Factors affecting student's preference of nursing education in Singapore

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FACTORS AFFECTING STUDENT’S PREFERENCE OF NURSING EDUCATION IN SINGAPORE

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I certify that the substance of this Thesis has not been already submitted for any degree and is not currently being submitted for any other degree or degrees. I certify that to the best of my knowledge any help received in preparing this work, and all sources used, have been acknowledged in this Thesis
## CONTENT

<table>
<thead>
<tr>
<th></th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgement &amp; Publication</td>
<td>2-3</td>
</tr>
<tr>
<td>Abstract</td>
<td>4-5</td>
</tr>
<tr>
<td><strong>Chapter ONE</strong></td>
<td></td>
</tr>
<tr>
<td>1.1 Introduction</td>
<td>6-8</td>
</tr>
<tr>
<td>1.2 Justification for this Research</td>
<td>8-8</td>
</tr>
<tr>
<td>1.3 Objectives of this Study</td>
<td>9-9</td>
</tr>
<tr>
<td>1.4 Research Questions and Hypotheses</td>
<td>9-10</td>
</tr>
<tr>
<td>1.5 Research Methodology</td>
<td>10-13</td>
</tr>
<tr>
<td>1.6 Definitions</td>
<td>13-14</td>
</tr>
<tr>
<td>1.7 Significant of the Research</td>
<td>14-15</td>
</tr>
<tr>
<td>1.8 Limitations and Key Assumptions</td>
<td>15-15</td>
</tr>
<tr>
<td>1.9 Structure of the Dissertation</td>
<td>16-16</td>
</tr>
<tr>
<td><strong>Chapter TWO</strong></td>
<td></td>
</tr>
<tr>
<td>2.1 Introduction</td>
<td>17-17</td>
</tr>
<tr>
<td>2.2 The Healthcare Education Industry, Roles and Responsibilities</td>
<td>18-26</td>
</tr>
<tr>
<td>2.3 Research Gap</td>
<td>26-26</td>
</tr>
<tr>
<td>2.4 Possible Influence on Students’ Preference for Nursing Education</td>
<td>27-28</td>
</tr>
<tr>
<td>2.5 Theoretical Framework and Research Hypotheses</td>
<td>28-34</td>
</tr>
<tr>
<td>2.6 Summary</td>
<td>35-35</td>
</tr>
<tr>
<td><strong>Chapter THREE</strong></td>
<td></td>
</tr>
<tr>
<td>3.1 Introduction</td>
<td>36-37</td>
</tr>
<tr>
<td>3.2 Research Paradigms</td>
<td>38-38</td>
</tr>
<tr>
<td>3.3 Research Design</td>
<td>39-40</td>
</tr>
<tr>
<td>3.4 Sampling</td>
<td>41-43</td>
</tr>
<tr>
<td>3.5 Questionnaire Design</td>
<td>43-49</td>
</tr>
<tr>
<td>3.6 Data Collection</td>
<td>49-50</td>
</tr>
<tr>
<td>3.7 Measurement Technique</td>
<td>50-51</td>
</tr>
<tr>
<td>3.8 Ethical Consideration</td>
<td>52-53</td>
</tr>
<tr>
<td>3.9 Summary</td>
<td>53-54</td>
</tr>
</tbody>
</table>
# Chapter FOUR

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Introduction</td>
<td>55-55</td>
</tr>
<tr>
<td>4.2 Research Hypotheses</td>
<td>56-56</td>
</tr>
<tr>
<td>4.3 Review of Demography Variables</td>
<td>57-59</td>
</tr>
<tr>
<td>4.4 Descriptive Analysis</td>
<td>60-66</td>
</tr>
<tr>
<td>4.5 Testing the Measurement Model</td>
<td>67-67</td>
</tr>
<tr>
<td>4.6 Internal Reliability</td>
<td>68-69</td>
</tr>
<tr>
<td>4.7 Hypothesis Testing</td>
<td>70-71</td>
</tr>
<tr>
<td>4.8 Exploratory Analysis</td>
<td>72-73</td>
</tr>
<tr>
<td>4.9 Summary</td>
<td>74-74</td>
</tr>
</tbody>
</table>

# Chapter FIVE

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Introduction</td>
<td>75-80</td>
</tr>
<tr>
<td>5.2 Contribution to Knowledge</td>
<td>80-85</td>
</tr>
<tr>
<td>5.3 Summary</td>
<td>85-86</td>
</tr>
<tr>
<td>5.4 Future Research</td>
<td>86-87</td>
</tr>
<tr>
<td>References</td>
<td>88-96</td>
</tr>
</tbody>
</table>

## Appendix A

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethic Committee Approval (HREC approval number ECN-04-59)</td>
<td>97-98</td>
</tr>
<tr>
<td>Approval Letter from Director of School of Health Sciences (Nanyang Polytechnic Singapore)</td>
<td>99</td>
</tr>
</tbody>
</table>

## Appendix B

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire with Consent Form</td>
<td>100-102</td>
</tr>
</tbody>
</table>

## PUBLICATION


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FACTORS AFFECTING STUDENT’S PREFERENCE OF NURSING EDUCATION IN SINGAPORE

ABSTRACT

Singapore nursing education has experienced a number of significant changes in recent years. The Singapore healthcare education industry is finding it increasingly difficult to compete for the limited pool of students. Many studies (e.g., Fonza & Tulker-Allen, 2007; Knox, Irving & Gharrity, 2001; Zysberg & Zisberg, 2008) reported that fewer qualified school leavers choose to be trained as nurses. This difficulty has been felt acutely because the high-quality students that Singapore Nursing has had over the years was a major determinant of the positive professional image of the Singapore nursing workforce.

The focus of this study was to understand the factors that influence local post-secondary students’ preference of nursing profession, addressing the factors which are identified from various countries (Bolan & Grainger, 2003; Carpenito-Mayet, 2002; Jrasat, Samawi & Wilson, 2005; Law & Arthur, 2003; Liegler, 2000; Scanion, 2008; Sweet, 2004; While & Blackman, 1998; Wilson, 2006; Zysberg & Zisberg, 2008), and examining the significance of these factors. With this aim in mind, the research questions driving this study are as follows: (a) What are the
key factors that influence students choosing to study nursing? (b) How can factors identified internationally be related to the local context?

The main contribution of this study was the derivation of a model that amalgamates five identified factors; Ability, Optimism, Nursing Image, Parents Image in Nursing and Peers Image in Nursing that play a significant role in influencing students’ preference for nursing education as their choice for tertiary study was derived.
CHAPTER ONE
INTRODUCTION

1.1 BACKGROUND TO THE RESEARCH

Nursing education in Singapore is provided by both tertiary and private healthcare education institutions. These institutions provide approximately one thousand nurses for the industry each year (NYP annual reports, 2006). School-leavers can enrol in the Polytechnic or the University Nursing education directly after their GCE ‘O’ or ‘A’ level school-leaving examination. School-leavers attend a three-year, full-time course of study which results in a Diploma or Degree of Nursing upon graduation and then go on to become registered nurses.

Until 2004, the nursing education was offered by a single Polytechnic. In 2005, this Polytechnic was joined by two other tertiary institutions, and they now account for an average of fifty percent of graduating nurses each year. A third private healthcare education institution entered the market in 2008.

Despite the efforts made to increase the number of educational institutions offering nursing courses, significant shortages of nurses are still projected by the Ministry for the coming years. While working conditions have been reworked and pay schemes of nurses had been subjected to regular revisions to ensure competitiveness in the local job market, these attempts have not remedied the shortage of nurses in Singapore. Although many studies (e.g., Law & Arthur, 2003; Meadus & Twomey, 2007; Sweet, 2004) have examined students’ preferences for nursing as a career choice, factors that influence youth in their preference of the nursing profession has not been examined in the context of Singapore.

The shortage of competently trained nurses has been a global problem for over a decade (Carpenito-Moyet, 2002; Jinks & Bradley, 2004; Wilson, 2006). In the ideal scenario, the number of new nurses entering the workforce either trained
locally or recruited from overseas, will not only match the attrition in the industry but also cover expansion requirements. In reality, the rate of entry into the nursing profession is decreasing whereas the rate of exiting the nursing profession is increasing (Buerhau, Staiger & Auerback, 2000; Crow & Hartman, 2005; Mavundla & Mabemella, 1997). The negative impact of fewer nurses on healthcare service has attracted much attention in recent times.

Bolan and Grainger (2003) provided possible reasons as to why few adolescents view nursing as a career option. Adolescents’ perceptions of an ideal career were markedly different from their perceptions of a career in nursing. This would help explain why fewer youth are opting for the nursing course as their choice of education, and also why a greater number of junior nurses are choosing to leave the profession. American Nurses' Association (1991) described a decline of 19% in youth enrolling for nursing education from 1995 to 2000, and this was compounded by a similar increase in young nurses leaving the industry shortly after they have graduated. The result is an imbalance between the number that enter the profession and those who have left it (Dragon 2009).

The general feeling in recent years is that emphasis on increasing enrolment will likely have a bigger impact than emphasis on reducing attrition. The healthcare and education industry recognize that youth are becoming increasingly more sophisticated and complex in their needs and wants. The influence factors would need to be managed properly in order to entice more youth to enter the healthcare industry (Canadian Nurses Association, 2002).

Previous studies (Davidhizar & Bartlett, 2006; Gaynor, Allasch, Yorkston, Stewart & Turner, 2006; Jrasat, et al., 2005; Liegler, 2000; Joel, 2002; Wilson, 2006; Zysberg & Zisberg, 2008) examined explicit and implicit factors that provide insights into why high-school leavers choose nursing as their field of study. Knowing these factors could help to explain the decline over the past years in school leavers with good grades enrolling in nursing programmes.

This research study will attempt to bridge this knowledge gap, and will potentially find useful application beyond the healthcare education institutions. Access to
this information may assist in the creation of targeted marketing strategies and profession-friendly work practices by the Health Ministry and the healthcare provision industry, which may help arrest or reverse the current trend by enticing more school-leavers to choose nursing as a career option.

1.2 JUSTIFICATION FOR THIS RESEARCH

Research into factors that influence student preferences is crucial as this knowledge can have wide application for various stakeholders in the local healthcare industry. This knowledge may enable the healthcare education industry to understand the shifting needs of today’s youth, thereby enabling the formulation of academic packages that fulfil the healthcare industry needs and meet the demands of students. By understanding how students make their decisions at the point of entry can ensure a quality fit between the student and the course of study (Yorke, 1999). This can also give the local healthcare education industry an edge over other schools and other countries in this region in attracting potential overseas student candidates.

The local healthcare providers industry, in which most of these students will eventually be employed, can also utilize this knowledge to design more appealing remuneration packages, staff benefits and work structures. This would also have the double effect of decreasing the attrition rate of their currently employed staff and improving staff morale. At the healthcare education industry level, this knowledge can potentially be useful for planning marketing programmes and designing other outreach programmes.
1.3 **OBJECTIVES OF THE STUDY**

A contribution to the knowledge of the area of study should increase overall enrolment in tertiary healthcare education in Singapore. This study has the following aims:

1. Identify the factors that positively influence enrolling in a nursing programme.
2. Examine the interplay between these factors in the decision-making process of students.
3. Determine the appropriateness of a model that can predict the decision to enrol in a nursing programme.

1.4 **RESEARCH QUESTIONS AND HYPOTHESES**

The proposed research will examine the factors that influence the students’ decision to enrol in healthcare education in Singapore. It will take into consideration the various aspects of internal factors such as self-perception of nursing and personal ability, and external factors such as peers and parents images of nursing and also the education and career construct of a healthcare professional. The main research questions driving this study are as follows: (a) What are the key factors that influence students choosing to study nursing? (b) How can factors identified internationally be related to the local context?
The development of a conceptual model in Chapter 2 helps to address the research questions. The model reflects the relationships between Ability, Optimism, Nursing Image, Parents Nursing Image and Peers Nursing Image. Chapter 2 contains the rationale for the model that consists of the following hypotheses:

**Hypothesis 1:** Ability is positively correlated to Optimism (i.e., being optimistic about having a successful nursing career).

**Hypothesis 2:** Optimism is positively correlated to Nursing Preference.

**Hypothesis 3:** Optimism mediates the relationship between Ability and Nursing Preference.

**Hypothesis 4:** Nursing Image is positively correlated to Nursing Preference.

**Hypothesis 5:** Parents Nursing Image is positively correlated to Nursing Preference.

**Hypothesis 6:** Peers Nursing Image is positively correlated to Nursing Preference.

### 1.5 Research Methodology

1.5.1 Research Paradigm, Strategy and Design

Research can be seen as a process to explore, describe, understand, explain, predict and assess aspects of certain phenomena (Blaikie, 2003). Furthermore, with consistent business landscape shifts, research can also be helpful to identify opportunities, to diagnosis causal factors, to evaluate current practices and suggest possible alternatives (Ticehurst & Veal, 2000). Most studies in the area of preference identification (e.g., Bolan & Grainger, 2003; Law & Arthur, 2003; Scanion, 2008; Sweet, 2004; While & Blackman, 1998) were conducted to broaden the baseline information and did not provide an explanation or solution to a particular pragmatic problem.
This study identifies and examines the interplay between various factors that may affect the decision of Singaporean Secondary school leavers to enroll in tertiary nursing education.

This study adopts a quantitative descriptive design and is exploratory. A descriptive approach is used to find out and describe the population interests to allow a better understanding of the existing phenomenon whereas an exploratory approach is used to analyse an area in order to gain a better understanding of the research problems (Burns & Grove, 2007). In this study, the descriptive approach is used to gain in-depth knowledge about factors that affect student’s decision to enrol in a nursing programme. The exploratory approach allows the researcher to observe whether the identified factor/s could influence the decision to choose a tertiary nursing programme.

1.5.2 Research Method

A questionnaire was constructed from extant literatures (in Chapter 2) to meet the aims of this research. A Pilot study was carried out to exam the readability, reliability and validity of the items in the questionnaire.

The sample was drawn from a nursing school with a diverse student population. In response to the nature of this study, only nursing students in the polytechnic institution were invited to participate in this research. The population for this study consisted of Year 1 to Year 3 students who are currently enrolled in a three-year Nursing Diploma during the second semester of 2009. The sample is chosen for its heterogeneous mix of students and ease of access.

The reason for selecting this particular Polytechnic is due to its recognition locally and overseas. It is also the pioneer in providing healthcare tertiary education in Singapore. The Polytechnic is a comprehensive tertiary institution that offers college healthcare programs in more than 40 academic and professional fields. Permission to survey students was obtained from the Director of the School and the Polytechnic’s Ethics Committee.
1.5.3 Data Analysis

Once the data have been collected and accuracy checks conducted, they are then entered by the researcher into an SPSS program (Version 14.0). In order to answer all the research questions and test the stated hypotheses, data analysis comprises three stages

Descriptive analysis was used to analyse the common factors that may influence students to choose nursing. The mean, percentage, and standard deviation will clearly meet the objective to identify the most common factors of influence.

