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Baccalaureate nursing students' perspectives of peer tutoring in simulation laboratory, a Q methodology study☆

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ABSTRACT

Objectives: The study aim was to identify the perceived perspectives of baccalaureate nursing students toward the peer tutoring in the simulation laboratory. Insight into the nursing students' experiences and baseline data related to their perception of peer tutoring will assist to improve nursing education.
Design: Q methodology was applied to explore the students' perspectives of peer tutoring in the simulation laboratory.
Participants: A convenience P-sample of 40 baccalaureate nursing students was used.
Method: Fifty-eight selected Q statements from each participant were classified into the shape of a normal distribution using an 11-point bipolar scale form with a range from − 5 to + 5. PQ Method software analyzed the collected data.
Results: Three discrete factors emerged: Factor I ("Facilitate or empower" knowledge acquisition), Factor II ("Safety Net" Support environment), and Factor III ("Mentoring" learn how to learn).
Conclusions: The findings of this study support and indicate that peer tutoring is an effective supplementary strategy to promote baccalaureate students' knowledge acquisition, establishing a supportive safety net and facilitating their abilities to learn in the simulation laboratory.

1. Introduction

Simulation is a supportive educational methodology, which duplicates situations not possible with real patients. Simulation replicates real clinical conditions to provide students with the opportunity to acquire skills by combining theory and practice, with decision-making without the possibility of causing actual patients harm (Khalaila, 2014). Based on the potential benefits of simulation, many schools are recommending application throughout the nursing curriculum (Gore and Schuessler, 2013; O'Donnell et al., 2014). Chinese educators use simulation as a revolutionary education strategy to support the efforts of preparing students for practice in the complex clinical settings (Wang et al., 2013; You et al., 2015). However, challenges confront students when undertaking simulation such as scenarios can be stressful, some students might suffer cognitive burnout because of the demand of preparation and progressive learning, they may have difficulty distinguishing between reality and simulation, or simulation may interfere with the students' development of professional socialization and communication skills for lack of association with other nurses and medical staff (Larue et al., 2015). In China, the lack of qualified faculty and large class size exacerbate this challenge (Wang et al., 2013).

Peer tutoring has been defined as a collaborative learning intervention in which individuals, who are not professional teachers from similar settings, help each other to learn through teaching (Topping, 1996). Researchers have used peer tutoring to supplement and achieve the maximum outcome from clinical simulation (Kim-Godwin et al., 2013; Owen and Ward-Smith, 2014). Peer tutoring has been found to be appropriate for use in simulation, reportedly enjoying high rating from the majority of students who attest that peer tutoring is an effective approach to meeting their learning needs (Ramm et al., 2015; Szlachta, 2013). Peer tutoring provides students with opportunities to learn from peer tutors through observation, feedback, and self-reflection (Brannagan et al., 2013). Exploring undergraduate students' feelings and perspectives may provide helpful insights into how to develop and improve impactful clinical teaching strategies in nursing education (Sharif and Masoumi, 2005). However, there is a dearth of studies

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investigating the baccalaureate nursing students' viewpoints of peer tutoring in the simulation laboratory (Brannagan et al., 2013; Mills et al., 2014). This study was designed to ascertain the perspectives of baccalaureate nursing students toward the peer tutoring in the simulation laboratory.

2. Methods

Q methodology created by Stephenson (1935), uniquely synthesizes the qualitative and quantitative methods (Brown, 1993). The qualitative aspects of Q-methodology allow the exploration of participants' subjective views and the quantitative parts provide in-depth insights into the opinion formation procedure by factor analysis (Watts and Stenner, 2012).

2.1. Research Procedure

2.1.1. Creating Concourse and the Q-set

The concourse is a list of statements used to express perspectives on specific subjects (Bartlett and DeWeese, 2014). The original statements for this research were gathered through a review of the literature related to peer tutoring employed in nursing or medical education. The focus was on peer tutoring utilized in the simulation laboratory between 2000 and 2015 using the search terms “peer tutoring,” “peer teaching,” “peer-assisted learning,” “peer mentoring,” “collaborating learning” and “collaborative study.”

