52*	0.44*	–	0.50*	0.43*
	4	0.44*	0.49*	–	0.44*	0.74*
	7	0.43*	0.46*	–	0.40*	–
Factor III	9	0.67*	0.30	–	1.00*	0.98*
	1	0.43*	0.68*	–	0.31	0.44*

*: Items with a factor loading ≥0.40

Upper-year: 3rd and 4th grades in BScN program, 2nd and 3rd grades in Diploma program.

Lower-year: 1st and 2nd grades in BScN program, 1st grade in Diploma program.

– : Not extracted

Correlation with external criterion (resilience scale)

To assess criterion-related validity, Pearson's correlation coefficient was calculated between the total scores on the Resilience Measurement Scale for University Students[15] and the scores for the "Moral Strength" factor. The result was statistically significant ($r = 0.46$, $p < 0.01$), suggesting sufficient criterion-related validity for the "Moral Strength" factor.

Content validity

Appropriate CVI =0.78 was present based on ratings by seven of the nine experts.

Model fit by confirmatory factor analysis

Model fit was examined using CFA, which resulted in the following model fit indices: Incremental Fit Index (IFI) = 0.91, Comparative Fit Index (CFI) = 0.91, and Root Mean Square Error of Approximation (RMSEA) = 0.08. The model fit was deemed sufficient to confirm the factorial structure.

Reliability

As shown in Table 2, the Cronbach's α coefficients of reliability for the full 11-item questionnaire identified by factor analysis was α = 0.62, and the Cronbach's α values for each factor were as follows: "Moral Strength" α = 0.76; "Sense of Moral Burden" α = 0.75; and "Moral Responsibility" α = 0.44. "Moral Strength" and "Sense of Moral Burden" values were deemed to display sufficient internal consistency.

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Scores by items

Figure 2 shows the mean scores and standard deviations for the 11 items. After the applicable items were processed for reverse scoring, the item with the highest score was item No. 4: "When I notice something about a patient's feelings, I do not think I can leave things as they are." This item was one of the questions loading on the factor "Sense of Moral Burden," producing a mean score of 4.74 (SD = 1.09). The lowest score was related to item No. 5, one of the questions for "Moral Strength:" "I believe that I have excellent ability to notice when patients are not receiving adequate care," which had a mean score of 3.05 (SD = 1.04).
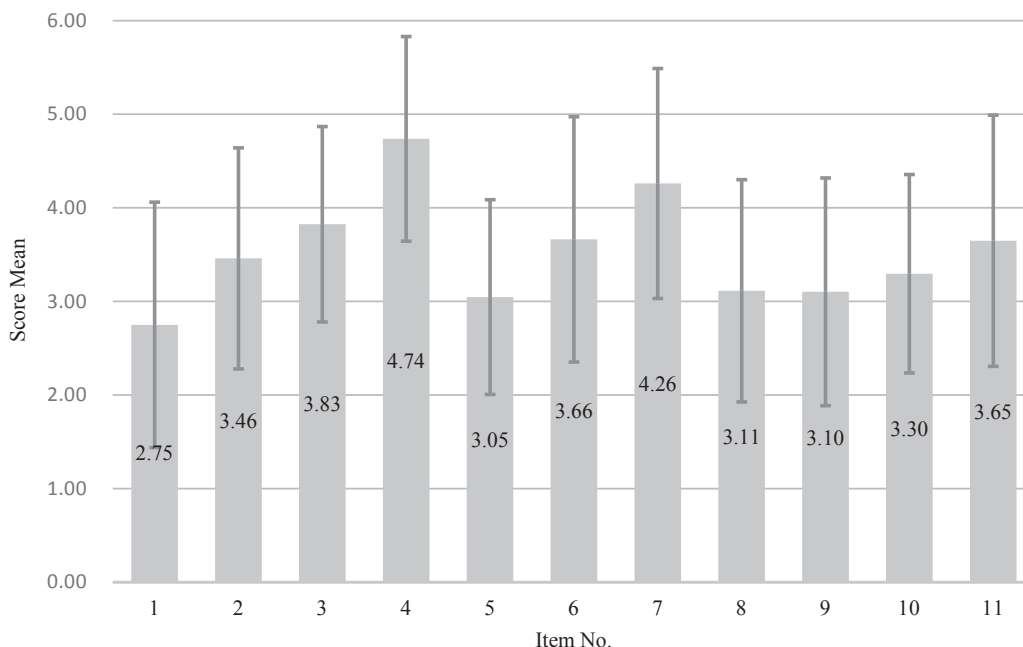
Fig. 2 Item-wise mean and standard deviation