Factor Analysis using the Principal Axis Factoring is used to identify underlying factors or that reflect what communalities variables share (Basilevsky, 1994). 34 items are categorized into Six categories (subscales): Ability, Optimism, Nursing Image, Parents Image on Nursing, Peers Image on Nursing and Nursing Preference. The following findings are observed when principle axis factoring is conducted:

1) Correlation matrix to justify the application of factor analysis.
2) The appropriateness of using factor analysis was determined by using Bartlett’s test of sphericity and the adequacy of sampling (MAS); the MAS must range from 0 to 1.
3) Eigenvalue to determine the number of factors retained for interpretation. Only factors with eigenvalue greater than 1 are included.

(Pasilevsky, 2004)

Pearson’s correlation coefficient (Pearson’s r) was used to analyse the association among independent variables; (1) Ability (2) Optimism (3) Nursing Image (4) Parents Image in Nursing (5) Peers Image in Nursing with Nursing Preference (dependent variable), therefore, one could be used to represent the other. Regression analysis will be used to examine possible effect of a predictors and Nursing Preference. Finally Baron and Kenny’s (1986) mediating principle will be carried out to determine the possible mediation effect of predictor on the other
independent variables affecting nursing preference. Using Judd and Kenny’s (1981) procedure, which involves meeting the following three conditions:

i) the independent variable must predict the dependent variable;
ii) the independent variable must predict the mediator; and
iii) when the independent variable and the mediator are used to predict the dependent variable, the mediator must be significant.

1.6 Definitions

The constructs used in this study are explained in this section:

**Ability:** Ability is an independent variable in this study. It represents influence factors that entice secondary school leavers into choosing nursing as their preference of career was the positive self-perception of nursing as a caring and helpful profession. Most students see themselves as caring, helpful, patient and have the ability to meet the stress and demand of the job (Beggs, Bantham & Taylor, 2008) and translate this perception as a good fit for the nursing profession. Items such as “I chose nursing because nursing is a reliable job”, “I can work in demanding and stressful environment”, “I feel good about myself whenever I care and look after people”, “I enjoy meeting people”, “I am good in interpersonal skills such as listening, caring and understanding” are used to measure Ability.

**Optimism:** Nursing is a professional career that carries a perceived optimistic disposition. It is a career that rewards, challenge, and provides diverse opportunities (Brennan, Best & Small, 1996; Liegler, 2000). Providing education and career advancement opportunities (Optimism) are the independent variables in this study. There are several career paths within nursing profession available for registered nurses, which include education, research, healthcare management, and business enterprise. Registered nurses are provided with local academic opportunities ranging from advanced diplomas, bachelor degrees, and master degrees. These nurses may choose to advance their education qualifications such as doctoral and PhD degrees through various overseas doctorate programs.
Nursing Image: Nursing Image is one of the independent variables in this study. It represents push factors such as the professional image of nursing and income (Beggs, Bantham & Taylor, 2008; Williams, Wertenberger & Gushuliak, 1997) and pull factor such as job security (Brodie, Andrews, Andrews, Thomas, Wong & Rixon, 2009).

Parental Image on Nursing: Parental Image on Nursing is the other independent variables in this study. Studies (e.g., Harrigan, Gollin & Casken, 2003; Seago, Spetz, Alvarado, Keane & Grumbach, 2006) reported that parental influences significantly influence the preference students eventually make, especially in circumstances when they are not familiar with the specifics of the programme.

Peers Image on Nursing: Peers Image on Nursing has impact on the Nursing Preference. Peers are a huge part of an adolescent’s social network and they are more influential in adolescence than at any other time in life (Steinberg, 1992). This recapitulated the findings in studies (e.g., Law & Arthurs, 2003; Paa & McWhirter, 2000) that importance of peers’ acceptance and support either for a post-secondary plan or career decision is regarded higher compare to advice from school counselors.

1.7 Significance of the Research

In Singapore, a nursing career is perceived as a hospital-based profession. There is a lack of information on career preferences available to registered nurses, which can include teaching, research, healthcare management and business enterprises. This has led to an increased demand for well-educated nurses. This lack of public awareness may be one of the reasons why youth tend to undervalue the nursing profession and reject it prematurely.

Until now, there is little recorded research that specifically explores the factors that influence youth to choose nursing education in the context of Singapore. The literature has concentrated on identifying the elements which play a part in students’ selection preference of nursing programme. However, these studies did
not go on to form an amalgamated point of view, which is the central focus of this paper. This study aims to contribute to the literature by bridging this knowledge gap because the findings can potentially have useful application not only for healthcare education institutions but also beyond.

1.8 LIMITATIONS AND KEY ASSUMPTIONS

This study is limited to the nursing tertiary programme in Singapore and only focuses on nursing students, it would have been ideal to include students from other faculties. This may allow the researcher to critically evaluate and compare the factors that influence the career-related decisions of other students. Therefore, generalising the results reported in this research to other healthcare tertiary programmes such as dental hygienist, physiotherapy or occupational therapy should only be done with caution.

A key assumption of this research is that the healthcare education industry in Singapore must recognize that there is a need for more focused marketing to attract young school-leavers to tertiary nursing programmes. Many universities across the globe are increasingly tailoring their marketing approach to suit consumer (students) choice.

This comes about as the students of today are better informed, more mobile and more able to make important judgments about a range of locally and overseas educational institutions.

1.9 STRUCTURE OF THE DISSERTATION

In order to fulfil the academic prerequisites of doctoral study (Moses, 1985), the dissertation is based on Perry’s (1995) approach of a five-chapter structure.

Chapter 1: Introduction – Outline of the study. This chapter describes the topic of the study and touches on some of the background that framed this endeavour. The
research questions are developed and its objectives defined. Justification of the significance of the dissertation is also identified. Leading from these research questions, a set of research hypotheses and the research model is derived and presented, illustrating the conceptual framework of the study. Additionally, this chapter also briefly introduces the research methodology used and gives an overview of the structure of the dissertation.

Chapter 2: Literature Review – A comprehensive review of the extant literature related to student enrolment is given in this chapter. This is followed by an in-depth discussion of the key variables that form the theoretical framework model. This chapter also provides the justification for each of the research hypotheses.

Chapter 3: Research Methodology – This chapter systematically elaborates on the study’s chosen research paradigm and research methodology. Details of research design are provided and the chosen research methodology adopted justified. This includes specific details on the methods for data-gathering, data-sampling and data-analysis. In addition, this chapter also touches on the ethical considerations and the limitations of the study.

Chapter 4: Data Analysis – Statistics on the respondents’ demography are summarised and presented together with the results of the individual hypothesis and exploratory testing.

Chapter 5: Discussion and Conclusion – This chapter describes and discusses the theoretical and practical implications of the findings of the study and its limitations. It also gives suggestions for future research.
CHAPTER TWO
LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will review the extant literature on students’ preference of education courses. An introduction to the Singapore healthcare education industry and its roles and responsibilities will be provided. A discussion on the chronic shortage of nurses and the vicious cycle that affects current nursing practices will follow. Specifically, the effects of reduced enrolment in academic programmes will be examined. In this chapter, a thorough discussion of the characteristics of the healthcare education industry in Singapore will be provided, the existing problems in the nursing industry and their possible causes before identifying the research gap.

The theoretical framework and research hypotheses for the study are then established with the reviewed literature recommendation. Finally, the key assumptions and limitations of the study are discussed and the contribution of this research is discussed.

The remainder of this chapter is structured in the following manner:

- A discussion of the healthcare education industry, and its roles and responsibilities is provided in Section 2.2;
- The research gap is identified in Section 2.3;
- A discussion of factors that may influence students’ decision to study nursing in Singapore is provided in Section 2.4;
- The theoretical framework and research hypotheses are derived in Section 2.5;
- The key assumptions of the research and the limitations of the study are discussed in Section 2.6;
- The contribution of this research to knowledge is discussed in Section 2.7; and
- A conclusion for this chapter is provided in Section 2.8.
2.2 The Healthcare Education Industry, Roles and Responsibilities

In Singapore, the two Polytechnic Institutions and two private healthcare education institutes together generate an average of seven hundred to eight hundred nurses each year (NYP annual report, 2003).

From 1997 onwards, school leavers have been able to join the Polytechnic Nursing education directly after completing their Cambridge GCE ‘O’ or ‘A’ levels. This is a three-year long, full-time course of study and students are given a Diploma of Nursing upon graduating and become state-registered nurses.

Up until 2001, nursing education was monopolised by a single polytechnic. From 2002, two other tertiary institutions started to provide nursing education and now supply an average of 20% of the demand for nurses. A third private healthcare education institution entered the market in 2008 and its first class recently commenced.

It was interesting to note that the nursing course enjoyed a sudden spike in popularity in the immediate aftermath of the Singapore SARS outbreak. The intake of new nursing students reached a total of 1400 in the main Polytechnic enrolment alone (NYP annual report, 2005) while the smaller private healthcare education institutions also reported increased intakes.

The primary role and responsibility of the local healthcare education industry is to supply sufficient competently-trained healthcare workers for the local healthcare provision industry. Local healthcare education is governed by strict guidelines issued by the Ministry of Development and the Ministry of Health. It has to fulfil the projected nursing manpower needs of the nation so that the healthcare sector can grow unhindered and contribute positively to the Gross Domestic Product (GDP) of Singapore.

The healthcare education industry in Singapore is largely well recognised locally and overseas due to their ability to attain service and standard excellence. Many institutes have adopted benchmarking awards such as ISO 9000 and Singapore...
Quality Award (SQA). These are the two most anticipated service quality achievements, and they are significantly customer-centric (Yeo, 2008).

2.2.1 Chronic shortage of nurses

The global shortage of competently trained nurses has been a noticeable phenomenon for over a decade (Carpenito-Moyet, 2002; Jinks & Bradley, 2004; Wilson, 2006). In the ideal scenario, the number of new nurses entering the workforce either produced locally or recruited from overseas would match the combined rate of retirement, resignation and career change in the industry along with any expansion. In reality, however, there are more nurses leaving than entering the profession. This phenomenon and its negative impact on healthcare service have attracted much attention in recent times.

Buerhau et al. (2000), Crow and Hartman (2005), and Mavundla and Mabemella (1997) reported that the numbers entering and leaving the profession is insufficient to replace those exiting the profession, and this has contributed to an ageing nursing workforce. Zysberg and Zisberg (2008), Fonza and Tulker-Allen (2007), and Knox, Irving and Gharrity (2001) all reported lower rates of qualified school leavers choosing to be trained as nurses. In Singapore, the NYP Annual Report (2004; 2006; 2007) revealed a significant decline in enrolment ranging between 20 and 35% for the reported years. The resultant shortage of nurses has raised many healthcare delivery concerns.

Parbury-Stein (2000) reported similar findings in Australia in which the impact is most keenly felt in the more remote areas. In fact, Australia is projecting another 15.5% increase in nursing shortages in the near future, fuelled by decreased enrolment in the nursing education programme and an expected 24.5% of nurses leaving the healthcare industry. The main reasons given by nurses for leaving the healthcare industry are the strenuous nature of the work and feeling under-valued in the workplace.

Various studies and reports (Buerhau et al., 2000; Crow & Hartman 2005; Capenito-Mayet, 2002; Crowley & West, 2002; Bolan & Grainger, 2003) have
emerged from Australia, the United Kingdom, the United States and Canada, all of which clearly demonstrated that the shortage of nurses is having a detrimental impact on the efficiency and effectiveness of healthcare delivery. This is not surprising, as nurses are the frontline of most global healthcare systems, and a nursing shortage would be clearly felt. This is especially the case in rural or remote areas, where nurses may be the only available healthcare provider.

Dragon (2009) also reported that the main reason for a shortage of nurses was an imbalance between the numbers entering the professions and those leaving it. The study reported that fewer youth are entering the profession. Additionally, it is also the younger nurses that are the most likely to leave the profession. ANA (1991) described a decline of 19% in youth enrolling for nursing education between 1995 and 2000, and mirrored a similar increase in young nurses leaving the industry.

Bolan and Grainger (2003) provided some possible reasons as to why adolescents today view nursing as a less favourable career option. Their study found that adolescents perceive nursing to be markedly different to their conceived ideal career. The study has helped to understand why fewer youth are opting for the nursing course as their preference of education, and also why a greater number of junior nurses are choosing to leave the profession.

The general feeling in recent years has been that the emphasis should be on increasing student enrolment rather than on reducing attrition. Healthcare and education industries recognise that youth are becoming increasingly sophisticated and, as a result, are developing more complex needs and wants.

The push and pull factors need to be managed properly to convince more youth to enter the healthcare industry (CAN, 2002).

2.2.2 Increased Exit

The problem of nursing recruitment and retention is a recurring theme in the healthcare agenda in many countries (Lea & Cruickshank, 2005). Daly, Swindlehurst and Johal (2003) examined the recruitment and retention of United
Kingdom nurses of South-east Asian origin. Their study adopted a triangulated research design, which combined qualitative and quantitative data for completeness, and involved 70 young nurses. Daly et al. (2003) found that the majority of the participants believed that both nursing as a profession and work within a hospital-context were perceived in a negative light. The findings reported low morale among nurses with common complaints of long work hours, physically demanding work, repetitive and boring work, lack of a professional image, condescension from physicians and inadequate remuneration. The nurses that participated in the study admitted that these reasons may cause them to leave the profession in the future.

The negative image of nursing has been well recognised as an on-going barrier to recruiting and retaining nurses, and there is a pressing need to find out the contributory factors in different contexts. A cross-sectional survey study in Hong Kong on socio-cultural perspectives on the image of nursing found that the prevailing image of nurses is one of people who are poor and of a low social status (Foong, Rossiter & Chan, 1998). This has led many Hong Kong nurses to leave the workforce and to cite the lack of appreciation by the public as a main cause. Attrition was even greater after the SARS outbreak where nursing was viewed as a hazardous job.

An Ethnography study conducted in South Africa reported that a career in nursing is portrayed as a spiritual calling. The nineteenth century European influence of nursing as religious sisterhood that involved strict discipline and regulations has not changed with the times (Sweet, 2004). There, the religious ethos was all-pervasive and could have contributed to the poor recruitment.

While and Blackman (1998) reported in a survey research study that seventy-five per cent of doctors regarded nurses as their assistants. It is a commonly held belief that nursing is the least prestigious of all the healthcare professions, and this has continued to be reported in many studies (Finlayson, Dixon & Meadows, 2002; Jrasat et al., 2005; Lea & Cruickshank, 2005). Boughn (2001) rated sympathy, kindness, approachability, politeness and trustworthiness among nurses’ most desired expertise, while ability to work independently was consistently rated
lowest. This study further reported that these ratings were reflective of the unequal power relationships between the various healthcare professions and society’s general tendency to undervalue nurses.

Jessup (2001) reported that nurses generally perceived their profession image more positively compared to the public’s image of them. This discrepancy is significant as it has been found to contribute to incongruence between what nurses themselves perceived as their ideal work environment and what the healthcare system and the general public expect them to do (Boughn, 2001).