The concourse comprised 79 statements focusing on non-academic benefits of peer tutoring in laboratory-based simulation; academic outcomes; metacognition and collaboration. The reduction of these 79 statements to a Q set of 58 items was accomplished by eliminating overlapping and ambiguous items in conjunction with three educational experts and two nursing professors who were also the methodological experts. After a pilot study was done with seven participants, 58 statements were retained.

2.1.2. Selecting P-set

The P-set is the participant: following Van Exel and de Graaf (2005), a convenient sample of 58 nursing students were recruited for the P set from the HOPE School of Nursing, Wuhan University, China. All the 58 students signed the informed consent and were willing to participate in the peer tutoring program. Seven students who participated in the pilot study were excluded from the main study. The class schedule prevented 11 students from participation in the peer tutoring in the simulation laboratory. Therefore, only 40 participants were enrolled and completed the study. Of the 40 participants, 37 were female, and three were male with ages ranging from 18 to 22 years old (Table 2).The participants were evenly divided between first-year and third-year baccalaureate nursing students. All participants met the inclusion criteria that they were enrolled baccalaureate students who had no prior experiences of peer tutoring in the simulation laboratory.

2.1.3. Conducting Q-sort

All participants were interviewed between April and June 2016. One independent researcher undertook the data collection. The interviews took about 60 min individually and were conducted in a quiet office in the university or the hospital. Each interview was recorded. Each participant separately was invited first to read the randomly numbered Q-statements cards and then rank order of cards onto a forced normal distribution Q-sort table. The predesigned Q-sort chart (Fig. 1) used an 11-point bipolar scale form with a range from −5 (strongly disagree) to +5 (strongly agree). After each Q-sort, each participant was interviewed about his/her thoughts about Q-sort choices.

2.1.4. Data Analysis and Factor Interpretation

The freeware PQ Method version 2.35 (Schmolk, 2014) was used to analyze the Q-sort data. Principal components analysis and further varimax rotation were computed. The Kaiser-Guttman criterion that suggests that factors with eigenvalues larger than one should be extracted and the results of the parallel analysis (Watts and Stenner, 2012) were both considered for deciding how many factors to retain. Guided by the parallel analysis, the eigenvalues from the research data were compared to the eigenvalues extracted from the random data about the number of participants and the number of Q items. Three factors were retained because the third eigenvalue from the research data is greater than the third eigenvalue from the random data (O'Connor, 2000) (Table 1). Z-scores were adopted as a level of standard deviation. The statements with Z-scores above +1.0 were considered as positive views and less than −1.0 as negative views (Cai et al., 2016). All participants' comments were transferred word for word and then read and re-read to identify similarities, distinctions, and possible explanations (Stone et al., 2016).

2.1.5. Validity and Reliability

The validity of Q study consists of content, face and Q-sorting validity (Watts and Stenner, 2012). The content validity was established by the literature review and experts consultation. A team of domain experts, containing two expat nursing professors that are also the methodologists, and three Chinese educators assessed the items. These domain experts evaluated the final panel of Q-samples and piloted by seven undergraduate nursing students for face and Q-sorting validity. In Q methodology, the most important type of reliability is whether the same people will produce the same results over time. However, through a test-retest procedure, the reliability of Q-sorting is verified by same Q-sample and individuals (Brown, 1993).

2.1.6. Ethical Considerations

Research ethical approval was obtained from the Research Ethics Committee of the HOPE School of Nursing (Wuhan University, No.2014-12-04-msn-03). Before the study, all students were provided with a written and verbal explanation of peer tutoring program in the simulation laboratory and the purpose of the Q study. The study objectives and students' rights were provided in Chinese, including their rights to withdraw from the study without penalty and that all the information gathered would be treated confidentially and anonymously.

