ENHANCING INTEREST IN NURSING AS A CAREER CHOICE
WITH FIFTH-GRADE STUDENTS

By

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To my husband, Joe; my daughter, Elizabeth; and my son, Walker.
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This research was designed to provide information on the career development of fifth-grade students and to explore the influence of an education program on children’s interest in nursing as a career choice, especially related to gender. Interest in nursing is conceptualized as interest, competence perception, and desire to help other people. A sample of 70 fifth-grade students recruited from a public elementary school in a large metropolitan city in the Southeast completed the study.

The students’ interest in nursing as a career was measured before and after participation in a four-week career education program about nursing. The four-week career education curriculum was designed in accordance with the National Career Development Guidelines. Data were collected to determine the effect of the education program on the students’ interest, competence perception, and desire to help other people based on John Holland’s (1959) theory of career development, Albert Bandura’s (1977) theory of self-efficacy, and Jean Watson’s (1985) theory of human caring. In addition, data were collected from pre- and post-questionnaires asking the students if they would consider nursing as a career to evaluate the effects of the
education program on school age children expressing their consideration for nursing as a future career choice.

Results indicated the education program had a highly significant effect on students’ expressed consideration of nursing as a career choice, achieving a 61% increase in the number of students indicating they would consider nursing after participating in the education program. This positive influence was discovered between male and female students, resulting in a 114% increase in the number of male students and a 43% increase in the number of female students indicating they would consider nursing after participating in the education program.

Results provided a pre- and post-career assessment of the students’ career types based on John Holland’s theory of vocational personalities and work environments. The career assessments for these students were congruent with findings from previous studies, especially related to gender differences. Lastly, the desire to help other people manifested itself with female students scoring significantly higher and male students showing no significant change after participating in the career education program.
CHAPTER 1
INTRODUCTION

Background

In the upcoming years, the nursing profession in the United States will encounter perhaps the largest challenge in its history. The current nursing shortage, which began in 1998, remains remarkably persistent throughout the nation. Today’s nursing shortage is considered one of the most important challenges affecting the country’s hospitals. A recent study conducted by the American Hospital Association indicated that within hospitals the nursing shortage has caused emergency department overcrowding, diversion of emergency patients, reduced number of staffed beds, discontinuation of programs and services, and the cancellation of surgeries (First Consulting Group, 2002). In addition, surveys of nurses have indicated that the shortage has negatively affected hospital’s care processes with nurses reporting delays in nurses’ responses to pages and telephone calls, interrupted staff communications, increased number of complaints about nursing care, reduced numbers of available hospital beds, increased patient wait times for surgeries and tests, and delayed patient discharges (Buerhaus et al., 2005b).

Research has revealed that nurses are essential to patient safety and the delivery of efficient and effective healthcare (Aiken, Clark, Sloane, Sochalski, & Silber, 2002). However, recent state and national surveys have reported that the shortage is interfering with nurses’ ability to provide quality patient care. Nurses are often stating that within their current work environment it is more difficult to provide quality patient care because of perceived workforce shortages (Aiken et al. 2002; First Consulting Group, 2002). Results from two recent national surveys in 2002 and 2004 assessing nurses’ perceptions of the nursing shortage indicated that nurses felt the shortage had affected their nursing care by decreasing the amount of time nurses had to spend with patients, the ability to detect patient complications early, and the capacity to maintain
patient safety (Buerhaus et al., 2005a). Further studies have demonstrated an increased risk of medical errors associated with inadequate nurse staffing. These medical errors have resulted in deleterious patient outcomes to include patient mortality (Blegen, Good, & Reed, 1998; Lichtig, Knauf, & Milholland, 1999; Aiken et al., 2002).

Buerhaus and colleagues recently reported that the majority of nurses (79%) and Chief Nursing Officers (68%) believe the nursing shortage is affecting the overall quality of patient care in hospitals, as well as in other healthcare settings. Their study indicated that 93 percent of hospital nurses express considerable concerns of not having enough time for patients and 68 percent express concern for their ability to maintain patient safety (Buerhaus et al. 2005b). The shortage has also reached the awareness of the American public with 81 percent reporting knowledge of the nursing shortage, 93 percent having the opinion that the shortage threatens the quality of care, and 65 percent considering the nursing shortage as a national problem (Johnson & Johnson, 2001).

Since the 1950s, the nursing supply has emerged with cycles of abundance followed by shortages. These past shortages in nursing were usually a direct effect of healthcare expansion in both size and technological advancements. Yet, the current nursing shortage is more complex and enduring than in previous shortages from past decades. Today’s nursing supply crisis is driven by a richer and broader set of issues never before experienced, such as an aging population, fewer workers, an aging workforce, gender and ethnic disparities, more options for women, the generation gap, a challenging work environment for nurses, consumer activism, and a burgeoning healthcare system (Robert Wood Johnson Foundation, 2002). An updated forecast of the nursing supply and demand a decade from now indicates a projected shortage of 340,000
nurses, three times larger than the size of the current shortage when it was at its peak in 2001 (Auerbach, Buerhaus, & Staiger, 2007).

**Future Supply of Nurses**

Looking ahead, a study conducted by Buerhaus and colleagues created concern for the future supply of nurses influenced by the aging nurse workforce. According to their predictions, the nursing workforce will continue to age and diminish, and will be unable to meet the projected workforce requirements if this trend is not reversed (Buerhaus, Staiger, & Auerbach, 2000). The recent National Sample Survey of Registered Nurses conducted by the Department of Health and Human Services, Health Resources and Services Administrations (HRSA), the key Federal agency responsible for nursing workforce and development in the United States, indicated the average age of the nurse workforce will increase over the upcoming years, rising from an average of 43.5 years in 2005 to 44.7 in 2012 and beyond (Health Resources and Services Administration, 2004). In 2005, the largest age group of nurses in the workforce was nurses in their forties, followed closely by those in their fifties. It is projected that in four years (2012), more employed nurses will be in their sixties than in their twenties (Auerbach, et al., 2007).

Other key factors contributing to the aging of nursing are the persistent trend of declining interest in nursing by women and the ever-decreasing number of people born after 1955 who have chosen nursing as a career (Buerhaus et al., 2000). In addition, there has been a recent trend toward later entry into nursing. Nurses today are less likely to enter a nursing education program immediately after high school and nursing has become an attractive career option for people in their twenties or early thirties. Therefore, recent nursing graduates have a higher average age at the time of graduating from nursing school than from previous years (Auerbach et al., 2007).
An additional critical problem directly affecting the nation’s supply of nurses is the shortage of nursing faculty in the United States, which is projected to worsen in future years. A considerable increase in nursing graduates is needed to meet the projected demand for new nurses in 2020. This corresponds to an increase in the demand for nursing faculty. The Robert Wood Johnson Foundation (2002, p. 2) recently reported, “Substantial evidence at both the national and state levels shows that the current inadequate supply of nursing faculty constrains the level of enrollment in nursing programs necessary to meet future demands of nurses.” The American Association of Colleges of Nursing’s (AACN) preliminary findings reported that 32,323 qualified applications to entry-level baccalaureate programs were not accepted in 2006 based on responses from 449 schools throughout the country. The number of qualified applications turned away each year from these nursing programs remains high with 37,514, 29,425, 15,944, and 3,600 students turned away in 2005, 2004, 2003 and 2002, respectively. Shortage of faculty was indicated by 76.1 percent of the surveyed schools as the main factor that limited admissions. In addition, the adequacy of the supply of future faculty will be strongly influenced by the high average age of nursing faculty. In 2001, the reported average age of doctorate-prepared faculty was about 53 years and masters-prepared faculty was about 49 years. It was also reported that not only do nurses enter the faculty role relatively late in their careers, but they retire young at an average age of 62.5 years (American Association of Colleges of Nursing, 2006b).

Lack of Interest in Nursing as a Career Choice

Given projections of a future and an even larger nursing shortage in the next decade, efforts to promote the nursing profession and attract people to pursue a career in nursing are essential. Moreover, the aging of the nursing workforce suggests the importance of recruiting younger students into nursing. Unfortunately, previous research has demonstrated that high
school students rarely consider nursing as a career choice based upon students’ attitudes, perceptions, and knowledge of nursing (Firby, 1990; Hemsley-Brown & Foskett, 1999; Kohler & Edwards, 1990; Marriner-Tomey, Schwier, Maricke, & Austin, 1990; Stevens & Walker, 1993). Other research has indicated that attitudes of children toward nursing grow increasingly negative as they progress from elementary to high school, and well into college (May, Austin & Champion, 1988). These findings were supported in a study done by Marriner-Tomey and colleagues, who discovered that the gap between students’ perceptions of an ideal career and a nursing career widens, as children get older, and by high school a very small percentage view nursing as a potential career (Marriner-Tomey, Schwier, Maricke, & May, 1996).

**Significance for Nursing**

It is suggested that the most important factor contributing to the aging and diminishing of the nursing workforce is the persistent trend of declining interest in nursing by young women (Buerhaus et al., 2000). Staiger and colleagues recently examined the reasons for this declining penchant of women to choose nursing as a career. They found that the peak interest to become a nurse occurred in women graduating from high school around 1973. Additional information from this study indicated a 40 percent drop of college freshman declaring that nursing was among their top career choices. One of the major reasons for this dramatic decline was credited to the concurrent expansion of opportunities for capable young women to enter formerly male-dominated professions such as medicine, law, and managerial occupations (Staiger, Auerbach, & Buerhaus, 2000).

This disturbing review of evidence demonstrating the rapidly aging nurse workforce partnered with the decline of interest in nursing as a career presents an unsettling picture of the future of the nursing profession. How will a profession with a majority of its members retiring in
the near future replace itself with the current low interest among young people to choose nursing as a career?

**Promoting Interest in Nursing as a Career Choice**

The promotion and dissemination of information about the nursing profession has shown to be successful in promoting nursing as a career choice with high school students. Past surveys of high school students’ interest in nursing as a possible career indicated that receiving information about nursing positively affects their attitudes about nursing (Marriner-Tomey et al., 1996) and is correlated with considering nursing as a future career choice (Erickson, Holm, Chelminiak, & Ditomassi, 2005). In addition, a presentation on nursing presented to middle school students provided further support that perceptions and attitudes of nursing as a career can be influenced positively through a classroom presentation. Using pre- and post-presentation assessments, 48 percent of the students indicated they had more interest in becoming a nurse after the classroom presentation (Hoke, 2006).

Evidence from these studies suggests education outreach has a positive impact on the student’s perception of nursing as a possible career choice. Thus, it is prudent to design education initiatives to stimulate interest in nursing by promoting the many career opportunities in nursing and by increasing awareness of the value of the nursing profession to students, beginning as early as elementary school and continuing through high school. As well, those students who receive accurate information about the nursing profession before ruling out nursing as a career too early may have more incentive to continue their exploration of nursing. Conceivably, a career education program designed to enhance interest in nursing as a career choice with elementary, middle, and high school students can be considered a promising initiative to strengthen the nursing workforce in the United States to meet the healthcare challenges of the future.
Origins of a Career Development Program for School age Children

We now know that career choice and development is not a matter exclusive of adolescence or adulthood and that childhood and its contexts are also important precursors of future vocational behaviors (Vondracek, 2001). Vocational theorists generally agree that career development begins in childhood and continues through adulthood. They recognize the need for career education for children to begin in their preschool and early elementary years so that knowledge and experiences related to career education are systematically organized across the years from preschool to high school. Clearly, these formative years of childhood have a large potential to influence future career decisions (Sharf, 2006).

Although career education at the elementary school age level might seem premature, studies have demonstrated that career development is an important antecedent for school age children to understand the world-of-work. Seligman and colleagues have shown that children by the age of 10 have done quite a bit of thinking about their future and can clearly articulate their career aspirations (Seligman, Weinstock, & Heflin, 1991). In addition, McMahon and colleagues found that children’s career development was enhanced as a result of career education lessons, with children showing an increased ability to list occupations and identify a favorite occupation (McMahon, Gillies, & Carroll, 1999). These studies and others have provided empirical evidence that suggest children as young as kindergarten (Trice & King, 1991) are not too young for and would benefit from early career counseling.

Additionally, the monograph representing the work of Super and his associates’ theory of vocational development indicates that most children by the age of 10 have passed through the fantasy vocational life stage of career development into the interest stage. During the interest stage, children’s dreams of occupations are influenced by information about the world, resulting in interest development of certain occupations (Super et al., 1957). Therefore, the researcher
conceives that encouraging a child’s emerging interests by their participating in a career education program about nursing is pragmatic in the development of their decision-making related to career preferences, specifically related to interest in nursing as a career choice.

A corollary concept to vocational life stage development is that of developmental tasks that need to be mastered by growing children in relation to their environment. According to Erik Erikson’s (1993) theory of psychosocial development, he distinguishes the crisis of the middle childhood years, occurring between six years and puberty, as the psychological stage of industry versus inferiority. Erikson holds that successful experiences give the child a sense of industry and a feeling of competence and mastery, while failures give the child a sense of inadequacy and inferiority (Miller, 1993). Thus, the researcher suggests a career education program that provides both informational and experiential learning activities associated with nursing is important in the development of a child’s perceived competence to consider nursing as a possible career choice.

Thus far, the role of career education in promoting career development with children has been discussed, yet seldom researched. Education models that could prompt career development in elementary school children have been proposed, yet the impact of such interventions has seldom been studied and reported. In one of the few studies, McMahon and colleagues, found that children’s career development was enhanced as a result of a career education program resulting in children being able to list various occupations and even identify a preferred occupation (McMahon et al., 1999). Another study involving sixth-grade students reported increased interest in career information as a result of career education activities (Gillies, McMahon, & Carroll, 1998). Hence, the impetus for this research was founded on information indicating that career development is a lifelong process beginning very early in childhood and
that career education programs have reported support of spawning children’s interests in certain careers.

**Theoretical Structure**

Review of the current literature does not offer a well-developed conceptual model to use as a foundation to develop a children’s career education program, partly because of the limited amount and scope of research conducted in career development in children. Therefore, the researcher constructed an integrated and parsimonious conceptual framework that was used in the development of a career education program for school age children to influence their interest in nursing as a career choice. The proposed conceptual model in the study examines interest, competence perception, and the desire to help other people as critical attributes that contribute to the understanding and operationalizing of the career education program for school age children. These attributes are empirically evaluated and their contributions to the ultimate goal, to positively influence school age children’s interest in nursing as a career choice.

The interest component of the model is consistent with John Holland’s theory of vocational personalities and work environments (Holland, 1997). The model’s element of competence perception is supported by Albert Bandura’s theory of self-efficacy mechanism in human agency (Bandura, 1982). Lastly, the desire to help other people is influenced by nurse theorist Jean Watson’s philosophy and science of human caring (Watson, 1985). Thus, the underpinnings of these three theories provided a theoretical framework for a career education program (intervention) for school age children intended to positively influence interest in nursing as a career choice.

**Interest**

John Holland published his theory of vocational psychology in 1959 and many consider Holland’s impact on vocational psychology in the past 35 years unprecedented (McDaniel &
Snell, 1999). Holland’s career classification hexagon, described in detail in Chapter 2, is a distinguished icon that represents a theory both rich with researchable propositions and assessment tools of great counseling utility. In fact, the American Association of Counseling and Development states that no other career development theory equals the contributions that Holland’s work has provided for both the theoretical researcher and the applied practitioner. His book entitled Making Vocational Choices has been by far the most cited work in the field of vocational psychology (Rayman & Atanasoff, 1999).

In career counseling, the satisfied relationship between an individual and an occupation is referred to as congruence. Congruence exists to the extent that a person selects an occupation that matches some predefined characteristic of that person. Career information delivery systems are designed to help individuals identify occupations that are congruent with their vocational personality that lead to satisfying careers. These delivery systems typically define congruence along multiple characteristics including interests, abilities, values, and education. Holland’s theory is the primary interest model utilized in the nearly 50 information delivery systems and almost all the systems incorporate Holland’s career classification scheme (McDaniel & Snell, 1999).

Additionally, Holland’s theory on vocational choice has added organization, structure, simplification, and improved interpretations to most all interest inventories utilized in career counseling. It has provided a framework for organizing and measuring occupational interest data within the field of vocational psychology. The robustness of Holland’s work has influenced nearly all contemporary interest inventories such as the Campbell Interest and Skill Survey, the Suder Occupational Interest Survey and Career Search Schedule, Holland’s Self-Directed-Search, the Strong Interest Inventory and Skills Confidence Inventory, and the Unisex edition of
the ACT Interest Inventory (Campbell & Borgen, 1999). Accordingly, Holland’s theory and occupational information has come to dominate the development, validation, and application of interest inventories

It is Holland’s theoretical value, especially related to the structure of vocational interests, that the researcher chose Holland’s theory of careers to operationally illustrate interest. The instrument used to measure interest in children is the *ICA-R* and is explained in Chapter 3.

**Perceived Competence**

The portion of Albert Bandura’s general social cognitive theory that has received the most attention in the career development literature involves the assessments of self-efficacy (Bandura, Barbaranelli, Caprara, Pastorelli, 2001). According to Bandura (1986, p. 391), “Self-efficacy refers to people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances.” The term “career self-efficacy” is a term intended to summarize the possibility that low expectations of efficacy related to career behavior may serve as a detriment to optimal career choice and development in an individual (Betz & Hackett, 1981).

Betz and Hackett introduced self-efficacy into the career literature in 1981. They conducted a study involving both male and female college students to investigate the applicability of Bandura’s self-efficacy theory to the process of career selection. They postulated a causal model of career choice in which perceived self-efficacy functions as a major mediator of career selection. Additionally, they discovered that the level of perceived self-efficacy correlates positively with the range of career options critically considered by students and the degree of interest shown in them. Overall, the data from the study suggest that the strongest predictors of career choice were self-efficacy and interest (Betz & Hackett, 1981).
According to Holland, although many different career related activities are pursued during a person’s formative years, people generally develop characteristic patterns of career interests. The development of these patterns of career interests is thought to crystallize during adolescence or young adulthood. Holland’s theory posits that people tend to select careers that are compatible with their interests (Holland, 1997).

In addition, Bandura (1977) suggests a reciprocal relationship between self-efficacy and interests, such that, vocational interests are related to self-efficacy because they increase the likelihood of successful performance in the areas of interest. Reciprocally, expectations of self-efficacy are suggested to influence the areas of behavior pursued and those avoided. Thus, avoidance of certain activities as a result of low self-efficacy may prevent the development of interests, whereas engaging in a variety of activities is likely to expand an individual’s range of interests. More specifically, it is likely that individuals form enduring interests in activities in which they view themselves to be efficacious and in which they anticipate positive outcomes (Bandura, 1986; Lent, Brown & Hackett, 1994). The little research that does exist in children suggests that children 10-12 years of age do engage in career exploration and employ their interests and aptitudes to guide how and what they learn about the world-of-work (Hartung, Porfeli, & Vondracek, 2005).

Tracey (2002) examined the structure of interest in children and in a study of fifth and seventh-grade students reported that just as interest led to the development of a sense of competence, the development of a sense of self-competence fostered interest. Additionally, Holland (1997) proposed that self-efficacy estimates are related to interests and incorporated measures of self-efficacy into his interest scales. This approach to parallel measurements of
perceived competency (self-efficacy) and interest has distinct implications for career counseling and education and is discussed more entirely in Chapter 2.

It is Bandura’s theory of self-efficacy that explains why certain activities generate different vocational interests over time (Bandura, 1977; 1982). The theory also fits well with the current scholarly focus of self-efficacy and its extension to vocational behavior (Lent, et al., 1994). For these reasons, the researcher chose Bandura’s theory of self-efficacy to operationally typify competence perception. The instrument used to measure competence perception in children is the ICA-R and is described in Chapter 3.