Jessup’s (2001) study found strong feelings of frustration from the participating nurses, who reported that they become nurses primarily to be with patients and become independent practitioners in an expanded capacity. The reality of being a nurse, however, is very different and results in many nurses leaving the profession.

A more positive public and professional image of nurses would have a positive impact on job performance and retention (Jessup, 2001). These factors also featured strongly in Cline, Reilly and Moore’s (2003) study on the reasons for young nurses leaving the profession.

Attracting more males to the nursing profession and retaining them in the workforce have been explored as one of the possible solutions to help overcome the nursing shortage. Meadus and Twomey (2007) used Likert scale questionnaires to investigate the reasons why male nurses leave the workforce. The most cited reason by the 78 male nurses was the negative public perception, amongst other complaints such as the uncompetitive salary, demanding work conditions, and gender stereotyping.

The traditional image of the nurse is an angel in white, a nun in religious garb devoted to charity and public service. The role has also has been associated with notions such as doctor’s handmaiden and even as a male’s sexual fantasy in certain circumstances (Meadus & Twomey, 2007). Boughn’s (2001) qualitative study, which compared and contrasted the reasons that women and men choose nursing, revealed similar findings. Jinks and Bradley (2004), in their quantitative
study, also found that there is an ingrained public opinion of male nurses as effeminate or homosexual. These studies highlighted how unpopular nursing is a career preference for men.

2.2.3 Decreased Entry

There are both explicit and implicit factors that prompt youth to choose to study nursing, and these have been extensively researched (Davidhizar & Bartlett, 2006; Gaynor et al., 2006; Joel, 2002; Jrasat et al., 2005; Liegler, 2000; Wilson, 2006; Zysberg & Zisberg, 2008). However, there are few studies that look specifically at why high-school leavers do not choose nursing as their study of preference. Knowing these factors could help to explain the phenomenon of decreasing nursing enrolment over the past years (Davidhizar & Bartlett, 2006; Gaynor et al., 2006; Jrasat et al., 2005).

In Singapore, the public perceives nursing as a hospital-based profession. Many people are unfamiliar with the many other career preferences available to registered nurses that can include teaching, research, healthcare management and business enterprises, which has led to an increased demand for well-educated nurses. This lack of public awareness may be one of the reasons why youth tend to undervalue the nursing profession and reject it prematurely (Gavin & William, 2008).

There are, of course, other causes. A quantitative study by Brennan et al. (1996), aiming to predict the variable that may help in recruiting more nursing students, has shown that more than 80% of candidates chose nursing because they enjoy caring for and helping others. These candidates also believed that nursing can be a rewarding and challenging profession. Liegler (2000) reported that the most common identified factors why students chose nursing program as their tertiary study was: “wanted to do nursing”.

Students who dropped out of the nursing program have identified stress as the main implicating factor. They found that the workload encountered during their clinical experience was significantly more demanding and difficult than they had
initially anticipated. These significant positive and negative findings are consistent among the findings reported by Brennan et al. (1996), Liegler (2000) and Jrasat et al. (2005).

Another study conducted by Beggs et al. (2008) examined factors that may lead to young college leavers choosing a career in nursing. Out of 106 participants who took part in this study, only 21% expressed interest in choosing nursing as their career. The reasons that college students cited for being interested in nursing include the positive self-perception of nursing as a caring and helpful profession. In terms of personal qualities, most of the participants see themselves as caring, helpful, patient and understanding. Interestingly, college students who did not express any interest in nursing education also saw themselves in similar terms. This study also reviewed the reasons as to why 79% of the participants were not interested in choosing a career in nursing, and there appeared to be a wide range of deterring factors.

The most commonly cited reason for not choosing a career in nursing was that the career “does not appeal to me”, while low expected pay ranked second (Beggs et al., 2008). Notably, of the participants who cited these two reasons, most were male. Females, on the other hand, mostly cited “dislike the sight of blood” and hard work as their top two reasons for not choosing to become nurses. Other reasons include not being sure what nursing is about and not being able to afford to spend four years in education. Lack of parental support for a career in nursing has also been reported as a factor for the disinterest. Beggs et al. (2008) emphasized the importance of parental influence on students’ preference of nursing study. These factors accounted for more than 60% of the students who had decided against pursuing a nursing career (Beggs et al., 2008).

In a descriptive study, Law and Arthur (2003) found that gender and parental influence featured strongly as factors that affect the decisions of students in Hong Kong whether or not to choose nursing as their career. These factors were also found to remain stable over the three-year period of the study. These results were consistent with a study conducted by Seago et al, (2006) who reported that 28% of high school students were interested in studying nursing, and that their preference
was significantly influenced by parental influence or demographic factors such as gender. Harrigan et al. (2003) also found, due to poor public perception of nursing, parental pressure to be the major factor preventing Native Hawaiian, Samoan and Filipino students from choosing nursing as their career.

Paa and McWhirter (2000) studied the extent to which the peers and parents of high school students influence their career preference, and reported that peers and parental influence do indeed form a part of the students’ consideration, especially in circumstances in which the specifics of the course program are not familiar to them. Interestingly, advice from school counsellors was found to exercise the least influence.

Law and Arthur (2003) reported that many students and their family harboured a view that nursing is a low-status profession that does not generally command respect and is thus not a good preference for higher study. Brodie et al. (2009) found that the main reasons why students based at two British Universities decided to study nursing were the desire for human contact and to help others. Job security also featured prominently. Studies from Rognstad, Aasland and Granum (2004) and Williams et al. (1997) also shared similar findings. There is also further evidence from many studies (e.g., Brodie et al., 2009; Rognstad et al., 2004) that the motives for choosing to study nursing have not changed significantly since the beginning of the new millennium.

Other factors may also play a role when deciding whether or not to study nursing. Scanion (2008) found that the career aspirations of young college leavers’ may dissuade them from studying nursing. Young college leavers were generally sceptical about the influence of television, particularly medical dramas, which they believed to be unrealistic. Medical documentaries, on the other hand, had a greater influence on their thinking and acceptance. In response to the question such as “What study do you currently have in mind?” and “Why was this the case?”, 21% reported that they were undecided. The most popular responses are engineering, then computing, accounting and law, followed by teaching, business, dentistry, and travel related: Nursing was the least popular. The reasons for selecting a particular career were “good salary” as the highest priority, followed
by “good status”, “less stressful”, “fun” and “exciting” and “the ability to afford luxury items”. These reasons are consistent with the reasons given by high school students for not choosing a career in nursing, in that they considered nursing to entail “low pay”, “long hours”, “too much work”, “too stressful” and “not seen as a good profession” (William et al., 1997).

2.3 Research Gap

The factors that influence the decision to pursue a career in nursing have analogous findings with many other studies. In order to predict the career preferences of students, it is important to consider both explicit and tacit factors that influence their decisions.

The theoretical model presented in this study aims to explain the factors influencing student’s preference to enrol in a nursing program. Another objective is to improve the industry’s marketing efforts as an education service provider by examining the interplay between these factors with regards to choosing nursing as a career.

The theoretical model comprises the nursing preference as a dependent variable and five factors, which have been identified in the literature, as independent variables. The four factors are optimism (includes students’ belief that nursing is the preference of career or education and students’ belief that there is advancement in nursing career or education), ability (includes stress management, motivation, perseverance and self-confidence), Nursing Image (includes job security, images, sexual stereotypes and monetary reward), parents image in nursing and peers image in nursing (parental and peers perceptions of nursing and support).
2.4 **Possible Influence on Students’ Preference for Nursing Education**

In most countries, nursing continues to be rated as the most trusted profession (Daly et al., 2003; Marriner, Schwirr, Marticke & May, 1996; Rognstad, 2002; Wilson, 2006). However, despite this accolade, nursing study appears to have lost its gloss as a premium preference for school leavers. In Singapore, there is a declining number of GCE ‘O’ level school leavers joining the nursing program. This will have a significant downstream effect over the next two decades as already the current nursing workforce is facing a serious manpower shortage. There is clearly an extensive and well-defined body of evidence on factors that influence student preference, but it is rather limited in terms of specific reference to Singapore’s context, and especially in the healthcare education industry. More research is therefore needed to identify these factors so that an evidence-based strategy can be formulated to convince school leavers to pursue a nursing career.

Many of the above-mentioned studies suggest that factors such as optimism (Brennan et al., 1996; Liegler, 2000), nursing image (Beggs et al., 2008; Brodie et al., 2009; Williams et al., 1997), ability (Beggs et al., 2008; Davidhizar & Bartlett, 2006; Gaynor et al., 2006), parents image in nursing (Law & Arthurs, 2003; Beggs et al., 2008) and peers image in nursing (Harrigan, et al., 2003; Law & Arthurs, 2003) encourage the decision to study nursing. This is supported by a similar study involving 167 college entrants, which found that the main determinants of students’ college preference included intellectual and social emphases, practicality and the advice of others (Kinzie, Palmer, Hossler, Jascob & Cummings, 2004).

More importantly, no research study has been carried out in Singapore to address the factors that actually influence youth’ preference to enter the nursing profession. Current enrolment marketing strategies and discussions are heavily influenced by foreign literature findings and recommendations. Hence, this study aims to bridge this gap in knowledge and explain the factors that influence the students’ preference in opting to study nursing. This study can find useful application beyond the education institutions, as the wider issues identified can guide the
Health Ministry and the healthcare industry to create policies and strategies that will entice more school-leavers to join the nursing profession. There can also be many avenues for collaboration between the various stakeholders.

Table 2.4 Summary of the possible factors that may influence students’ preference for nursing study in Singapore

<table>
<thead>
<tr>
<th>Possible factors</th>
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<tbody>
<tr>
<td>Nursing Preference</td>
</tr>
<tr>
<td>1. Optimism (Optimism)</td>
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<tr>
<td>2. Ability (Ability)</td>
</tr>
<tr>
<td>3. Nursing Image (NI)</td>
</tr>
<tr>
<td>4. Parents Image in Nursing (PAIN)</td>
</tr>
<tr>
<td>5. Peers Image in Nursing (PEIN)</td>
</tr>
</tbody>
</table>

2.5 Theoretical Framework and Research Hypotheses

As mentioned earlier, the main intention of this study is to explore factors that influence student preference in healthcare education in Singapore. The central question driving this research is “What factors influence students’ preference to enrol in healthcare education programmes in Singapore?” The intention is to examine how these factors affect the decision processes of the students in order to align industry marketing efforts with the preferences of students. This study will consider five factors that have been identified in the literature review: Ability, Optimism, Nursing Image, Parents Image in Nursing and Peers Image in Nursing. Figure 2.5.1 illustrates the conceptual model derived from the literature review.
The theoretical model comprises the students’ nursing preference as a dependent variable, and five factors as independent variables identified in the existing literature. The factors identified are ability (includes stress management, motivation, perseverance and self-confidence), optimism (includes the student’s belief that there is advancement in nursing career or education), nursing image (includes job security, images, sexual stereotypes and monetary reward), and parents and peers influence on nursing (parental and peers perceptions and support). A discussion of these factors is provided in the following sections.
2.5.1 The Relationship between Ability and Optimism

Beggs et al. (2008) and Liegler (2000) examined factors that may convince young college school leavers to choose nursing as a career, reported that the most frequently stated reason why students chose to enrol in the nursing program was that they enjoy caring for and helping others. Williams et al. (1997) found that high school students did not choose nursing as their career because they viewed nursing as having “long hours”, “too much work”, being “too stressful” and feeling that they are “not able to meet the demand”. A quantitative study by Brennan et al. (1996) has shown that more than 80% of candidates chose nursing because they enjoy caring for and helping others. These candidates also believed that nursing can be a rewarding and challenging profession. The findings from these studies can be explained by the fact that nursing is perceived as a very challenging and altruistic profession but the feelings of efficacy directly influence students’ preference to enrol in a nursing programme. Students will only undertake the course if they feel they have the ability to meet the demands of the course. Zysberg and Berry (2005) stated that career choice is decided when one sees a good fit between their ability and what the career is about. Thus, for any nursing education institution to successfully attract and enrol the right students, it must increase the public awareness that nursing is not only a hospital-based professional but it is a rewarding profession that entailed diverse education and career advancement.

At the same time institutions should also address their personal ability and clarify the nature of the demands of the profession. With reference to rationale discussed in this section, the following hypothesis is proposed:

Hypothesis 1: Ability is positively correlated to Optimism
2.5.2 The Relationship between Optimism and Nursing Preference

The study by Brennan et al. (1996) suggested students who prefer nursing as their choice of education or career commonly view nursing as a rewarding and challenging profession. Nurses can be educators, administrators, researchers or provide direct patient care. Young college leavers were found to have career aspirations that may have dissuaded them from studying nursing (Scanion, 2008). In Singapore, the career paths available to nurses include teaching, research, healthcare management and business enterprises. Local academic advancement for nurses range from diplomas, advanced diplomas, bachelor’s degrees, master’s degrees, to PhD degrees. The opportunity to obtain a strong education and ample employment opportunities are two main reasons why school leavers enroll in nursing programmes (Boughn, 2001). With reference to the above literature review, the following hypothesis is proposed:

_Hypothesis 2: Optimism is positively correlated to Nursing Preference_

2.5.3 The Relationship between Ability, Optimism, and Nursing Preference

Singapore has also evolved from a developing country to a developed nation into a multi-racial and technologically diverse society. Over the past decade, Singapore adolescents’ ability to access to technology has increased exponentially. Convenient access to the Internet allows youth to stay connected to information and learning on an international scale. As today adolescents are referred to as ‘Generation Y’, they are known for being self-reliant, critical thinkers and tech-savvy.

For instance, local teens can use the Internet as a means to gain information about nursing programme or career or issues regarding the specific courses or job demands. This knowledge enable them to have deep insights into diverse information on their preference choice and thus provide youth with the opportunity to exercise judgement with regards to the demands of the course and what future does it afford. This new freedom of access to information empowers students to constantly and instantly assess the positivity of a preference course and
at the same time matching self-defined capability level with the preferred course or career demands.

However, studies by Jessup (2001), and Cline et al. (2003) re-iterated the importance of enhancing and promoting the diverse opportunities of nursing education and career, in order to retain and attract youth to enter the profession. There are a few studies that have established the factors and interrelationships of factors including aiming for successful and rewarding career (Optimism) and self-perceived capability (Ability) as intervening variable that predicts students’ college preference (Hooley & Lynch, 1981; Ivy, 2000; Sewell & Shah, 1967).

As mentioned earlier, this study aims to further examine and explore the findings of influence factors that were mentioned in the literature review, by offering the chance to analyse the importance of Optimism as a mediator variable in explaining the relationship between Ability and Nursing Preference.

Based on the preceding reasoning, it is therefore posited that Ability affects students’ preference of a nursing study directly as well as indirectly through Optimism. As such, the following hypothesis is proposed:

_Hypothesis 3: Optimism mediates the relationship between Ability and Nursing Preference._

### 2.5.4 The Relationship between Nursing Image and Nursing Preference

Low expected pay was ranked second among fifteen variables that affected the school leaver’s choosing to enrol in a higher education programme in nursing (Beggs et al., 2008). Notably, most of the participants who cited the reason were male students. Negative implicit factors, such as the impression that nursing is a low-status profession and does not generally command respect, were reported in Law and Arthur’s (2003) study. However, Brodie et al. (2009) found that job security is the prime reason why school leavers choose to study nursing. Hence, the professional image of the profession must be addressed to increase the
attractiveness of enrolling in nursing programmes in tertiary institutions. Jessup (2001) found that retention can be increased if the nursing profession had a more positive public and professional image.