3. Results

Three factors emerged: “Facilitate or empower” knowledge acquisition (Factor I), “Safety Net” Supportive environment (Factor II), and “Mentoring” learn how to learn (Factor III). The three factors accounted for 34.4% of the variance, including Factor I (18.6%), Factor II (8.3%), and Factor III (7.6%). The eigenvalues were 7.44, 3.31 and 3.03 respectively. ‘Thirty-six participants' responses determined the three factors: nineteen exemplified Factor I, ten generated Factor II and seven created Factor III.’

3.1.1. Factor I: “Facilitate or Empower” Knowledge Acquisition

Twenty-nine distinguishing statements loaded on this factor (Table 3). Students in Factor I agree that “peer tutoring offered embellishment enhanced comprehension of a clinical situation” (+4), and peer tutors “frequently paraphrased learning” (+3), engaged them “to seek clarification” (+3). Peer tutoring, a non-traditional teaching strategy allowed many students to engage in learning (Item 56, +3). On the other hand, students in Factor I oppose the ideas that the networks developed through peer tutoring fostered their sense of belonging (−4). Also, the Factor 1 group did not think when facing difficulties; peer tutors were the preferred point of contact (−4). However, these students would like to access knowledge support from peer tutors, they thought peer tutors had “the same deep understanding

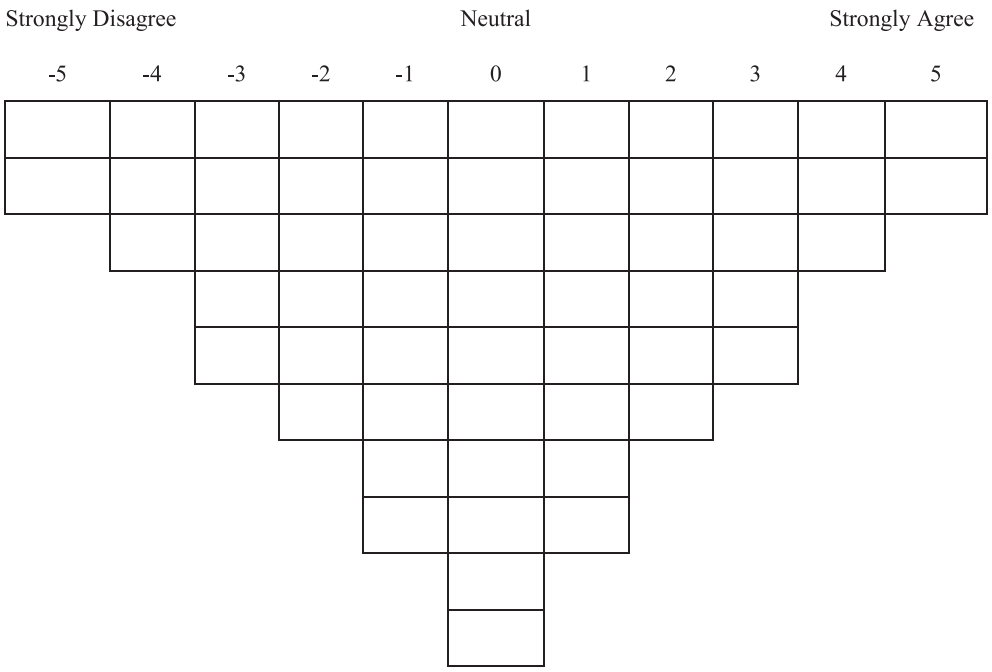

Fig. 1. Q-sort table.

Table 1
Results of parallel analysis.

	Eigenvalue	
	Research data	Random data
1	7.4354	3.3536
2	3.3058	2.9523
3	3.0332	2.7110
4	2.1471	2.5159

Note: Variables = 40, cases = 58, datasets = 1000, percentile = 95.

Table 2
Eigenvalue, variance, and characteristics of the 40 participants.