**Desire to Help Other People**

From a nursing and anthropological viewpoint, the concept of caring for self and others is one of the oldest forms of human expression and has incited humans to convey their feelings of caring toward others. Historically, caring has been reported as the most frequent response given for selecting nursing as a career and continues to be a major influence for those choosing nursing. In a study examining student’s choice of nursing as a career, researchers found that the concepts of caring and nurturance were identified as high motivators for selecting nursing. The study also indicated that students described the meaning of nursing related to caring issues such as helping others, giving care and comfort, serving, supporting, and sharing (Kersten, Bakewell, & Meyer, 1991). In addition, Grossman and Northrop’s (1993) study of eleventh-grade students’ opinions of nursing as a career reported that most of the students perceived nursing as a career that provides opportunities to care for people in a time of need. More recent studies examining the most important personal influences of why students chose nursing as a career, reported a desire to help people (Wilson & Mitchell, 1999; Hemsley-Brown & Foskett, 1999). These studies continue to reinforce society’s time-honored views in relation to the overwhelming image of nursing as a caring and helping profession.
According to nurse theorist Jean Watson, the nursing profession acknowledges its claims to the concept of caring describing their professional services to others as nursing care, therapeutic care, caring for others, and other related caring expressions. Therefore, Watson contends that a science of caring is essential and the foundation for nursing practice. Watson asserts that nursing is both scientific and artistic, combing science with humanism. She views nursing as a therapeutic interpersonal process, yet at the same time, must continue to advance the science of nursing through scientific knowledge and research (Watson, 1985). Her ambition is to “study nursing as a humanistic-scientific discipline as well as an academic-clinical profession” (Watson, 1985, p. xvii).

Swanson’s (1999) meta-analysis of published nursing research on the concept of caring resulted in a proposed framework to integrate the current state of substantive knowledge about caring in nursing. Findings about the characteristics of a caring nurse were categorized as “the capacity for caring” and suggest that the caring nurse is compassionate, empathetic, knowledgeable, confident, and reflective. Previous studies have raised the question as whether these traits and characteristics are inherent (nature) or if they may be environmentally enhanced or diminished (nurture) (Ray, 1987; Clarke & Wheeler, 1992). However, in a survey design study, Soldwisch (1983) supported the association between capacity to care and maturational readiness (experience).

The researcher proposed a measurement of the desire to help other people to explore and quantify the caring capacity of the sample population of fifth-grade students and the effects of an education intervention on the students’ caring capacity. The instrument used to measure helping others in children was developed from the Child Development Project; Scales from Student Questionnaires, of the Developmental Studies Center titled Concern for Others (Grades 3-6) and
is discussed in Chapter 3. According to Dr. Watson (personal communication, November 5, 2006) the instrument is one possible tool that can measure caring reflective of her theory of human caring.

**Purpose of the Study**

The purpose of the study was to develop and examine the effects of a career education program to strengthen the future professional nursing workforce by encouraging an interest in nursing as a career choice with school age children, specifically fifth-grade students. The research was designed to provide information on the career development of fifth-grade students, approximately ages 10 to 11, and to explore the influence of a career education program on children’s interest in nursing as a career choice. The following aims guided the study:

- Evaluate the effects of a career education program designed to enhance fifth-grade students’ interest of nursing as a career on: (a) interest, (b) competence perception, and (c) desire to help other people, considering gender. Interest in nursing as a career choice is operationally illuminated by the concepts of interest (Holland, 1959), competence perception (Bandura, 1977), and desire to help other people (Watson, 1985).

- Evaluate the effects of a career education program about nursing on children’s expressed consideration of nursing as a future career choice, considering gender.

**Summation**

In summation, choosing a future occupation is one of the most vital decisions young people face. Vocational development begins much earlier in the life span than generally assumed, and what children learn about work and occupations has a profound effect on the choices they make as adolescents and young adults, and ultimately, on their occupational careers. The theoretical suppositions presented in this study suggest that many children in the range of 10–12 years of age engage in dynamic career explorations, using their interests and aptitudes to guide how and what they learn and the goals they formulate in relation to the world-of-work.
The theoretical model that has been proposed served as a functional foundation to develop a career education program for school age children, particularly fifth-grade students, intended to enhance interest in nursing as a career choice. The proposed theoretical model is shown in Figure 1-1 including a relational synthesis of the three conceptual components: (a) interest, (b) perceived competency, and (c) desire to help other people.

**Research Questions**

1. What is the effect of a career education program on fifth-grade students’ interest in nursing as a career choice measured by changes in the students’ “yes” or “no” responses when asked if they would consider being a nurse when grown, taking into account gender?

2. What are the effects of race, having a family member who is a nurse, and knowing someone who is a nurse other than a family member on the students’ “yes” or “no” responses when asked if they would consider being a nurse when grown before and after participating in a career education program about nursing?

3. What are the effects of a career education program on fifth-grade students’ interest in nursing as a career choice measured by changes in interest (ICA-R), competence perception (ICA-R), and desire to help other people (Concern for Others)? Interest in nursing as a career choice is operationally illuminated by the concepts of interest (Holland, 1959), competence perception (Bandura, 1977), and desire to help other people (Watson, 1985).

4. Is there a difference in how male and female fifth-grade students respond to a career education program about nursing as a career choice measured by scores on the ICA-R and Concern for Others?
Figure 1-1. Theoretical model of a career education program for school age children
CHAPTER 2
REVIEW OF LITERATURE

The Nursing Shortage

Thinking about today’s nursing shortage can be overwhelming. Almost everyone feels an obligation to do their part to address the shortage of qualified nurses in this country. Duly, the American Association of Colleges of Nursing (AACN), the national voice for university and four-year-college education programs in nursing, is concerned about the nursing shortage and is working with colleges and universities, policy makers, kindred organizations, and the media to bring attention to this healthcare emergency. The AACN is functioning to enact legislation, identify strategies, and form public and private partnerships to help strengthen the nursing workforce (American Association of Colleges of Nursing, 2006a). In addition, other major national outreach efforts are underway aimed at drawing attention to the nursing shortage, promoting the image of nursing, and attempting to attract people into the nursing profession (Donelan et al., 2005).

Current Outreach Efforts

Policy makers

On February 22, 2002 the Bush administration released a national news bulletin identifying the nursing shortage as a national priority and unveiled a plan to promote careers in nursing among America’s young people. Endorsed by the Bush administration, Health and Human Services’ (HHS) Secretary Tommy G. Thompson and Education Secretary Rod Paige launched a government campaign to encourage schoolchildren to consider a career in nursing. During this public announcement, Secretary Thompson is quoted saying “Secretary Paige and I both want students to realize that nursing is an exciting and satisfying career that makes a difference in people’s lives” (HRSA News Room, 2002, p. 1). Secretary Paige went on to say, “By making
students in America’s schools and postsecondary institutions aware of careers in the health profession, particularly nursing, we hope we can interest these outstanding young people in filling the critical need of qualified nurses” (HRSA News Room, 2002, p. 1).

During the press release, Secretaries Thompson and Paige unveiled “Kids into Health Careers” (KIHC). KIHC operates through the Health Resources and Services Administration’s Bureau of Health Professionals (BHPr) and is a government sponsored education campaign to encourage children’s interest in nursing and other health professions. KIHC stresses the need to reach children at an early age to encourage them to choose a career as a healthcare professional. Their agenda includes raising the image of and interest in nursing within communities throughout the country by promoting the nursing profession in local schools, particularly at the elementary school level (Kids into Health Careers, 2003).

Private organizations

The private sector also became involved at about the same time that Secretaries Thompson and Paige introduced KIHC with the Johnson & Johnson Company announcing it had begun a multi-year, multi-million dollar national campaign, The Johnson & Johnson Campaign for Nursing’s Future, aimed at attracting young people to the nursing profession. The campaign was developed following a review of current research on the nursing shortage and after consulting with professional nursing organizations, schools of nursing, hospitals, and other healthcare agencies. As well, the campaign was assisted by healthcare researchers studying the nursing shortage at Vanderbilt University Medical Center’s School of Nursing and Center for Health Services Research (Johnson & Johnson, 2001).

Led by Peter Buerhaus, Associate Dean of Nursing at Vanderbilt and a leading researcher on the nursing shortage, a national poll was conducted to gain insights on Americans’ perceptions related to the nursing shortage. The nationwide poll commissioned by Johnson &
Johnson consisted of telephone interviews of 1,005 Americans, 21 years of age or older (Smith, 2002). Based on the analysis of the study, Buerhaus commented:

The biggest problem is that people are unaware of the array of opportunities and rewards in nursing today. They are unaware that nursing salaries are very competitive with other professions or that nursing offers career opportunities in health research, hospital management, and family and community health care, in addition to traditional patient care. We need to get these messages out to parents, teachers, counselors and, above all, students at all levels. (Smith, 2002, p. 3)

Therefore, one of the campaign’s central objectives was to publicly promote opportunities in nursing and increase awareness of the value of the nursing profession to America’s healthcare system. The campaign included providing free recruitment brochures, posters and videos to hospitals, high schools, nursing schools, and other nursing organizations; as well as a national advertising campaign that celebrated nursing and their contributions to healthcare (Johnson & Johnson, 2001). One of the primary goals of the campaign was to stimulate interest in nursing as a career choice through national advertising. Noteworthy, five years (1995-2000) prior to the campaign the nation had experienced a drop in enrollments into nursing education programs. Yet, after the campaign was launched enrollments in nursing programs increased impressively within the next three years (American Association of Colleges of Nursing, 2006b).

**Kindred organizations**

Nurses for a Healthier Tomorrow (2007), a coalition of 43 nursing and healthcare organizations working together to wage a communications campaign to attract people to the nursing profession launched its national media campaign to encourage interest in nursing careers. The coalition conducted nationwide focus groups, launched a Web site, created public service announcements, and designed print ads that were distributed to the American public to bolster the image of nursing and to educate the public on the opportunities offered by a career in nursing. Its mission states:
The potential and the solution to the nursing shortage lies in the profession of nursing itself and in the tremendous range of opportunity it offers to young people considering a career in health care. Our job is to communicate that message and bring the image of the nursing profession in line with the realities of its tremendous social importance and personal potential for career satisfaction. (Nurses for a Healthier Tomorrow, 2007, p.1)

Results

Joining together in 2003, Tommy G. Thompson, Health and Human Services Secretary, and James T. Lenehan, President and Vice Chairman of the Board of Johnson & Johnson, announced to the American public that baccalaureate nursing school enrollments increased by more than eight percent in 2002. Overall, 84 percent of all nursing schools nationwide were experiencing increased applications and enrollments as a result of these major recruitment projects (Smith 2002). Accordingly, AACN (2006b) reported a 3.7 percent enrollment increase in 2001 in entry-level baccalaureate programs in nursing, an 8.1 percent increase in 2002, a 16.6 percent increase in 2003, a 14.1 percent increase in 2004, a 9.6 percent increase in 2005, and a five percent increase in 2006 (based on preliminary data). Additionally, AACN’s (2006b) annual survey indicated an 18 percent increase from 2005 to 2006 in the number of graduates from entry-level baccalaureate nursing programs; as well as 3.2, 4.3, 14, and 13.4 percent increases in the number of graduates in 2002, 2003, 2004, and 2005, respectively.

Future Outlooks

Although these increases in enrollment and number of graduates are encouraging, the federal report published by the Health Resources and Services Administration (2004) projecting future nurse supply and demand entitled What is Behind HRSA ’S Projected Supply, Demand, and Shortage of Registered Nurses? indicates that the U.S. must graduate approximately 90 percent more nurses from its nursing programs to meet the projected growth in the demand for nursing services. This equates to a deficit of one million new nurses by the year 2020, suggesting that 64 percent of projected demands for nursing services will not be met (Health Resources and
Services Administration, 2004). This survey is completed every four years and is considered the most extensive and comprehensive statistical resource on registered nurses with a current license to practice in the United States. However, an updated forecast of the nursing supply and demand a decade from now is not quite as ominous, projecting a shortage of 340,000 nurses, which is still three times larger than the size of the current shortage when it was at its peak in 2001 (Auerbach, et. al., 2007).

A contributing factor to the increased demand for nursing services is the rising elderly population in proportion to the projected increase in the number of nurses and other caregivers. The future demand for nurses is expected to increase dramatically as the baby boomers reach their sixties and beyond. It is projected that the population of people 65 years old and older will double between 2000 and 2030. The increasing age of the general population and the growing need for management of chronic disease conditions, suggest that the overall requirement for nursing services will increase (Buerhaus et al., 2000). This obvious disparity between the future supply of and demand for nurses continues to widen the gap between the number of people needing care and those available to provide that care (United Stated General Accounting Office, 2001). Even with AACN’s (2006b) report of increased enrollment in nursing programs and graduates for the past six years, it is evident that the need for more nurses will billow in the years ahead related to the increasing demands for nursing services heightened by an aging workforce exiting the profession.

Future Recommendations

The researcher suggests that this recent robust interest in the nursing profession, demonstrated by the increase in student enrollment and number of graduates in nursing colleges and universities for the sixth consecutive year, is in part an outcome of the dissemination of positive information about the nursing profession and its myriad of career opportunities through
these above mentioned national outreach efforts (Smith, 2002; American Association of Colleges of Nursing, 2006b). Therefore, the researcher recommends that initiatives aimed at continuing to increase interest in nursing careers must be expanded and sustained to help stabilize this disequilibrium of the supply and demand in the nursing workforce.

**Career Education Program for School age Children**

The purpose of this review is to provide a general overview of the current study’s proposed concept of a career education program as it relates to the development of school age children’s interest in nursing as a career choice. Career development information from the disciplines of nursing, Holland’s (1959) theory of career development, Bandura’s (1977) theory of self-efficacy, and Watson’s (1985) theory of human caring were identified and reviewed. Although limited in scope for school age children, the research that does exist suggests many children in the range of 10-12 years of age do engage in dynamic career exploration, using their interests to guide how and what they learn and the goals they formulate in relation to their world-of-work (Wahl & Blackhurst, 2000).

**Nursing**

The researcher reviewed past nursing research that examined various perceptions of nursing as a career and specific influencing factors of those students considering or choosing nursing as a career. To begin, in 1988 a survey regarding the public’s perceptions of an ideal career and nursing as a career was conducted by May and associates for Sigma Theta Tau International. The overall goal of the study was to provide information that could be used to enhance recruitment into nursing and ultimately reduce the nursing shortage in Indiana. College freshmen, students from grades six through 12, their parents, teachers, counselors, and school nurses were sent a questionnaire developed by the researchers. Among the various findings was that students in grades six to 12 had more positive attitudes toward nursing career attributes than
did the other groups in the study. Based on this particular result, the researchers proposed that a
potential recruitment group for nursing is school age students because of their more positive
attitudes toward nursing as a career. In addition, the researchers recommended that parents,
teachers, counselors, and college students receive education and be involved in recruitment
strategies intended to raise the image of nursing (May, Austin, & Champion, 1988).

A group of nurse researchers (Marriner-Tomey, et al., 1990) conducted a similar study
involving only high school students. The purpose of their research was to identify career
characteristics that sophomore high school students value along with their perceptions of those
characteristics in nursing. To elicit this information they used the questionnaire developed by
May and associates (1988) with minor changes in the demographic questions. The questionnaire
was distributed to 450 high school sophomores to compare sophomore high school students’
perceptions of an ideal career with their perceptions of nursing as a career. The researchers
reported:

Students wanted significantly more criteria to be met in an ideal career than they perceived
in nursing as a career: always have a job; be appreciated; know a great deal; make a large
amount of money; work in a safe place; be a leader; make decisions; be powerful; and have
respect. They wanted significantly less of the other criteria to be met in an ideal career
than they perceived in nursing as a career: care for people; work very hard; work with my
hands; be very busy; and work with high-tech equipment. (Marriner-Tomey et al., 1990, p. 28)

Results of the study incited the researchers to recommend strategies to change students’
perceptions about nursing as an ideal career to include development of public relations
campaigns about the advantages of nursing as a career and for school programs to educate
students, school counselors, and career advisors about nursing (Marriner-Tomey et al., 1990).

In 1989, a survey of 300 middle school students was conducted by Grossman and
colleagues to elicit students’ perceptions of nursing and to explore the relationship between the
experiences of having a nursing role model and the decision to consider nursing as a career.
They found that the majority of students were aware of the caring and helping aspects of nursing but had little knowledge about the expanded roles and diverse opportunities available in a nursing career. In addition, the results indicated a significant relationship between the experience of having a nurse role model and consideration of nursing as a career choice. The researchers suggested that this particular finding has important implications and must be considered in the recruitment of young people into the nursing profession (Grossman, Arnold, Sullivan, Cameron, & Munro, 1989).

Similar findings were reported in a study (Kersten, et al., 1991) that focused on the motivation factors in a nursing student’s choice of nursing as a career. The study explored current nursing students’ definition of nursing, reasons for choosing nursing, and who or what influenced their choice to be a nurse. The researchers developed a questionnaire and collected data from a random sample of 20 nursing schools. They concluded that practicing nurses were identified most frequently as influencing students’ image of nursing and their reason for selecting nursing as a career. The data also indicated that caring continues to be a major motivating factor for individuals going into nursing in that caring and nurturance of others gave the students a feeling of satisfaction (Kersten et al., 1991).

Additionally, Pillitteri (1994) surveyed 102 undergraduate students enrolled in a general education course at a large university in an attempt to identify differences in how nursing and non-nursing college students view nursing. Demographic information included if the student had a relative who was a nurse. Accordingly, the study revealed that exposure to nurses was correlated to a student’s view of nursing as an enjoyable occupation. Pillitteri suggested that an effective recruitment intervention for nursing would be to introduce prospective college students to practicing nurses. The researcher recommended that students interested in nursing would
benefit from, “early introduction to nursing instructors, exposure of nurses to junior and senior students, or ideally, spending a day with a nurse in actual practice” (Pillitteri, 1994, p. 133). Along the same line, in a recent survey of nursing students, Buerhaus and colleagues (2005b) found that information or advice from practicing nurses was identified by 65 percent of nursing students as a factor positively influencing their decision to be a nurse. Similarly, researchers (Donelan, Buerhaus, Ulrich, Norman, & Dittus, 2005) found that teenage students highly recommended the nursing profession when the students were given the opportunity to talk with nurses about nursing rather than with a school counselor, suggesting that nurses themselves are key influencers of young students considering a career in nursing.

In a study involving high school students, Kohler and Edwards surveyed 306 students’ beliefs about nurses and nursing as a career. The students responded to a questionnaire asking about education requirements, working conditions, earning power, and social status of nurses. Of the 306 high school students, only 8.6 percent were considering nursing as a career choice. The findings also indicated that students perceived nursing education to be too difficult and costly in view of the potential return on their investment related to status or monetary compensation. The researchers proposed nursing to become further expanded and integrated into high school career education curricula and to offer students a personal experience with nurses in actual work settings. They felt perceptions about nursing would be enhanced by expanding the informational sources related to nursing, thereby facilitating the recruitment of young students into nursing (Kohler & Edwards, 1990).

On the other hand, a study (Stevens & Walker, 1993) analyzing 641 college bound high school seniors was designed to determine the reasons these students do not select nursing as a career more frequently. Some of the findings from this study were consistent with previously
reported nursing research, such as citing a lack of knowledge about the expanded roles and
diverse opportunities available in a nursing career (Grossman et al., 1989; Marriner-Tomey et al.,
1990). Other findings indicated the students were unaware that nurses worked with computers
(91.8%) or high-tech equipment (84.1%), directed health programs (85.5%), or held management
positions (81.2%). Only slightly more than half of the students believed that nurses made their
own decisions (62.2%), had many opportunities for promotion (55%), and could always get a job
(52.6%). Approximately one third of the students acknowledged that nurses had opportunities to
travel (34.4%), were in demand (28.5%), and that nursing was an exciting career (38.9%). In
addition, almost half of the students (43.8%) believed that nursing was mainly a career for
women (55.1% of the sample were female). Based on their findings the researchers
recommended that nurse educators participate in projects and activities that correctly inform and
improve the knowledge of high school students’ understanding and perception of the nursing
profession. They further suggested offering career development activities with elementary and
secondary students before career decisions are made should be purposively considered and
explored to stimulate nursing as a career choice in younger children (Stevens & Walker, 1993).