With reference to the above literature review, the following hypothesis is proposed:

_Hypothesis 4: Nursing Image is positively correlated to Nursing Preference._

### 2.5.5 The Relationship between Parents Image in Nursing and Nursing Preference

In the still prevailing Confucian ethnos of Singaporean society, parental influence on the career preference of children starts from when they are young to adolescence and even after the children have reached adulthood. Asian parental influence strongly focuses on their children’s education and their desire for them to pursue higher education for a better and more secure professional career. Conventionally, Asian trends to match occupational as the primary source of identity. Thus, professions such as lawyers, doctors, scientists or economists are acknowledged as the prestige and powerful careers.

Asian parents may perceive nursing as a low prestige job: Merely a physician’s handmaiden with no professional identity. This mind-set contributes to a collective negative stereotype of nurses as a subordinate occupation (Brodie et al., 2003). However, the SARS episode in 2004 has elevated the importance of job security and professionalism of a career in nursing (Foong et al., 1998). The positive public perception of nursing in Singapore has also experienced a soared.

Joseph and Joseph (1998) concluded that family influence the intention of students to pursue higher education, especially in professional faculty. Bowers and Pugh (1972) reiterated the joint positive influence of family, socioeconomics and student’s academic ability as strong indicators of undertaking higher education.
In line with this argument, it is postulated that Parents Image in Nursing leads to students deciding to pursue a nursing career. The following hypothesis is therefore proposed:

_Hypothesis 5: Parents Nursing Image is positively correlated to Nursing Preference._

### 2.5.6 The Relationship between Peers Image in Nursing and Nursing Preference

In a similar context, peers image in nursing was found to have a significant influence on students’ preference to enrol in a nursing programme. Paa and McWhirter (2000) studied the effect of peers pressures on high school students’ career preferences. They reported that influence from peers significantly influence the eventual career preference of students, especially in circumstances when the specifics of the course program are not familiar to the students. Interestingly, advice from these students’ school counsellors influenced them the least.

Studies (e.g., Nora & Canbrera, 1992; Okrainec, 1994; Wilson & Mitchell, 1999) reported that peers’ perception of nursing are; ‘nursing is a female profession’; ‘nursing is a challenging but demanding career’; ‘nursing is an altruism profession’; and ‘nurses only work in hospital’. This positive and negative image of nursing held by peers may impact greatly on the final decision on student’s preference on nursing programme choice. Whilst acknowledging the important contribution of earlier studies, this research also aims to develop and extend the work of previous studies by investigating factors that influence and dissuade secondary school leavers in Singapore from choosing nursing as their course of tertiary education.

Based on the rationale discussed in this section, the following hypothesis is proposed:

_Hypothesis 6: Peers Nursing Image is positively correlated to Nursing Preference_
2.6 **Chapter Summary**

Several key theoretical issues associated with the proposed research question on the factors that influence students deciding to choose to undertake healthcare education have been reviewed. It is important to find out whether some of these issues can be applied to the Singaporean context.

Based on the theory and practise gap identified in this chapter, a study has been proposed to investigate the relationship between the factors identified and students deciding to choose to undertake healthcare education in Singapore (the dependent variable). The five influential factors identified as independent variables are i) Ability, ii) Optimism, iii) Nursing Image, iv) Parents Image in Nursing and v) Peers Image in Nursing. The following six hypotheses are proposed taking into account the arguments discussed in the preceding sections. From these, an overarching conceptual model is developed.

*Hypothesis 1:* Ability is positively correlated to Optimism

*Hypothesis 2:* Optimism is positively correlated to Nursing Preference.

*Hypothesis 3:* Optimism mediates the relationship between Ability and Nursing Preference.

*Hypothesis 4:* Nursing Image is positively correlated to Nursing Preference.

*Hypothesis 5:* Parents Nursing Image is positively correlated to Nursing Preference.

*Hypothesis 6:* Peers Nursing Image is positively correlated to Nursing Preference.

In the next chapter, an explanation for adopting the positivist research paradigm is justified. The research methodology that will be used to address the research questions and hypotheses is also presented in the next chapter.
CHAPTER THREE
MEHODOLOGY

3.1 INTRODUCTION

The aim of this research is to contribute to the literature by identifying internal and external factors that have led local students to enrol in nursing programmes. The literature reviewed in Chapter Two identified various factors that may influence post-secondary school leavers’ decision regarding whether or not to attend nursing college and which healthcare education institute to attend. Previous studies (Beggs et al., 2008; Brennan et al., 1996; Hooley & Lynch, 1981; Law & Arthur, 2003; Nora & Canbrera, 1992; Scanion, 2008) indicate that factors such as socio-economic status, family and friends, and students’ personal characteristics influence students’ preference. These studies led to the construction of a research framework and the formulation of six hypotheses.

This chapter contains a discussion of reasons for utilising positivist research paradigm and methodology to test the hypotheses. Thereafter an illustration on research design, sampling and sampling technique adopted, procedures used for data collection, data analysis and ethical considerations are also discussed.

This chapter is organised in the following manner:

- An examination of the common research paradigms used in social and business studies, and a justification for the research paradigm and methodology chosen for this study are provided in Section 3.2;
- A description of the various types of research design typically used in social and business studies, and a justification for the research design to be adopted in this study are provided in Section 3.3;
- Section 3.4 contains an overview of the different types of sampling design, an explanation for using a specific sampling method for this study, and an examination of the sampling frame and population for this study;
• The design of the questionnaire is discussed in Section 3.5;
• A discussion of the different types of data collection methods that are applicable to quantitative studies and a justification for the data collection method to be used in this study are provided in Section 3.6;
• A discussion of measurement techniques and the different types of scales used in social and business studies, and an explanation for the selection of the scales to be used in this study are provided in Section 3.7;
• Ethical principles in research are discussed in Section 3.8; and
• A conclusion to the chapter is provided in Section 3.9.
3.2 Research Paradigms

Social science researchers use a wide variety of research methods to gain knowledge and enhance theory. Two of the most popular approaches are positivism and interpretivism (Galliers, 1992).

3.2.1 Positivism

Positivism looks at reality as stable and assumes it can be observed and explained objectively (Minger 2003). Phenomena are viewed as isolated and observations should be repeatable. This often involves changing reality by varying an independent variable so as to detect regularities in and to form connections between different variables. With this approach, prediction can be made on the basis of consistency from the previous observation and explanation. Many empirical studies on students’ decision to enrol in tertiary nursing education (Beggs et al., 2008; Bolan & Grainger, 2003; Dragon, 2009; Paa & McWhirter, 2000) have adopted a positivist approach.

3.2.2 Interpretivism

Interpretivism assumes that reality is subjective. The study of phenomena encompasses acknowledgement that researchers’ experiences and involvement influence the phenomena they study. Consequently give rise to many findings and this is the scientific knowledge they are tracking (Galliers, 1992). In Gavin and William (2008) paradigmatic case study, the emphasis was on explaining the factors that affect quality high school students and nursing career. Similarly, the studies of Jessup (2001) and Sweet (2004) were interpretivist.
3.3 **Research Design**

Before introducing the research methodology that this research used, the following sections attempt to explore some of the methodologies; the key features, respective strengths and weaknesses. In the following paragraph, a justification for the chosen methodology is presented.

Case study design is one of the research strategies that can be either positivist or interpretivist in nature depending on the method of data collection and the method of analysis. In a case study, the researcher aims to intensively explore a particular issue. Although the number of subjects tends to be small, for example a single organisation, the number of variables examined may be large. A well-designed case study can be used as evidence to support or invalidate theories (Burns & Grove, 2007). If only one organisation is examined, the generalisability of the findings is questionable. Furthermore, different researchers may interpret the same data differently thus adding research invalidity and biases.

There are a variety of Experimental designs ranging from simple Laboratory experimental approaches to complex Field experimental methods. Research has to develop an intervention to facilitate the search for knowledge and analyses of causality in which complete control is not possible (Nora & Canbrera, 1992). Wagner and Fard (2009) conducted an experimental research design to examine factors that influence students choosing to undertake higher education. However, the control experimental situation was too simple and hence the findings may not be valid. The experiment also had problems in achieving sufficient control to make replication viable.

A Survey is a non-experimental design. Surveys allow the researcher to obtain information such as practices, situations or opinions at one point in time through questionnaires or personal interviews. This approach limits the possibility of gaining insights relating to the causes of or the processes involved in the phenomena being studied (Burns & Grove, 2007).
A longitudinal design looks at changes in the same subject over an extended period of time. This is a very expensive and time-consuming design. The researcher will select the area to be examined, the variables and their measurement before data collection commences. Loss of subjects can be high and can decrease the validity of the findings. As such, subject bias may be present (Burns & Grove, 2007).

According to the research objective, this study adopts a quantitative descriptive design and is exploratory. The descriptive approach is used to identify factors that influence students to choose to enrol in healthcare education. Due to the limited number of studies that have been conducted in Singapore, exploratory research is deemed appropriate.

According to Fletcher (2004), descriptive research is appropriate to identify and describe the characteristics of an existing phenomenon or population of interest. It is appropriate for an in-depth understanding of a topic but provides no explanation for the causes of the phenomena. A descriptive study is helpful when the research objective is to gain a better understanding of various influences on a variable of interest (Burns & Grove, 2007). In this context, an exploratory study was undertaken by testing hypotheses for a clearer understanding of the various factors that influence students to choose to enrol in healthcare education.

In order to understand relationships amongst variables, exploratory research and some theoretical frameworks or models are generally required to understand and predict the relationships (Fletcher, 2004; Zepke & Leach, 2005). Therefore, in order to move beyond mere description, exploratory approach is utilised to investigate relationships amongst ability, optimism, nursing image, parents image in nursing and peers image in nursing as well as to examine the appropriateness of the proposed theoretical framework.
3.4 SAMPLING

Sampling is a process which involves deciding on a group of people, events or other elements with which to conduct a study (Burns & Grove, 2007). The differences between the various sampling procedures are discussed in section 3.4.1 to 3.4.3.

3.4.1 Target Population

The sampling process begins with identifying the target population that the researcher wishes to investigate (Sekaran, 2003). It is important to identify the correct population to prevent invalid data and limit generalization of the findings of the study. Burns and Grove (2007) reiterated the importance of defining and identifying the correct target population, as it is the basis for data collection.

3.4.2 Sample Frame

The next step involves creating a sample frame, which is also known as the working population from which a sample may be drawn from the target population (Wagner & Fard, 2009). A sample frame is used to achieve a representative sample for statistical inferences and randomise sampling (Fletcher, 2004).

In selecting the population frame for this study, an attempt was made to select a nursing college with a diverse student population. The School of Health Sciences (SHS) in Nanyang Polytechnic in Singapore was selected as the sampling frame. The School of Health Sciences (SHS) in Nanyang Polytechnic is a pioneer in providing healthcare tertiary education in Singapore. It is a comprehensive tertiary institute that offers college healthcare programs in more than 40 academic and professional fields. The reputation of School of Health Sciences (SHS) as a centre of learning has attracted many students from Singapore and other countries. For the period, 2004 to 2007, SHS recruited an average of eight hundred post-secondary students per semester. Semesters run over a period of 21 weeks, followed by 2 weeks of examination.
3.4.3 Sampling Design

Sampling method is the technique involved to analysis the characteristic of the identified population. There are two general categories of sampling; (1) Probability and (2) Non Probability sampling (Sekaran, 2003).

In probability samples, every element in the target population has equal chance to be selected for the study. To achieve this probability, the sample is obtained randomly and this reduces the opportunity for systematic bias (Burns & Grove, 2007) and hence increases the representativeness of the sample. Probability sampling designs include: (1) Simple random sampling, (2) Cluster random sampling (3) Stratified random sampling and (4) Systematic sampling.

Non probability samples do not allow the study’s findings to be generalised because not every element of the population has a chance to participate in the study (Sekaran, 2003). It is a methodology where the researcher limits the findings to the selected persons or elements.

There are five sampling designs available for conducting non probability samples: (1) Convenience sampling, (2) Network sampling (3) Purposive sampling, (4) Quota sampling, and (5) Theoretical sampling.

Due to the nature of this study, only nursing college students were invited to participate in this study. The study targeted Year One to Year Three students who were enrolled in a three-year Nursing Diploma programme during the second semester of 2009.

In this study, a stratified random sampling method was chosen. The sample is primarily divided into exclusive group or relevant, appropriate subjects that are meaningful for the context of the study. As equal chance is given to respective years of student, proportionate stratified sampling is employed.
3.4.4 Sample Size

Sample size determination is an important part of planning a quantitative study. An adequate sample size helps to provide reliable estimates of population parameters. If the sample is too small, the results may not be reliable and if the sample is too large, it could be a waste of resources (Lenth, 2001).

A reliable and valid sample depends on which approach is taken. One can specify a desired level of confidence (or Type I error), usually a 95% confidence level, to determine the sample size (Sekaran, 2003). Precision is another approach that enables the researcher to tell how close the population parameters have been estimated within a study (Burns & Grove, 2007).

In this study the sample size is determined by Roscoce’s (1975) rule of thumb. A sample size of larger than 30 and less than 500 will be considered acceptable. Thus, four hundred nursing students, respectively from Year One to Year Three were targeted.

A total of one thousand, two hundred nursing students were invited to participate in this study. The sample size is considered sufficient based on Hair et al.’s (1998) recommendations for sample size.

3.5 Questionnaire Design

To ensure reliable and valid results, variables should be selected on the basis of the ability to represent and measure the concept accurately and consistently. Reliability and validity must be sufficiently addressed to prevent measurement error (Hair, Babin, Money & Samouel, 2003). The term ‘reliability’ is associated with consistency whereas the term ‘validity’ is associated with accuracy (Hair et al., 1998). To prevent measurement error, items designed in the questionnaire should accurately represent the characteristics being measured. Therefore when designing questionnaire, it must be clear and allows the participants to select their responses correctly.
Consistency in research findings demonstrates the reliability of the study. A survey instrument (or questionnaire) is considered reliable if consistent results are obtained from its repeated application (Hair et al., 2003). Commonly, validity defines a measure measuring the construct it is supposed to measure (Hair et al., 2003).

In the design phase of the questionnaire, specific attention is undertaken to ensure the effective measurement of each of the constructs under investigation. Each construct will be measured with a set multi-item scales (Hair et al., 1998). The resulting individual items scores will be computed into a composite multi-item scale index and correlated in order ensure reliability.

To ensure the validity of the questionnaire, previously validated measures will be used as far as possible. When this is not possible, a new measure will be constructed to measure the constructs under investigation. A five-point agree/disagree Likert scale is to be used to measure each of the constructs.

