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Development and validation of nursing students' moral sensitivity questionnaire in Taiwan

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ABSTRACT

Ethical literacy is a critical aspect of professional nursing development. It is considered an essential quality that nursing professionals should possess throughout their careers. Moral sensitivity serves as the foundation for developing ethical literacy. The objective of this study was to develop a reliable tool for assessing moral sensitivity among nursing students. The questionnaire was developed following a rigorous approach, consisting of three stages process, combining the Schwartz-Barcott and Kim hybrid model of concept development with the methodology suggested by Devellis and Waltz. A total of 297 nursing students (287 females, 10 males; mean age: 18.7 years) participated in the study, with five invalid questionnaires excluded from the analysis. The questionnaire's reliability was established through internal consistency and test-retest reliability analyses. Furthermore, the moral sensitivity questionnaire for nursing students demonstrated satisfactory validity through the results of construct, convergent and discriminant validation procedures. The study findings revealed a significant correlation between the internship performance of students and their overall moral sensitivity score. The questionnaire would be appropriated to be included as a supplemental measure for ethical literacy evaluation.

Keywords: moral sensitivity, nursing students, reliability, validity, professional responsibility

Abbreviation:
NS-MSQ: nursing students' Moral Sensitivity Questionnaire

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INTRODUCTION

Ethical literacy is an essential component of professional nursing development. The objective of ethical literacy in nursing education is to foster moral sensitivity in nursing students[1] and enable students to maintain ethical principles in their nursing practice and navigate complex situations. Moral sensitivity forms the basis of ethical literacy in nursing students. Nurses with a higher level of moral sensitivity are better equipped to identify patients' needs and deliver ethical care.[2] Therefore, nursing education must include training courses that cultivate moral sensitivity and

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ethical understanding.[3] The moral sensitivity of nursing students can be enhanced through ethics education to ensure that their decision-making aligns with nursing ethics.

Questionnaires assessing moral sensitivity have been utilized in countries such as Switzerland,[4] Turkey,[5] South Korea,[6] China,[7] and Japan.[8] Begat suggested that the questions in the Moral Sensitivity Questionnaire (MSQ) originated in a Western cultural context,[9] and it might thus be inapplicable to other cultures. Furthermore, Japanese culture differs from Western culture in the context of nursing practice. Japanese nurses rarely make independent decisions; most decisions are made collectively within the nursing team. Consequently, Japanese nursing staff tend to have scores on the MSQ indicating lower levels of autonomy. Han[6] discovered that two categories, "interpersonal orientation" and "modifying autonomy," were absent on the Korean study on moral sensitivity. This absence may be attributed to a strict hierarchical structure within the nursing work environment in Korea, where senior nurses predominantly make decisions. Thus, entry- and mid-level Korean nurses may lack sensitivity in situations involving autonomous decision-making. Korean nurses tend to exhibit lower scores in benevolence and moral significance, underscoring the need for ethical development in these areas.

Nursing ethics education in Taiwan has adopted American curriculum. Taiwanese students shape their ethical values based on the guidelines of American nursing ethics. The literature has indicated that the cultural background of nurses may influences their ethical sensitivity,[6,9,10] which in turn may affect the effectiveness of their nursing ethics education. Current evaluation of Taiwanese nursing ethics primarily focuses on cognitive aspects and overlooks the affective dimension of caregivers' attitudes toward patients. Research on the measurement of moral sensitivity among nursing students in Taiwan is lacking. This study developed a practical tool that measures the moral sensitivity of nursing students in particular and nurses in general.

Aim of the study

This study aimed to develop a valid and reliable tool, the nursing students' Moral Sensitivity Questionnaire (NS-MSQ), for assessing moral sensitivity among nursing students in Taiwan.

MATERIALS AND METHODOLOGY

Study design

Questionnaire development proceeded through a three-stage process and was based on a combination of the Schwartz-Barcott and Kim[11] hybrid model of concept development and the methodology of Devellis[12] and Waltz[13] (Fig. 1).