Variable	Factor	Factor	Factor
	(n = 19)	(n = 10)	(n = 7)
Eigenvalues	7.4	3.3	3.0
(Variance, %)	(18.6%)	(8.3%)	(7.6%)
Sex			
Male	2	1	0
Female	17	9	7
Grade			
1	9	4	5
3	10	6	2
Age in years (range)	18–22	18–22	19–22

of the situation as the lecturer" (− 4) and hoped to have a high level of contact with their tutors (Item 13, − 5). The students further believed that peer tutors had the appropriate level for tutoring (Item 23, − 4; Item 25, + 2). Explanatory comments from participants who loaded on this factor are as follows:

> "In the debriefing, peer tutors guide us to develop a summary of learning, I like this way…"
>
> (NPI5JB2)

> "Some knowledge has been taught. However, I have not understood. If you ask the teachers, they will think you should already have mastered the content and be disappointed with you. I like to go to peer tutors as a resource and for guidance."
>
> (NPI113YA)

> "The peer tutors though not as authoritative as teachers are at a level appropriate for me; I can easily understand and remember the knowledge they gave me…"
>
> (NPI3XA1)

3.1.2. Factor II: "Safety Net" Supportive Environment

Thirty-one distinguishing statements loaded in Factor II (Table 3). Students loaded on this factor strongly agreed that peer tutoring created a positive, non-intimidating learning environment for them (+ 5) and they felt free to ask questions (+ 5). It was noticeable that students in this group believed that peer tutoring supported the development of a network (+ 2), which fostered the integration of students into their community (+ 2) and sense of belonging (+ 1). Peer tutors were preferred options to seeking help (+ 2) and facilitate the development of other support (NPI333YA). Students loaded on this factor strongly disagreed with the statements "peer tutoring provided scaffolding learning" (− 5), "peer tutoring in the simulation laboratory provided orientation" (− 4), "peer tutors clarified complex issues for them" (− 4) and peer tutoring increased their responsibility to prepare for simulation (− 4).

Student comments that support the concept of a supportive environment included:

> "The friendship is imperative. Developing one contact sometimes means many. Contacts often bring you a lot of ideas and resources to solve problems."
>
> (NPI333YA)

> "I hope we can have more opportunities to participate in the collaborative study; then we will have a real friendship with each other. If I meet some problems, I can ask other for ideas."
>
> (NPI14JB2)

> "I prefer to contact with peer tutors. We are all students, so I dare to discuss more topics with them. More mature students have longer school lives than us, they can share some useful experiences with us."
>
> (NPI311TA)

Table 3
Factor Z-score for each statement.