High school guidance counselors’ attitudes about nursing as a career were examined by
Hendrickx and Finke (1994). The questionnaire used in their study was the same questionnaire
used by Grossman and colleagues (1989) when they examined high school students’ perception
of nursing as a career. The researchers were encouraged by their results in that most counselors
surveyed (96%) reported that they do recommend nursing as a positive career choice to high
school students and were well informed about the opportunities in nursing. Other studies
exploring the image of nursing held by high school guidance counselors also found that the
majority of counselors are well informed about nursing as a professional discipline and
considered nursing as a potential career for their students. The researchers celebrated their results and emphasized the need for guidance counselors to continue to stay informed about nursing and further suggested that the high school level may be too late for initial student contacts about career choices and recommended counselors in middle and elementary grade levels needed information about nursing as a career choice as well (Hendrickx & Finke, 1994; Lippman & Ponton, 1993; Mignor, Cadenhead, & McKee, 2002).

A particular study of interest to the researcher explored the effects a presentation about nursing has on a students’ perception of nursing and whether it changes their perception of how a career in nursing compares with an ideal career (Marriner-Tomey, et al., 1996). The questionnaire used by May and colleagues (1988) in a Sigma Theta Tau International study designed to elicit respondents’ perceptions of nursing as a career was used in this study. The 450 Indiana students completed the questionnaire during their sophomore year of high school. Then, during their junior year, a thirty-minute educational video about nursing was presented to these same students. The video was followed by an informational session about nursing careers, to include where nurses work, salaries, and job security. The same questionnaire was distributed a second time during these students’ junior year after attending the presentation to analyze the effects of a presentation about nursing as a career option on the attitudes of high school students toward nursing and their likelihood of entering the profession. Their findings compared pre-test and post-test attitudes of a comparison group and an experimental group. The attitudes of the experimental group revealed that significantly more students thought that nurses make money, are leaders, and are powerful on the post-test as compared to the pre-test. Thus, the researchers concluded that these findings support the hypothesis that a presentation about nursing delivered
Findings and implications from this previously described study (Marriner-Tomey et al., 1996) generated the development of the Nursing 2000 model, a collaboration of nursing service and nursing education serving eight central Indiana counties. The primary purpose of Nursing 2000 was public promotion and dissemination of information about the nursing profession. A survey was conducted (Wilson & Mitchell, 1999) seven years after the implementation of Nursing 2000 to determine the extent of influence it had on nursing students in choosing nursing as a career. The majority of respondents (92%) indicated that they were aware of the programs and activities of Nursing 2000. The researchers found five of the 13 programs sponsored by Nursing 2000 to be statistically significant in the students’ perception of the influence that Nursing 2000 had on their career choice as a nurse. Those five programs were: (a) “Shadow a Nurse Program”, (b) career literature, (c) classroom presentations, (d) community presentations, and (e) career counseling by telephone.

A study that was conducted in a small London borough found that students entering college had very little interest in nursing as an occupational choice, with less than 2% of the students declaring an interest in nursing (Firby, 1990). The researcher contends this is due in part because nursing is no longer one of the few professions available for women. She declares that women are no longer simply looking to teaching and nursing, but have widened their horizons to incorporate many occupations, which in the past have been considered part of the male domain. She explained that nursing is no longer in the privileged position of being one of the few professions available for women and will have to compete with occupations offering greater prestige and money. Inferring from the study, the researcher strongly recommended that
nurse leaders take urgent action in recruitment strategies about nursing in an attempt to increase its appeal to young people. Firby (1990, p. 737) declared, “Unless nursing can increase its appeal to the youngsters of today it really will become a career of yesterday.”

Another study (Hemsley-Brown & Foskett, 1999) reported from southern England consisted of focus groups and individual questionnaires using a sample of 410 young people, ages, 11, 15, and 17. The specific purpose of the study was to examine and analyze how young people choose a career by focusing on how nursing and engineering are perceived by students at different ages and how these perceptions influence decision-making about subject choices while in school, education and training pathways, and ultimate career ambitions. It was found that the main reason for choosing nursing was to be involved with “helping people,” although only 6.6 percent of the total sample expressed an interest in nursing as a possible career choice. The majority of those choosing nursing as a career were 17-year-old girls. An additional 9.6 percent of the 17-year-old group claimed that in the past they had wanted to become a nurse, but had changed their minds and chosen another occupation before reaching 17, and half of that group had changed their minds before reaching the age of 10. The most popular reason given by all age groups for not wanting to be a nurse was that they were “not interested” (27.3%). Boys were more likely to give the reason “not interested in nursing” (39.5%) as the main reason for not choosing nursing and more likely to say that nursing is female work, particularly boys in the 15-year-old group. Eighty-nine percent of young people had made a career choice without regard for financial reward and had based their career choice on intrinsic factors such as “interest and enjoyment” (Hemsley-Brown & Foskett, 1999). These results are similar to results cited in various United States’ studies, suggesting that young people in these two neighboring countries have similar perceptions of nursing as a career choice.
Lastly, a study conducted by Buerhaus and colleagues (2005a) compared data from a 2002 and 2004 national random survey of nurses evaluating nurses’ perceptions of nursing and satisfaction with their current job. Comparing the results of the two surveys revealed that in both surveys 83 percent of nurses were very or somewhat satisfied with their jobs, but those who were very satisfied with their jobs rose from 21 percent in 2002 to 34 percent in 2004. In addition, both surveys found that the majority of nurses (87%) were either very or somewhat satisfied with nursing. However, the number of nurses reporting they were very satisfied with being a nurse increased from 37 percent in 2002 to 46 percent in 2004. Moreover, the comparison of the two surveys indicated considerably more nurses would definitely or probably recommend a career in nursing to qualified high school or college students, 60 percent in 2002 to 72 percent in 2004. More notable, the nurses that would definitely recommend nursing nearly doubled, from 17 percent in 2002 to 33 percent in 2004. The results of this study are very encouraging for the researcher and suggest that nurses being currently satisfied with nursing have potential implications for recruitment activities. Since nurses are currently more satisfied with nursing as a career, illustrated by the 2002 and 2004 survey (Buerhaus et al., 2005a), then it is reasonable that a career education program for school age children designed to stimulate an interest in nursing as a career choice include exposing young students to nurses and what nurses do in their world-of-work.

**Career Development in Children**

How Early?

In essence, the question ensues, “How early is too early to begin career development?” To answer this question the researcher reflected on a study conducted by Beverly Parks (1976) where she evaluated if exposure to a career oriented curriculum increased the career awareness of elementary school students in grades three, four, and five. Other purposes of the study were to
determine whether exposure to the curriculum reduces gender bias and what effect the curriculum had on the students’ choice of occupations. Results indicated that the curriculum did not lead to significant differences in career awareness among all grade levels, although it did have a significant impact on the gender-stereotyping behavior of both male and female students in grades four and five, but not in grade three. Based on these results, Parks proposed that the reduction in stereotyping might have the positive effect of having students consider more career options and may ultimately be a more desirable outcome than increased career awareness. Thereby, the researcher inferred that a curriculum intervention as early as fourth grade could significantly reduce occupational stereotyping and perhaps lead to greater freedom of occupational choices.

**Developmental Career Counseling**

Emerging in the 1950s, developmental career counseling is generally credited to Donald Super (Super et al., 1957) for generating the major concepts that gave impetus to a developmental approach to career counseling beginning in childhood and progressing into adulthood. Developmental career counseling is based on traditions rooted in principles from developmental psychology and is evidenced by the fact that many vocational theorists have used life-span development as an organizer for their presentation of career development concepts (Walsh & Osipow, 1990). Of recent, the perspective on career guidance has shifted from a focus of vocational development during adolescence and early adulthood to include a broad view of career development throughout the various life stages, including young children (Sharf, 2006).

The developmental theories of Erikson (1993) and Piaget (1972) describe the ways in which children develop their understanding of the world. As well, life career theories, such as those of Super (Super, et al, 1957) and Gottfredson (1981) provide a framework for understanding the ways in which children develop their understanding of the world-of-work.
Therefore, the researcher suggests that age-appropriate career development activities for children be designed by weaving the underpinnings of both child and career development theories that are appropriate to the various developmental stages of childhood.

Acknowledging that it is during childhood that crucial career related concepts and attitudes are first formed (Super et al., 1957), the American School Counselor Association (ASCA) issued the ASCA Policy Statement on Career Guidance citing the elementary school years as a period for children to develop awareness of self and careers. The policy statement called for school counselors to assume leadership in implementing developmental care guidance programs for all students and to begin as early as kindergarten (American School Counselor Association, 1984). In so doing, the importance of providing career development programs in the elementary schools became a recommended standard of elementary school counseling programs. Thus, career education is now recognized as a fundamental element of guidance programs at elementary and middle school levels, and not just of high school students (American School Counselor Association, 2006).

The importance of developmentally appropriate career guidance activities being introduced at the elementary school level has gradually and increasingly been acknowledged in the career development literature. However, the empirical literature focused on young children is relatively sparse as compared with the rich literature on adolescent and adult career development (Trice, Hughes, Odom, Woods, & McClellan, 1995). Areas of research related to childhood career development have focused on the child’s ability to express realistic occupations, permanence of career preferences, the influence of gender role expectations, parental and role model influences, social and status valuation, and personal interests on children’s career aspirations (Sharf, 2006).
Based on the study’s research questions, the researcher chose to review and include the literature related to (a) expression and permanence of career preferences, (b) the influence of gender role expectations, and (c) the effect of interests and competence perceptions on children’s career aspirations. These literature reviews are covered in the subsequent paragraphs.

**Expression and Permanence of Career Aspirations**

The review of the research literature uncovered several studies that have provided evidence that young children are able to express career aspirations. One study (Trice & King, 1991) interviewed 211 kindergartners at the beginning of the school year and again eight months later concerning the children’s career wishes. Seventy-four percent of the kindergartners gave a realistic career as their first choice during the initial interview and the percentage increased to 84 percent on the second interview. Of those giving a realistic career on the first interview, 46 percent chose the same occupation at the second interview. Based on these results the researchers concluded that kindergarten children have both realistic and stable career aspirations. This study was subsequent to Trice (1990) reporting that 70 percent of 203 second-graders and 45 percent of 209 fifth-graders over a nine-month period gave the same answer to the question, “What do you want to be when you grow up?” These studies suggest that even among five-year-old children there is a degree of structure and stability in children’s occupational aspirations (Trice, 1990; Trice & King, 1991).

In a retrospective study, 620 full-time employed adults between the ages of 40 and 53 were asked to identify their first realistic career aspirations and how old they were at the time. Results indicated a majority, 59 percent, specified a first career aspiration before the age of 13. Of particular attention, 41 percent of the childhood aspirations and 46 percent of the adolescent aspirations matched current occupations. The researchers concluded that early career aspirations are associated with adult career choices and that first choices aspired in childhood are as likely to
result in career achievement as those developed in adolescents (Trice, 1991). Other studies with adults and college students (Costa & McCrae, 1986; Costa, McCrae, & Holland, 1984; Swanson & Hansen, 1988) have also illustrated the stability of vocational interest patterns over the life span.

Trice and McClellan (1993), in a study evaluating the permanence of occupation preference with young children and adolescents, found a strong correlation between the career aspirations of individuals interviewed at ages six to 17 and their actual careers 14 to 20 years later, particularly in scientific, artistic, helping, and skilled trade professions. In addition, the results of a study measuring the vocational interests of gifted adolescents supported assessing vocational interests at age 13 can in fact offer a glimpse of eventual adult vocational-interest patterns (Lubinski, Benbow, & Ryan, 1995). Hence, these studies demonstrate how critical the career development of children can be on their subsequent career goals and illuminate the predictive value of early occupational aspirations.

**Gender Role Expectations**

A seminal study (Looft, 1971) indicated gender differences in career aspirations develop early in childhood, especially with females. The study suggested that females, as early as first and second grade, identified a narrower range of career preferences and had lower expectations of occupational achievement than males. A more recent study (Phillips, Cooper, & Johnson, 1995) indicated similar results, finding distinct differences between the career goals of girls and boys in grades four through eight, with girls identifying a much narrower range of professional occupations.

As well, studies (Phipps, 1995; Sellers, Satcher, & Comas, 1999) have found that young children continue to think of occupations and choose occupations in terms of the occupations being male or female. Research (Bailey & Nihleh, 1990; Bigler & Liben, 1990) has indicated
that same-gender role models in a particular career are one factor that influences men and women’s attitudes about the appropriateness of a career for members of their own gender. This research suggested that exposure to nontraditional role models can lead to a reduction in occupational gender stereotyping in school age children. The researcher gleaned several recommendations from these studies to help dispel young students’ gender stereotypes, such as: (a) designing a curriculum that stresses the irrelevance of occupation gender versus the relevance of interest, (b) bringing guests with nontraditional occupations into the classroom to discuss their occupations, (c) reading stories whose characters hold nontraditional jobs, (d) taking field trips to view workers in nontraditional settings, (e) depicting nontraditional workers on career posters (such as male nurses), and (f) establishing mentoring and shadowing programs for children interested in nontraditional careers.

Holland’s Theory of Career Development

John Holland, vocational psychologist, first published his heuristic theory of vocational choice in 1959. Holland’s theory is unique and most notable among career theories in that it provides an analogous method to describe people in terms of personality type (interest) and work environment. The theory characterizes people by their resemblance to six personality types; Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C), collectively referred to as RIASEC. The more closely a person resembles a certain type, the more likely the person will display personal traits and behaviors associated with the type. Holland (1997, p. 6) explains, “The idea for a typology resulted from the frequent observation that several broad classes account for most human interests, traits, and behaviors.” A second concept of Holland’s theory is the environments in which people live and work can be characterized by their resemblance to six model environments; Realistic (R), Investigative (I),
Artistic (A), Social (S), Enterprising (E), and Conventional (C), which correlate with the six personality types (Holland, 1968).

Holland designed his iconic RIASEC hexagonal model (Figure 2-1) to portray similarities and differences between and among the six types. Herein, the six types can be represented as existing in a hexagonal arrangement where proximity between types represents the degree of relation. Those that appear next to each other on the hexagon, such as Artistic and Social, have similar interests and personality traits. Conversely, those types that are directly across on the hexagon, such as Social and Realistic, are considered opposites with no similarity in interests or personality traits (Holland, 1997).

In Holland’s typology, both personality and environment are expressed in a three-letter code, formed by selecting the three types that most closely distinguishes the person or the person’s work environment. The three-letter code, referred to as the Summary Code, summarizes a person’s characteristics by showing the degree of likeness to the three types (Holland, 1997). As an example, a nurse has the three-letter code of SIA, indicting a nurse typically has dominant Social beliefs, but also, to a lesser degree, exhibits Investigative and Artistic characteristics. An individual is more likely to be successful, feel satisfied, and enjoy a productive work life when there is congruence between personality characteristics and work environment (Holland, 1997).

Two of Holland’s basic assumptions are that people in the same occupation have similar personalities and they choose occupational environments that are consistent with their personality type (Rayman & Atanasoff, 1999). These two assumptions illustrate a secondary concept of Holland’s theory referred to as congruence. To illustrate, someone that is energetic, self-confident, and attention getting will seek an environment in which these traits can be easily
expressed. This person could possibly find “that fit” in the occupational roles of business
executive, salesperson, or news reporter (Holland, 1997).

Other secondary concepts of Holland’s theory include consistency, differentiation, and
identity. Consistency is determined by examining the relationship of the first two letters of the
Summary Code. In RIASEC theory, a personality pattern or interest profile is consistent if the
ideal types most resembled are closely related or adjacent on the hexagon. High consistency is
associated with stability in career direction and career selection. Differentiation is the extent that
a person or an environment is well defined. An individual that is clearly defined may closely
resemble only one type as opposed to someone that resembles many types, or undifferentiated.
Lastly, the concept of identity provides an estimate of the clarity and stability of a person’s goals,
interests, and talents, as well as the clarity or explicitness of an environment’s goals or
expectations. It is a general measure to rule out vocational decision-making difficulties (Reardon
& Lenz, 1999).

Two of the underlying six principles of Holland’s theory are considered relevant to this
study and require enumeration. The two principles are: (1) The choice of a vocation is an
expression of personality and (2) Interest inventories are personality inventories. Holland is
very clear that he believes personality and vocational choices are related stating:

If vocational interests are constructed as an expression of personality, then they represent
the expression of personality in work, school subjects, hobbies, recreational activities, and
preference. In short, what we have called “vocational interests” are an important aspect of
personality. If vocational interests are an expression of personality, then it follows that
interest inventories are personality inventories. (Holland, p. 8, 1997)

However, for the past 50 years, researchers have investigated the links between interests
and personality and a question remains, Does the available research findings support Holland’s
(1973) view that vocational interests are an expression of personality, and if so, can interest
scales reflect personality characteristics? Perhaps Costa, McCrae, and Holland (1984) did the
largest study examining the relations between vocational interests and personality traits. Their analyses supported the conclusion that personality dispositions show a strong and consistent association with vocational interests. Later studies (Gottfredson, Jones, & Holland, 1993; Hogan & Blake, 1999; Tokar & Swanson, 1995; Tokar, Vaux, & Swanson, 1995) have replicated the correlation between interest scales and personality scales reporting small to moderate correlations.

In relation to measurements of assessed interests, Holland’s contributions to the development of interest measurement have dominated the field with the redesign of the Strong Interest Inventory and Holland’s development of the Self-Directed Search and Vocational Preference Inventory. These instruments continue to be the most popular interest inventories used by contemporary career counselors. In précis, Holland’s RIASEC hexagon has brought structure, organization, and simplification to interest measurement (Reardon & Lenz, 1999; Savickas & Gottfredson, 1999).

**Bandura’s Theory of Self-Efficacy**

Bandura’s social learning theory provides a philosophy of human agency to explain career choice and development. Recent application of social learning theory to career development has focused on the predominance of a sense of competency, specifically self-efficacy (Bandura, 1977, 1982, 1986; Betz & Hackett, 1981; Lent, et al., 1994), as leading to the development of career behavior. According to Bandura and colleagues:

> Among the mechanisms of human agency, none is more focal or pervading than people’s perceived self-efficacy. Unless people believe they can produce desired outcomes by their actions, they have little incentive to act or to persevere in the face of difficulties. Perceived self-efficacy is, therefore, posited as a pivotal factor in career choice and development. (Bandura, et al., 2001, p. 187)

Self-efficacy is defined by Bandura (1986, p. 391) as “... people’s judgment about their capabilities to organize and execute a course of action required to attain designated types of
performances.” Self-efficacy expectations refer to individuals’ beliefs in their abilities to perform particular behaviors successfully and are developed from their experiences with the effects of their own past behavior (Bandura, 1977, 1982).

More than 20 years of research (Bandura, 1997; Betz, 2000; Betz & Hackett, 1981, 1997; Hackett, 1985; Lent, et al., 1994) have indicated that beliefs of self-efficacy do in fact influence occupational development and pursuits. However, while there is substantial research that confirms the role of perceived self-efficacy in career choices in young adults, there has been little research and knowledge development on how children develop their sense of occupational efficacy and how it affects their career trajectories. One of the few studies involving children ranging from 11 to 15 years old found that the pattern of children’s perceived academic efficacy had the most pervasive impact on children’s judgments of their occupational efficacy. It was explained that this perceived occupational efficacy influences the type of occupations children believe they have the capability to perform and is linked to the kinds of career pursuits they choose for their life’s work (Bandura et al., 2001).

**Interest and Self-Efficacy**

A recent trend in the theory and practice of vocational psychology is to integrate the concepts of vocational interest and self-efficacy. This trend is based on heightened empirical evidence that vocational self-efficacy is a strong predictor of interest and career choice (Betz & Hackett, 1981; Lent, et al., 1994). The reigning model, the Social Cognitive Career Theory (SCCT) (Lent, et al, 1994), focuses on self-efficacy as providing a key theoretical link between abilities and interests. In fact, the SCCT propositions the concepts of interest and self-efficacy as conceptual partners when considering vocational behavior.