Stage 1: Conceptual analysis of the moral sensitivity of nursing students. The conceptual analysis of the moral sensitivity of nursing students was conducted in three phases. In the theory phase, our researchers explored the definitions and meanings of moral sensitivity through literature review. In the fieldwork phase, we conducted 12 qualitative interviews of nursing students to record their conceptions of moral sensitivity. In the analysis phase, we developed an item pool with the insights gained from the literature review and qualitative interviews to measure the moral sensitivity of nursing students.

Stage 2: Development of questionnaire items. On the basis of the findings of the conceptual analysis and qualitative study, our researchers developed an initial pool of 80 questions for the NS-MSQ. After conducting item inspection and discussions, duplicate or unclear items were removed from the initial pool of questions. Items with similar meaning or semantics were merged and condensed. This iterative process resulted in a final set of 38 questions.

To ensure the content validity of the questionnaire, a panel of five experts (including specialists

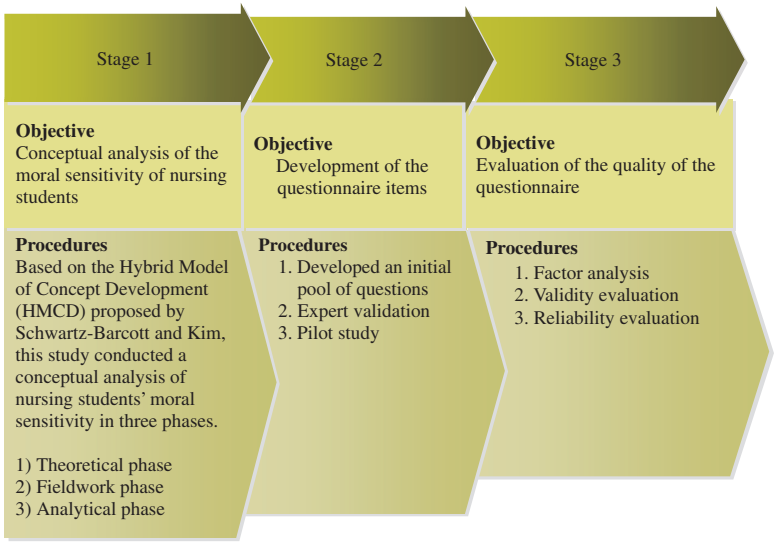

Fig. 1 The 3-stage development of moral sensitivity questionnaire for Taiwanese student nurses

in nursing ethics, statistics, and education) was invited to review the 38 questions in the NS-MSQ. Following the approach recommended by Lester and Bishop,[14] the researchers considered an item to be valid when agreement was found among more than 80% of the experts.[15] The researchers also incorporated suggestions provided by the experts to further refine and modify the questionnaire.

A convenience sample of 60 student nurses who had completed a nursing ethics course was selected for the pilot study. Seven criteria were used to identify and remove low-quality questions from the questionnaire. The seven criteria [15,16] for removal were as follows:

- 1) The item had a response omission rate exceeding 10%.
- 2) The item's average score on a 7-point scale was either greater than 6.3 or less than 2.1, indicating that participant attributes could not be distinguished by the item.
- 3) The item's variance was low at <1.
- 4) The item had a coefficient of skewness greater than 1 or less than −1.
- 5) The independent sample *t*-test indicated no significant differences between the high-score and low-score groups for the item.
- 6) The item exhibited a correlation coefficient with an overall score of less than 0.3 after modification.
- 7) Deleting the item resulted in an increase in the Cronbach's alpha value.

Stage 3: Evaluation of NS-MSQ quality. Exploratory factor analysis was warranted because the research design was based on a questionnaire. Principal component analysis was used for factor extraction. Convergent validity was used to assess the degree to which items within a particular dimension of the questionnaire were consistently related to each other.[15] The convergent validity of the NS-MSQ was indicated if the internship score was correlated with the moral sensitivity of nursing students. Discriminant validity was used to analyze whether the validity criterion distinguished between groups.