There are a total of 39 items; Part A consists of 29 items on possible influence factors, Part B consists of 5 items on choosing to study nursing, and Part C consists of 5 demographic items. Twenty-nine items were used to identify factors influencing participants’ preference in nursing.

A five-point Likert scale (1 = strongly disagree to 5 = strongly agree) was used for all of the items. The classification of the factors is derived from the literature that was reviewed. These 34 items were arranged into six categories:

1) Ability
2) Optimism
3) Nursing Image
4) Parents Image in Nursing
5) Peers Image in Nursing
6) Nursing Preference.
3.5.1 Ability

Items 1 to 7 are used to measure Ability. These items relate to the study by Jrasat et al. (2005), which found that students who dropped out of the nursing programme reported doing so due to high levels of stress encountered in the programme. They found that despite positive personal traits such as “always wanted to be nurse, caring and helping personality”, the workload encountered during the student’s clinical experience was significantly more demanding and difficult than what they had initially anticipated. One of the hypotheses is that students’ perception of their ability to cope with the perceived demands of a nursing career will be associated with their preference to pursue a nursing career.

The following items were used to measure Ability;

1. I have always wanted to be a nurse
2. I am capable of caring and helping others.
3. I am able to understand others in need.
4. I am able to cope in demanding and stressful environment.
5. I enjoy meeting people.
6. I have good interpersonal skills
7. Nursing is too difficult for me (R).

3.5.2 Optimism

In items 8 to 14, participants were asked if the diverse education and career advancement in nursing influenced their preference of Nursing. Scanion’s (2008) study suggests that young college-leavers have negative career and education aspirational perceptions of nursing and these dissuaded them from undertaking a tertiary nursing course. Scanion (2008) also reported that young college-leavers are generally sceptical about the accuracy of the nursing image as portrayed in medical dramas on television: They considered the portrayal of excitement in nursing to be unrealistic. On the other hand, medical documentaries are deemed to be more realistic and wield a greater influence on their thinking with regards to
the nursing profession. One of the hypotheses of this study is that Optimism has a direct positive effect on students’ preference of post-secondary study.

The following items were used to measure Optimism:

8. Nursing study enables one to gain an acceptable tertiary education and appreciation of ideas.
9. Nursing study allows me to learn more about applicable knowledge.
10. Nursing study prepares me for my chosen career.
11. Nursing provides extensive job mobility and opportunities.
12. I am positive of my career advancement in nursing.
13. I am positive of my education advancement in nursing.
14. Nursing provides opportunity to grow professionally.

3.5.3 Nursing Image

Studies by Rognstad et al. (2004), Williams et al. (1997), and Brodie et al (2009) highlighted the point that the effect of job security, the image of the field of nursing, sexual stereotypes and the issue of pay are some of the reasons for choosing a nursing education. Items 15 to 21, categorised under socio-economic status factors, explore students’ preference by asking whether nursing is viewed positively in Singapore as a profession. Is nursing a caring and helpful profession? Is it a profession that commends respects and recognition? It is hypothesized that the level of student’s perception of nursing image will affect their likelihood of choosing a nursing program.

The following items were used to measure Nursing Image:

15. Nursing is a caring and helpful profession.
16. Nursing is a challenging and exciting profession.
17. Nursing is a professional that exercise great autonomy.
18. Nursing commends respect and recognition.
19. Nursing provides job security.
20. Nursing is a stressful and demanding profession.
21. Nursing is a lowly paid profession. (R)
3.5.4 Parents Image in Nursing

Participants were asked to respond to three items about the opinions of their parents with regards to nursing as a profession. These items were developed from Law and Arthur (2003), and Paa and McWhirter (2000) who found that parents influenced the decisions of students regarding which college to attend.

The following items were used to measure Parents Image in Nursing:

1. I chose nursing education because my parent(s) is/are in the same profession.
2. My parent(s) believes(s) that nursing is a reliable and rewarding career.
3. My parent(s) is/are positive about nursing education.

3.5.5 Peers Image in Nursing

Participants were asked to respond to five items about the opinions of their peers’ perception of nursing as a profession. These items were developed from Nora and Canbrera (1992), Okrainec (1994), and Wilson and Mitchell (1999), found that peer influence, played an important role in determining the college preferences of students.

The following items were used to measure Peers Image in Nursing:

1. I chose nursing education because my friend(s) is/are in the same profession.
2. My friend(s) think(s) that nursing is an altruism profession.
3. My friend(s) think(s) that nursing is an appealing profession.
4. My friend(s) think(s) that nursing is a female profession. (R)
5. My friend(s) is/are positive about nursing education.
3.5.6 Nursing Preference

Part B of the revised questionnaire consists of 5 items on Nursing Preference. Participants were asked to respond to five items about the opinions of their college preference. These items were developed from Ozga and Sukhnandan (1997) who found that a good fit between the student and their course of study played an important role in determining the performance outcome of the student.

The items that are used to measure Nursing Preference are:

1. Nursing is my first choice of tertiary education.
2. Nursing is my first choice of career.
3. I have always wanted to be a nurse.
4. I am satisfied with my education choice
5. I am thinking of making a change in my education choice (R).

3.5.6 Demographics

The final portion of the revised questionnaire comprises of the following 5 demographic items: age, gender, ethnic background, entry education level, and year of study. Baumgartner and Strong (1998) believe that presenting demographic questions at the end of the revised questionnaire can prevent participants from feeling threatened or embarrassed.

3.5.7 Pilot Study

To establish content validity, reliability and readability, the initial questionnaire was reviewed by the research supervisor on June 10, 2009. Approval was obtained from Southern Cross University Human Research Ethics Committee on December 21, 2009 (HREC approval number ECN-04-59). Pilot studies were also conducted on a sample of 50 advanced diploma nursing students in the same institution. According to Sekaran (2003), pilot studies are important to detect ambiguity or bias in the questionnaire. Official approvals were obtained from the institution Principal Chief Executive Officer and School Director. The results of
the pilot study were used to determine if any of the items in the questionnaire needed to be clarified. The pilot study indicated that the items were well received by participants and no major issues in the wording of the 39 items or the layout of the questionnaire were reported. After participating in the pilot study, these 50 advanced diploma students were not involved in the actual study.

3.6 DATA COLLECTION

Approval was granted by the school director and ethics committee to invite the students to complete the revised questionnaire in the lecture auditorium or tutorial classroom. For this study, only primary data are obtained from participants. According to Cooper and Schindler (2003), the survey method is one of the most commonly used tools for collecting primary data from a representative sample of individuals. To achieve a better response rate, the researcher personally visited the lecture and tutorial venues to administer the revised questionnaire. The revised questionnaire was administered without the participants having prior knowledge that they would be invited to participate in the study. This was done to ensure that their responses would be spontaneous, and to increase the probability that their responses reflected their true feelings.

Each revised questionnaire package consists of a cover letter, a consent form, and the 39-item revised questionnaire (as shown in Appendix B).

The cover letter and consent form stated the purpose of this study, highlighted that all of the data received from the participants would remain anonymous and confidential, and informed participants that they could withdraw from the study at any time. The students were also reassured that non-participation would not have an impact on their school grades, and that no questions of a sensitive nature are in the revised questionnaire. The language used in all documents in the revised questionnaire package was kept simple and written in English.

The survey was conducted during the student’s free period, which increases the likelihood that the participants would complete and return the revised
questionnaire. Return envelopes were given to a volunteer student from each class with specific instructions to collect all of the forms at the end of the classes. The completed forms were personally collected by the researcher from each volunteer.

In total, 1200 revised questionnaire packages were distributed to first-year, second-year and third-year nursing cohorts. Although all of the classes from each cohort had been approached, only 800 revised questionnaires were returned. Due to the Singapore Formula One events, some students from SHS who were involved in the First Aid station and were off campus for rehearsal decided they did not want to participate in the study. Students on medical leave are another reason why students did not participate in the study. However, more than 50% of the revised questionnaires were returned completed, which can be considered a high response rate and thus a representative sample of the selected institution.

3.7 MEASUREMENT TECHNIQUE

Once data have been collected and accuracy checks conducted, they were then entered by the researcher into an SPSS program (Version 14.0). In order to answer all of the research questions and test the stated hypotheses, data analysis comprises three components.

Descriptive analysis was used to analyse the common factors that may influence the students’ decision to enrol in a tertiary nursing programme. The mean, percentage and standard deviation will clearly meet the objective to define the most common factors of influence.

Principal axis factoring is used to summarize and identify underlying factors (Basilevsky, 1994). 30 items (possible influence factors) are categorized into five categories (subscales): ability, optimism, nursing image, parents influence on nursing and peers influence on nursing. The following steps need to be followed when conducting a principal axis factoring:
1) The correlation matrix needs to be examined to justify the application of principal component analysis.

2) Bartlett’s test of sphericity needs to be used to determine the appropriateness of principal component analysis and also measure the adequacy of sampling (MAS).

3) Eigenvalue to determine the number of factors retained for interpretation. Only factors with eigenvalue greater than 1 are considered significant to be used as a representative variable (Basilevsky, 1994).

To observe the relationship between the independent variables and Nursing Preference, Pearson’s correlation coefficient is used. The significance level of $p < .05$ is used to indicate a significant relationship between variables.

Multiple linear regression analysis will be used to examine the possible effect of an intervening variable (optimism) on the association between an independent variable (ability) and nursing preference (dependent variable).

Baron and Kenny’s (1986) mediation technique was used to determine the possible mediation effect of optimism on the other independent variables affecting nursing preference (Hypotheses 3). In order to establish positive mediation, the following regression equations are observed: regressing the nursing preference (dependent variable) on the influence factors (independent variable) and finding the influence factors to be significantly related to student preference (Step 1); regressing optimism (mediator) on the influence factor and finding the influence factor to be significantly correlated to ability (Step 2); regressing nursing preference on optimism and a significant relationship must be presence (Step 3); and finally, regressing nursing preference on both influence factor; optimism and ability (Step 4). Full mediation holds if the influence factors no longer affect nursing preference and optimism has been controlled. Partial mediation occurs when the relationship between influence factor and nursing preference is significant but less that that found in Step 1.
3.8 Ethical Considerations

Ethical issues on business research, particularly the use of deceptive means to collect information, have been a major concern expressed by many (Cavana, Delahaye & Sekaran, 2001). Hence, there is a need to ensure that ethical practices are adopted through all phases of the research, in particular during data collection, analysis, interpretation and reporting. As espoused by Diener and Crandal (1978; cited in Bryman, 2004: 509), there are four aspects of ethics that has to be defended in all social/business research:

i. ensure no harm comes to participants as result of the study,
ii. ensure informed consent is obtained from participants,
iii. protect the privacy of participants; and
iv. ensure that deception is not used.

These principles of good ethical practice are also found in the codes of practice of the various professional bodies, such as the British Sociological Association, the British Psychological Society and the American Sociological Association (Bryman, 2004). In the conduct of this research, the above-mentioned principles will be strictly adhered to. Additionally, permission to conduct the study was sought from the University’s Human Research Ethics Committee prior to actual field work.

In compliance with the ethics committee’s requirements, the participants’ interests are above those of the study. This study adheres strictly to the following principles:

i. Participation is strictly voluntary. All participants have the right to withdraw at any point in time without the threat of penalty.
ii. A brief is conducted for all potential participants explaining the purpose of the research study. Each student will then be given a revised questionnaire accompanied by an invitation letter and information sheet. Consent is implied if the students choose to complete the revised questionnaires.
iii. No student identification is required for the revised questionnaire. Students will be assured of anonymity and encouraged to be open and honest in their answers.

3.9 Chapter Summary

This chapter provided a discussion of the research methodology used for this study. The process of sampling, data collection and data analysis were described. The quantitative methodology approach was selected as the research problems are well-defined. A systematic review of the current methodologies used in published studies and academic textbooks that described similar phenomena also showed that this method is well accepted by academics and practitioners as an appropriate for conducting studies that aim to test hypotheses.

This study adopted the stratified sampling method for probability sampling. This was chosen as one of the main aims of this study is the generalisability of the research findings. All the currently enrolled nursing students in Nanyang Polytechnic in Singapore are included in the study's target population.

This study chose to conduct face-to-face survey method of data collection as it was considered the most appropriate choice among the other possible data-collection methods to achieve a better response rate. The revised questionnaire was personally administered by the researcher during lectures and tutorial sessions. The revised questionnaire package consisted of a cover letter, a consent form, and the 39-item revised questionnaire.

The revised questionnaire was designed to yield valid and reliable data. There are four levels measurement studied, namely: nominal, ordinal, interval and ratio. The measure for each construct was carefully selected in order to maximize accuracy. The revised questionnaire uses ordinal and nominal scales to capture participants’ demographic information but adopts a 5-point Likert scale, often
referred to as an interval scale in business/social studies, to facilitate data processing for quantitative analysis.

Ethical considerations were weaved into each phase of this study. This included the data-collection phase and also the data analysis phase and reporting phase. Under no circumstances will any of the participant's interests be placed below those of this study.

The data analysis findings will be provided in the following chapter.
CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

This chapter will provide a discussion of the study findings from completed data analyses. A total of 800 completed revised questionnaires were returned to the researcher.

SPSS version 14.0 was used to check the accuracy of the data; univariate descriptive statistics for each variable were examined, and out-of-range values were verified. Missing values from the data were totally removed from this data file. The final sample size is 747 complete because some revised questionnaires could not be used due to incorrect or incomplete responses. The final response rate is approximately 62%.

This chapter is organised in the following manner:

- The conceptual model and hypotheses to be tested is identified in Section 4.2.
- Details of the respondents’ demographic results are provided in Section 4.3.
- A descriptive analysis finding is reported in Section 4.4.
- The results of the measurement model testing are reported in Section 4.5.
- The findings from the internal reliability analysis are reported in Section 4.6.
- Hypothesis testing findings are reported in Section 4.7.
- Details of the exploratory analysis findings with a model are derived in Section 4.7.
- The summary of the main findings is discussed in Section 4.7.
4.2 Research Hypotheses

Hypothesis 1: Ability is positively correlated to Optimism (i.e., being optimistic about having a successful nursing career).

Hypothesis 2: Optimism is positively correlated to Nursing Preference.

Hypothesis 3: Optimism mediates the relationship between Ability and Nursing Preference.

Hypothesis 4: Nursing Image is positively correlated to Nursing Preference.

Hypothesis 5: Parents Nursing Image is positively correlated to Nursing Preference.

Hypothesis 6: Peers Nursing Image is positively correlated to Nursing Preference.

Figure 4.2.1: Conceptual model of the hypotheses

Notes: NI = Nursing Image, PAIN = Parents Image in Nursing, PEIN = Peers Image in Nursing, NP = Nursing Preference
4.3 **Review of Demographic Variables**

An analysis was conducted to understand the profile of the respondents who participated in the study. The respondents’ demographic findings are as follows:

i. age,
ii. gender,
iii. educational level,
iv. nationality,
v. programme stage.