Several researchers have constructed self-efficacy ratings that parallel Holland’s RIASEC types and found that these self-efficacy RIASEC scales correlate highly with the matching
RIASEC scales from interest instruments (Betz, Harmon, & Borgen, 1996; Swanson, 1993). Thus, with regard to adults, inventories have been designed to elicit parallel measures of vocational interests, so that the mutual interpretation of interest and self-efficacy can occur. This particular application of conjointly measuring interest and self-efficacy has implications for the current study in that both interest and competence perception were measured to evaluate the effects of a career education program on fifth-grade students’ interest in nursing as a career.

Understandably, given the extensive literature with adults as compared to the extant literature in children, the question emerges, How do you evaluate vocational interests and self-efficacy in children? Explanation is made using Piaget’s model of developmental salience. According to Piaget (1975), it is expected that children will change their thinking during the years from around fourth to ninth grade, from concrete cognitive organization to more abstract, less egocentric, organization. He proposed that these formal operations develop as a result of stimulation and that people are most likely to develop and use formal operations in areas where they have special interests. This thought suggests that children will apply their newly learned formal operations to those areas deemed most salient or of interest and make sense out of those activities that they are most attracted to or like best. Thus, it could be supposed that if a child is interested in activities involving caring for people, a characteristic of the nursing profession (Watson, 1985), the child would begin to examine those activities of a Social type (prefers helping and developing others and interpersonal pursuits) that incorporates the activity of caring before the child would begin to examine activities related to other vocational types, such as the Conventional type (prefers data management, numerical and organizational pursuits).

Tracey attributes this process of cognitive development to explain the adoption of the RIASEC types by children and adolescents. In a conceptual analysis, Tracey uses Piaget’s
model of salience to describe the developmental process that occurs in how children and
adolescents begin to structure interests. As a result of this analysis, Tracey suggested it is more
appropriate to study children’s interest by examining the activities they like and perceive a sense
of competency (Tracey, 2001).

Thus, Tracey and Ward (1998), in a study designed to evaluate the structure of children’s
interests and competence perceptions, “. . . sought to construct a brief instrument that would
include activities that are relevant to children: those that they engage in and have the necessary
experience to accurately assess their liking” (p. 290). Presuming the importance of the link
between self-efficacy and interest, Tracey and Ward concluded that instrumentation must be
generated to study both interest and perceived competence in children. Tracey and Ward
focused on perceptions of competence as a measure of self-efficacy based on information from
Lent and colleagues demonstrating the conceptual and empirical overlap of perceived
competence and self-efficacy (Lent, Brown, & Gore, 1997).

As a result, Tracey and Ward (1998) developed the Inventory of Children’s Activities
(ICA) designed to assess a child’s interests and competence perceptions. It consisted of
questions the child responded to in terms of what the child “liked to do” and what the child was
“good at doing.” The ICA contained two sections of 34 identical activities. The first section
focused on interests and the second section focused on perceptions of competence.

The ICA was first administered to college, middle school, and elementary school students
to access longitudinally the structure of children’s interests and competence perceptions and to
determine if they can be represented using the six RIASEC types: since the interest and
competence measures on the ICA-R were designed to parallel the RIASEC types. The results
indicated that there was overall support for the ICA representing the RIASEC relational structure
in the college sample; however, there was less support for the younger children. However, in each age group the interest scores correlated highly with the competence perception scores (Tracey & Ward, 1998).

In a subsequent study (Tracey & Ward, 1998), the ICA was altered to increase reliability with the intent to provide additional support of the structures of interests and competence perceptions. In addition, six extra items were added to help validate gender typing. The researchers concluded that the revised ICA, the Inventory of Children’s Activities-Revised (ICA-R), appeared to be a reasonable instrument to examine children’s interests and evaluate the self-efficacy and interest linkage to career development and occupational choice in children. Again, as in the previous study, the interest scores correlated highly with the competence perception scores (Tracey & Ward, 1998).

In a later study, Tracey (2002) used the ICA-R scale to determine if it was a valid indicator of interests and competence perceptions to yield RIASEC scale scores in a group of fifth and eighth-grade students. The relationship of competence ratings to interest was also examined. Unlike the results of Tracey and Ward (1998), the RIASEC model was found to provide an adequate fit to the data for the elementary school sample. The researcher attributed this finding to all the elementary students being in the fifth-grade and that the viability of the RIASEC scales has been shown to have better structure with increased age. In addition, Tracey’s notion of a reciprocal causal relation between competence beliefs and interests, with interests leading to competence development and competence beliefs leading to interest development, was found to be the best description of the data for both the elementary and middle school sample (Tracey, 2002).
Watson’s Theory of Human Caring.

The concept of caring has emerged as an important phenomenon fundamental to the advancement of nursing knowledge, theories, and models of practice (Kyle, 1995; Lea & Watson, 1996; McCance, McKenna, & Boone, 1997). Caring is continuing to be increasingly recognized as a core concept characteristic of the nursing profession, both in science and in practice. Recently, the revised social policy statement issued by the American Nurses Association (2003) attests to the centrality of caring as part of nursing’s focus with the inclusion of caring and caring relationships as core aspects of the definition and scope of professional nursing practice.

Many studies have investigated the concept of caring, adopting a dichotomous approach of both qualitative and quantitative methodologies. However, much debate has been generated in relation to the most appropriate method for researching the concept of caring. Historically, researchers have advocated the qualitative approach based on the nebulous nature of caring (Leininger, 1986). However, Watson (2002) recently published a book, Assessing and Measuring Caring in Nursing and Health Science, which includes 21 of the most salient instruments currently available to assess and measure caring. It is Watson’s intention for these instruments to be used by nurse researchers to advance the knowledge of caring by advancing the empirical measurement of caring (Watson, 2002).

This central concept of caring within nursing has led to the development of several caring theories. One of the most well known theories is Jean Watson’s theory of human caring. Watson posits nursing as the art and science of human caring where nursing is a human science concentrating on the study of the relationship of caring to health and healing (Watson, 1997). Watson introduced her theory in 1985 in a book entitled Nursing: The Philosophy and Science of
Caring. At the time, Watson considered the content of her book a perspective about nursing and caring rather than a theory in itself (Watson, 2001).

Watson’s original work was directed at designing an integrated baccalaureate nursing curriculum (Fawcett, 2005), yet resulted in the establishment of ten carative factors (Figure 2-2) which provided a framework for nursing and a foundation for Watson’s theory of human caring (Watson, 1985). According to Watson (1985), these carative factors represent the core of nursing when all the techniques and technologies have been removed. In Watson’s second book, *Nursing: Human Science and Human Care: A Theory of Nursing*, Watson (1988) presents her theory of human caring, describing it as an intersubjective human process where value is placed upon the caring relationship between the nurse and the care recipient. The original ten carative factors were further posited not only as a framework for nursing, but for all health and healing practitioners and professions, thereby extending the application of her theory beyond nursing.

In developing the theory of human caring, Watson (2001, p. 345) “. . . sought to balance the cure orientation of medicine, giving nursing its unique disciplinary, scientific, and professional standing with itself and its public.” Watson (1997) has distinguished nursing from medicine and associates caring with nursing and curing with medicine. Watson (1985) considers the knowledge within her theory of human caring provides the framework to advance nursing practice that is distinct from, but complementary with current practices of modern medicine.

**In Nursing Theory and Practice**

The significance of Watson’s theory of human caring lies in her concern with the metaparadigm concepts of nursing (human beings, environment, health, and nursing), which focuses on health and nursing, and more specifically the nursing process with effective positive changes in health status (Fawcett, 2005). There is current evidence that nursing care and caring are decisive variables that make a positive difference in patients’ outcomes of health and
Swanson’s (1999) meta-analysis of 130 publications of empirical caring studies in nursing research offers paramount evidence as to the importance of caring and its favorable outcomes for both patients and nurses.

Numerous studies (Beck 2000; Boughn, 2001; Boughn, & Lentini, 1999; Kelly, Shoemaker, & Steele, 1996; Kersten et al., 1991; Pillitteri, 1994; Stevens & Walker, 1993; Williams, Wertenberger, & Gushuliak, 1997) have established an iterative theme of “caring for others” as the major motivating factor for both men and women choosing nursing as a career. Yet, nurses are continually confronted with having to practice nursing based on a task-oriented, highly technological, biomedical model as opposed to a model of human caring that influenced them to the profession in the first place. This challenge is compounded by the current nursing shortage and today’s fast-paced healthcare environment. It is reported that nurses who are not able to practice within a caring context are characterized as hardened, oblivious, robot-like, frightened, and worn down (Swanson, 1999). Conversely, nurses are much more satisfied, fulfilled, more purposeful, and knowledge seeking when caring is present in their nursing practice (Watson, 2002).

**Future Directions of Watson’s Theory of Human Caring**

Of interest, Watson (2005) recently introduced her model of science, which she named Caring Science, in her book *Caring Science as Sacred Science*. Watson (2002, p. 456) describes caring science as an “… evolving philosophical-ethical-epistemic field of study and is grounded in the discipline of nursing and informed by related fields.” Watson acknowledges that some may consider it somewhat of an oxymoron to juxtapose Caring with Science. However, to make clear, Watson (2002, introduction) states, “Perhaps the time is right for such paradoxical scientific considerations and integrations, which allow science, morality, metaphysics, art, and
spirituality to co-mingle for new reasons.” Watson also introduces the changing nature of the Carative Factors toward using the language of “Caritas,” described by Watson as:

. . . conveying a deep form of transpersonal caring and love to come into play as part of a caring-healing perspective guiding Caring Science. It is when we include caring and love in our science; we discover our caring-healing professions and disciplines are much more than a detached scientific endeavor, but a life-giving and life-receiving endeavor for humanity. (Watson, 2005, p. 3)

**Summary**

Although career development interventions at the elementary school age level might seem premature, the studies reviewed in this chapter have shown that career development is an important antecedent for school age children to understand the world-of-work. Seligman and colleagues (1991) have shown that children by the age of 10 have done quite a bit of thinking about their future and can clearly articulate their career aspirations. McMahon and associates (1999) found that children’s career development was enhanced as a result of career education lessons, with children showing an increased ability to list occupations and identify a favorite occupation. These studies and others have provided empirical evidence that suggest young children are not too young for and would benefit from early career counseling.

In addition, research has demonstrated career interventions and the exposure to nontraditional workers can lead to a reduction in occupational gender stereotyping in school age children (Bailey & Nihlen, 1990; Bigler & Liben, 1990). An example is a male nurse teaching a group of young students a career education program about nursing. This may be especially efficacious if the career is considered nontraditional for a particular gender, such as nursing (Betz, 2004).

The proposed career education program about nursing used in the study was evaluated to determine its effect on fifth-grade students’ interest in nursing as a career choice. Separate components of the career education model (illustrated in Figure 1-1) are examined: (a) interest,
(b) competence perception, and (c) desire to help other people. The results of the study will serve as a foundation for future development of career education programs designed particularly for school age children.
Figure 2-1. A hexagonal model for defining the psychological resemblances among personality types and environments and their interactions. Source: Holland, 1997
1. The formation of a humanistic-altruistic system of values
2. The instillation of faith-hope
3. The cultivation of sensitivity to one’s self and to others
4. The development of a helping-trust relationship
5. The promotion and acceptance of the expression of positive and negative feelings
6. The systematic use of the scientific problem-solving method for decision making
7. The promotion of interpersonal teaching-learning
8. The provision for a supportive, protective, and/or corrective mental, physical, sociocultural, and spiritual environment
9. The assistance with the gratification of human needs
10. The allowance for existential-phenomenological dimensions.

Figure 2-2. The original ten carative factors. Source: Watson, 1985, pg. 11
CHAPTER 3
METHOD

This study will evaluate career exploration activities with school age children before career decisions are made to stimulate interest in nursing as a career choice. Specifically, the researcher will develop a career education program about nursing’s world-of-work for fifth-grade students, incorporate the concepts from the proposed theoretical model (Figure 1-1), and study its effect on students’ interest in nursing. Therefore, the purpose of this study is to evaluate the influence of a career education program on fifth-grade students’ interest in nursing as a career choice. The nature of comparisons is within-subjects with group comparison. Data were collected at two points in time, pre- and post-education intervention. Because of the study’s two measurement points, it is considered a pre-test-post-test design, where the initial measure of the dependent variable is referred to as the baseline measure and the post-test measure is referred to as the outcome measure.

Participants

Study participants were recruited from fifth-grade classrooms from a public elementary school in a large metropolitan city in the Southeast. The school consists of three fifth-grade classes, each class having 20 to 25 students, resulting in a convenience sample of 70. Major demographic variables were collected on each participant such as age, race/ethnicity, gender, career aspirations, nurse as a family member, and nurse as an acquaintance. The sample of 70 fifth-grade students in the study reported by ethnic categories consisted of six students of Hispanic origin and 64 students of non-Hispanic origin. The sample reported by racial categories consisted of two students who identified themselves as Asian/Native Hawaiian or Pacific, 16 students as Black/African American, and 52 students as White. The six students of Hispanic origin reported themselves racially as White and therefore are part of the 52 students
reported in the racial category as White. For purposes of data analyses, race was defined and
dichotomized into two categories: (a) Black and (b) non-Black. The two Asian students were
placed into the non-black category resulting in 16 Black students and 54 non-Black students.
Table 3-1 illustrates the demographics related to age, gender, race, having a family member as a
nurse, and knowing a nurse for the total sample (N = 70), Group 1 (N = 35), and Group 2 (N =
35).

The researcher attended a parents’ association meeting and explained the study to parents
(or legal guardians) of fifth-grade students. Following explanation of the study to the parents,
the researcher visited each fifth-grade classroom and explained the education program to the
students. The nurse researcher wore a nurse’s uniform to the parents’ meeting and to the
classrooms to provide a visual image of a nurse. In addition, a male nurse accompanied the
researcher to represent males as nurses.

Inclusion criterion consisted of teacher recommendation for a student to participate.
Exclusion criterion was difficulty reading English at a fourth grade level, reported by the school.
Consent to participate in the study was obtained from the student’s parent or legal guardian.
Assent to participate was obtained from each student. Children were considered for enrollment
in the study if they met the inclusion criterion, gave assent to participate in the study, and had
signed consent from the student’s parent or legal guardian.

In determining the sample size, the researcher established the level of significance to be
acceptable at 0.05 (α) and beta at 0.80 (1 - β). Previous studies (Tracey & Ward, 1998; Tracey,
2002) have demonstrated that the strength of the relationships among the research variables as
moderately correlated. Thereby, based on a priori reason, the researcher proposed a moderate
effect size (γ = .50). An approximate sample size of 60 is necessary to achieve this selected level
of power for the planned statistical analyzes that was conducted in this study: (a) Pearson’s chi-square test, (b) McNemar test, and (c) paired t-test (Polit & Beck, 2004).

**Intervention**

The current research incorporated a career education program for school age children intended to influence fifth-grade students’ interest in nursing as a career choice. The concepts of interest, competency perception, and the desire to help people served as the theoretical foundation for the career education program (Figure 1-1).

The career education program was comprised of four consecutive weekly education sessions, each lasting approximately 2½ hours. At the conclusion of the education program and after post-assessment of all students, an optional field trip to a local children’s hospital was planned. The researcher suggested a field trip, a traditional, yet worthwhile activity, as an opportunity for students to experience nursing’s world-of-work first hand. The researcher recognized that although a hospital is not the only setting where nurses work, a hospital employs a diversity of nurses performing a wide range of occupational experiences, thereby allowing the students to explore a number of diverse work settings.

In an attempt to maximize internal validity, the researcher exerted a high degree of consistency of research conditions, especially as they related to the environmental context. Thus, the students participated in the program the same day of the week, same time, and same classroom. Additionally, the researcher provided all the student-training sessions for each group of students.

**Curriculum Design**

The career education program used in this study entitled, Fifth-grade Career Education and Awareness of Nursing as a Career Choice, consists of four instructional units:
(a) Everybody Can Learn about Nursing, (b) Learning What Nurses Need to Know about the Body, (c) Learning about Skills that Nurses Perform, and (d) Learning What Nurses Need to Know about Common Diseases, Such as the Common Cold. Appendix A provides a comprehensive outline and description of the study’s career education curriculum.

Each unit’s learning objective and performance competencies were designed in accordance with the curriculum framework provided by the National Career Development Guidelines (NCDG). The NCDG initiative is a major national effort to foster excellence in career development for students of all ages, genders, and cultural backgrounds. The guidelines are a result of a collaborative effort among the National Occupational Information Coordinating Committee (NOICC), the State Occupational Information Coordinating Committee (SOICC), and leading career counseling and development professional organizations. The National Career Development Association (NCDA), the American Counseling Association (ACA), the American School Counselor Association (ASCA), and other counseling and career development organizations endorse the guidelines. In addition, the guidelines identify key competencies that students need to master at various stages throughout the career developmental process. These competencies define general career development goals by age level: (a) elementary school, (b) middle school, (c) high school, and (d) adult. There are twelve competencies for each age level and are categorized into three areas: (a) self-knowledge, (b) educational and occupational exploration, and (c) career planning (National Occupational Information Coordinating Council 1989). The development of these guidelines established a competency-based career guidance and counseling program to career education. In a study (Freeman, 1994) of 1,273 randomly selected school counselors, they were asked how important are each of the competencies from the standpoint of practicing school counselors. The results of the study indicated that school
counselors consider the career development competencies within the guidelines to be important to very important across all three areas for all age levels.

The researcher incorporated the twelve elementary school competencies as a foundation to develop the learning objectives of the career education program about nursing that is applied in the study. Table 3-2 provides a crosswalk of the NCDG’s elementary school competencies and the instructional content within each of the four units of the study’s career education program about nursing. The curriculum was given to a panel of experts consisting of: (a) two pediatric nurse educators, (b) two fifth-grade teachers, and (c) one elementary school age counselor to evaluate the appropriateness of the education program’s content, interest level, and ability of fifth-grade students to understand and participate. Each evaluator judged the education program suitable in all aspects for fifth-grade students.

**Instructional Units**

Each instructional unit of the career education program states the: (a) specific learning objective, (b) student’s targeted competencies and skills, (c) recommended instructor preparation, to include a list of suggested supplies, and (d) student learning assessment tools. Each unit is instructor-directed and includes a group activity to reinforce the instructional lesson and to help students master the targeted competencies and skills. The program includes various modalities of learning to provide the students with information to help them develop a comprehensive understanding of nursing as a career choice.

The developmentally appropriate fifth-grade curriculum was intended to encourage “curious spirits” about nursing by weaving the natural curiosity of children with the writings of child development and career development theorists, providing for both career awareness and career exploration strategies. The curriculum included various experiential learning activities, such as learning to take a temperature, blood pressure, heart rate, respiratory rate, and how to
properly wash hands. An advanced practice nurse from a local children’s hospital was invited to
demonstrate proper hand-washing technique. Each student had an opportunity to wash their
hands and evaluate their performance by looking for germs left on their hands with a black light.
In addition, the students completed word searches and crossword puzzles to reinforce learning
instructions to include identifying and naming body parts and listing the many career
opportunities in nursing. Throughout the program, the students were provided information about
the nursing profession supplied by Johnson & Johnson’s Campaign for Nursing’s Future, which
included colorful brochures, coloring books, and book covers featuring The Nursing Gang™.
They also received colorful handouts produced by Nemours Foundation, Kids Health® for Kids
which outlined and reinforced information covered in each education session, such as
instructions for both parents and students on how to properly wash hands to prevent the spread of
germs. The researcher brought into the classroom anatomical models of the body, the skeleton,
and other major body parts, such as the heart, lungs, eye, and brain. In addition, the students
accessed and interacted with Johnson & Johnson’s The Nursing Gang™ website, featuring four
contemporary animated nurses from diverse backgrounds making a difference in people’s lives.
The website is packed with interactive games, jokes, music videos, fashion tips, trivia, and more,
all related to the nursing profession.