For readability analysis, a Cronbach's α value greater than 0.7 was considered satisfactory. However, some scholars suggest that an α value greater than 0.6 is acceptable.[17,18] High test–retest reliability indicates that testing results are not normally affected by the duration of study or the number of tests administered.

Participants

This study used convenience sampling. The participants in this study were 147 fourth-year nursing students and 150 fifth-year nursing students in their nursing internship year.

Ethical considerations

This research was approved by the Human Research Ethics Committee of National Cheng Kung University (IRB number: 104–136). The researchers explained the research purpose to and obtained consent from participants before administering the questionnaire. The first author of this study (HLL) was one of instructors of the participating school. However, she was not present during the questionnaire administration to avoid bias. Students were assured that their participation in the study was optional and that it would not affect their academic evaluation. Only participants who agreed to take part in the project would be included in the analysis, and their responses were collected anonymously and systematically to ensure confidentiality. The research results were intended solely for academic research. Participants were encouraged to answer the questionnaire candidly.

RESULTS

A total of 297 nursing students (287 women, 10 men; mean age: 18.7 years) responded to the questionnaire, and five questionnaires were invalid. Per the development stages, each testing stage was conducted as follows.

Stage 1: Conceptual analysis of the moral sensitivity of nursing students

Theory phase. Moral sensitivity in the context of nursing has been described in the literature as the sensing, perceiving,[19] and cognitive processing of a clinical ethical situation[20,21] (Table 1). Through this process, nursing students foster compassion or sympathy for a patient[22] and examine how they can protect their patient's rights, provide patient-centered care, and predict the patient's outcomes.

Table 1 Definition of moral sensitivity – a synthesis of relevant literature

Scholars & experts / definitions	Study participants	Characteristic attributes	Categories of characteristics
Lin[20] said that one must be able to recognize and care about the real feelings and needs of others.	Nurses	Awareness and concern for the true feelings and needs of others	Patient-centered care
Blum[21] said that the characteristic of the sensitive moral perception sensitivity serves as an agency to understand the comfort of his/her existence, and this sensitivity cannot be separated from ethical principles and norms.	No participants	Perceiving whether a person's existence is comfortable or not	

Kim[22] said that moral sensitivity is a personal characteristic and a contributing factor in determining patient well-being; relevant factors such as institutional policies, personal practical experience, contextual knowledge, as well as honest and virtuous motivation are all centered on providing a good life for the case.	Nurses	Perceiving what is good for the case and centered on providing a good life for the case.	
Lützén[27] and Gastmans[26] said that moral sensitivity allows a person to be self-aware of his or her role and responsibilities in situations of moral conflict.	Nurses / physicians / nursing assistants	Being self-aware of one's role and responsibilities in situations of moral conflict	Professional roles and responsibilities
Lützén[23] said that moral sensitivity is the moral values and self awareness of one's role and responsibilities involved in "paying attention" to a conflicting situation.	No participants	Self-awareness of one's role and responsibilities	
Lützén[23] said that moral sensitivity is not only a "feeling" but also a human ability that is acquired through personal experience and can "feel" the moral significance of a situation!	No participants	Moral meaning as perceived by personal experience	Moral meaning
Lützén[25] said that the ability of an individual to recognize an ethical conflict that exists in the interpersonal relationship between caregivers and patients.	Psychiatric nurses	Identifying ethical conflicts in the nurse-patient relationship	Moral conflicts
Park[2] stated that ethical conflicts that the nurse is confronted with when making decisions for a patient who is perceived to be in a moral conflict position because of illness.	Nursing students	Moral conflicts	
Heggestad[24] stated that sensing the necessity to protect the privacy of a case.	Qualitative researcher	Ability to recognize when a case is likely to be harmed	Principle of nonmaleficence
Park[2] stated that ethical conflicts that the nurse is confronted with when making decisions for a patient who is perceived to be in a vulnerable position because of illness**.**	Nursing students	Ability to recognize when a case is likely to be harmed	
Heggestad[24] stated that the ability to respect the autonomy of the case.	Qualitative researcher	Respect the autonomy of the case	Principle of autonomy
Rest[19] stated that the potential of one's actions to affect the well-being of others.	No participants	Knowing the effectiveness of behavioral outcomes	Principle of beneficence

A comprehensive literature search revealed the following five categories of moral sensitivity in nursing students: 1) moral meaning,[10,23] 2) ethical principles,[2,10,24] 3) moral conflicts,[2,4,25] 4) patient-centered care,[20-22] and 5) professional responsibilities[22,26,27] (Table 2).