4.3.1 **Age of Respondents**

The participants’ ages range from 16 years to 27 years. The majority of the participants (35.8%) are aged between 19 years and 21 years. 31.5% of participants are between the ages of 16 to 18 and 17.8% are between the ages of 22 and to 25.

![Age of Respondents](image)

*Figure 4.3.1 – Age of Respondents*
4.3.2 Gender of Respondents

The majority of the participants are females (86.9%). Male and Female students responses were compared during the pilot study and no significant difference were reported. Thus, no gender comparison were analysed in the actual study.

![Figure 4.3.2 – Gender of Respondents](image)

4.3.3 Educational level of Respondents

71.4% of the participants are secondary school-leavers who have completed the Singapore GCE ‘O’ level, 15.4% were direct NITEC enrol led students, 3.9% of the participants hold a GCE ‘A’ level and 9.4% hold an overseas pre-college certificate.

![Figure 4.3.3 – Education Level of Respondents](image)
4.3.4 Ethnicity of respondents

The Ethnicity profiles of the participants consist of Chinese (58.4%), Malay (24.4%), Indian (8.2%) and Others (9.2%).

![Figure 4.3.4 - Ethnicity of Respondents](image)

4.3.5 Program stage of respondents

Most of the participants (71%) are first-year students in the nursing program, 11.9% of second-year students and 5.1% are final-year students. 12% of students who participated in the study are repeat students who had failed a module due to either medical or academic reasons.

![Figure 4.3.5 – Program Level of Respondents](image)
4.4 Descriptive Analysis

Descriptive statistics are provided for the following variables:

i. Ability,
ii. Optimism,
iii. Nursing Image,
iv. Parents Image in Nursing,
v. Peers Image in Nursing, and
vi. Nursing Preference

The tabulated table 4.4.1 provides a summary of the descriptive statistics for each variable. The table presents the mean, median, mode, standard deviation, variance, minimum, maximum, skewness, kurtosis and the standard deviation of the sample. The central tendencies and dispersion of each of the variables in relation to the population is also reported.

Table 4.4.1: Descriptive Statistic

<table>
<thead>
<tr>
<th></th>
<th>Optimism</th>
<th>NI</th>
<th>Ability</th>
<th>PAIN</th>
<th>PEIN</th>
<th>NP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>747</td>
<td>747</td>
<td>747</td>
<td>747</td>
<td>747</td>
<td>747</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mean</td>
<td>1.9</td>
<td>1.87</td>
<td>2.4</td>
<td>2.94</td>
<td>2.85</td>
<td>2.65</td>
</tr>
<tr>
<td>Median</td>
<td>2.00</td>
<td>1.89</td>
<td>2.43</td>
<td>2.88</td>
<td>2.78</td>
<td>2.75</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>.526</td>
<td>.395</td>
<td>.484</td>
<td>.553</td>
<td>.544</td>
<td>0.693</td>
</tr>
<tr>
<td>Skewness</td>
<td>.289</td>
<td>.188</td>
<td>.087</td>
<td>.111</td>
<td>.135</td>
<td>.289</td>
</tr>
<tr>
<td>Std. Error of Skewness</td>
<td>.090</td>
<td>.090</td>
<td>.090</td>
<td>.090</td>
<td>.090</td>
<td>0.90</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>.364</td>
<td>.512</td>
<td>.310</td>
<td>.487</td>
<td>.530</td>
<td>-.404</td>
</tr>
<tr>
<td>Std. Error of Kurtosis</td>
<td>.179</td>
<td>.179</td>
<td>.179</td>
<td>.179</td>
<td>.179</td>
<td>.179</td>
</tr>
</tbody>
</table>
To assess the normality of a frequency distribution of the population, skewness and kurtosis must be insignificant. (Bryman, 1984). According to Tabachnick and Fidell (1996), the criteria of skew significant for a sample size that is greater than 300, if this value is less than an absolute of 3.29. Each of the variables is reviewed as follows:

Normality of the distribution of the score of the variable Ability was investigated. The values of skew and kurtosis were calculated for the distribution of scores of this variable. To test whether the distribution’s skew significantly deviated from that of a normal distribution, the value for the skew (.087) was divided by the standard error of the skew (.090). This yielded a $z$-score of 0.97 which was interpreted to be not significant as it does not exceed an absolute value of 3.29. A similar procedure was conducted for kurtosis where the value for kurtosis (.311) was divided by the standard error of kurtosis (.179). This yielded a $z$-score of 1.74 which was interpreted to be also not significant as it has does not exceed an absolute value of 3.29. The frequency distribution for Ability provided in Figure 4.4.1 and the information provided in Table 4.4.1 indicate the distribution for Ability is normal.
Normality of the distribution of the score of the variable Optimism was investigated. The values of skewness and kurtosis were calculated for the distribution of scores of this variable. To test whether the distribution’s skew significantly deviated from that of a normal distribution, the value for the skew (.289) was divided by the standard error of the skew (.090). This yielded a z-score of 3.21 which was interpreted to be not significant as it does not exceed an absolute value of 3.29. A similar procedure was conducted for kurtosis where the value for kurtosis (.364) was divided by the standard error of kurtosis (.179). This yielded a z-score (2.03) which was interpreted to be not significant as it did not exceed an absolute value of 3.29. The frequency distribution for Optimism provided in Figure 4.4.2 and the information provided in Table 4.4.1 indicate the distribution for Optimism is normal. If the value for skew or kurtosis is significant, then transforming the scores is necessary.
Normality of the distribution of the score of the variable Nursing Image was investigated. The values of skew and kurtosis were calculated for the distribution of scores of this variable. To test whether the distribution’s skew significantly deviated from that of a normal distribution, the value for the skew (0.188) was divided by the standard error of the skew (0.090). This yielded a $z$-score of 2.08 which was interpreted to be not significant as it does not exceed an absolute value of 3.29. A similar procedure was conducted for kurtosis where the value for kurtosis (0.512) was divided by the standard error of kurtosis (0.179). This yielded a $z$-score of 2.86 which was interpreted to be also not significant as it has not exceeded an absolute value of 3.29. The frequency distribution for Nursing Image provided in Figure 4.4.3 and the information provided in Table 4.4.1 indicate the distribution for Nursing Image is normal.
Normality of the distribution of the score of the variable Parents Image in Nursing was investigated. The values of skew and kurtosis were calculated for the distribution of scores of this variable. To test whether the distribution’s skew significantly deviated from that of a normal distribution, the value for the skew (0.111) was divided by the standard error of the skew (0.090). This yielded a z-score of 1.23 which was interpreted to be non-significant as it does not exceed an absolute value of 3.29. A similar procedure was conducted for kurtosis where the value for kurtosis (0.487) was divided by the standard error of kurtosis (0.179). This yielded a z-score (2.72) which was interpreted to be also non-significant as it does not exceed an absolute value of 3.29. The frequency distribution for Parents Image in Nursing provided in Figure 4.4.4 and the information provided in Table 4.4.1 indicate the distribution for Parents Image in Nursing is normal.
Normality of the distribution of the score of the variable Peers Image in Nursing was investigated. The values of skew and kurtosis were calculated for the distribution of scores of this variable. To test whether the distribution’s skew significantly deviated from that of a normal distribution, the value for the skew (.135) was divided by the standard error of the skew (.090). This yielded a z-score of 1.5 which was interpreted to be non-significant as it does not exceed an absolute value of 3.29. A similar procedure was conducted for kurtosis where the value for kurtosis (.530) was divided by the standard error of kurtosis (.179). This yielded a z-score (2.9) which was interpreted to be also non-significant as it does not exceed an absolute value of 3.29. The frequency distribution for Peers Image in Nursing provided in Figure 4.4.5 and the information provided in Table 4.4.1 indicate the distribution for Peers Image in Nursing is normal.
Normality of the distribution of the score of the variable Nursing Preference was investigated. The values of skew and kurtosis were calculated for the distribution of scores of this variable. To test whether the distribution’s skew significantly deviated from that of a normal distribution, the value for the skew (.289) was divided by the standard error of the skew (.090). This yielded a z-score of 3.21 which was interpreted to be non-significant as it does not exceed an absolute value of 3.29. A similar procedure was conducted for kurtosis where the value for kurtosis (-.404) was divided by the standard error of kurtosis (.179). This yielded a z-score (-2.26) which was interpreted to be not significant as it did not exceed an absolute value of 3.29. The frequency distribution for Nursing Preference provided in Figure 4.4.6 and the information provided in Table 4.4.1 indicate the distribution for Nursing Preference is normal.
4.5 Testing the Measurement Model

A factor analysis using the Principal Axis Factoring option in SPSS with Varimax Rotation was used to examine the measurement model. A six-factor solution was sought as there are six constructs in the conceptual model. The findings of this analysis are presented in Table 4.5.1, which shows that only 15 of the 34 items survived this analysis. The revised questionnaire was constructed from extant literatures and most of factors derived from the research were influenced by western cultures. However, the respondents in this were mainly students from Asia. Hence in this context, cultural differences may influence why only 15 items survived the factor analysis.

A cut-off value of 0.4 was used as an indicator of a satisfactory loading. An overall score for each of the constructs in the conceptual model was obtained by taking the average of the items for each scale shown in Table 4.5.1.

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td>.886</td>
<td></td>
<td></td>
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<td>NP2</td>
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<td>Optimism5</td>
<td></td>
<td>.863</td>
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<tr>
<td>Optimism6</td>
<td></td>
<td>.880</td>
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<td></td>
</tr>
<tr>
<td>NI3</td>
<td></td>
<td></td>
<td></td>
<td>.866</td>
<td></td>
<td></td>
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<td>NI4</td>
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</tr>
<tr>
<td>PAIN2</td>
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<td></td>
<td>.909</td>
<td></td>
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</tr>
<tr>
<td>PAIN3</td>
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<td>.911</td>
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<td></td>
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<tr>
<td>PEIN3</td>
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<td>PEIN5</td>
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<td>.742</td>
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<td>.789</td>
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<td>Ability3</td>
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<td>.844</td>
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<tr>
<td>Ability4</td>
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<tr>
<td>Ability6</td>
<td></td>
<td>.669</td>
<td></td>
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</tr>
</tbody>
</table>

* Only loadings > .40 are shown.

Table 4.5.1. Factor analysis results
4.6 Internal Reliability

4.6.1 Internal Reliability Analysis

To highlight the tendencies of correlations, internal consistency of the final items was measure with Cronbach’s coefficient alpha. Stability of scores in a test-retest approach tend to correspond with a test of scale with high internal consistency, therefore, coefficient alpha is used to estimate the reliability (Gregory, 2000). It is evident that, as the correlations between items in a scale increases, so does Cronbach’s alpha which can infer an increase in the internal consistency of a scale. A Cronbach’s alpha of .7 in this study indicated an acceptable internal reliability, as recommended by Nunnally (1978).

The Cronbach’s alpha for each of the scales is provided in Table 4.6.1, which shows that the alpha for all of the scales is above .5, which indicates that they have good internal reliability (Hair, 2003).

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>CRONBACH’S ALPHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability</td>
<td>.77</td>
</tr>
<tr>
<td>Optimism</td>
<td>.9</td>
</tr>
<tr>
<td>Nursing Image</td>
<td>.74</td>
</tr>
<tr>
<td>Parents Influence in Nursing</td>
<td>.85</td>
</tr>
<tr>
<td>Peers Influence in Nursing</td>
<td>.55</td>
</tr>
<tr>
<td>Nursing Preference</td>
<td>.78</td>
</tr>
</tbody>
</table>

Table 4.6.1 – Cronbach’s Alpha for the Measured Variables
Table 4.7 Correlations between the measured variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Gender</td>
<td>-.076*</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Education</td>
<td>.177***</td>
<td>.026ns</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Ethnicity</td>
<td>.064*</td>
<td>.075*</td>
<td>-.130***</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Stage</td>
<td>.499***</td>
<td>.015ns</td>
<td>.457***</td>
<td>-.074*</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Ability</td>
<td>-</td>
<td>.141***</td>
<td></td>
<td>.050ns</td>
<td>-.017ns</td>
<td>-.123***</td>
<td>-.068*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Optimism</td>
<td>-</td>
<td>.086**</td>
<td>.009ns</td>
<td>-.017ns</td>
<td>-.123***</td>
<td>.025ns</td>
<td>.495**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Nursing Image</td>
<td>.198***</td>
<td>.146**</td>
<td>.184***</td>
<td>-.106**</td>
<td>.226**</td>
<td>.321**</td>
<td>.330**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. PAIN</td>
<td>.108**</td>
<td>.104**</td>
<td>.029ns</td>
<td>-.209***</td>
<td>.012ns</td>
<td>.193**</td>
<td>.187**</td>
<td>.286**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. PEIN</td>
<td>-.025ns</td>
<td>.064*</td>
<td>.066*</td>
<td>-.191***</td>
<td>.024ns</td>
<td>.266**</td>
<td>.283**</td>
<td>.279**</td>
<td>.283**</td>
<td></td>
</tr>
<tr>
<td>11. Nursing Preference</td>
<td>-.083*</td>
<td>.013ns</td>
<td>.042ns</td>
<td>-.122***</td>
<td>-.003ns</td>
<td>.312**</td>
<td>.399**</td>
<td>.242**</td>
<td>.138**</td>
<td>.279**</td>
</tr>
</tbody>
</table>

Stage = Stage of Study (e.g., first-year), PAIN = Parents Nursing Image, PEIN = Peers Nursing Image
ns = p > .05, * = p < .05, ** = p < .01, *** = p < .001
4.7.1 Hypothesis Testing

This section contains the results of the analyses that were conducted to test the six hypotheses and the results of an exploratory analysis that was conducted to determine the best predictor of Nursing Preference.

**Hypothesis 1: Ability is positively correlated to Optimism**

As shown in Table 4.7, Hypothesis 1 is supported because Ability has a significant positive correlation with Optimism ($r = .495$, $p < .001$).

**Hypothesis 2: Optimism is positively correlated to Nursing Preference.**

As shown in Table 4.7, Hypothesis 2 is supported because Optimism has a significant positive correlation with Nursing Preference ($r = .399$, $p < .001$).

**Hypothesis 3: Optimism mediates the relationship between Ability and Nursing Preference.**

Hypothesis 3 was tested using Baron and Kenny’s (1986) procedure. The findings from these analyses revealed the following: Ability significantly predicts Nursing Preference ($\beta = .312$, $p < .001$: Condition 1 met) and Optimism ($\beta = .495$, $p < .01$: Condition 2 met). Nursing Preference was then regressed on both Ability and Optimism ($\beta = .152$, $p < .001$ and $\beta = .323$, $p < .001$, respectively): Condition 3 met. Hypothesis 3 is supported because Optimism mediates the relationship between Ability and Nursing Preference.

**Hypothesis 4: Nursing Image is positively correlated to Nursing Preference.**

As shown in Table 4.7, Hypothesis 4 is supported because Nursing Image has a significant positive correlation with Nursing Preference ($r = .242$, $p < .001$).
Hypothesis 5: Parents Nursing Image is positively correlated to Nursing Preference.