Differences in moral sensitivity by year of school and sex

We examined differences in scores by year of study with regard to "Moral Strength" and "Sense of Moral Burden." These factors were compared among lower-year students separately for the BScN programs and the Nursing Diploma programs, which have different educational programs. Because "Moral Responsibility" could not be identified with an appropriate extraction for lower-year students in the BScN programs, it was not considered in the present analysis. As shown in Table 4, third-year BScN program students had significantly higher scores for "Moral Strength" than first-, second-, and fourth-year students ($F(3, 156) = 5.46$, $p = 0.001$), and third-year Nursing Diploma program students had significantly higher scores than second-year students ($F(2, 240) = 3.10$, $p = 0.047$). There were no differences between students in different years in either program for the "Sense of Moral Burden" factor. There were no differences in scores by sex (Table 5).

Table 4 Differences in mean scores of each factor for each year

	Year	BScN program students			Diploma program students		
		n	Score mean	*SD*	*n*	Score mean	*SD*
Moral Strength (Total Score = 24)	1	15	12.27	2.97	42	13.21	3.08
	2	33	12.70	3.33	90	13.21	3.37
	3	56	15.13	3.42	111	14.22	2.94
	4	56	13.47	3.30	–	–	–
Sense of Moral Burden (Total Score = 30)	1	22	18.91	3.74	50	18.94	4.12
	2	35	19.26	3.60	94	18.65	4.26
	3	56	18.54	4.45	115	18.78	4.33
	4	58	17.97	5.46	–	–	–

*p < 0.05
**p < 0.01
SD: standard deviation
Note. Underlined values denote significantly higher scores.

Table 5 Differences in mean scores on each factor by sex

	Sex					
	Male			Female		
	n	Score mean	*SD*	*n*	Score mean	*SD*
Moral Strength (Total Score = 24)	45	13.73	4.00	358	13.70	3.18
Sense of Moral Burden (Total Score = 30)	51	17.60	4.79	379	18.82	4.31
Moral Responsibility (Total Score = 12)	52	7.77	2.22	407	8.20	1.99

*p < 0.05
SD: standard deviation

Differences in moral sensitivity by clinical practice experience

The fourth-year BScN students had already completed their clinical practice at the time of this study; however, the third-year BScN students were at different levels of progress in their clinical practice, which made it possible to compare moral sensitivity in these students, based on whether they had experienced specific clinical practice areas. Thus, we investigated differences by clinical practice in nine out of ten specialties of training in the third year, excluding public health nursing clinical practice, which had been selected by very few students. As shown in Table 6, nursing students who had undergone clinical training in pediatric nursing had significantly higher "Moral Responsibility" scores than those who had not ($t(54) = -2.255$, $p = 0.028$); however, there were no significant differences in scores on "Moral Strength" and "Sense of Moral Burden" based on whether students had experience in any specific clinical practice areas.

Table 6 Differences in mean scores of factors by clinical practice experience among third-year students in BScN programs

	Experience	Adult nursing practice - chronic care			Adult nursing practice - acute care			Adult nursing practice - terminal care		
		n	Mean	SD	n	Mean	SD	n	Mean	SD
Moral Strength	Yes	47	15.13	3.11	26	14.96	4.05	13	15.15	2.79
(Total Score = 24)	No	9	15.11	4.96	30	15.27	2.83	43	15.12	3.62
Sense of Moral Burden	Yes	47	18.66	4.30	27	18.56	4.64	13	20.08	5.01
(Total Score = 30)	No	9	17.89	5.42	29	18.52	4.34	43	18.07	4.22
Moral Responsibility	Yes	48	7.13	2.20	27	7.48	2.27	13	6.15	2.41
(Total Score = 12)	No	9	7.11	1.36	30	6.80	1.86	44	7.41	1.91

	Experience	Geriatric nursing home practice			Geriatric hospital practice			Maternity nursing practice		
		n	Mean	SD	n	Mean	SD	n	Mean	SD
Moral Strength	Yes	23	15.78	3.09	35	15.31	3.53	42	14.67	3.42
(Total Score = 24)	No	33	14.67	3.61	21	14.81	3.30	14	16.50	3.16
Sense of Moral Burden	Yes	23	18.65	4.61	35	18.29	4.62	42	19.10	4.29
(Total Score = 30)	No	33	18.45	4.41	21	18.95	4.22	14	16.86	4.67
Moral Responsibility	Yes	23	6.96	1.85	35	6.89	2.21	43	7.37	2.01
(Total Score = 12)	No	34	7.24	2.24	22	7.50	1.85	14	6.36	2.17