No. Q statements	Z-score (factor)		
	I	II	III
1 Peer tutors engaged me to seek clarification.	**0.92***	−0.82	0.36
2 Peer tutors clarified complex issues for us.	**0.47***	**−1.71***	**−0.97***
3 Peer tutoring assisted me to focus my preparation for the simulation laboratory experience.	**0.07***	**−0.85***	**0.69***
4 Peer tutoring frequently paraphrased learning for us.	**1.17***	−0.56	−0.74
5 Peer tutors enhanced our learning by selection of relevant topics.	**0.47***	−0.67	−1.13
6 Peer tutors presented knowledge to us in simple, not academic language.	1.00	**0.20***	1.26
7 I think peer tutoring could provide help with academic problems.	0.16	0.25	**−0.47***
8 I think peer tutors could help us effectively model study skills, such as concentrating on the material, organizing study habits, and asking questions.	**0.39***	**−0.28**	**−0.83**
9 I think peer tutoring is not a remedial strategy for high-risk students.	**−1.18***	**0.86***	**1.76***
10 I think with the experiences (peer tutoring), students seem better prepared since they engage in more strategic and profound orientation activities.	−0.52	−0.70	**0.13***
11 I think students would be able to deal with more stress and cope with unforeseen adversities after peer tutoring.	0.03	0.13	**0.60**
12 Peer tutors influenced my communication skills.	**−0.41***	**0.23***	**1.28***
13 I desire high levels of contact and support that teachers offer rather than peer tutors.	**−2.75***	−0.17	−0.20
14 I think peer tutors supported the development of a network.	**−0.61***	**0.75***	**−1.30***
15 I think networks developed through peer tutoring fostered my sense of belonging.	**−1.31***	**0.52***	**−1.91***
16 I think peer tutor supporting networks fostered the integration of student into the academic community.	**−0.07***	**0.67***	**−0.99***
17 I think networks developed in peer tutoring supported students during challenging times.	0.07	−0.02	**−0.97***
18 I think the relational aspect of support inherent in the peer tutor role is significant to students.	0.50	0.23	**−2.06***
19 Peer tutoring was an exciting experience.	0.98	1.14	**0.16***
20 My peer tutor was supportive when I was performing the clinical skill/procedure.	−0.34	**0.76***	−0.15
21 My peer tutor created a positive, none-intimidating learning environment.	**0.13***	**2.10***	**1.31***
22 I can get an immediate response from my peer tutors.	0.81	**−0.45***	−0.53
23 I think Peer tutors did not have the same deep understanding of the situation as the lecturer.	**−2.34***	0.42	0.85
24 Peer tutoring lets me have more supervised opportunities to practice repeatedly during the session.	**−0.90**	**−0.50**	**−2.05***
25 I find the peer tutoring to be at the right level for me.	0.63	**1.16***	0.33
26 Peer tutors encouraged students to express their uncertainty	**0.27**	**−0.15***	**1.12***
27 Peer tutoring allowed me to raise areas of concern freely.	1.71	**0.95***	1.97
28 I perceive peer tutor as competent and well-trained teachers.	0.28	**0.73**	0.18
29 The feedback I received from my peer tutor was helpful.	**0.82**	0.43	0.07
30 I think peer tutoring increased the students' enthusiasm for learning.	−0.82	−0.49	**0.28***
31 I think peer tutoring helped me to develop a more personal interest in the subject.	**−0.95**	**−1.34**	**−0.45**
32 I have found increased meaningfulness of the subject with the help of peer tutors.	0.01	**−1.23***	0.35
33 I could see the course in a more favorable light by the peer tutoring.	**−0.95***	0.30	0.08
34 I could evaluate the course (NPI1/3) more positively by the peer tutoring.	−0.62	−0.56	**0.23***
35 Having been taught by peer tutor increased my sense of responsibility to prepare to practice.	**−0.44***	**−1.69***	**0.39***
36 My ability to solve problems and think critically had been improved with the help of peer tutor.	**0.60***	**−0.20***	**1.21***
37 I could gain insight into how my peer tutor approached similar clinical problems.	−0.21	−0.41	−0.75
38 It was from the peer tutor's extra experience that I realized that there is always something to learn.	2.01	1.87	**0.92***
39 Self-motivated peer tutors have an understanding of the course requirements	1.50	1.68	**0.71***
40 Peer tutoring provided openness for students to ask questions.	**0.37**	**1.87***	**0.85**
41 I think peer tutoring in the simulation laboratory provided orientation.	**0.70**	**−1.79**	**0.25***
42 It was hard for me to share my anxieties (e.g., fear of mistakes, inadequacy) with peer tutors in the simulation laboratory.	−2.79	−2.78	**−1.34***
43 My knowledge level of the clinical skill/procedure has been increased because of the support of my peer tutor.	0.18	−0.06	−0.31
44 Peer tutoring increased our time spent on task so that we can discuss in-depth about the experience.	−0.77	−1.14	**0.42***
45 Peer tutors enabled us to become more aware of our strengths and weaknesses.	**0.31***	−0.61	−0.99
46 I found I learned from other people (peer tutor) explaining things and commenting on various approaches potential outcomes would be done. For me peer tutoring is an excellent way to learn.	1.37	1.12	**0.06***
47 Peer tutoring facilitated my validation of comprehension.	−0.47	−0.58	**0.05**
48 I think peer tutoring offered embellishments that enhanced comprehension of the clinical situation.	**1.66***	0.57	0.27
49 I think peer tutoring in the simulation laboratory optimized the scope of scholarly endeavor.	−0.64	**0.27***	−0.65
50 I think peer tutoring provided scaffolding learning.	0.72	**−1.97***	0.57
51 I think peer tutors transferred professional values to students.	−0.36	**0.73***	0.06
52 The peer tutor prompted me to generate more higher-level thinking questions and responses.	−0.18	−0.37	0.09
53 I think the discussion in or out of the simulation could be further fostered and optimized by the tutors' thought-provoking questions.	0.66	**−0.30**	0.27
54 With the support of peer tutor, I would critically (re)consider my interpretations and presumably become aware of the need to permanently monitor my comprehension.	**0.14***	**−0.44***	**1.24***
55 I think peer tutoring led to more significant student participation in learning.	−0.02	0.38	0.31
56 I think peer tutoring allowed multiple students to work on non-traditional approaches to learning.	**0.94***	**1.43**	**1.94**
57 I think peer tutors are the student's preferred point of contact when facing difficulty.	**−1.46***	**0.68***	**−2.12***
58 I prefer regular contact with the same peer tutor throughout the program.	**−0.93***	**0.39***	**−1.88***