As shown in Table 4.7, Hypothesis 5 is supported because Parents Nursing Image has a significant positive correlation with Nursing Preference ($r = .138$, $p < .001$).

Hypothesis 6: Peers Nursing Image is positively correlated to Nursing Preference.

As shown in Table 4.7, Hypothesis 5 is supported because Peers Nursing Image has a significant positive correlation with Nursing Preference ($r = .279$, $p < .001$).

Figure 4.7 Conceptual Model of the Hypotheses

Optimism ($r = .399$, $p \leq .001$), Ability ($r = .312$, $p \leq .001$), NI = Nursing Image ($r = .242$, $p \leq .001$), PAIN = Parents Nursing Image ($r = .138$, $p \leq .001$), PEIN = Peers Nursing Image ($r = .279$, $p \leq .001$), NP = Nursing Preference
4.8 Exploratory Analysis

An exploratory analysis was conducted to determine which of Ability, Optimism, Nursing Image, Parents Nursing Image, Peers Nursing Image is the best predictor of Nursing Preference.

Table 4.8.1 Results of exploratory Regression Analysis on Nursing Preference

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>.982</td>
<td>.136</td>
<td></td>
<td>7.192</td>
</tr>
<tr>
<td>Ability</td>
<td>.187</td>
<td>.062</td>
<td>.116</td>
<td>3.020</td>
</tr>
<tr>
<td>Optimism</td>
<td>.338</td>
<td>.047</td>
<td>.279</td>
<td>7.212</td>
</tr>
<tr>
<td>Nursing Image</td>
<td>.077</td>
<td>.038</td>
<td>.070</td>
<td>1.989</td>
</tr>
<tr>
<td>PAIN</td>
<td>.003</td>
<td>.032</td>
<td>.004</td>
<td>.107</td>
</tr>
<tr>
<td>PEIN</td>
<td>.158</td>
<td>.038</td>
<td>.150</td>
<td>4.174</td>
</tr>
</tbody>
</table>

PAIN = Parents Nursing Image, PEIN = Peers Nursing Image

A multiple linear regression analysis was conducted in which Ability, Optimism, Nursing Image, Parents Nursing Image, Peers Nursing Image were the independent variables and Nursing Preference the dependent variable. As shown in Table 4.8.1, this analysis revealed that all of the independent variables except for PAIN explain significant amounts of unique variance in Nursing Preference. The order of importance of the significant predictors of Nursing Preference in descending order of importance is as follows: Optimism, Peers Nursing Image, Ability and Nursing Image. The findings of the exploratory analysis are presented in Figure 4.8.2.
Figure 4.8.2 Findings from the Exploratory Analyses

NI = Nursing Image, PAIN = Parents Nursing Image, PEIN = Peers Nursing Image, NP = Nursing Preference

dashed line = non-significant effect
4.9 Chapter Summary

This chapter analyzed data collected from 747 nursing students of a local tertiary institution. The demographics of the participants were outlined and described. The mean and standard deviation were used to describe the research variables. Cronbach’s alpha was used to examine the reliability of the measures. Principal Axis Factoring was applied to reduce the scales before examining the hypothesised relationships. Pearson’s correlation matrix was applied to study the relationship among research variables.

Statistical analysis and tests such as Pearson correlation coefficients and regression analysis were used to examine the research hypotheses. This study found that factors such as ability, optimism, nursing image, parents image in nursing and peers image in nursing may significantly affect students preference to enrol in a tertiary nursing programme. The next chapter provides a discussion of the findings, the limitations of the study, and recommendations.
CHAPTER FIVE
DISCUSSION

5.1 INTRODUCTION

In Chapter Four, the results of the analysis of 747 revised questionnaires collected from one local tertiary healthcare education institution were presented. Using a revised questionnaire that was developed based on literature (Kinzie et al., 2004) students were asked to provide their demographic information and also to identify factors that influenced their preference of nursing study. The 30 factors that the students rated were subsequently divided into five different factor categories. These were: 1) Ability, 2) Optimism, 3) Nursing Image 4) Parents Influence on Nursing and 5) Peers Influence on Nursing.

Descriptive statistics were used to examine students’ preferences. The relationship between nursing preference and the four categories of influence factors were further examined using Pearson’s (r) correlation and coefficient to determine the type of intervening variable (Optimism) that indirectly predict students’ final preference of a nursing program as their course of tertiary study. Regression was then used to answer whether a relationship existed between the derived decision (Nursing Preference) and the intervening variable (influence factors).

The findings from the descriptive statistics examined the first research problem: What are the factors that positively influence the enrolment preference of entering the nursing program?

The results from the revised questionnaire concluded that all five identified factors play an influential role in the students’ preference in choosing a nursing programme as their post-secondary education.
Optimism was the first category of independent variables that was tested. Items such as “nursing has a positive education and career advancement” were determined to be significant reasons as to why local students chose nursing as their tertiary education. Bolan and Grainger (2003) also found that career diversity is one of the main determinants of which tertiary programme a student will choose to study. Scanion (2008) also highlighted the importance of education and career aspiration for young school leavers contemplating which tertiary programme to choose.

Ability was the second category examined. Students rated Item 1 (‘I am capable of caring and helping others) and Item 4 (“I am able to cope in demanding and stressful environment”) higher than all of the other items in the category. This was similar to the findings from Liegler’s (2000) study, in which it was reported that the most frequently cited reason as to why students chose nursing was that they enjoyed a challenging career and their beliefs that they had the ability to manage hectic demands. Generally most of Singaporean students recognised that nursing was a difficult programme, which is similar to the findings from two studies (Beggs et al., 2008; Brennan et al., 1996). It is therefore not surprising that these nursing students were very conscious of their personal capabilities, including having good interpersonal skills and the ability to cope with stress and physical demands, and listed them as significantly influential factors for their preference. This was in contrast to the findings of Williams et al. (1997) which, in the list of dissatisfactions, reported that students were dissuaded from careers that were stressful and involved hard work.

Nursing Image was the third category that was tested and it looked into the students’ perception of how the public regard the local nursing profession. In contrast to the literature discussed in Chapter Two, these nursing students were comparably more positive about how the public view their profession in general. The items reported to be significant reasons as to why local students chose nursing as their tertiary education were: 1) it is a profession in which one can exercise great autonomy, and 2) nursing commands respect and recognition. It can thus be inferred that students who
chose nursing as their tertiary education were influenced by affirmative public recognition and acceptance.

**Peers Image on Nursing** was the fourth category studied. According to Law and Arthur (2003) and Paa and McWhirter (2000), most students were influenced by peers, and if this influence was positive, it would carry significant weight. The findings in this study were largely consistent. Singaporean nursing students indicated that highly influential peers were those who held positive perceptions of nursing (e.g., nursing is an appealing profession and the friends are positive about nursing education) and encouraged the students to undertake a tertiary nursing programme. This finding is similar to that reported by Hossler, Schmit and Vesper (1999).

**Parents Influence on Nursing** was the final category studied. Joseph and Joseph (1998) concluded that family influence the intention of students to pursue higher education. This study suggests that having a great number of parents who have a positive mind-set about nursing (e.g., nursing is a reliable and rewarding career and is positive about nursing education and career) contributes to the factor that influence students’ preference of choice after secondary education. The findings in this study were largely consistent to that reported by (Foong et al., 1998).

The Ministry of Health in Singapore have already implemented a series of multifaceted marketing approaches to cater to the rapidly changing landscape of college students, predominantly targeting external factors.

This study explored whether marketing strategies should not only target external factors but also internal factors such as students’ perception of self-ability, education and career advantage opportunities. The association among the four factors, (1) optimism \( (r = 0.399, p \leq 0.001) \), (2) ability \( (r = 0.312, p \leq 0.001) \), (3) nursing image \( (r = 0.242, p \leq 0.001) \), (4) peers image in nursing \( (r = 0.279, p \leq 0.001) \), (5) parents image in nursing \( (r = 0.138, p \leq 0.001) \) and nursing preference, were analysed and examined. These
answered the following research question: What is the correlation, if there is any, between the various identified factors of influence?

The results showed that all five factors were positively correlated with each other. The current enrolment marketing strategies in Singapore thus seem to be largely well-matched and appropriate for today’s youth.

The results indicated that Optimism mediates the relationship between Ability and Nursing Preference. As a consequence, Hypothesis 3 is supported. This finding provides better insights on how the on-going efforts of the Singapore government to increase enrolment in healthcare education can be in line with the factors that may influence local secondary school leaver’s preference to choose nursing as tertiary study. The current efforts include Open House Events and Discussion Forums for students and their parents, and Promotional Enrolment Talks held in the individual secondary schools for school leavers, and they had contributed encouragingly in maintaining the enrolment numbers each year.

However, with the Ministry pressing for more and better quality students, the result of the following research question may influence policy makers to rethink their marketing approaches: Which is the key influence factor as predictor for student preference?

The study also broadens the knowledge regarding the appropriate predicator(s) for Student Preference. All of the independent variables except for Parents Image in Nursing ($p=.915, p= \leq 0.05$) explain significant amounts of unique variance in Nursing Preference. The order of importance of the significant predictors of Nursing Preference in descending order of importance is as follows: Optimism, Peers Nursing Image, Ability and Nursing Image.
Rossiter, Foong and Chan (1999) study stated that knowing someone in nursing did not significantly influence the student’s choice of studying nursing. Nevertheless, the result of the hypothesis indicated that the importance of positive peers and parental image in nursing have an influence on the local student’s preference. However, as a predictor, Parents image in nursing is ranked insignificant amongst the other predictors by local students.

For the findings, we can see that in Singapore context, an adolescent’s relationship with parents is likely to remain strong but the role of peers is generally accepted as crucial. Most Singaporean parents impose on their children the notion that education with better career security is a better outcome of college choice. Nursing has been reiterated the secure professional locally. This association is quite logical since parents of the current secondary school leavers are beneficiary from the post war Singapore which has placed significant emphases on education. They are the first generation of parents whom are brought up to believe that good match of education and career advancement are primal to survive and sustain in a professional orientated employment environment such as Singapore. Moreover, local parents also provide monetary support for education and this usually influence the student’s decision as well (Hu & Hossler, 2000).

According to Steinberg (1992) and Noller (1994), parents’ decision is considered important when issues involved money or vacation. However, adolescents’ decision making is largely influence by their peers. This may be due to peers who are the immediate social network and they provide the norms, attitudes and inclination values. The adolescent then viewed that peers’ enumeration of specific information concerning their preferences to be more valid than their parents (Hayes, 1989).

With the predictor emphasis placed on ability, the research conducted a test for the possible association of both optimism and nursing preference. The findings are significantly conclusive that personal ability is an important factor for the student preference of nursing program.
The rest of this chapter is structured in the following manner:

- Details of the new knowledge that has been found from this study are discussed in Section 5.2.
- The main summary and outcomes of the study are discussed in Section 5.3.
- Areas for possible further research are discussed in Section 5.4.

### 5.2 Contribution to Knowledge

Five factors that influence Singapore secondary students’ preference for nursing tertiary education were examined in this research. The study clearly addressed the knowledge gap, which was to identify internal and external factors that have influenced local students to enrol in a nursing programme, and seeks to serve a provocative role in explaining the effectiveness of the Singapore government’s efforts to increase enrolment in healthcare education.

Although some surveys and sharing have been conducted locally to examine factors that influence nursing college recruitment, there is no conceptual framework drawn from these previous studies. A conceptual was developed in this research: A Conceptual Model of students’ Preference of Nursing Education. The findings that optimism as well as the ability of students is the key predictors of choosing to undertake tertiary study are considerably different from the findings of studies conducted outside of Singapore.

In Singapore, the Ministry of Health projects the number of nurses required by the health industry annually and sets the target for Ministry of Education to achieve, and it is left to the individual nursing education institution to attract the required student population. The healthcare provision institutions, Singapore Nursing Board (Nursing Body) and Singapore Nursing Association (Nursing Union) are usually not involved in recruitment of potential nursing students in a significant way. All the findings are
of significant theoretical and practical importance in that they improve the base of fundamental knowledge that can be utilized by industry to enhance the effectiveness of existing enrolment activities and promote more student-centric marketing events. Therefore, the Ministry of Health should work closely with the healthcare education industry and other related bodies to develop strategies to promote enrolment in college nursing. The findings presented in this study provide new and important insights into how policymakers can organize cost-effective publicity events that can influence students to choose a career in nursing.

5.2.1 Need for more focused enrolment marketing

The healthcare education industry in Singapore must recognize that there is a need for more focused marketing to attract young school-leavers into nursing. Many universities across the globe are increasingly tailoring their marketing approach to suit students. This comes about as the students of today are more independent, better informed, more mobile and more able to make important judgments about a range of potential preferred institutes either locally or overseas compared to students a few decades ago (Biggin, 2000). Many studies show that knowing the preferences of the students and utilizing this knowledge to craft an effective and informative personalized marketing strategy influences the decision-making process of students regarding their tertiary education and perhaps even their final choice (Law & Arthur, 2003; Sweet, 2004; Dragon, 2009).

5.2.2 Extend the ‘market’ to the school leaver

The only way in which marketing personnel can truly assist their organizations is to “bring the market to the consumer” (Biggin, 2000). This research shows that it is important to identify students’ perceptions of studying nursing. The ‘image reputations’ of nursing must be given high priority by healthcare education or provider industries to develop attractive ‘products’ or remuneration packages to enhance market demand. The development of specialized marketing and attractive
courses with short ‘shelf life’ may be significantly aided by a predictor (Optimism and Ability) of student preference.

Several key theoretical issues associated with the proposed research question on factors that influence students choosing healthcare education were reviewed in Chapter 2. This study contributes to the literature on this topic by identifying internal (i.e., Ability and Optimism) and external factors (i.e., Nursing image, Peers Image in Nursing and Parents Image in Nursing) that influence local students to enrol in a nursing programme, and seeks to play a provocative role in explaining the effectiveness of efforts made by the Singapore government to increase the number of students enrolling in tertiary nursing courses. The finding that the positive image of nursing as perceived by students and their peers as the influential factors to choose nursing as their tertiary education has considerably diverged from other papers on the same topic in various international contexts (Bolan & Grainger, 2003; Jrasat, et al., 2005; Liegler, 2000; Joel, 2002; Wilson, 2006; Zysberg & Zisberg, 2008). This is of significant theoretical and practical importance in that it improves the fundamental knowledge bases that can be utilized by policymakers to enhance the effectiveness of existing enrolment activities and promote more student-centric marketing events (Hossler, 1984).

Additionally, the findings of this study also identified that of the four sets of predictors, Optimism, and Ability, in particular, are the key predictors of student preference. This may allow for further refinement of our enrolment marketing, and this paper offers three broad enrolment strategies:

1) Market segmentation to allow more personal and relevant marketing
2) Designing a curriculum that can allow students to achieve more
3) Trust and utilize the strengths of the youth.
5.2.3 Market segmentation to allow more personal and relevant marketing

The current local marketing exercise had been trying to reach students of all socio-economic backgrounds and academic abilities. With this new data, policymakers may want to consider segmentation of the student population so that their marketing initiatives can be tailored for a better fit. For example, instead of the usual blanket invitation to all secondary school students in Singapore, it may be more fruitful to target selected schools with a history of strong healthcare-related extra-curricular activities. For example, this can include First Aid, the St John’s Ambulance Brigade or the Red Cross. Such an endeavour would concentrate on students with the key influential factors pertaining to personal abilities and permit a higher level of engagement to promote the nursing curricula and career.