	Experience	Pediatric nursing practice			Psychiatric nursing practice			Home nursing practice		
		n	Mean	SD	n	Mean	SD	n	Mean	SD
Moral Strength	Yes	35	14.71	3.82	38	14.82	3.57	38	14.89	3.45
(Total Score = 24)	No	20	15.80	2.63	18	15.78	3.08	18	15.61	3.40
Sense of Moral Burden	Yes	35	19.06	4.44	38	18.79	4.21	37	18.22	4.18
(Total Score = 30)	No	20	17.70	4.55	18	18.00	5.01	19	19.16	4.99
Moral Responsibility	Yes	36	<u>7.61</u> ⎤*	2.21	39	7.26	2.21	38	7.00	2.21
(Total Score = 12)	No	20	6.35 ⎦	1.57	18	6.83	1.79	19	7.37	1.83

* p < 0.05

SD: standard deviation

Underlined value denotes significantly higher score.

DISCUSSION

Factors constituting the Moral Sensitivity of Nursing Students

The results of the factor analysis for all participants (Table 2) suggest that the questionnaire, based on the J-MSQ which was derived from the rMSQ, shows a three-factor structure comprising "Moral Strength," "Sense of Moral Burden," and "Moral Responsibility." This structure is consistent with the J-MSQ for nurses. This suggests that nursing students' moral sensitivity is composed of the same three concepts as registered nurses.

We examined the developmental stages of these three factors with the sample divided into two groups: upper-year and lower-year students. For the upper-year students in the BScN and Nursing

Diploma programs, we were able to reproduce the three factors and all 11 items loading on the three factors, as shown in Table 3; however, since "Moral Responsibility" was not extracted as an independent factor for the lower-year students, we infer that it is not yet developed at this educational stage. Rather, "Moral Responsibility" may be developed after students advance to upper years of training. This may reflect the moral development process; that is, morality develops step by step, as suggested by Kohlberg.[20] In contrast, the findings suggest that "Moral Strength" and "Sense of Moral Burden" are developed during lower school years and can, therefore, be continuously evaluated using this questionnaire, and comparisons can be drawn between training periods.

Validity and reliability of the questionnaire

In this study, the results of the EFA revealed a three-factor structure: "Moral Strength," "Sense of Moral Burden," and "Moral Responsibility," consisting of eleven items, in accordance with the concept of moral sensitivity defined by Lützén et al[6] "Moral Strength," one of the aspects of moral sensitivity, was significantly and positively correlated ($r = 0.46$, $p < 0.01$) with the Resilience Measurement Scale for University Students.[15] Guilford[21] and Zoltán et al[22] indicated that the usual strength of the meaningful relationships detected is between 0.3 and 0.5. Thus, it was confirmed that the criterion-related validity of the questionnaire was supported. By following the methodology used by Lynn[16] and Knafl et al,[14] content validity was confirmed (CVI = 0.78). Lynn[16] shows that content validity is supported when the CVI is greater than 0.7. Thus, it was confirmed that the content validity of the questionnaire was supported. The number of recruited panels was set to nine as indicated by Lynn,[16] who argued that expert panels with five to ten people can calculate an effective CVI. Furthermore, content validity was enhanced because nursing students' experiences as research participants were reflected in the content of the question items.[14] The model fit indices (IFI= 0.91, CFI = 0.91, and RMSEA = 0.08) was examined by CFA. Hair[23] indicated that the possible range of IFI and CFI values were higher values between 0 and 1 and typically these values of greater than 0.9 were considered good. Hair[23] also reported that RMSEA value was between 0.03 and 0.08 with 95% confidence. Thus, it was confirmed that the model fit of the questionnaire was supported. However, the questionnaire had an overall reliability coefficient (Cronbach's α) of 0.62, with the coefficient for "Moral Responsibility" being 0.44. Nunnally[24] and DeVellis[25] showed that a coefficient of 0.7 and above is acceptable. Therefore, these values indicated insufficient internal consistency. Thus, it would be necessary to revise the questionnaire to elicit higher levels of reliability in accurately measuring the moral responsibility of nursing students.