Note: Bold indicates significance at $P < 0.05$; asterisk (*) indicates significance at $P < 0.01$.

3.1.3. Factor III: "Mentoring" Learn How to Learn

Factor III determined by 34 distinguishing statements (Table 3). Students in this group also agreed with that peer tutoring allowed many students to learn in this non-traditional approach and peer tutors provided a positive, satisfactory environment. Significantly, students loaded on this factor considered that peer tutoring influenced their communication skill (+4), improving their ability to solve problems and think critically (+3), and they would critically reconsider their learning (+3). Students loaded on this factor hoped that they could have more opportunities to study with different peer tutors (Item 58,

− 4). Factor III students strongly disagree with the saying that the support inherent in peer tutoring were significant to baccalaureate students (− 5). If the students met difficulties, peer tutors were not the first choice for them (− 5). Moreover, the students did not support the collaborative study with peer tutors (Item 58, − 4; Item 15, − 4). Comments from the students about this factor include:

> "Sometimes more urgent than complementing knowledge is that you do not know how to get started with your preparation. Peer tutors guide you how to deal with this kind of problem which is based on their experiences. Later, the preparations become more efficient."
>
> (NPI112YB)

> "Some peer tutors who like to share and guide. They are good at study. A collaborate study with them, allows me to learn from them on how to study."
>
> (NPI37JA3)

> "The peer tutors are very helpful. I have realized that there are lots of things I need to learn…I need to study harder."
>
> (NPI119LA)

3.1.4. Consensus Statements

There were five items (28, 37, 43, 52 and 55) with which the majority of the students agreed or disagreed. All the students moderately agreed with statement 28 and 55: "peer tutors are competent and well-trained teachers" and "I think peer tutoring led to greater student participation in learning." All moderately disagreed with three statements (37, 43 and 52), which implies that the students were not aware of the role of the peer tutors. Interview data indicated that most participants thought study with peer tutors was a new experience and many expressed a desire for more opportunities to use this method of teaching.

4. Discussion

4.1. Factor I: "Facilitate or Empower" Knowledge Acquisition

Factor I students regarded peers as an effective way of promoting knowledge acquisition. Traditionally in China teaching is lecture and rote memorization, which aids the student to pass the test but not necessarily retain the knowledge or be effective at critical thinking. Factor I reflects the use of peer tutoring with simulation to promote self-sufficiency and empower students to be active participants in the acquisition of knowledge. Participants reported that peer tutors have recent experience in studying the relevant material and understand issues the baccalaureate students need to confront and resolve. Peer tutoring provides the learners with a way of reinforcing their new learning and assists them to adapt to the simulation experience, which was beneficial for the learners' ability to attain desirable outcomes of learning.