Fieldwork phase. The fieldwork phase comprised a qualitative study of 12 nursing students (4 men, 8 women; mean age: 21.6 years) in an internship; these included six junior college students who were in their fifth year of study, two nursing students from 4-year technical programs, and four working nursing students in 2-year technical programs. According to our interview data analysis, the moral sensitivity of nursing students was defined by the following desideratum: nursing students should fulfill their professional roles and responsibilities in patient-centered care, maintain trustworthy interpersonal relationships, abide by ethical principles of care, and behave in a morally responsible manner during moral conflicts.

According to our fieldwork findings, the moral sensitivity of nursing students was divided into six categories: 1) patient-centered care, 2) interpersonal relationships, 3) moral conflicts, 4) compliance with ethical principles, 5) professional roles and responsibilities, and 6) moral meaning (Table 2). These six categories guide nursing staff and students to adhere to the mentalities and behaviors that best serve the interests of patients.

Table 2 Categories adjustment of the moral sensitivity questionnaire in 3 phases

Developmental phase	Theoretical phase	Fieldwork phase	Analytical phase
Categories	Patient-centered care	Patient-centered care	Patient-centered care
	Professional responsibility	Professional roles and responsibility	Professional responsibility
	Moral conflict	Moral conflict	Moral conflict
	Ethical principles	Compliance with ethical principles	Principle of nonmaleficence
	Moral meaning	Moral meaning	Maintenance of privacy
		Interpersonal relationship	

Analysis phase. Nurses were defined as morally sensitive when they showed awareness and presence in clinical moral situations; responded to situations with cognitive processing; and empathized with patients to protect their rights and interests, provide patient-centered care, and predict possible injuries and outcomes (Table 2).

We combined the findings of the theoretical and fieldwork phase to develop five categories of moral sensitivity, including: 1) patient-centered care, 2) professional responsibility, 3) moral conflict, 4) principle of nonmaleficence, and 5) maintenance of privacy.

Stage 2: Development of questionnaire items

We used the findings of our literature review and qualitative research with nursing students to develop 80 questions. After collaboration with the research team, questions that were repetitive or nonsignificant were removed, leaving three questions per five categories (categories: moral implications, ethical principles, moral conflicts, patient-centered care, and professional responsibility) for expert validity testing. After removing 10 questions with an expert validity of <0.7, the 27 remaining questions with an overall expert validity of 0.885 were retained.

Ta[15] argued that NS-MSQ questionnaire items should be included only if they fulfill the fol-

lowing criteria: 1) a *t*-test indicates a significant difference between the average scores of the high and low group; 2) a modified item has a correlation of <0.3 with the overall score; and 3) the Cronbach's alpha value increases after the item is deleted. On the basis of these criteria, 7 items (numbers 6, 7, 8, 12, 13, 22, and 27) were excluded, and 20 items in the NS-MSQ remained.

Stage 3: Evaluation of questionnaire quality

Validity. Exploratory factor analysis was used to examine construct validation. The results indicated a five-factor solution with eigenvalues of 6.488, 1.672, 1.366, 1.105, and 1.026. The items and factor loadings of the NS-MSQ are depicted in Table 3. Respondents provided their answers on a 7-point Likert scale, ranging from "strongly agree" (7 points) to "strongly disagree" (1 point). A higher total score indicated a greater level of moral sensitivity.

The factor analysis results revealed that 1) patient-centered care, 2) principle of nonmaleficence, 3) professional responsibility, 4) moral conflict, and 5) maintenance of privacy accounted for 32.438%, 8.359%, 6.830%, 5.525%, and 5.128% of the total variance, respectively. These five factors accounted for a total cumulative variance of 58.280% (Table 3).