Differences in moral sensitivity

In this study we compared moral sensitivity among students in different educational years in BScN and Nursing Diploma programs as there are differences between the two types of programs. The scores obtained through this survey revealed differences in the moral sensitivity of nursing students depending on their characteristics, as shown in Tables 4 and 5. The scores did not reveal differences in moral sensitivity by sex, consistent with previous findings.[26]

Our results did show that there were differences in the comparison of scores between school years by educational program. In contrast, Tuvesson and Lützén[10] reported no differences in moral sensitivity by program (school) year. Our results indicated that third-year BScN program students' scores for "Moral Strength" were significantly higher than those of the first-, second-, and fourth-year students. Scores for third-year Nursing Diploma program students were significantly higher than those for students in their second year, which is consistent with previous findings suggesting that awareness of ethical issues improves by gaining related experiences

during practice training.[27-29]

At the time of this survey, third-year BScN students were still in the process of completing their clinical practice, while the third-year Nursing Diploma program students had recently finished their clinical training or were taking their final course. We originally hypothesized that clinical practice provides a valuable opportunity to improve moral sensitivity through better care for patients in the clinical setting; therefore, the score of the third-year students, who had just finished all of their clinical training or were taking the final course, would be significantly higher than that of the students in the other school years for both programs. The reason that the scores for "Moral Strength" for students in their fourth year of the BScN program proved to be lower than that of the third-year students may be that because they had finished all their practical training, they did not have the opportunity to take care of patients for a period of six to eight months preceding the survey. Thus, "Moral Strength" may improve during active practical training.

Among the nine specialties, a significant difference was found only in the "Moral Responsibility" scores of third-year BScN program students who had experienced clinical training in pediatric nursing versus those who had no experience in this field (Table 6). The reasons underlying this difference require further analysis since the specifics of experiences in pediatric nursing were not surveyed; however, the fact that differences were not found in the practical training for any other nursing specialties suggests that experiences in specific independent practical areas do not have a significant impact on the moral sensitivity of nursing students.

The results of this study demonstrate that it is possible to measure differences in moral sensitivity and its development over the training period among nursing students using this questionnaire. An exception may be for the concept of "Moral Responsibility." As a result, this questionnaire could enable assessment of moral sensitivity of nursing students, as well as clarify any changes in their moral sensitivity, if used periodically during each year of training. Thus, the questionnaire could facilitate effective ethical education or the development of better training content and methods.

Limitations

This study had several limitations. First, the low response rate (24.1%) may have led to some bias in responses. Second, the reliability coefficient of the entire questionnaire (Cronbach's) was 0.62, which is not generally considered to be sufficiently strong. Specifically, the items for the factor "Moral Responsibility" did not demonstrate strong internal consistency; therefore, further improvement and refinement of the questionnaire items is required. Third, because we did not include an item regarding specific progress in the curriculum, we were not able to link and analyze educational content and student responses.

CONCLUSIONS

The moral sensitivity questionnaire for nursing students (MSQ-ST), consisting of 11 items, was developed with some degree of reliability and sufficient validity to measure the moral sensitivity of nursing students. Moral sensitivity, as measured by this questionnaire, reflected the same three-factor structure as moral sensitivity in registered nurses: "Moral Strength," "Sense of Moral Burden," and "Moral Responsibility." Our findings suggested that while "Moral Responsibility" may only be acquired by upper-year students, "Moral Strength" and "Sense of Moral Burden" may be largely formed during the lower years of training and can, therefore, be continuously evaluated. The MSQ-ST developed in this study showed that differences in moral sensitivity among nursing students can be measured effectively.

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DISCLOSURE STATEMENT

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APPENDIX Moral Sensitivity Questionnaire for Nursing Students

The 11 items listed below are questions about patient care. For each item, there are 6 responses provided (1 = completely disagree to 6 = completely agree). Please circle the answer that most applies to you.

		Completely disagree	...			Completely agree	
1	I do not think that it is my responsibility if the best care cannot be provided because the instructor is sometimes not there and clinical practice time is limited. *	1	2	3	4	5	6
2	My ability to notice the feelings of patients well has always been useful during clinical practice.	1	2	3	4	5	6
3	When explaining difficult things or things that are hard to talk about with a patient, I have a good understanding of what kind of consideration is required as a nurse after realizing the situation at that time.	1	2	3	4	5	6
4	When I notice something about a patient's feelings, I do not think I can leave things as they are.	1	2	3	4	5	6
5	I believe that I have excellent ability to notice when patients are not receiving adequate care.	1	2	3	4	5	6
6	When caring for a patient who is suffering, I feel terrible because of feeling helpless.	1	2	3	4	5	6
7	When providing care for patients, I always keep on wondering whether my care was good for the patient.	1	2	3	4	5	6
8	If I notice a patient's need, I feel downcast because they might have other needs as well.	1	2	3	4	5	6
9	If I do clinical practice in accordance with rules, I believe that I have adequately fulfilled my responsibility. *	1	2	3	4	5	6
10	My ability to notice the needs of patients well has always been useful during clinical practice.	1	2	3	4	5	6
11	When I see a patient suffering, it makes me feel terrible.	1	2	3	4	5	6

Note. This English version was translated according to the authentic back-translation method.

*: No. 1 and No. 9 are reverse-scored items.