The results are consistent with those presented in other studies that peer tutoring will facilitate knowledge acquisition. Mills et al. (2014) investigated the baccalaureate students' experiences of attending a peer tutoring in a simulation suite: the majority of baccalaureate students gained from the collaborative peer tutoring study offered by studying together with more experienced peer tutors. Peer tutoring gave students the chance to discover their inadequacies, correct misunderstandings and encourage the openness to others' ideas (Loke and Chow, 2007). As Ramm et al. (2015) reported in the teaching processes, peer tutors had the opportunities to integrate their experience of learning the similar contents, enabling tutees to achieve a better understanding of learning the material and promoting more in-depth understanding of course concepts.

Most students loaded on Factor I voiced their satisfaction about the peer tutoring experiences. Sometimes, fear interfered with their ability to ask for clarification from teachers because of the probability of being told "you should know that already" (NPI15JB2), or that a wrong impression would be given to the teachers. However, baccalaureate students felt it more accessible to externalize their thoughts and make explicit their questions related to the subjects from interaction with peer tutors. Peer tutoring may result in information being more readily accepted by students as individuals often turn to others who have a similar experience, for advice and guidance (Stone et al., 2013).

Topping (2005) reported that peer tutoring could naturally be both formal and informal, whereas those in Factor I said that students' interactions with peer tutors were mainly formal. Participants said most of their collaborations were limited within the class, their contact with the peer tutors was insufficient and "peer tutors were not the preferred point of contact when facing difficulties."

4.2. Factor II: "Safety Net" Supportive Environment

The Factor II group highlighted the chance for collaborative learning with different master students in peer tutoring. The number of students reported through peer tutoring opportunity, their circle of friends has been expanded, and the friendships developed during the peer tutoring created a network that connected them as a community of students. Students in Factor II expressed only fellow students understand, so their networking was developed to help each other process information and to gain support. Roberts (2009) found that the friendships formed by peer tutors and tutees, which is not only allowing the asking of questions but also abound resources of support. It seems that peers are considered to have a more powerful influence than an advisor or instructor in undergraduate education (Nisbet et al., 2014). When the students are unsure of what to do or feel uncertainty about something, they will actively seek out another student. The close interactions between tutor and tutee can facilitate group discussion that may not quickly happen in a formal teaching atmosphere (Abedini et al., 2013).

The students loading on Factor II group did report that the support networks fostered their sense of belonging and incorporation into the specialty (Item 51, + 2). Unlike the Factor I group, informal communication frequently occurred among the students in the Factor II group. Tutees asked many questions about master students' prior experience. However, some students pointed out that the after class informal communications were not in sufficient quantity to satisfy the demand for the baccalaureate and master students' heavy course tasks (NPI332YB).

A similar finding is reported by Loke and Chow (2007). In their study, students described that to arrange a time that was convenient for both tutor and tutee was difficult for they always have another arrangement. Networking effectiveness is influenced by the quality of the tutor-tutee relationship. Relationship building requires time. McKenna and French (2011) pointed out that the network built in peer tutoring took place within a reciprocal power relationship. The master students' understanding of the peer tutor role and their abilities to communicate, listen and share power influence the creation and maintenance of a supportive, inclusive and egalitarian environment where baccalaureate students are confirmed as not only learners but friends (Watts, 2011), which may explain why baccalaureate students desire more peer tutoring opportunities.

4.3. Factor III: "Mentoring" Learn How to Learn

In this group, the focus is on the peer tutors' roles of facilitation of how to learn. In Factor III students' eyes, master students represented those students who were successful in learning and peer tutoring is a form of mentoring which promotes the sustainability of the educational experience. The peer tutors' ways of study served as a model for learning processes and strategies. Factor III students portray the tendency of metacognition such as enhanced self-motivation and responsibility for their learning. They described that in the simulation laboratory, some of the master students helped them turn theory into

practice by illustrating relevant concepts from a clinical practice with care for a patient with a similar disease process. During the course, peer tutors acted as the standard patients and attending the debriefing. Peer tutors gave immediate feedback about the students' clinical performances especially in the patients' role, and provided advises on how they would behave under such circumstances. Students reported personal growth, such as increased self-confidence. Also, perceived an increase in patient care competence and motivation because actively participate during the entire session.