5.2.4 Designing a curriculum that can allow students to achieve more

The items that came up strongly in the personal ability category included respect and recognition as well as autonomy and empowerment in future roles. Participants expect their education to not only make them into caring and capable nurses, but also provide avenues for them to evaluate their own values, skills and potential, so that they can take control of their careers and future goals and become a more valuable component in the healthcare profession. These are important points for nursing educators to ponder.

In truth, there are areas in the existing diploma nursing curriculum that can be improved. Beyond imparting nursing knowledge and skills, it is important that the teaching also promote dynamism, critical thinking, good interpersonal skills and ethics, all of which are crucial in the healthcare industry. Perhaps the initiatives that encourage recognition and autonomy such as ‘nursing diagnoses’ and ‘nursing prescriptions’ can be improved and expanded. These initiatives would allow new nurses to feel more involved in direct patient care and enhance the profession image. If nurses can derive more meaning from their work, it can only help to improve their
motivation, quality of work and job satisfaction, and may even decrease the rate of attrition. These indirectly assist in promoting an affirmative professional nursing image to the public. Finally, the findings show that students also expect their diploma nursing curriculum to prepare them for higher learning and the greater responsibilities involved in management roles that are essential for career advancement.

5.2.5 Trust and utilize the strengths of the youth

As more healthcare educational institutes enter the market, the marketplace becomes more diverse and competitive. This study indicated that “peers image that nursing is an appealing professional and peers are positive about nursing education” features strongly as a positive factors in student’s preference. Targeted relationship management are more likely to deliver sustainable longer-term market share as compared with the traditional generic brochure publicity approach, particularly with individuals who are likely to exert influence on the preference of the potential nursing student (Stewart & Felicetti, 1991).

Policymakers may want to consider focusing on outreach programs for peers instead of the outreach programs for secondary schools to gain a competitive edge. Additionally, the current annual Polytechnic Open House Event can also be enhanced with, for example, a ‘bring a friend’ initiative, whereby each of the currently enrolled nursing students is encouraged to invite one or more of their respective secondary school juniors to attend.

If logistics permit, this initiative can also be extended to include the other regularly conducted polytechnic academic or social activities. Bringing this level of visibility to prospective students by peers that they know and trust can only have a positive effect on the likelihood that secondary school students will choose a career in nursing.
Currently, the planning and implementation of enrolment marketing exercises has been carried out by management and teaching staff. This study suggests that it may be time to let students take a leading role and leave management and teaching staff to function as mentors and facilitators. In this way, the creativity of the students can be better utilized and there is no generation gap to be bridged. The nursing students would probably have a better traction with their peers and are thus more likely to make nursing an attractive option. This would also send a powerful message of the healthy relationship and mutual trust that exists between academia and the students to potential candidates.

A concurrent sub-event can still be led by the management and teaching staff to cater specifically to parents or friends of parents who would want to look into a higher level of discussion into academic goals, advancements and career paths. This aspect has been lacking in traditional marketing drives, and is likely to be well-received.

5.3 Summary

This study was conducted in a local polytechnic in Singapore. Nevertheless, it has relevance for many stakeholders in healthcare industries. It delineates the importance of focused and targeted enrolment activities for the Ministry of Health, the education institutions and the healthcare industry players in order to ensure improvement in both enrolment numbers and quality of students.

As the demands of secondary school leavers evolve, this study shows the value and importance of matching their needs with the nursing program. Firstly, the findings suggest that there is a need for a more comprehensive understanding of what influences students to pursue particular careers to improve a better fit between the student and their course of study.
The policymakers would need to gain a better understanding of the key factors that drive the career-related decisions of students in order to develop promotional events that are meaningful and effective.

Secondly, the findings suggest that in order to positively influence students and maintain a sustainable market share, potential students would need to be confident that they have the ability to perform well in the healthcare industry. This key factor, Ability, Optimism, Nursing Image and Peers Image in Nursing, should be considered carefully and given full weight when forming marketing and recruitment programs.

5.4 Future Research

The findings from this research study are noteworthy as they can improve the understanding of local academic administrator regarding how healthcare education institutions might successfully develop strategies to attract students with outstanding Singapore-Cambridge Ordinary Level (GCE O-Level) result to enrol in nursing education in Singapore. The proposed conceptual model provides potentially valuable insights into current practices in the health care education sector, but more research into this topic would be useful and may include the following suggestions:

1) The sample should be extended to include students from other faculty. This may allow the researcher to critically evaluate and compare the factors that influence the career-related decisions of other students.

2) The study could be extended chronologically to deal with every incoming batch of nursing students in this polytechnic to determine whether, over a period of time, the factors that influence the career-related decisions of students change. This will be worthwhile for policymakers as it will allow them to maintain the relevance of their enrolment activities.

3) This study focused solely on factors that influence the career-related decisions of students in nursing. The stages that a student undergoes when choosing a
career could be approached in greater detail. Hossler’s (1984) three-stage college-choice approach can also be used to match the factors into the various stages of the decision-making process. The level of importance students place on the factors in each stage would be useful for policymakers to know, as it would help them to better match the needs of the students at the different stages.
REFERENCES


Bolan, C.M. & Grainger, P. (2003). High school to nursing: given today’s nursing shortage, it is crucial that universities select the nursing school applicants who most likely to succeed academically. The Canadian Nurse, 99:3, 18-24.


Carpenito-Moyet, L.J. (2002). Nurses it’s time to dust off your caps. *Nursing Forum*, 37:3. 3-6.


HUMAN RESEARCH ETHICS COMMITTEE (HREC) NOTIFICATION

To: Dr Keith Ng/Gwendoline Tan-Kuick Ching Li
Graduate College of Management
csinku10@scu.edu.au, keith.ng@scu.edu.au

From: Secretary, Human Research Ethics Committee
Division of Research, R. Block

Date: 23 November 2009

Project: The influences on student's choice of healthcare education.
Approval Number: ECN-09-147

The Southern Cross University Human Research Ethics Committee has established, in accordance with the "National Statement on Ethical Conduct in Human Research – Section 5/Processes of Research Governance and Ethical Review", a procedure for expedited review by a delegated authority.

This application was considered by the HRESC, Tweed Heads/Gold Coast campus.

This research is approved and you may commence your research.

The approval is subject to the mandatory standard conditions of approval. Please note these and inform the HREC when the project is completed or if there are any changes of protocol.

This approval will be ratified by the full Human Research Ethics Committee (HREC) at its October meeting. If the full HREC has any further queries, the researchers are expected to respond to those queries.

**Standard Conditions** in accordance with the "National Statement on Ethical Conduct in Human Research (National Statement) (NS)."

1. **Monitoring**
   **NS 5.5.1 – 5.5.10**
   Responsibility for ensuring that research is reliably monitored lies with the institution under which the research is conducted. Mechanisms for monitoring can include:
   (a) reports from researchers;
   (b) reports from independent agencies (such as a data and safety monitoring board);
   (c) review of adverse event reports;
   (d) random inspections of research sites, data, or consent documentation; and
   (e) interviews with research participants or other forms of feedback from them.
Appendix A

Southern Cross UNIVERSITY
A new way to think

The following should be noted:

(a) All ethics approvals are valid for 12 months unless specified otherwise. If research is continuing after 12 months, then the ethics approval MUST be renewed. Complete the Annual Report/Renewal form and send to the Secretary of the HREC.

(b) NS 5.5.5
   Generally, the researcher/s provide a report every 12 months on the progress to date or outcome in the case of completed research specifically including:
   - The maintenance and security of the records.
   - Compliance with the approved proposal
   - Compliance with any conditions of approval.
   - Any changes of protocol to the research.

Note: Compliance to the reporting is mandatory to the approval of this research.

(c) Specifically, that the researchers report immediately and notify the HREC, in writing, for approval of any change in protocol. NS 5.5.3

(d) That a report is sent to HREC when the project has been completed.

(e) That the researchers report immediately any circumstance that might affect ethical acceptance of the research protocol. NS 5.5.3

(f) That the researchers report immediately any serious adverse events/effects on participants. NS 5.5.3

2. Research conducted overseas
   NS 4.8.1 – 4.8.21
   That, if research is conducted in a country other than Australia, all research protocols for that country are followed ethically and with appropriate cultural sensitivity.

3. Complaints
   NS 5.6.1 – 5.6.7
   Institutions may receive complaints about researchers or the conduct of research, or about the conduct of a Human Research Ethics Committee (HREC) or other review body.

   Complaints may be made by participants, researchers, staff of institutions, or others. All complaints should be handled promptly and sensitively.

   Complaints about the ethical conduct of this research should be addressed in writing to the following:

   Ethics Complaints Officer
   HREC
   Southern Cross University
   PO Box 157
   Lismore, NSW, 2480

   T (61 2) 6620 3000 / (61 2) 6620 3700 PO Box 157 Lismore NSW 2480 Australia  www.scu.edu.au ABN 41 998 851 524
Appendix A

SCHOOL OF HEALTH SCIENCES

Date: 25 Aug 2009

Mrs Gwendoline Tan

Dear Gwendoline

PROJECT TITLE: FACTORS AFFECTING STUDENT’S CHOICE OF CHOOSING NURSING EDUCATION

This is to inform you that the above study has been approved to be ethically sound. This approval period is from this date till 25 Aug 2010. Your study number is SHS/2009/02/NR

Documents reviewed were:
   a. Study proposal
   b. Consent form
   c. Questionnaire

Approval is conditional upon your compliance with the following requirements:

   a. Only the approved consent form and questionnaire should be used. The consent form must be signed by each subject prior to initiation of any protocol procedure. In addition, each subject should be given a copy of the signed consent form.

   b. No deviation from or changes of the protocol should be implemented without documented approval from Project Committee, School of Health Sciences, Nanyang Polytechnic. Any deviation form or a change of the protocol should be forwarded for approval.

   c. The study cannot continue beyond the approval period

Please submit Form F (Feedback on Service Provided/Project) on completion of the study.

With best regards

[Signature]

Director
SHS(N)

[Signature]

Chairperson
SHS Projects Committee

(no signature required as for internal circulation)

PROJECT ETHICAL APPROVAL (SHS)

EDUCATION FOR THE NEXT LAP
CONSENT TO PARTICIPATE

I am a post graduate student who is current pursuing the Doctorial of Business Administration and is conducting the following research for my final thesis.

<table>
<thead>
<tr>
<th>Project Title:</th>
<th>Factors Affecting Student's Choice to Choose Nursing Education In Singapore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researchers Name(s):</td>
<td>Gwendoline Tan-Kuick Ching Li <a href="mailto:ctanku10@scu.edu.au">ctanku10@scu.edu.au</a></td>
</tr>
<tr>
<td>Supervisor(s):</td>
<td>Dr. Keith Ng Y.N, Southern Cross University <a href="mailto:keithynng@gmail.com">keithynng@gmail.com</a></td>
</tr>
</tbody>
</table>

The research aimed to examine the factors that affect the students' choice when they chose nursing education as their tertiary study in Singapore.

I would like to invite you to participate in the study by completing a 10 minute’s questionnaires; no questions of the sensitive nature will be included.

Your voluntary participation in this research is being solicited in order to achieve a better understanding of study choices. Please be assured that your responses will remain confidential. Your participation in this research is appreciated very much.

Should you have any questions or concerns regarding this questionnaire or my research, please contact me at my email address above.

Gwendoline Tan-Kuick

Keith Y.N. Ng

I CONSENT TO PARTICIPATE IN THIS STUDY
What are the influences on student’s preference of healthcare education in Singapore?

<table>
<thead>
<tr>
<th>SN</th>
<th>Item</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>PART B</strong></td>
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<tr>
<td></td>
<td>Ability</td>
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</tr>
<tr>
<td>1</td>
<td>I have always wanted to be a nurse.</td>
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<td>2</td>
<td>I am capable of caring and helping others.</td>
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<td>3</td>
<td>I am able to understand others in need.</td>
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<td>4</td>
<td>I am able to cope in demanding and stressful environment.</td>
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<td>5</td>
<td>I enjoy meeting people.</td>
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<td>6</td>
<td>I have good interpersonal skills</td>
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<td>7</td>
<td>Nursing is too difficult for me (R).</td>
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<tr>
<td></td>
<td>Optimism</td>
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<td>8</td>
<td>Nursing study enables one to gain an acceptable tertiary education and appreciation of ideas.</td>
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<tr>
<td>9</td>
<td>Nursing study allows me to learn more about applicable knowledge.</td>
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<td>10</td>
<td>Nursing study prepares me for my chosen career.</td>
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<td>11</td>
<td>Nursing provides extensive job mobility and opportunities.</td>
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<tr>
<td>12</td>
<td>I am positive of my career advancement in nursing.</td>
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</tr>
<tr>
<td>13</td>
<td>I am positive of my education advancement in nursing.</td>
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<tr>
<td>14</td>
<td>Nursing provides opportunity to grow professionally.</td>
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<tr>
<td></td>
<td>Nursing Image</td>
<td></td>
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<tr>
<td>15</td>
<td>Nursing is a caring and helpful profession.</td>
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<tr>
<td>16</td>
<td>Nursing is a challenging and exciting profession.</td>
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<tr>
<td>17</td>
<td>Nursing is a professional that exercise great autonomy.</td>
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<tr>
<td>18</td>
<td>Nursing commends respect and recognition.</td>
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<tr>
<td>19</td>
<td>Nursing provides job security.</td>
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</tbody>
</table>
Nursing is a stressful and demanding profession.

Nursing is a lowly paid profession. (R)

<table>
<thead>
<tr>
<th>SN</th>
<th>Item</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
</table>

Parents Image in Nursing

22 I chose nursing education because my parent(s) is/are in the same profession.

23 My parent(s) believes(s) that nursing is a reliable and rewarding career.

24 My parent(s) is/are positive about nursing education.

Peers Image in Nursing

25 I chose nursing education because my friend(s) is/are in the same profession.

26 My friend(s) think(s) that nursing is an altruism profession.

27 My friend(s) think(s) that nursing is an appealing profession.

28 My friend(s) think(s) that nursing is a female profession. (R)

29 My friend(s) is/are positive about nursing education.

PART B

<table>
<thead>
<tr>
<th>SN</th>
<th>Item</th>
<th>Strongly Agree</th>
<th>Agree</th>
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<th>Strongly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
</table>

30 Nursing is my first choice of tertiary education.

31 Nursing is my first choice of career.

32 I always wanted to be a nurse

33 I am satisfied with my education choice

34 I am thinking of making a change in my education choice (R).

PART C

<table>
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<tr>
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<th>Page</th>
</tr>
</thead>
</table>

35 Student Nursing Year

36 Gender

37 Ethnicity

38 Age

39 Education

THANK YOU.