Table 3 Items and factor loadings of the nursing student moral sensitivity questionnaire

Items	Factor loading
Factor 1. Patient-centered care (Accounts for 32.44% of the explained variance)	
1. I make an effort to handle and document the vital signs and charting records for which I am responsible, rather than relying on others.	.504
2. When answering patients' questions about their treatment, it is important to me to be truthful and honest.	.478
3. I am willing to apologize to patients in the event of any negligence in the nursing care, even if I may face criticism.	.604
4. Regardless of my busy schedule, I prioritize following the standard operation procedure and avoid rushing through procedures.	.371
5. I provide quality care to all patients regardless of their identities.	.787
6. When confronted with the task of juggling my internship assignments and patient care, I prioritize the needs of the patient.	.459
7. Even in situations where the hospital does not provide an enclosing curtain, I proactively seek methods to ensure the privacy of patients when performing nursing care that involve exposing the genital area.	.394
Factor 2. Principle of nonmaleficence (Accounts for 8.35% of the explained variance)	
8. Even when faced with multiple patients in need of eating assistance, I prioritize accommodating the patient's eating pace and avoid pressuring them to eat faster.	.630
9. If I observe a student nurse performing nursing skills or administering medication incorrectly, I will make an effort to intervene and prevent harm to the patient.	.515
10. I would feel uneasy if I were to ignore incorrect caring practices that may potentially impact the patient's health	.649

11. I foster a professional relationship during nursing practices by maintaining emotional stability.	.515
Factor 3. Professional responsibilities (Accounts for 6.83% of the explained variance)	
12. Throughout the internship phase, I am confident in my ability to perform aseptic procedures accurately.	.657
13. I recognize that the provision of sufficient materials is essential of following standardized procedures for patient safety. Therefore, I am willing to raise requests during the internship evaluation meetings.	.566
14. Throughout my internship, I am committed to fostering a caring and empathetic nurse-patient relationship, even when faced with challenging attitudes.	.535
Factor 4. Moral conflicts (Accounts for 5.53% of the explained variance)	
15. I would feel uneasy if I have to comply with instructions that contradicted my professional knowledge.	.664
16. The practices in the clinical unit differ from the nursing standards I learned in school, which makes me feel upset.	.618
Factor 5. Maintenance of privacy (Accounts for 5.13% of the explained variance)	
17. I avoid discussing patients' information in elevators, restaurants, or other public places.	.540
18. I feel uneasy when I hear medical staff discussing and disclosing personal information about patients.	.614

Each of the nursing students' five moral sensitivity scores were significantly correlated (r = .271 to .787, $p < .01$) with their internship performance. These results were used to assess convergent validity. A significant correlation was also found between internship performance and the total score of the nursing students' moral sensitivity (r = .523, $p < .01$). Thus, convergent validity of the NS-MSQ was demonstrated. Two groups of nursing students were evaluated for discriminant validity: students with internship experience (fifth grade) and students without internship experience (fourth grade). The results revealed a significant NS-MSQ score difference between the two groups (t = −2.081, $p < .05$).

Reliability. To assess test–retest reliability, we analyzed the data of a convenience sample of 40 nursing students twice, with a 3-month interval between the assessments. The results indicated a significant correlation between the assessments (r = .447), indicating that the NS-MSQ was reliable. Internal consistency was assessed with Cronbach's α, which ranged from .611 to .771 for the five subscales.

DISCUSSION

A reliable three-stage test for assessing moral sensitivity among nursing students was developed through a combination of the Schwartz-Barcott and Kim[11] hybrid model of concept development and the methodology of Devellis[12] and Waltz.[13] The average moral sensitivity score of nursing

students averaged 5.97 on a 7-point scale (SD = 0.61), which indicated an adequate level of moral sensitivity among the students. A score analysis of each category indicated that "patient-centered care" received the highest score (6.334) and "professional responsibility" received the lowest score (5.542).