King et al. (1998) stressed the promotion of metacognition termed as the capability to reflect on, understand, control, and reconstruct one's cognitive processes and strategies in academic tasks (Efklides, 2008). This kind of ability requires students to step back and to consider the cognitive learning process, it is relatively stable but late-developing (Backer et al., 2012). A study conducted by Rush et al. (2012) explored the possibility of peer tutoring, as a particular kind of collaborative learning, to promote university students' metacognition. Reports indicated that peer tutors could effectively model study skills by functioning as role models for baccalaureate students (Ramm et al., 2015; Harvey et al., 2010). Peer tutoring was welcomed by most students in Factor III group for the potential of modeling learning behaviors in the simulation laboratory (Item 56, +5; Item 9, +5), but some baccalaureate students complained that few peer tutors showed less responsibility for the tutors' roles (NPI19LA1). Some participants attributed more value to the feedback provided by the qualified staff rather than the peer tutors. In the interview, some of them expressed the view that the peer tutors were not well prepared for the scenarios or could not answer their questions straight away (NPI315YA).

Similar findings were reported by recent studies (Christiansen et al., 2011; Loke and Chow, 2007). Nisbet et al. (2014) pointed out that the negative feedback might attribute to some peer tutors were not adept at a tutor role. The interaction and relational support need to be engendered in the peer tutoring may be taxing in the aspect of the task and role responsibility. The pressure generated from time and administration might indirectly affect the quality of tutorial support (Watts, 2011). The tutees' growth will also challenge the tutor (Christiansen et al., 2011).

4.4. Strengths and Limitations

There are several strengths of this study. Factors and an understanding of Chinese baccalaureate nursing students' perceptions toward peer tutoring in the simulation laboratory were successfully identified and explored by using Q-methodology. This study is valuable because it is important to understand the nursing students' present perceptions toward peer tutoring in simulation laboratory with the intention of effectively applying them in undergraduate nursing education. Despite the benefits of this research, several limitations should be considered. Firstly, this study used participants from a single university; the findings might not be broadly applied to universities with different levels. Secondly, Q methodology explores subjective experience and cannot be used to generalize beyond the study, but the study has provided some useful insights into the value that students place on peer mentoring in a simulation environment. Thirdly, the ability of the peer tutors impacts the quality of the methodology. Therefore, if peer tutors are unqualified, the outcomes will be influenced.

5. Conclusion

The predominant feature of this study is that it was one of the first to utilize Q methodology to reveal Chinese baccalaureate nursing students' perspectives of peer tutoring in the simulation laboratory. The results support that peer tutoring is a useful supplement for simulation. Peer tutoring contributes to knowledge acquisition through sharing the similar learning experiences and empowers the baccalaureate students to participate in the learning process actively. Peer tutoring fosters both formal and informal communication, providing students a supportive safety net. Through serving as models, peer tutors also “mentor” undergraduates' teaching how to learn and helped them translate simulation with clinical reality, implementing theory into practice. All the actions mentioned help undergraduates to adapt to the simulation as soon as possible, decrease their anxiety and relieve their cognitive burnout. Though students acknowledge the peer tutoring's benefits, there are some negative comments about it. Furthermore, all the participants in this study had only one-semester experience of peer tutoring. The time was short, but the influences of peer tutoring were exposed adequately. Future research should be conducted to expand the effects of peer tutoring in the simulation laboratory and the baccalaureate students' perspectives.

Author Contributions

Design: TL, MP.
Research supervision: MP.
Data collection: TL.
Data analysis: TL, MP.
Manuscript writing: TL.
Critical revision and intellectual content: MP, TES.

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