Research Design

The current study is a within-subjects design, often referred to as repeated-measured
design, involving comparisons of the same students at two points in time, pre- and post-
education intervention, where the students serve as their own control to evaluate the effects of
the career education program. An advantage of a within-subjects design is it requires fewer
subjects; the total number of subjects needed corresponds to the number required for any one
condition (Brink & Wood, 1998). An approximate sample size of 60 students is necessary to
achieve the selected levels of power ($\alpha = .05$, $\beta = .80$ and $\gamma = .50$) for the planned statistical analyses used in the study.

A second advantage of a within-subjects design is the unsystematic error variance is reduced making the study most sensitive to the evaluation of the education program (Fields, 2005). This means the current study because of the within-subjects design minimizes random factors that may affect the results of the study.

**Instruments**

The researcher is interested in several dependent variables that involve the critical research variable, *interest* in nursing as a career choice. These variables include: (a) interest, (b) competence perception, and (c) the desire to help other people. Two psychometrically tested instruments were used to evaluate the effects of the career education program on interest in nursing, the *ICA-R* and *Concern for Others*.

In addition, the researcher developed a pre- and post-intervention questionnaire. The pre-questionnaire was designed to obtain demographic information of each student and answers to questions related to the research questions. Questions on the questionnaire included: (a) Would you consider being a nurse when you are grown? (b) Do you have a family member who is a nurse? and (c) Do you know anyone other than a family member who is a nurse? The post-intervention questionnaire asked if the student would consider being a nurse when grown. The following information will provide a description of the instruments used in the study.

**Questionnaires**

The researcher designed the pre-questionnaire to elicit information prior to the students participating in the education program. The students were asked to provide their age, gender, ethnicity, and race. Questions on the pre-questionnaire included: (a) What job do you want to do when you are grown? (b) Do you have a family member who is a nurse? (c) Do you know
anyone other than a family member who is a nurse? and (d) Would you ever consider being a nurse when you are grown? All questions allowed for a “yes” or “no” response, except for the question asking the student what job that wanted to do when they were grown, which allowed for an open ended response. The post-questionnaire was designed to determine if the students would consider being a nurse as a career after participating in the career education program about nursing. The question allowed for a “yes” or “no” response.

**ICA-R**

Tracey and Ward (1998) designed an instrument, the Inventory of Children’s Activities (ICA) to assess Holland’s RIASEC types of interest and competence perception with children. The instrument was developed to examine the structure of children’s interests. As well, given the association of self-efficacy and perceived competence in the determination of interest by well-known theorists (Bandura, 1982, 1986; Hackett, 1985; Lent et al., 1994), the instrument was also developed to assess and rate perceptions of competence appropriate for children and comparable to the interest scale.

Tracey and Ward (1998) first applied their ICA instrument in a cross-sectional study of elementary students (grades four and five), middle school students (grades six, seven, and eight), and college students. The college students were included to provide a comparison group to examine the formation of career interests in children and adolescents. They found good internal consistency in the samples of elementary and middle school students with alphas ranging from .60 to .81 with a mean of .71 for the interest scales, and from .61 to .81 with a mean of .70 for the competence scales. In addition, a 1-week test-retest reliability ranging from .58 to .73 with a mean of .64 on the interest scales and from .60 to .84 with a mean of .70 on the competence scales was documented.
However, in a second study, Tracey and Ward (1998) adopted the Inventory of Children’s Activities-Revised (ICA-R) from the ICA, replacing activities that had low scale correlations to increase reliability in hopes of providing additional support of the structures of interests and competence perceptions in children. In addition, six activities were added to help in the validation of gender typing that resulted from their first study. To verify appropriateness of the revised instrument, it was given to two fourth-grade teachers to check for its readability, clarity, and ability to be accurately responded to by fourth-grade students. Based on the findings from their second study, Tracey and Ward (p. 299) concluded, “Given the similarity of the interest and competence structures in this study, issues relating to the structural difference across age relate equally to both.” Thereby, with corresponding scales for both interests and perceptions of competence, the researchers concluded the ICA-R appears to be a reasonable instrument to examine the perceived competence-interest causal link in children (Tracey & Ward, 1998).

In a subsequent longitudinal study of fifth and eighth-grade students, Tracey (2002) used the ICA-R to examine several questions regarding the development of interests over time. A primary purpose of the study was to determine if the ICA-R could be used as a valid indication of interests and competence beliefs for these age groups, since previous studies (Tracey & Ward, 1998) found that younger children’s responses to the ICA-R differed in structure from older children. In addition, Tracey wanted to determine if the previous cross-sectional analyses (Tracey & Ward, 1998) where hexagonal structure was supported more with age would be replicated in a longitudinal study and if the scoring in ICA-R would appropriately yield RIASEC scale scores in younger children. Based on the results of the study, Tracey (2000, p. 153) concluded, “Unlike the results of Tracey and Ward (1998), the RIASEC model was found to provide an adequate fit to the data for the elementary school sample.” Tracey further reported:
The viability of the RIASEC scales here could be a function of the older basis of the sample in this study in that all the elementary school students were at least in the fifth-grade. With increased age, it would be expected that the RIASEC scales would hold better. (Tracey, 2002, p. 159)

Another indication of the increasing appropriateness of the RIASEC scales with age is the internal consistency of the scales. The elementary school sample in Tracey’s (2002) study demonstrated somewhat higher internal consistency estimates than found by Tracey and Ward (1998), which in part could be attributable to greater scale coherence with age.

The composition of the ICA-R consists of two sections of 30 activities; five activities for each of the RIASEC scales. These activities include behaviors that children commonly participate and were endorsed by teachers and children, as well as researcher observations. In the first section the child responds to each of the activities based on the extent to which the child likes that activity (interests) using a 5-point scale with $1 = \text{don't like at all}$ to $5 = \text{like a lot}$. The child then responds to the same activities with respect to perceptions of competence using a 5-point scale with $1 = \text{very bad at}$ to $5 = \text{very good at}$. RIASEC scores for interest (liking items) and competence (good at items) are scored by averaging the five items on the scale.

The internal consistency and 1-year test-retest reliability estimates for the ICA-R are presented in Table 3-3 for the elementary and middle school sample (Tracey, 2002). These values are similar to those obtained by Tracey and Ward (1998) in their previous samples. According to Tracey (2002, p., 151), “The values of the internal consistency estimates were generally moderate, but these values are in part attributable to the relative brevity of the instrument (five items per scale).”

The researcher of this study obtained permission to use the ICA-R from one of the researchers who developed the instrument, Terence J. G. Tracey, PhD (personal communication,
Dr. Tracey provided the researcher the inventory, as well as the scoring guidelines.

**Concern for Others**

The instrument, *Concern for Others* is an inventory designed to measure students’ desire to help other people. The Child Development Project (CDP), part of the Developmental Studies Center, developed the instrument. The CDP is a research-based program focused on creating caring and supportive learning environments that encourages students’ sense of belonging and connection to school. The program has received national recognition for its learning approaches fostering students’ academic, ethical, social, and emotional development. The CDP’s past 20 years has been devoted to developing and validating measures of students’ social, emotional, ethical, and academic development (Developmental Studies Center, 2005).

The *Concern for Others* instrument is comprised of 10 items scored on a 5-point scale with $1 = $Disagree a lot$ to $5 = $Agree a lot$. The instrument is designed for students in grades three to six. The instrument’s internal consistency reliability is .80 (Developmental Studies Center, 2005). According to Dr. Jean Watson (personal communication, November 5, 2006) the instrument is one possible tool that measures caring reflective of her theory of human caring. The *Concern for Others* inventory is a commercially distributed instrument within the public domain.

**Intervention Implementation and Data Collection**

After the parent or legal guardian provided consent and the child gave assent, the implementation timeline illustrated in Table 3-4 was followed throughout the study until completion. To begin, the students were randomly assigned to either Group 1 or Group 2, resulting in half of the students ($N = 35$) in Group 1 and half of the students ($N = 35$) in Group 2. Two groups of 35 students, as opposed to a single group of 70 students, allowed for individual
instruction and greater intimacy with the students. Following group assignment, Group 1 was administered the pre-test assessment and began the four-week intervention. Upon completion of the intervention, Group 1 was administered the post-test assessment. Pre-test assessment and post-test assessment consists of scores on the ICA-R and the Concern for Others inventories, as well as responses to the pre- and post-questionnaires.

After Group 1 completed the post-test assessment, Group 2 was administered the pre-test assessment. Accordingly, Group 2 began the four-week career education intervention. Upon completion of the intervention, Group 2 was administered the post-test assessment.

The pre- and post-assessments were administered by the researcher and the male nurse. The students were given as much time as they needed to complete the instruments. It took approximately 45 minutes for the students to complete the pre-assessment and the same amount of time to complete the post-assessment.

The researcher was granted IRB approval to conduct the research project as presented. It was documented in the IRB proposal and explained to the students and parents that there is no anticipated risks to taking part in this study. However, it was clearly communicated to both the parents and the students that students could withdraw without consequences from the study at any time in the event, for any reason, the students cannot complete the career education program.

**Threats to Internal Validity**

Quasi-experimental studies, such as this study, are especially susceptible to threats to internal validity and represent alternative explanation that competes with the independent variable as a cause for the dependent variable. When subjects are not assigned randomly to groups, the researcher must always be alert to the possibility that the groups are nonequivalent; being aware that the possibility that a group difference on the dependent variable is the result of initial differences rather than the effect of the independent variable (Polit & Beck, 2004). Thus,
to minimize this particular threat of internal validity, the researcher randomly assigned the students to either Group 1 or to Group 2.

Another threat to internal validity is testing effects that results from the consequence of taking a pre-test on the participants’ performance on a post-test. It could be questioned that the first administration of the pre-test (ICA-R, Concern for Others, and the Pre- and Post-Questionnaires) might sensitize the students to issues that they had not considered. This potential sensitization may result in attitude changes regardless of whether the students receive the career education intervention. If a comparison group is not used in the study, it is difficult to segregate the effects of the instructional intervention from the effects of having taken the pre-tests (Polit & Beck, 2004).

In addition, another possible threat to internal validity, especially with longitudinal studies involving young children, results from maturation. Maturation is defined as a process occurring within the subjects during the course of the study because of the passage of time rather than a result of the independent variable, such as cognitive maturity (Polit & Beck, 2004). However, the researcher questioned the probable threat of maturation because of the short time frame (four weeks) between pre-test and post-test assessments.

Characteristics of special importance to the study include the age of the participants and their reading abilities related to the readability of the instruments used in the study. The Flesch-Kincaid Grade Level readability for the ICA-R is 3.1 and the Concern for Others is 4.4. The reading levels of the students were at least fourth-grade level as reported by the school. To ensure readability of the Concern for Others, the researcher read the items on the Concern for Others to the students to make certain all items for scoring were understood by all students.
Statistical Analyses

Questionnaires

To begin, the data obtained on the pre-questionnaires were analyzed to determine the relationships of: (a) gender, (b) race, (c) having a family member who is a nurse, and (d) knowing someone who is a nurse on students’ interest in nursing as a career choice prior to the education intervention. This information was analyzed for the total sample (N = 70), Group 1 (N = 35), and Group 2 (N = 35) using a series of Pearson’s chi-square tests. The Pearson’s chi-square test is the statistical test to use when determining the relationship between two categorical variables (Fields, 2005).

The researcher was most interested in determining the overall effect of the education intervention on students’ “yes” or “no” responses when asked if the students would consider being a nurse when grown on the pre-questionnaire prior to participating in the career education program compared to responses on the post-questionnaire after participating in the career education program. These analyses were accomplished using a series of McNemar tests. The McNemar test determines differences in proportions between two related groups. It is typically used when detecting changes in people’s scores and it compares the proportion of people who change their responses in one direction to those who change in the opposite direction. It is an appropriate statistic when a pre-test post-test design is used to compare changes in proportions on a dichotomous variable (Fields, 2005).

The researcher also analyzed the effects of the education program for other variables of interest: (a) gender, (b) race, (c) having a nurse as a family member, and (d) knowing a nurse other than a family member and their influences on students’ interest in nursing as a career choice. McNemar tests were conducted to determine if a change in students’ responses to
consider nursing as a career occurred after participating in the education program and, if so, to examine the influence of these variables of interest on the changes.

**Interest and Competence RIASEC Scores and Caring Scores**

In addition, the researcher was interested in evaluating several dependent variables simultaneously (scores on RIASEC for both the interest and competence scales). However, the researcher was most concerned with scores related to the Holland summary code for nursing, SIA (Social, Investigative, and Artistic), particularly related to gender effect. In previous studies, (Tracey & Ward, 1998; Tracey, 2002) the gender effect for the interest scale was manifested in male students’ having higher mean scores on Realistic and Investigative career types, whereas female students had higher mean scores on Artistic, Social, and Conventional career types. There was no gender mean difference on the Enterprising career type. An identical gender mean difference was found on the competence scale with male students having higher means on Realistic and Investigative career types and female students having higher means on Artistic, Social, and Conventional career types, with no difference on the Enterprising career type. Of equal importance, were the caring scores on the *Concern for Others* inventory measuring a desire to help other people.

A paired *t*-test was conducted on the total sample (*N* = 70) to analyze differences in mean scores between pre-test and post-test RIASEC interest and competence scores and caring scores as a result of the students participating in the career education program about nursing. A paired *t*-test is appropriate when determining differences within two group means collected from the same sample (Fields, 2005). Lastly, a paired *t*-test was performed to determine the differences between pre-test and post-test RIASEC mean scores on the interest and competence scales and caring scale within male and female students.
Table 3-1. Demographic characteristics of students

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 70</td>
<td>N = 35</td>
<td>N = 35</td>
</tr>
<tr>
<td></td>
<td>N   %</td>
<td>N   %</td>
<td>N   %</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>38 54%</td>
<td>16 46%</td>
<td>22 63%</td>
</tr>
<tr>
<td>11</td>
<td>29 41%</td>
<td>16 46%</td>
<td>13 37%</td>
</tr>
<tr>
<td>12</td>
<td>3  5%</td>
<td>3  8%</td>
<td>0  0%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>35 50%</td>
<td>17 49%</td>
<td>18 51%</td>
</tr>
<tr>
<td>Female</td>
<td>35 50%</td>
<td>18 51%</td>
<td>17 49%</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>16 23%</td>
<td>10 29%</td>
<td>2 17%</td>
</tr>
<tr>
<td>Non-Black</td>
<td>54 77%</td>
<td>25 71%</td>
<td>33 83%</td>
</tr>
<tr>
<td>Family Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>25 36%</td>
<td>11 31%</td>
<td>14 40%</td>
</tr>
<tr>
<td>No</td>
<td>45 64%</td>
<td>24 69%</td>
<td>21 60%</td>
</tr>
<tr>
<td>Knows a Nurse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>23 33%</td>
<td>10 29%</td>
<td>13 37%</td>
</tr>
<tr>
<td>No</td>
<td>47 67%</td>
<td>25 71%</td>
<td>22 63%</td>
</tr>
</tbody>
</table>
Table 3-2. Crosswalk of national career development competencies for elementary school and fifth-grade career education intervention by unit of instruction. Source: National Occupational Information Coordinating Council, 1989

<table>
<thead>
<tr>
<th>Career Competencies</th>
<th>Unit 1</th>
<th>Unit 2</th>
<th>Unit 3</th>
<th>Unit 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 1</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Developing a good self-concept</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 2</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Interacting with others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 3</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Growing and changing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Educational and Occupational Knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 4</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Achieving in school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 5</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Working and learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 6</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Using career information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 7</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Developing good work habits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 8</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Working and helping others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Career Planning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 9</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Making decisions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 10</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Working with others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 11</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Contributing to others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Competency 12</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Planning for a Career</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3-3. Internal consistency and 1-year stability estimates of RIASEC scales across grade groups. Source: Tracey, 2002, p. 152

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Interest Scale</th>
<th>Competence Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R</td>
<td>I</td>
</tr>
<tr>
<td>Elementary School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>α fifth-grade</td>
<td>.81</td>
<td>.71</td>
</tr>
<tr>
<td>α sixth-grade</td>
<td>.78</td>
<td>.74</td>
</tr>
<tr>
<td>1-year retest</td>
<td>.54</td>
<td>.62</td>
</tr>
<tr>
<td>Middle school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>α seventh-grade</td>
<td>.80</td>
<td>.75</td>
</tr>
<tr>
<td>α eighth-grade</td>
<td>.79</td>
<td>.76</td>
</tr>
<tr>
<td>1-year retest</td>
<td>.76</td>
<td>.77</td>
</tr>
</tbody>
</table>

RIASEC = Realistic, Investigative, Artistic, Social, Enterprising, and Conventional
Table 3-4. Timeline for career education intervention

<table>
<thead>
<tr>
<th>Parameter</th>
<th>PTA Mtg.</th>
<th>Visit To Classes</th>
<th>Wk 1</th>
<th>Wk 2</th>
<th>Wk 3</th>
<th>Wk 4</th>
<th>Wk 5</th>
<th>Wk 6</th>
<th>Wk 7</th>
<th>Wk 8</th>
<th>Wk 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consent</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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CHAPTER 4
RESULTS

The purpose of this study was to evaluate the influence of a career education program on fifth-grade students’ interest in nursing as a career choice. Seventy fifth-grade students from a public elementary school in a large metropolitan city in the Southeast participated in the study. The students were randomized into two groups, each group consisting of thirty-five students. The first group of students (Group 1) participated in a four-week career education program about nursing, followed by the second group of students (Group 2) participating in the same career education program about nursing. Pre-test and post-test responses to a questionnaire and scores on the ICA-R and Concern for Others were analyzed to determine interest in nursing before and after participating in the career education program about nursing and to answer the research questions presented in the study.

Questionnaire Data

Data collected on the pre- and post-questionnaires were evaluated to answer the critical research question: What is the effect of a career education program on fifth-grade students’ interest in nursing as a career choice measured by changes in the students’ “yes” or “no” responses when asked if they would consider being a nurse when grown, taking into account gender? Other variables of interest: (a) race, (b) if the student has a family member who is a nurse, and (c) if the student knew someone other than a family member who is a nurse were collected on the pre-questionnaire to determine their influence on students’ responses to consider nursing as a career choice.

The pre-questionnaire asked for the student’s name, age, gender, ethnicity, and race. Of the 70 students, 38 students (54%) were 10 years old, 29 students (41%) were 11 years old and three students (5%) were 12 years old. Interestingly, the total sample of students was comprised
of 35 male students and 35 female students. The sample was predominantly non-Black with 54 non-Black students (77%) and 16 Black students (23%).

The researcher evaluated the variability of the demographic data between Group 1 and Group 2 and determined the groups were similar with regard to: (a) number of students in each group, (b) age, (c) number of male and female students, (d) number of Black and non-Black students, (e) number of students that have a family member who is a nurse, and (e) number of students that knew a nurse other than a family member (Table 3-1). In addition, differences between the two groups’ pre-questionnaire “yes” and “no” responses to consider nursing as a career were evaluated with a series of Pearson’s chi-square tests. The results of these analyses indicated no significant differences between the students’ responses across: (a) group assignment (Group 1 and Group 2), (b) gender, (c) race, (d) having a family member who is a nurse, and (e) knowing someone other than a family member who is a nurse. Based on these comparisons, the researcher determined the two groups appeared equivalent and therefore combined the two groups into a single group creating a sample size of 70 students.

Hence, all data analyses were based on a within-subjects experimental study design where (a) pre-test and post-test measures are taken on all subjects and (b) all subjects are exposed to all levels of the independent variable (Brink & Wood, 1998). A within-subjects design allows for an increased sample size and will take advantage of the relative power of a repeated measures design. In addition, a repeated measures design intrinsically reduces the chance of unsystematic error variance making it easier to detect any systematic variance (Fields, 2005).

Variables of Interest before Participating in the Education Program

The researcher was interested in the effect that: (a) gender, (b) race, (c) having a family member who is a nurse, and (d) knowing someone who is a nurse other than a family member on the students’ “yes” or “no” responses to consider nursing as a career when grown prior to
participating in a career education program about nursing. Thus, a series of Pearson’s chi-square tests were conducted to determine the effects of the above listed variables of interest, independent of the influence of the education intervention.