The test–retest reliability was determined through assessment of the questionnaires on two occasions, with a 3-month interval between the assessments. The test–retest correlation coefficient was .447 ($p < .01$), which indicated the stability of the questionnaire.[14] Alpha coefficients were between .611 to .771, indicating internal consistency between the items and the construct in the questionnaire.[14]

Our findings revealed a significant correlation between the internship performance of students and their overall moral sensitivity score (r = 0.523, $p < .01$) and the five sub-scores of each category in the NS-MSQ (r =.266 to .490, $p < .01$). Higher scores on the NS-MSQ were associated with higher internship performance, which aligns with the findings of Lützén, who reported that nurses with higher moral sensitivity provided better quality of care.[27]

Discriminant validity was examined through a comparison of two groups of nursing students: those with internship experience (fifth grade), and those without internship experience (fourth grade). The results indicated significant differences between the two groups in moral sensitivity ($p < .05$) and "patient-centered care" ($p < .05$). This difference may be attributed to the fifth grade students' involvement in multiple clinical settings, including internal medicine, surgery, long-term care, obstetrics, and pediatrics. However, no significant differences between the two groups in the scores of the other four categories (the principle of nonmaleficence, professional responsibility, moral conflict, and maintenance of privacy) were present.

In our study, "patient-centered care" had the highest average score, but in the study conducted by Comrie,[10] "structuring moral meaning" had the highest average score. This difference may be attributed to the diverse sociocultural backgrounds of the participants in Comrie's study. Comrie identified five categories of moral sensitivity in nursing students, namely moral meaning, interpersonal orientation, benevolence, autonomy, and moral conflict.[10] The NS-MSQ categories used in this study differ from those used by Comrie.

The results of the study demonstrated that the NS-MSQ is reliable and valid; however, it also had limitations. The cross-sectional design of the study precluded any inference of a causal relationship between moral sensitivity and internship performance. Thus, future studies should use longitudinal research designs. Furthermore, this study's sample comprised nursing students from a 5-year college program in a single country. Cultural backgrounds may influence moral sensitivity. Therefore, the findings should not be extrapolated to other populations or cultural settings. Future studies may consider including a more diverse sample to ensure the applicability of questionnaire results to different cultural contexts.

Despite these limitations, our study has implications on nursing ethics education. The NS-MSQ is a valuable assessment tool for nursing educators to understand the dimensions of moral sensitivity in nurses. By identifying differences in moral sensitivity among nurses, educators can tailor ethics education programs to address specific needs and enhance moral development. Furthermore, the questionnaire can promote self-awareness among students of their own levels of moral sensitivity. It can facilitate discussions and comparisons among students to foster a deeper understanding of moral sensitivity and its role in ethical decision-making and professional practice.

CONCLUSION

The objective of this study was to develop a reliable tool for assessing moral sensitivity among nursing students. The scale development process followed a three-stage approach according to previous literature.[11-13] According to the results, the NS-MSQ instrument has internal consistency and test–retest reliability and construct validity, convergent validity, and discriminant validity.

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DISCLOSURE STATEMENT

The authors declare no conflicts of interest.