**Gender**

A Pearson’s chi-square analysis indicated a highly significant association between gender and whether the students would consider nursing as a career for the total sample (N=70), ($X^2 = 11.67, df = 1, p < .01$). Of the 28 students in the total sample who would consider being a nurse, seven were males (25%) and 21 were females (75%). Of the 42 students who would not consider nursing as a career, 28 were males (67%) and 14 were females (33%). Thus, based on the odds ratio for this sample of students, with an equal number of male students (N = 35) and female students (N = 35), the female students are six times (OR = 6.0, $p < .01$) more likely to consider being a nurse as a career than the male students prior to participating in the education program. Simply stated, it could be estimated that the likelihood of a fifth-grade student considering nursing as a career choice is about six times greater if the student is a female than if the student is a male.

**Family member**

The influence of a student having a family member who is a nurse and a student saying “yes” to consider being a nurse as a career was highly significant ($X^2 = 12.70, df = 1, p < .001$). The 28 students in the total sample who would consider nursing prior to the education program, 17 students (61%) reported having a family member who is a nurse and 11 students (39%) reported not having a family member who is a nurse. The 42 students who said “no” to consider nursing as a career, only eight students (19%) reported having a family member who is a nurse and 34 students (81%) reported not having a family member who is a nurse. Thus, based on the odds ratio for this sample of students, students who have a family member who is a nurse are
almost seven times ($OR = 6.6, p < .001$) more likely to consider being a nurse than students without a family member who is a nurse. Simply stated, it could be estimated that the likelihood of a fifth-grade student considering nursing as a career choice is about seven times greater if the student has a family member who is a nurse than if the student does not have a family member who is a nurse.

**Race and knowing a nurse other than a family member**

Race and knowing someone other than a family member who is a nurse did not have a significant effect on a student to consider nursing as a career prior to participating in the education program. Thus, it can be concluded that there was no association between students’ race and knowing a nurse other than a family member as to whether they would consider nursing as a career choice when grown. These descriptive statistics and Pearson’s chi-square analyses are presented in Table 4-1.

**Effects of the Career Education Program**

To begin, the researcher conducted a McNemar test to analyze students’ pre-test and post-test questionnaire responses to determine the effect of the career education program on fifth-grade students’ interest in nursing as a career choice measured by changes in the students’ “yes” or “no” responses when asked if they would consider being a nurse when grown, considering gender. In addition, a series of McNemar tests were performed to determine the effects of the other variables of interest: (a) race, (b) having a family member who is a nurse, and (c) knowing someone other than a family member who is a nurse on students’ responses to consider nursing as a career after participating in the education program.

The data obtained from the pre- and post-questionnaires asking if the students’ would consider being a nurse were studied to determine the education program’s effect on the students’ expressed consideration of nursing as a career when grown. The number of students ($N = 70$)
that indicated they would consider being a nurse prior to the education program was 28 students (40%). Subsequently, an additional 19 students said they would consider nursing as a career after participating in the education program. Two of the students who indicated they wanted to be a nurse prior to the education program changed their responses not to consider nursing as a career choice after participating in the education program. Yet, the overall positive change in responses resulted in 45 students (64%) indicating they would consider being a nurse after participating in the education program compared to the 28 students (40%) who would consider being a nurse prior to the education program.

A McNemar analysis of these results documented a highly significant change in the number of positive responses after the students participated in the education program (N = 70, \( p < .001 \)). The change reflects an additional 17 positive responses (28 to 45 “yes” responses), yielding a 61% increase in the number of positive responses to consider nursing as a career after students participated in the education program. Thus, it can be concluded that the education program had a significant positive influence on students’ expressing they would consider being a nurse when grown.

However, the researcher, despite a significant 61% increase in the number of students indicating they would consider being a nurse after participating in the career education program, acknowledged that this evaluative observation is susceptible to certain design limitations, such as the influence of a spurious relationship or the potential for the Hawthorne effect. The researcher will discuss in detail potential design limitations of the study in Chapter 5.

**Gender**

An important inquiry of this study was the effect of the career education program on both male and female students. The 28 students who considered nursing as a career prior to the education program, 21 students were female (75%) and seven students were male (25%).
Whereas, the 45 students indicating they would consider being a nurse after the education program, 30 were females (67%) and 15 were males (33%). Nine additional male students and 10 additional female students said “yes” to consider nursing as a career after participating in the education program. One male and one female student changed their responses from “yes” to “no.” Overall, these results reflect a 114% increase in the number of positive responses for male students (seven to 15 “yes” responses) and a 43% increase for female students (21 to 30 “yes” responses). A McNemar analysis indicated a statistically significant positive effect for both male and female students to consider nursing after the education program (N = 35, p < .05). Based on these findings, it can be concluded that the career education program had a significant positive influence on both the male and female students’ responses to consider nursing as a career when grown.

**Race**

For the 28 students who considered nursing as a career prior to the education program, 22 students were non-Black (79%) and six were Black (21%). Whereas, the 45 students indicating they would consider being a nurse after the education program, 34 students were non-Black (76%) and 11 were Black (24%). Twelve additional non-Black students and five additional Black students said “yes” to consider nursing as a career after participating in the education program. Two non-Black students changed their responses from “yes” to “no” to consider nursing after participating in the education program. These results reflect a 55% increase in the number of positive responses for non-Black students (22 to 34 “yes” responses) and an 83% increase for Black students (six to 11 “yes” responses).

A McNemar analysis indicated a statistically significant positive effect for non-Black students (N = 54, p < .01), but not for Black students for this sample. The researcher suspects the small sample size of Black students, N = 16, may have resulted in a Type II error.
Family member

A McNemar analysis determined the effect of the education program on students who do and do not have a family member who is a nurse. Within the total sample, 25 students (36%) reported having a family member who is a nurse and 45 students (64%) reported not having a family member who is a nurse. The 25 students with a family member who is a nurse, 17 students (68%) said “yes” and eight students (32%) said “no” to consider being a nurse as a career prior to participating in the education program. There was no change in responses for this group of students after participating in the education program.

However, the 45 students reporting not having a family member who is a nurse, 11 students (24%) said “yes” and 34 students (76%) said “no” to consider being a nurse prior to participating in the education program. A highly significant positive change in responses resulted after these students participated in the education program, 28 students (62%) said “yes” and 17 students (38%) said “no” to consider nursing as a career (N = 45, p < .001). This reflects a 156% increase in positive responses (11 to 28 “yes” responses). Thus, it can be concluded, that the education program about nursing had a significantly positive effect on students reporting not having a family member that is a nurse, but not for students reporting having a family member as a nurse.

Knowing a nurse

A McNemar analysis determined the effect of the education program on students who did and did not know a nurse other than a family member. Within the total sample, 23 students (33%) reported knowing a nurse and 47 students (67%) reported not knowing a nurse other than a family member before participating in the education program. The 23 students who knew a nurse other than a family member, 10 students (43%) said “yes” and 13 students (57%) said “no” to consider being a nurse. After participating in the education program there was a significant
change in responses, 17 students (74%) said “yes” and six students said “no” (26%) to consider nursing as a career (N = 23, \( p < .05 \)). This reflects a 70% increase in positive responses (10 to 17 “yes” responses).

For the responses of the 47 students who did not know a nurse other than a family member, 18 students (38%) said “yes” and 29 students (62%) said “no” to consider being a nurse before participating in the education program. As well, a highly significant change in responses occurred after these students participated in the education program, 28 students (60%) said “yes” and 19 students said “no” (40%) to consider nursing as a career (N = 47, \( p < .01 \)). This reflects a 56% increase in positive responses (18 to 28 “yes” responses). Thus, it can be concluded that participating in the education program about nursing had a significant positive effect on the students who knew a nurse and a highly significant positive effect on the students who did not know a nurse other than a family member.

The results of these McNemar tests are provided in Table 4-2. In addition, the percent increases in the students’ positive responses after participating in the education program are illustrated in Figure 4-1. As well, the increases in the number of positive responses are illustrated in Figure 4-2.

**ICA-R and Concern for Others Data**

The researcher analyzed data collected from the *ICA-R’s* interest and competence scales and the *Concern for Others* scale to answer the research question asking what are the effects of a career education program on fifth-grade students’ interest in nursing as a career choice measured by changes in interest (*ICA-R’s* RIASEC interest scale), competence perception (*ICA-R’s* RIASEC competence scale), and desire to help other people (*Concern for Others* scale). The differences between the pre-test and post-test mean RIASEC interest and competence scores and caring scores were examined to determine the effect of the education program for the following
Within-Subjects Comparison of the Total Sample

The researcher analyzed the data from a within-subjects design using a paired t-test to analyze the total sample, N = 70. A paired t-test was conducted on the difference of the mean scores for the total sample (N = 70) at two points in time, before and after participating in the education program for RIASEC interest and competence scores measured by the ICA-R instrument, as well as caring scores measured by the Concern for Others instrument. 

ICA-R analyses

On average, there were no significant differences between the students’ mean pre-test and post-test measurements with the exception of the difference in mean scores on the competence scale for the Investigative career type. The results revealed that the students’ mean pre-test competence Investigative score (M = 4.00) was significantly higher than the students’ mean post-test score (M = 3.83), (t (69) = 2.04, p < .05), yielding an effect size of r = .24. This result was of particular interest to the researcher because the Investigative career type is a component of the Holland three-letter career code for nursing, SIA. This result is further discussed in Chapter 5. The results of these paired t-tests are presented in Table 4-3.

Concern for Others analysis

A paired t-test was conducted on the difference of the caring mean scores measured by the Concern for Others instrument for the total sample (N = 70) at two points in time, before and after participating in the education program. The results indicated a positively significant change in the mean caring scores after the students participated in the education program about nursing. The students’ mean post-test caring score (M = 2.78) was significantly higher than the student’s
mean pre-test score \((M = 2.58)\), \((t(69) = -2.61, p < .05)\), yielding an effect size of \(r = .30\). Thus, it can be concluded that the career education program has a significant positive effect on a student’s desire to help other people. The results of this analysis are presented in Table 4-5.

**Within-Subjects Comparison of Male and Female Students**

These final analyses were studied to answer the remaining research question asking if there is a difference in how male and female fifth-grade students respond to a career education program about nursing as a career choice measured by scores on the *ICA-R* and *Concern for Others* instruments.

**ICA-R analyses**

Paired *t*-tests were performed to determine the differences between pre-test and post-test measures of RIASEC mean scores on the interest and competence scales within male and female students. The gender effect for the interest scales was manifested in male students’ mean scores increasing on the Artistic and Conventional scales and female students’ mean scores increasing on the Realistic, Investigative, and Enterprising scales. The results of the competence scale scores revealed no increase for both male and female students. However, all the analyses yielded non-significant differences in mean pre-test and post-test scores.

Even so, the researcher presented in text the changes in mean interest and competence scale scores for Social, Investigative, and Artistic, due to the relevance of these three Holland codes to this study. Both male \((M = 3.18)\) and female students \((M = 3.87)\) scored lower on the Social scale for interest after participating in the education program. On average, male students scored higher \((M = 3.80)\) on the Artistic scale for interest after participating in the education program than before \((M = 3.74)\) participating in the education program. The female students scored higher \((M = 3.70)\) on the Investigative scale for interest after participating in the education program than before \((M = 3.68)\) participating in the education program.
The comparisons of the male and female students’ mean pre-test scores and post-test scores for both the interest and competence scales are presented in Table 4-3.

**RIASEC career assessment**

The evaluation of the RIASEC scores on the interest and competence scales provided an assessment of the career types for this sample of fifth-grade students at two points, before and after participating in a career education program about nursing. Prior to the education program, scores on the interest scale revealed the male students scored higher on the Realistic and Enterprising scales, whereas, the female students scored higher on the Investigative, Artistic, Social, and Conventional scales. The comparisons of the interest scale scores after the student participated in the career education program were almost identical, with the exception of the Enterprising scale scores. Again, the male students scored higher on the Realistic scale and the female students scored higher on the Investigative, Artistic, Social, and Conventional scales. The scores for the Enterprising scale were the same for male and female students. These RIASEC interest assessments are illustrated in Figure 4-3.

Assessments of the competence scale scores were reciprocal to the interest scale scores. The male students scored higher on the Realistic and Enterprising scales and the female students scored higher on the Investigative, Artistic, Social, and Conventional scales prior to participating in the education program. The comparisons of the scale scores after the students participated in the study were almost identical, the male students scored higher on the Realistic scale and the female students scored higher on the Investigative, Artistic, Social, and Conventional scales. The scores for the Enterprising scale were the same for male and female students. These RIASEC competency assessments are illustrated in Figure 4-4.
Interestingly, the gender effects manifested in this study for both the interest and competence scales are similar to the gender effects Tracey found in his 2002 study (Tracey, 2002). These similarities are discussed in Chapter 5.

**Concern for Others analysis**

Likewise, the researcher analyzed the caring data from a within-subjects design using a paired \( t \)-test to analyze differences in mean pre-test and post-test scores for males and females. The results demonstrated a significant difference in the mean pre-test and post-test scores for the female students, but not for the male students. The female students’ mean post-test caring score \( (M = 2.86) \) was significantly higher than their mean pre-test caring score \( (M = 2.63) \), \( (t (34) = -2.22, p < .05) \), yielding a moderate effect size, \( r = .36 \). Thus, it can be concluded that only the female students’ caring scores were significantly influenced by participating in the education program about nursing. The results of this analysis are presented in Table 4-5 and Figure 4-5.

**Scale Reliabilities**

**ICA-R**

The internal consistency reliability estimates for the **ICA-R** for both interest and competence RIASEC scales are presented in Table 4-6 for this sample of fifth-grade students. In general, these values are better than the values obtained by Tracey and Ward (1998) and Tracey (2000) in their samples. The values of the internal consistency estimates in this study were generally acceptable with Cronbach’s alphas ranging from .79 to .81 on both the interest and competence scales. The overall reliability of the scales resulted in a Cronbach’s \( \alpha \) of .81 for the interest scale and .80 for the competence scale.
Concern for Others

The internal consistency reliability estimate for the Concern for Others scale was .83 for this sample of fifth-grade students. This estimate is comparable to the internal consistency reliability of .80 reported by the Child Developmental Studies Center (2005).

Summary of Findings

Question 1

1. What is the effect of a career education program on fifth-grade students’ interest in nursing as a career choice measured by changes in the students’ “yes” or “no” responses when asked if they would consider being a nurse when grown, taking into account both male and female students' responses?

The researcher answered this question by conducting a McNemar test to analyze changes in students’ “yes” and “no” responses when asked if they would consider being a nurse when grown before and after participating in the career education program. The results documented a highly significant change in the number of positive responses after the students participated in the education program (N = 70, \( p < .001 \)). The change reflects an additional 17 positive responses (28 to 45 “yes” responses), yielding a 61% increase in the number of positive responses to consider nursing as a career after students participated in the education program.

In addition, an important inquiry of this study was the effect of the career education program on gender. A McNemar analysis indicated a statistically significant positive effect for both male and female students to consider nursing after participating in the education program (N = 35, \( p < .05 \)). These results reflect a 114% increase in the number of positive responses for male students (seven to 15 “yes” responses) and a 43% increase for female students (21 to 30 “yes” responses). Thus, it can be concluded that the education program had a significant positive
influence on both male and female students’ expressing they would consider being a nurse when grown.

Question 2

2. What are the effects of race, having a family member who is a nurse, and knowing someone who is a nurse other than a family member on the students’ “yes” or “no” responses when asked if they would consider being a nurse when grown before and after participating in a career education program about nursing?

Race

Results of a McNemar analysis indicated the education program had a significant positive effect for the non-Black students (N = 54, \( p < .01 \)), but not for the Black students to consider nursing as a career choice. However, the researcher suspects the small sample size of Black students, N = 16, may have resulted in a Type II error.

Family member

A McNemar analysis determined that the education program did not have a significant effect on students who have a family member who is a nurse. There was no change in responses for this group of students after participating in the education program. Conversely, a highly significant positive change in responses resulted after the students who reported not having a family member that is a nurse participated in the education program (N = 45, \( p < .001 \)). This reflects a 156% increase in positive responses (11 to 28 “yes” responses). Thus, it can be concluded that the education program had a significant positive effect on the students reporting not having a family member who is a nurse, but did not have a significant effect on the students reporting having a family member that is a nurse.
Knowing a nurse

A McNemar analysis determined the effect of the education program on students who reported knowing and not knowing a nurse other than a family member prior to participating in the education program. The results indicated that the education program had a significant effect for both groups of students. A significant change in positive responses to consider nursing as a career after participating in the education program occurred with the students that reported knowing a nurse other than a family member (N = 23, p < .05). This reflects a 70% increase in positive responses (10 to 17 “yes” responses). As well, a highly significant change in positive responses occurred after participating in the education program with the students that reported not knowing a nurse other than a family member (N = 47, p < .01). This reflects a 56% increase in positive responses (18 to 28 “yes” responses). Thus, it can be concluded that participating in the education program about nursing had a significant positive effect on the students who know a nurse and a highly significant positive effect on the students who did not know a nurse other than a family member.

The results of these McNemar tests answering research questions 1 and 2 are provided in Table 4-2. In addition, the percent increases in the students’ positive responses after participating in the education program are illustrated in Figure 4-1. As well, the increases in the number of positive responses are illustrated in Figure 4-2.

Question 3

3. What are the effects of a career education program on fifth-grade students’ interest in nursing as a career choice measured by changes in interest (ICA-R), competence perception (ICA-R), and desire to help other people (Concern for Others)?

The researcher analyzed data collected from the ICA-R’s interest and competence scales and the Concern for Others scale before and after participating in the education program to
answer the research question. A within-subjects comparison of the total sample (N = 70) using paired \( t \)-tests determined the differences between the pre-test and post-test mean RIASEC interest and competence scores and caring scores. Overall, the results revealed no significant differences between the students’ mean pre-test and post-test measurements on the *ICA-R*’s RIASEC interest and competence scales with the exception of the difference in mean scores on the competence scale for the Investigative career type. This isolated significant result reflected a decrease in the competence score for the Investigative career type and is discussed in Chapter 5. The results of these paired \( t \)-tests are presented in Table 4-3.

In addition, the paired \( t \)-test conducted on the difference of the mean caring scores indicated a positively significant change after the students participated in the education program about nursing. The students’ mean post-test caring score (\( M = 2.78 \)) was significantly higher than the student’s mean pre-test caring score (\( M = 2.58 \)), \( t(69) = -2.61, p < .05 \), yielding an effect size of \( r = .30 \). The results of this analysis are presented in Table 4-5.

**Question 4**

4. Is there a difference in how male and female fifth-grade students respond to a career education program about nursing as a career choice measured by scores on the *ICA-R* and *Concern for Others*?

A within-subjects comparison of male and female students using paired \( t \)-tests (N = 35) was performed to determine the differences between pre-test and post-test measures of RIASEC mean scores on the interest and competence scales within male and female students, yielding non-significant differences for all mean pre-test and post-test scores. The comparisons of the male and female students’ mean pre-test scores and post-test scores for both the interest and competence scales are presented in Table 4-3.
Lastly, the caring data was analyzed using a paired $t$-test to determine differences in mean pre-test and post-test scores for male and female students. The results demonstrated a significant difference in the mean pre-test and post-test scores for the female students, but not for the male students. The female students’ mean post-test caring score ($M = 2.86$) was significantly higher than their mean pre-test caring score ($M = 2.63$), ($t(34) = -2.22, p < .05$), yielding a moderate effect size, $r = .36$. Thus, it can be concluded that only the female students’ caring scores were significantly influenced by participating in the education program about nursing. The results of this analysis are presented in Table 4-5 and Figure 4-5.
Table 4-1. Pearson’s chi-square tests of students’ “Yes” and “No” responses before participating in the education program

<table>
<thead>
<tr>
<th>Group</th>
<th>Responses</th>
<th>Yes</th>
<th>No</th>
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<td>Gender</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>N = 28</td>
<td>N = 42</td>
<td>**11.67</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7 (25%)</td>
<td>28 (67%)</td>
<td></td>
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<tr>
<td>Female</td>
<td>21 (75%)</td>
<td>14 (33%)</td>
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<tr>
<td>Race</td>
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<td></td>
<td>NS</td>
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<td>Black</td>
<td>N = 28</td>
<td>N = 42</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Non-Black</td>
<td>6 (21%)</td>
<td>10 (24%)</td>
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</tr>
<tr>
<td>Family Member</td>
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<td>***12.7</td>
</tr>
<tr>
<td>Yes</td>
<td>N = 28</td>
<td>N = 42</td>
<td>***12.7</td>
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<tr>
<td>No</td>
<td>17 (61%)</td>
<td>8 (19%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knows A Nurse</td>
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<td></td>
<td></td>
<td>NS</td>
</tr>
<tr>
<td>Yes</td>
<td>N = 23</td>
<td>N = 47</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>10 (36%)</td>
<td>18 (38%)</td>
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**p < .01, ***p < .001, df = 1
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<th>N</th>
<th>p</th>
<th>% Increase of Positive Responses</th>
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</tr>
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<td>28</td>
<td>42</td>
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<td>61%</td>
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<td>20</td>
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<tr>
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<tr>
<td>Before</td>
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<td>10</td>
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<td>16</td>
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<td></td>
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<tr>
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<td>70%</td>
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<td>23</td>
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Table 4-3. Paired $t$-tests for interest and competence RIASEC scale scores for the total sample

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<th>t</th>
<th>p</th>
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<tr>
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<td>2.75</td>
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<td>.11</td>
<td>NS</td>
<td></td>
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<td>After</td>
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<tr>
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<td>.67</td>
<td>NS</td>
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<td>.97</td>
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</tr>
<tr>
<td>After</td>
<td>4.08</td>
<td>.77</td>
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</tr>
<tr>
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<td>.88</td>
<td>.07</td>
<td>NS</td>
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<td>After</td>
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<td>.15</td>
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<td>3.78</td>
<td>.77</td>
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<td>NS</td>
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Table 4-4. Paired $t$-tests of interest and competence RIASEC scale scores for male and female students

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<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
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<td><strong>Interest Scale</strong></td>
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<td>2.88 .99</td>
<td>2.59 .94</td>
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<td>3.68 .67</td>
<td>-0.90</td>
<td>NS</td>
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<td>Investigative After</td>
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<td>3.70 .81</td>
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</tr>
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<td>3.74 .64</td>
<td>4.08 .69</td>
<td>0.53</td>
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<td>Artistic After</td>
<td>3.80 .73</td>
<td>4.07 .54</td>
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<td>3.90 .76</td>
<td>-0.82</td>
<td>NS</td>
</tr>
<tr>
<td>Social After</td>
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<td>3.55 .53</td>
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<td>4.03 .99</td>
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### Table 4-5. Paired t-tests of caring scores for total sample, male, and female students

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<th>p</th>
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<td>After</td>
<td>2.78</td>
<td>.89</td>
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<td><strong>Males (N = 35)</strong></td>
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<td>.45</td>
<td>-1.50</td>
<td>NS</td>
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<td>After</td>
<td>2.70</td>
<td>.85</td>
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<tr>
<td><strong>Females (N = 35)</strong></td>
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<td></td>
</tr>
<tr>
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<td>&lt; .05</td>
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### Table 4-6. Internal consistency estimates of ICA-R’s interest and competence scales and Concern for Others scale

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<th>Competence Scale</th>
<th>Caring Scale</th>
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<td>R</td>
<td>I</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>.80</td>
<td>.79</td>
<td>.81</td>
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</table>
Figure 4-1. Percent increase in the number of students who would be a nurse after participating in the education program
Figure 4-2. Increase in the number of students who would be a nurse after participating in the education program
Figure 4-3. Interest assessment: comparing male and female students before and after the education program.
Figure 4-4. Competence assessment: comparing male and female students before and after the education program
Figure 4-5. Paired *t*-tests of caring scores for total sample, male, and female students
CHAPTER 5
DISCUSSION

The researcher developed a career education program for fifth-grade students in accordance with the National Career Development Guidelines hoping to stimulate young students’ interest in nursing as a future career choice. A review of past research presented in the study has shown that the promotion and dissemination of information about the nursing profession is successful in promoting nursing as a career choice with students of all ages. In addition, information from vocational theory indicates that career development and choice is not a matter exclusive of adolescence or adulthood and that childhood and its contexts are important precursors of future vocational behaviors (Vondracek, 2001). Thus, the researcher thought it a prudent and promising initiative to help strengthen the future nursing workforce by designing a career education program to spawn interest in nursing as a career choice among young people, beginning as early as elementary school. BlueCross and BlueShield of Florida also recognized the value of this initiative to encourage young students to view a career in nursing as a possibility and achievable goal and sponsored a substantial grant to support the research.

When designing the career education program the researcher took into account past nursing research demonstrating that the number one influencer for prospective nurses is another nurse. Recently, a survey conducted by Buerhaus and colleagues (2005a) found that information or advice from practicing nurses was identified by 65% of nursing students as a factor positively influencing their decision to become a nurse. Therefore, the researcher considered it crucial that a practicing nurse teach the curriculum. This also allowed the researcher to personalize the work of a nurse and better create awareness of a nurses’ world-of work by speaking first-hand from lived experiences about the various rewarding job opportunities in nursing.
The theoretical framework of the career education program was founded on an integrated conceptual model that examined interest, competence perception, and the desire to help other people. The interest component is consistent with John Holland’s (1959) theory of personalities and work environments. The competence perception component is supported by Albert Bandura’s (1977) theory of self-efficacy. The desire to help other people component is largely influenced by Jean Watson’s (1985) philosophy and science of human caring. Thus, interest in nursing is operationally illuminated by these three concepts: (a) interest, (b) competence perception, and (c) desire to help other people (Figure 1-1).

The primary purpose of the study was to examine the effects of a career education program on fifth-grade students’ interest in nursing as a career choice when grown. The concepts of interest and competence perception were evaluated by an instrument developed by Tracey and Ward, (1998), the Inventory of Children’s Activities-Revised (ICA-R), which includes activities children commonly engage in and is designed to assess Holland’s six career types (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional, referred to collectively as RIASEC) among children. For the most part, the results of the study did not demonstrate significant changes in mean scores on the RIASEC interest and competence scales as an effect of the students’ participation in the career education program. However, the scores provided an assessment of the structure of vocational interests in fifth-grade students measured at two points in time, at the beginning and at the end of the four-week career education program. Thus, the students’ career assessments (types) based on ICA-R scores on the RIASEC interest and competence scales are evaluated in an attempt to examine career interests within this sample of fifth-grade students.
The concept of desire to help other people was measured by an instrument, *Concern for Others*, designed to quantify students’ characteristics of caring, referred to by Swanson (1999) as an individual’s caring capacity. The Child Development Project created the instrument and according to Dr. Jean Watson (personal communication, November 5, 2006) it is one possible tool that measures caring reflective of her theory of human caring. Caring is increasingly recognized as a core concept, characteristic of the nursing profession. In fact, the revised social policy statement issued by the American Nurses Association (2003) attests to the centrality of caring as part of the definition and scope of professional nursing practice. Numerous studies discussed in Chapter 2 established an iterative theme of “caring for others” as the major motivating factor for both men and women to consider nursing as a career. In addition, caring is traditionally viewed by the public as the foundation for the nursing profession and is foremost in the public’s perceptions of nursing. Recognizing the fundamental phenomenon of caring within the nursing profession, the nurse researcher was interested in discovering fifth-grade students’ caring capacity and determining the effect of a career education program about nursing on a students’ concern for and desire to help other people. These results are presented in a context reflecting the deeply human nature of nursing’s caring works.

In addition, questions were addressed regarding the students’ expressed interest in nursing as a career before and after participating in the education program to determine the influences of four factors: (a) gender, (b) race, (c) having a family member who is a nurse, and (d) knowing someone other than a family member who is a nurse.

**Interpretations of the Effects of the Career Education Program**

**Expressed Interest in Nursing**

One of the goals of the current study was to examine the effect of a career education program about nursing on fifth-grade students’ *expressed* interest in nursing as a career choice.
when grown. The majority of literature on the development of children’s interests focuses almost exclusively on expressed aspirations, asking children what career they would like to pursue when grown (Phipps, 1995; Trice, 1990, 1991; Trice & King, 1991; Trice et al., 1995, Vondracek, 2001). These studies revealed that children are able to express career ambitions and often these early career goals are associated with adult career choices, illuminating the predictive value of early expressions of career aspirations.

Overall, the results clearly supported the education program as an effective career development initiative to stimulate fifth-grade students’ expressed interest in nursing as a career choice. The current study demonstrated a significant 61% increase in the number of students expressing their consideration of a nursing career after participating in the career education program. Interestingly, two students changed their responses from “yes” to “no” to consider nursing after participating in the education program. One student is a White female, age 10, and was in Group 1, and the other student is a White male, age 11, and was in Group 2. The female student reported her grandmother is a nurse, but she did not know anyone else who is a nurse. She indicated on the pre-questionnaire she wanted to be, “A chef. Or a vet. Maby a pet shop owner,” and on the post-questionnaire she indicated wanting only to be a chef when grown. The male student reported his mom is a nurse and that he knew someone other than a family member who is a nurse. On the pre- and post-questionnaires he originally indicated he would consider being a nurse when grown, but on the post-questionnaire he erased his answer, changing it to a “no” response. He expressed he wanted to be a tree surgeon when grown on both the pre- and post-questionnaires. The researcher thought it of special interest that both of these students have a close family member who is a nurse, yet changed their responses not to consider nursing after
participating in the education program. This result is discussed later in the chapter in the context of having a family member who is a nurse and its influence on children’s career choices.

The following discussions are related to specific sub-groups of students considering: (a) gender, (b) race, (c) having a family member who is a nurse, and (d) knowing someone other than a family member who is a nurse.

**Gender**

Another purpose of the current study was to concentrate on the issue of career gender bias within nursing by having students participate in an education program about nursing that discussed and portrayed males as nurses and to determine its effect on male students. Much of the focus on children’s expressed career aspirations has revealed that children tend to have gender-typed career preferences that develop early in childhood, with boys demonstrating more rigid gender typing than girls (Trice et al., 1995). Gottfredson (1981) postulated that one of the first things children learn is “sex-typing” and that this is a primary filter for children to evaluate and consider occupations in terms of their being male or female. Several studies have demonstrated the effectiveness of career education programs with elementary school age children to help reduce career gender stereotyping.

In spite of the efforts to attract men into the nursing profession, men still comprise a very small percentage of the total number of nurses in the United States. Data for 2007 indicated among all full-time employed nurses, only 9% were males (Johnson & Johnson, 2007). Evidence suggests that same-gender role models can influence the attitudes about the appropriateness of a career for members of their own gender and children have been shown to accept the concept of adults in nontraditional roles if models are visible in these roles (Bailey & Nihlen, 1990; Bigler & Liben, 1990).
Therefore, the researcher included a male nurse as a strategic component of the career education program to help dispel the idea that nursing is a career primarily for females. The male nurse participated in the administration of the pre- and post-questionnaires and assisted the researcher in the education sessions. An intriguing observation by the researcher was the tendency for the male students to gravitate to the male nurse during the classroom learning activities. Intentionally, the education curriculum was filled with information about males as nurses with posters and education videos featuring both men and women in pivotal nursing roles. The students were given brochures and coloring books portraying and describing males as nurses. In addition, Johnson & Johnson supplied each student with a Be a Nurse tee shirt with pictures of nurses silk-screened on the front, which included a male nurse.

At the completion of the study, the male students reported a significant 114% increase in the number of positive responses to consider nursing as a career. Thus, it can be inferred that engaging students in an education program that includes not only information about males in nursing, but also a male nurse as an integral part of the curriculum for students to identify as a role model, has the potential to reduce the traditional gender stereotyping of nursing as a female profession. The researcher recommends that gender focused education programs, similar to the one in the study, continue to be offered to young students to help their understanding of nursing as a socially appropriate occupation, regardless of gender. Subsequent studies are recommended to replicate the results of the current study to advance the existing empirical literature on the influence that male nurses can have on young male students’ attitudes about the appropriateness of a career in nursing.

Race

Even though this was not a central question of the current study, the researcher evaluated the effect of the education program considering students’ race and ethnicity, since race and
ethnicity data were collected on the student sample and the recruitment and retention of minority students into the nursing profession continues to be a problem. The diversity of the nursing population remains far less than that of the general United States’ population and is expected to get worse with racial/ethnic minorities projected to constitute an estimated 40% of America’s population by 2030 (Health Resources and Services Administration, 2004). Therefore, the researcher thought it useful to evaluate the effect the education program had on the different racial/ethnic backgrounds represented in the study to determine its utility as a potential intervention to stimulate interest in nursing.

The sample of 70 fifth-grade students reported by ethnic categories consisted of six students of Hispanic origin and 64 students of non-Hispanic origin. The sample reported by racial categories consisted of two students who identified themselves as Asian/Native Hawaiian or Pacific, 16 students as Black/African American, and 52 students as White. The six students of Hispanic origin reported themselves racially as White and therefore are part of the 52 students reported in the racial category as White. For purposes of data analyses, race was defined and dichotomized into two categories: (a) Black and (b) non-Black. The two Asian students were placed into the non-Black category resulting in 16 Black students and 54 non-Black students.

The results of the study yielded a significant positive effect for non-Black students, but not for Black students, even though the percent increase of positive responses for Black students was greater than the increase of positive responses among non-Black students after participating in the education program. The increase in positive responses for Black students was 83% compared to a 55% increase in positive responses for non-Black students. However, the researcher suspects this non-significant finding may be an outcome of insufficient power, due to the small sample size of Black students in the study, resulting in a Type II error. It is the
researcher’s interpretation that the sample size in this study is not large enough to support the division of the sample to test the effects of specific sub-groups, especially when one group has only 16 subjects, such as the sub-group of Black students.

**Having a family member who is a nurse**

Other aims of the study were to evaluate the effect of the education program on students’ reporting whether or not they have a family member who is a nurse and if they know someone other than a family member who is a nurse. Interest in a nursing career can frequently be inspired by having family members or friends who are nurses. Evidence has shown that young people who have a nurse in the family have a more positive view of nursing than those who do not (Pillitteri, 1994).

The pre-questionnaire data analyses are consistent with the evidence supporting the influence of family dynamics on a child’s consideration of a particular career. The students’ pre-questionnaire responses revealed that having a family member who is a nurse had a highly significant effect on students’ expressed consideration of nursing as a career choice. For the current study, 25 students reported having a family member who is a nurse and of those 25 students, 17 students (68%) indicated they would consider nursing as a career prior to participating in the education program.

This highly positive finding of the influence of having a family member who is a nurse is congruent with Roe’s (1956) seminal work describing the impact of the relationships between family background and the development of children’s early educational and career aspirations. The researcher views the theoretical underpinning of family influence as an opportunity to enrich the current career education program by involving parents of young students as part of the career education process. The researcher envisions that parent education programs taught concurrently with student programs have the potential to establish a family orientation to the lifelong nature of
career development beginning in early childhood. Once implemented, the effectiveness of parent education programs would warrant evaluation to determine their influence on parents’ perceptions of nursing as a potential career choice for their children.

Interestingly, there were no changes in the number of positive responses for this group of students after they participated in the education program, indicating that overall the education program did not have an influence on students with a family member who is a nurse to consider nursing as a career. This result could possibly infer that family influence is stronger than an education program about nursing in its utility to positively affect students’ consideration of nursing.

As mentioned in an earlier section of this chapter, two students who have a family member who is a nurse changed their responses to consider nursing from “yes” to “no” after participating in the education program. This meant that two other students who have a family member who is a nurse changed their responses from “no” to “yes” to consider nursing after participating in the education program. Further exploration of these two students who changed from “no” to “yes” revealed that both students were male. One of the students is non-Black, was in Group 1, aspires to be a professional athlete when grown, and reported he has an aunt who is a nurse. The other student is Black, was in Group 2, aspires to be a police officer when grown and reported he has an aunt who is a nurse. The researcher cannot dismiss the inference that for these two students who changed their responses to consider nursing was due in part, to their participation in the education program, especially in lieu of the significant effect of the education program on the male students.

Yet, on the other hand, the career education program had a highly significant influence on the students reporting not having a family member who is a nurse. Of the 45 students in the
sample who do not have a family member who is a nurse, only 11 students would consider being a nurse prior to participating in the education program compared to 28 students who would consider being a nurse after participating in the education program. This is an increase of 17 students, reflecting a 154% increase. This finding lends support to the efficacy of a career education program about nursing to stimulate expressed interest in nursing with fifth-grade students, especially for students without a family member who is a nurse. However, the researcher cannot disregard and separate the idea that the personal interactions that took place between the researcher and the male nurse with the students during the course of the four-week education program influenced the students’ expressed interest to consider nursing as a career when grown. The potential for this type of spurious relationship is discussed later in the chapter.

**Knowing a nurse other than a family member**

Not only having a family member, but also having a friend or knowing someone who is a nurse has shown to provide motivation and direction with young children which eventually led to nursing as a career choice (Beck, 2000). The present study attempted to replicate the influence of knowing a nurse on students’ expressed interest in nursing as a career. However, pre-questionnaire data analyses of the present study revealed that knowing a nurse other than a family member did not have a significant influence on students’ expressed consideration of nursing as career when grown.

As the next step, the researcher evaluated the effects of the career education program on students who reported knowing a nurse other than a family member compared to students not knowing a nurse other than a family member. Slightly less than one-third or 23 students reported knowing a nurse and of those 23 students, only 10 students would consider nursing as a career choice prior to participating in the education program. After this group of students participated
in the education program, a significant increase of an additional seven students expressed they would consider being a nurse when grown.

Of even greater significance was the increase in the number of students who did not know a nurse and would consider being a nurse after participating in the education program. Forty-seven students reported not knowing a nurse other than a family member and of these 47 students, 18 students expressed considering nursing prior to participating in the education program. Yet, after this group of students participated in the education program, an additional 10 students positively changed their expressed consideration of nursing. An observation worth mentioning is that several students stated they knew a nurse other than a family member and listed the nurse researcher and/or the male nurse as the nurse they knew. Although these responses were not counted as the student knowing a nurse for the purpose of analysis, it may suggest the question was not clear to the students or that the researcher and male nurse had enough impact on several students at the onset of the education intervention to be considered a nurse who the students knew.

Overall, based on these results from the current study the researcher proposes a potential linkage between the positive influences of the education program with the intentionally planned experiences for students to have personal contact with practicing nurses. This implication supports the argument that personal exposure with nurse role models has the potential to influence students to view nursing as an enjoyable career and supports previous studies demonstrating the correlation between nursing role models and students’ decisions to pursue a career in nursing. Simply stated, the more contact young people have with nurses, the better the chance of positively influencing their decision to become a nurse.
These results underscore the responsibility of each practicing nurse as potential recruiter of future nurses and substantiate the importance of exposing young students to practicing nurses as a key strategy to stimulate interest in nursing. Nurses are in a unique position to build on the profession’s credible reputation, help dispel any existing negative images of nursing, and educate young people on the many benefits and opportunities a career in nursing can offer. To encourage students of all ages to consider the nursing profession would be one way that all nurses can help maintain a steady recruitment of young people into the future nursing workforce.

Effects on Interest, Competence Perception, and Desire to Help Others

Interest and competence perception

The small body of extant literature on children’s career interests focuses primarily on aspirations and not on the broader construct of interests in the younger ages where it is presumed the establishment of interests occurs. Despite the simple methodology, the current study’s attempt to evaluate children’s expressed career aspirations has been revealing and the results have clearly demonstrated that the career education program about nursing had an overall significant positive influence on fifth-grade students’ expressed interest in nursing. However, the researcher wanted to explore a broader representation of children’s career interests incorporating John Holland’s (1959) theory of vocational choices, Albert Bandura’s (1977) theory of self-efficacy, and Jean Watson’s (1985) theory of human caring.