REFERENCES

1 Yeom HA, Ahn SH, Kim SJ. Effects of ethics education on moral sensitivity of nursing students. *Nurs Ethics*. 2017;24(6):644–652. doi:10.1177/0969733015622060.
2 Park M, Kjervik D, Crandell J, Oermann MH. The relationship of ethics education to moral sensitivity and moral reasoning skills of nursing students. *Nurs Ethics*. 2012;19(4):568–580. doi:10.1177/0969733011433922.
3 Vynckier T, Gastmans C, Cannaerts N, de Casterlé BD. Effectiveness of ethics education as perceived by nursing students: development and testing of a novel assessment instrument. *Nurs Ethics*. 2015;22(3):287–306. doi:10.1177/0969733014538888.
4 Lützén K, Evertzon M, Nordin C. Moral sensitivity in psychiatric practice. *Nurs Ethics.* 1997;4(6):472–482. doi:10.1177/096973309700400604.
5 Ersoy N, Göz F. The ethical sensitivity of nurses in Turkey. *Nurs Ethics*. 2001;8(4):299–312. doi:10.1177/096973300100800403.
6 Han SS, Kim J, Kim YS, Ahn S. Validation of a Korean version of the Moral Sensitivity Questionnaire. *Nurs Ethics*. 2010;17(1):99–105. doi:10.1177/0969733009349993.
7 Huang FF, Yang Q, Zhang J, Zhang QH, Khoshnood K, Zhang JP. Cross-cultural validation of the moral sensitivity questionnaire-revised Chinese version. *Nurs Ethics*. 2016;23(7):784–793. doi:10.1177/0969733015583183.
8 Takizawa M, Ota K, Maeda J. Development of a questionnaire to measure the moral sensitivity of nursing students. *Nagoya J Med Sci*. 2021;83(3):477–493. doi:10.18999/nagjms.83.3.477.
9 Bégat I, Ikeda N, Amemiya T, Konishi E, Iwasaki A, Severinsson E. Comparative study of perceptions of work environment and moral sensitivity among Japanese and Norwegian nurses. *Nurs Health Sci.* 2004;6(3):193–200. doi:10.1111/j.1442-2018.2004.00192.x.
10 Comrie RW. An analysis of undergraduate and graduate student nurses' moral sensitivity. *Nurs Ethics*. 2012;19(1):116–127. doi:10.1177/0969733011411399.
11 Rodgers BL, Knafl KA, eds. *Concept development in nursing: foundations, techniques, and applications*. 2nd ed. Philadelphia: Saunders; 2000.
12 DeVellis RF. *Scale development: theory and applications*. 3rd ed. Thousand Oaks: SAGE; 2012.
13 Waltz CF, Strickland O, Lenz ER. *Measurement in nursing and health research*. 4th ed. New York: Springer Publishing Company; 2010.
14 Lester PE, Bishop LK. *Handbook of tests and measurement in education and the social sciences.* 2nd ed. Lanham, Marylsnd: Scarecrow Press; 2000.
15 Ta JT. *Scale development and SPSS* [in Chinese]. Taipei: Wu-Nan; 2012.
16 Chiou H. *Quantitative research and statistical analysis in social & behavioral science* [in Chinese]. Taipei:

Wu-Nan; 2022.
17 Kline P. *The handbook of psychological testing*. 2nd ed. London: Routledge; 2000.
18 George D, Mallery P. *SPSS for Windows step by step*. 4th ed. Boston: Allyn & Bacon; 2003.
19 Rest JR. *Moral development: advances in research and theory*. New York: Prager Publishers; 1986.
20 Lin YP. Moral sensitivity [in Chinese]. *Taipei City: Liberty Times*, 2010.
21 Blum LA. *Moral perception and particularity*. Cambridge: University Press; 1994.
22 Kim YS, Kang SW, Ahn JA. Moral sensitivity relating to the application of the code of ethics. *Nurs Ethics*. 2013;20(4):470–478. doi:10.1177/0969733012455563.
23 Lützén K. *Moral sensitivity: a study of subjective aspects of the process of moral decision making in psychiatric nursing*. Dissertation. Karolinska Institute; 1993.
24 Heggestad AK, Nortvedt P, Slettebø Å. The importance of moral sensitivity when including persons with dementia in qualitative research. *Nurs Ethics*. 2013;20(1):30–40. doi:10.1177/0969733012455564.
25 Lützén K, Nordström G, Evertzon M. Moral sensitivity in nursing practice. *Scand J Caring Sci*. 1995;9(3):131–138. doi:10.1111/j.1471-6712.1995.tb00403.x.
26 Gastmans C. A fundamental ethical approach to nursing: some proposals for ethics education. *Nurs Ethics*. 2002;9(5):494–507. doi:10.1191/0969733002ne539oa.
27 Lützén K, Dahlqvist V, Eriksson S, Norberg A. Developing the concept of moral sensitivity in health care practice. *Nurs Ethics*. 2006;13(2):187–196. doi:10.1191/0969733006ne837oa.