After a comprehensive review of the existing research on children’s career interests, the researcher located an instrument designed by Tracey and Ward (1998) that measured school age children’s interests and competence ratings on Holland’s RIASEC scale of career types. The instrument, the Inventory of Children’s Activities - Revised (ICA-R), consists of an interest scale and a competence scale that concomitantly measures interests and perceived competencies appropriate for children. There are questions children respond to in terms of what they “like to
do” (interest) and what they are “good at doing” (perceived competence). Locating an instrument that was appropriate to examine fifth-grade students’ interests based on Holland’s RIASEC structure allowed the researcher to explore the effects of a career education program on the students’ RIASEC career types.

The study evaluated the effects of a career education program on fifth-grade students’ interest in nursing based on changes in pre-test and post-test mean scores on the ICA-R’s interest and competence scales. The results of a paired t-test yielded one isolated significant effect. This one effect demonstrated a decrease in the mean competence score for the Investigative career type. Remarkably, after visually examining all of the differences between the mean pre- and post-interest and competence RIASEC scores, the researcher observed a decrease in most of the mean scores. There was a decrease in the mean interest scores for the Realistic, Investigative, Social, and Enterprising career types and a decrease in the mean competence scores for the Realistic, Investigative ($p < .05$), Artistic, Enterprising, and Conventional career types. Otherwise, there were two increases in mean scores on the interest scale for the Artistic and Conventional career types, and no change on the competence scale for the Social career type.

These changes in mean scores are consistent with other research findings documenting a pattern of decreasing interest and competence ratings with age and maturation. It seems that young children first view their interests and competence perceptions as relatively high and undifferentiated, and as they mature developmentally from elementary school to middle school, they slowly start to differentiate interests and competence perceptions with their ability to reason more abstractly (Holland, 1968; Piaget, 1972). In addition, as children grow and age, they begin to view themselves differently as their social comparisons and competition increases, often resulting in children’s overall levels of competence ratings decreasing over time (Roberts &
Peterson, 1992). Tracey (2002, p. 160) posits, ‘This process of differentiation could manifest itself in an overall decrease in the mean levels of interest and competence as children are deciding what things they do not like or are not good at.’ Thus, it would be predicted that instead of the highly undifferentiated ratings of interests and competence perceptions present in the earlier years, older children would drop their levels of interests and competence perceptions in some areas, resulting in an overall drop in mean RIASEC scores.

Even though it is unclear if a four-week period between the pre-test and the post-test accounts for developmental and/or social changes, the researcher proposes that merely participating in the education program may have affected how the students cognitively organized their responses to the questions on the ICA-R. Therefore, the researcher proposes that the overall drop in mean scores demonstrated in the study contributes to the existing literature documenting a general decrease in interest and competence ratings associated with the process of differentiation in children. However, the potential of the testing effect and its threat to this study’s internal validity must be considered.

Regarding gender, the results of a paired t-test to determine the effects of the education program between male and female students uncovered no significant changes for any of the RIASEC mean scores on both the interest and competence scales. Therefore, as a next step, the researcher focused on the assessment of differences among post-test RIASEC mean scores across gender to determine if there were any gender differences. In general, the gender differences found for both the interest and competence mean scores supported gender patterns found in previous research (Tracey & Ward, 1998; Tracey 2002).

The current study revealed the gender effect for the interest scale was manifest with male students having higher mean scores on the Realistic scale, whereas the female students had
higher mean scores on the Investigative, Artistic, Social, and Conventional scales. There was no
gender mean difference on the Enterprising interest scale. An identical pattern was discovered
on the competence scale. The male students scored higher on the Realistic scale and the female
students scored higher on the Investigative, Artistic, Social, and Conventional scales. Again,
there was no gender mean difference on the Enterprising competence scale. These interest and
competence mean scores for the male and female students are depicted in Figure 5-1.

The mirroring of the interest and competence mean scores indicated a high degree of
similarity across the RIASEC mean scores for these two scales. This important finding provided
support of previous research conducted by Tracey and Ward (1998; Tracey, 2002) demonstrating
the structural similarity between interests and competence perceptions, with no differences
between the structures for males and females within the same age group. As described, one of
the purposes of Tracey and Ward’s 1998 study was to develop an instrument that enabled the
examination of interests and competence perceptions with commensurate measures, resulting in
the development of the ICA-R. The similarity of the RIASEC mean scores for interests and
competence perceptions for both male and female students demonstrated in this study adds
validity to the ICA-R’s ability to examine the structure of children’s career interests. These
results also support the primacy ascribed by many career theorists to the link between interest
and perceived competence in the determination of career interests (Bandura, 1982; Lent et al.,
1994; Holland, 1997). However, longitudinal examinations of the structures of interests and
competence perceptions and how they develop across age are warranted.

Desire to help other people

As discussed in Chapter 2, there is extensive evidence that describes caring as a principal
quality and a primary reason nurses consider a career in nursing. As part of this discussion, the
researcher proposed the theoretical model conceptualizing interest in nursing as a career choice
include the desire to help other people, guided by the underpinnings of Watson’s theory of human caring. Therefore, an important aim of the current study was to examine the effect of the career education program on students’ desire to help other people or capacity to care as described by Swanson (1999).

The results of a paired t-test concluded the education program had a significant positive effect on students’ desire to help other people. This discovery raised a question with the researcher whether caring is a characteristic trait that remains as a constant and inherent behavior (nature) or is it a dynamic and learnable behavior enhanced or diminished by instruction, experience, or modeling (nurture). This result suggests that a career education program that includes the caring work of nursing presented by practicing nurses can potentially affect and nurture fifth-grade students’ desire to help other people. In addition, the research findings align with some of Benner’s (1984) original work of her concept of novice to expert, where in her phenomenological investigation of excellence in nursing practice she discovered that the ability to practice expert caring is deepened and expanded with knowledge and practice.

Evidence from the current study indicates that caring instruction and modeling have positive implications for nurse educators. This information should be considered when establishing academic standards and activities in nursing curricula that incorporate the art and science of human caring to ensure future nurses are learning how to practice within a framework of caring. This would be the first step to establish a model of nursing that advances the science of human caring in education, practice, and research. Watson posits, “It is when we include caring and love in our science, we discover our caring-healing professions and disciplines are much more than a detached scientific endeavor, but a life-giving and life-receiving endeavor for humanity” (Watson, 2005. p. 3).
The last aspect of the research was to determine if male and female students’ desire to help others responds differently to a career education program about nursing. A paired $t$-test evaluating differences in pre-test and post-test mean scores for males and females determined that only the female students’ caring scores were significantly influenced by participating in the education program. The result could lend support to some authors’ views that stress a greater affinity of females to characterize the relational and emotional ethical attitudes of caring when compared to males. Yet, these traditional social conventions are not to say that males are unable to care and that caring for others is a phenomenon exclusive of females. In fact, surveys of male nurses have reported that one of the motivating factors in men who chose nursing was the desire to help people (Kelly, et al., 1996; Marsland, Robinson, & Murrells, 1996).

The researcher supports a more gender neutral attitude about a person’s capacity to care based on the suppositions of Watson’s theory of human caring describing caring as an ontological trait of being human and a fundamental trait of human relatedness (Watson, 2001), and therefore not a privilege of any one group of people. However, a limitation of the current study is its small sample size, suggesting that the conclusion of the differences between male and female students’ responses to their desire to help other people as an effect of the education program are tentative and future research is needed to further examine gender differences.

Furthermore, a number of limitations should be considered when using quantitative research methods to investigate the concept of caring. Researchers have discussed the complexity of the concept of caring, highlighting that it is more than a simple set of caring behaviors, and that risks exist when evaluating caring strictly from a quantitative approach. Caring reflects the humanitarian side of nursing, which is often difficult to quantify and can benefit from the more interpretive methods of knowledge building. Therefore, the researcher
recommends future research evaluating children’s caring attributes include multiple paradigms of scientific inquiry to include both qualitative and quantitative research to build upon the results of the current study. This quest of new knowledge from a quantitative paradigm would require developing instruments that are specifically designed to measure caring attributes in children reflective of Watson’s theory of human caring, since none currently exists.

**Research Design**

The current study is a within-subjects design, often referred to as repeated-measured design. An advantage of a within-subjects design is it requires fewer subjects; the total number of subjects needed corresponds to the number required for any one condition (Brink & Wood, 1998). It was only when sub-groups, like race and gender, were evaluated that the statistical power of the study was threatened.

A second advantage of a within-subjects design is the unsystematic error variance is reduced making the study most sensitive to the evaluation of the education program (Fields, 2005). This means the current study because of the within-subjects design minimizes random factors that may affect the results of the study. However, a disadvantage of the study’s design is the lack of a comparison group. Therefore, much greater confidence can be placed in the findings of this study if the results can be replicated in other settings with different subjects.

**Strengths, Limitations, and Implications for Future Research**

Many of the study’s strengths, limitations, and implications for future research were discussed within the context of the interpretations of the various results. Yet, additional strengths, limitations, and research recommendations that apply to the study as a whole are elucidated in this section.

Strengths of the current research point to the overall contributions made to the existing evidence supporting the efficacy of a career education program’s utility to stimulate school age
students’ expressed interest in nursing as a career choice. In addition, the intentional interventions designed to address gender bias of nursing were effective in significantly influencing the male students to consider nursing as a career choice when grown. However, the researcher is sensitive that these causal relationships may be attributed to the influence of a third variable or spurious relationship, the person or persons presenting the education program, giving way to a possible Type I error. Without a comparison group, it is difficult to separate spurious effects of other extraneous variables, thereby threatening the internal validity of the study.

The researcher acknowledges there is a possibility that any positive influence of the career education program may reflect the relationships established between the students and the researcher and/or the male nurse delivering the career education program. Then again, was that not the desired outcome of exposing students to “real” nurses, for the students to identify with nurse role models as a dynamic influence on students’ consideration of nursing as a career choice? Another pause to the positive influence of the education program is the potential of the Hawthorne effect. The plain fact that the students were participating in the education program may have had an effect on the students’ behaviors and positive responses to the education program.

A limiting factor of the current study is the incomplete results related to racial/ethnic influences. Further career education programs should be designed similarly to the one developed for this study that addressed gender barriers, but should include a concerted focus describing and portraying racial/ethnic minorities in pivotal nursing roles to increase awareness of nursing as a career choice within diverse groups of young students. It is the researcher’s belief that efforts to build a more diverse nursing workforce will benefit both the nursing profession and the individuals entrusted in their care.
An additional limiting factor of the current study is it did not examine whether the scoring of the *ICA-R* for the current study’s sample of fifth-grade students supported the measurement of the RIASEC scales. Findings from Tracey and Ward’s (1998) study suggested the RIASEC basis of the instrument was inappropriate for elementary school age children. However, the results in Tracey’s (2002) study were different in that his sample of elementary school children’s *ICA-R* scores supported the measurement of RIASEC scales. Tracey attributes the viability of the RIASEC scales in his 2002 study a function of the students being older, in that all of the students were in the fifth-grade. Previous studies (Mueller, 1991; Tracey & Ward, 1998; Tracey, 2002) determined that the extent to which the RIASEC scales were supported was positively related to age, with older grades having a better fit.

To determine if the *ICA-R* could be scored using the RIASEC structure, Tracey (2002) conducted a separate confirmatory factor analysis (CFA) on each of the item responses from both the interest and the competence scales using LISREL with maximum-likelihood estimation. These statistical analyses examined whether: (a) the items loaded on the six RIASEC scales and (b) if the hexagonal structure among the RIASEC scales was valid. The results of these CFAs are thoroughly detailed in Tracey’s 2002 study. The researcher recommends the same analyses be conducted on the current fifth-grade sample’s interest and competence mean scores to confirm if the *ICA-R* appropriately measured RIASEC career types for this sample of students.

Nonetheless, according to Tracey and Ward (1998; Tracey, 2002), another indication of the *ICA-R*’s ability to score career interests using the RIASEC format is the evaluation of the internal consistencies of the interest and competence scales. The fifth-grade school sample in the study demonstrated much larger internal consistency estimates, ranging from .79 to .81, than found by Tracey and Ward (1998; Tracey, 2002), providing some support of the *ICA-R*’s
reliability in measuring RIASEC career types for this sample of students. The internal consistency estimates of each RIASEC score for both the interest and competence scales are presented in Table 4-6. However, more research is needed to validate the ICA-R’s appropriateness in evaluating elementary school students’ RIASEC scores, especially in light of the dearth of research on interests in the younger ages. Pragmatically, the ICA-R was easily administered by the researcher using a common set of directions, was relatively brief, the directions were easily understood by the students, and the students seemed not to have any difficulty with any of the questions.

Other limitations of the study are related to the study’s sample. First, the current study was conducted with a small number of participants from one elementary school. The sample was relatively homogeneous with all of the students living in a suburb close to a large city, coming from a middle-class background. Therefore, the ability to generalize the results of the study to students from a more diverse background should be considered with caution. The researcher recommends further studies of this nature are needed to see if the same results are obtainable in other more diverse populations of fifth-grade students.

Secondly, the sample size in the study is adequate when testing differences between two means for the total sample (N = 70) of students in the study. However, when analyses are conducted between sub-groups of the total sample, it places the study at risk for a Type II error. This was most apparent when evaluating the effect of the education program with Black students (N = 16). Therefore, it is important to replicate the study’s findings with larger and more diverse samples of students.

Lastly, a weakness of the study is its cross-sectional nature. Longitudinal research is recommended to examine just how long the students’ expressed consideration of nursing as a
career remained constant. For instance, the post-questionnaire was administered immediately after the last education session, which raises the question as to how long students’ expressed interest in nursing will last. Longitudinal studies are needed to study the effects of a career education program on students over time to determine its influence on students choosing nursing as a career.

**Practice Implications**

The education program was designed primarily to increase awareness of and interest in a career in nursing with fifth-grade students. Yet, as children mature, career exploration becomes a greater emphasis than career awareness to stimulate vocational interests. Thus, it is recommended that as children move into the middle school years, career education programs, like the one designed for the current study, be enriched with developmentally appropriate opportunities to further explore nursing’s world-of-work. These activities could include field trips to local hospitals, shadowing experiences with practicing nurses, partnerships with schools and healthcare facilities to sponsor mentorship programs for students at all grade levels, and even part-time employment as appropriate. All of these activities have shown to have a positive influence on students’ perception of nursing as a career choice.

Related to the current study, the researcher recommends the students who expressed an interest in nursing as a career to be encouraged to participate in subsequent career exploration activities. These activities could include, but not be limited to, the aforementioned career exploration activities. The participation in additional career exploration activities would be particularly valuable for those students in the study whose assessed career types were Social. Longitudinal evaluations of the proposed career awareness and exploration activities are essential to determine the relationship between increased interest in nursing as a career and a student’s actual career choice and enrollment in nursing school.
The findings from the current study examining the structure of children’s interest and competence perceptions supported many findings from previous research on interest development in children. First, the gender mean differences found on all the scales except the Investigative scales (both interest and competence) mirrored the results of Tracey (2002) on a similar sample of students. Secondly, the findings illustrated a general decrease in ratings of interest and competence scores, which is supported by previous studies and explained by developmental and vocational psychology as a function of differentiation as children decide what they ‘do not like or are not good at’. Additionally, the results provided some support for the ICA-R to score RIASEC types for the current study’s sample of fifth-grade students based on the internal consistency estimates of RIASEC scales.

Since the structures of interests and competence perceptions in children change over time, especially in the transition years from elementary to middle school and do not stabilize until late adolescence, more research of a longitudinal nature is needed to examine interest development in late elementary and middle school students. A longitudinal approach would some shed light on the question of how children shift from a concrete orientation to a more abstract perspective, especially related to the synthesis of career awareness and exploration. A better understanding of how children change in their thinking about their interests and competence perceptions has great promise with respect to the future design of career interventions to assist children to work with and understand their interests.

Overall, the results demonstrated the importance of research focusing on the career development of children and the positive effect that career education can have on children’s career interests. As well, the review of the career development literature supports the notion that career counseling programs should be an integral part of students’ daily educational environment.
and a fundamental component of the academic mission of elementary, middle, and high schools. Thus, the researcher recommends that a foundational principle of our nation’s pedagogy include career development instructions and experiences as part of a comprehensive career counseling program to be introduced at the elementary level and continued through high school and that research be supported to study the effects on the development of children’s career interests and choices over time. In conclusion, many of the students’ responses in this study to a career education program about nursing are conceived as empirical contributions to existing knowledge for theorists, practitioners, and researchers to build upon, within the sciences of nursing and vocational psychology.
Figure 5-1. Gender effect for the interest and competence scales
APPENDIX
CAREER EDUCATION CURRICULUM FOR FIFTH-GRADE STUDENTS

Fifth-Grade Career Education and Awareness
Of Nursing as a Career Choice

Unit 1: Everybody Can Learn about Nursing

Unit 2: Learning What Nurses Need to Know about the Body

Unit 3: Learning about Skills that Nurses Perform

Unit 4: Learning What Nurses Need to Know about Everyday Infections, Such as the Common Cold
Unit 1: Everybody Can Learn about Nursing
►Objective
• To help students broaden their view of nursing as a career choice, appreciate that nurses come from diverse backgrounds, and recognize that nurses are both male and female
►Competencies and Skills
• Students will:
  • Describe the many roles and responsibilities of a nurse
  • Discuss the advanced education beyond high school that is required of a nurse, and suggested high school subjects to prepare the student to study nursing
  • List various job opportunities and places a nurse can work
  • Discuss employment, advancement opportunities, and job outlook
  • State the earning potential of nurses
  • Acknowledge that nurses are both male and female and they comprise all ethnicities
►Instructor Preparation
  o Nature of the work
  o Working conditions
  o Work values, skills, and, abilities
  o Required education, other qualifications, and advancement
  o Recommended school courses
  o Employment and job outlook
  o Earnings
  o Related occupations
►Include both a female and male nurse during class instruction
►Display posters of nurses depicting various ethnic backgrounds
►Supplies
  o Johnson & Johnson Recruitment Posters
  o Johnson & Johnson Coloring Book, “You Can be a Nurse”
  o Johnson & Johnson Video, “They Dare to Care”
  o Johnson & Johnson Nursing Pin, “We Dare to Care”
  o Nursing Gang CD, “Making a Difference Everyday”
  o “Nursing Crossword Puzzle”
►Classroom Instruction
  o Video – “They Dare to Care”
  o Roles and responsibilities
  o Nursing education
  o Employment opportunities
  o Diverse backgrounds
  o Distribute coloring book, nursing pin, and CD
►Assessment
  o Nursing Crossword Puzzle
  o Assign Optional Homework, “Career Report”
Unit 2: Learning about What Nurses Need to Know

 ► Objective
 • To help students understand that nurses need to know the parts of the human body and their functions

 ► Competencies and Skills
 • Students will:
   • Recognize the location of the major organs of the body
   • State the primary function of the major organs of the body

 ► Instructor Preparation
 • Prepare an introductory lesson on all the organs of the Anatomy Apron. Information included in “The Anatomy Apron – Teacher’s Guide”
   o Brain
   o Lungs
   o Heart
   o Stomach
   o Liver
   o Large and small intestines
   o Kidneys

 ► Supplies
   o Education Insights “Anatomy Apron”
   o Handouts –
     ▪ “My Body”
     ▪ “The Brain is the Boss”
     ▪ “The Real Deal on the Digestive System”
     ▪ “All About the Heart”
     ▪ “What Kids Need to Know about Kidneys”
     ▪ “Looking at Your Lungs”
     ▪ “The Whole Story on Skin”

 ► Classroom Instruction
   o Discuss handout “My Body”

 ► Assessment
   o Locate major organs of the human body using the “Anatomy Apron”
   o State primary functions of the body’s major organs

Unit 3: Learning about Skills that Nurses Perform

 ► Objective
 • To help students understand basic skills required of nurses, specifically, major vital signs assessment skills

 ► Competencies and Skills
 • Students will:
   • List the major vital signs assessment skills
     o Heart rate (HR)
     o Respiratory rate (RR)
     o Temperature (T)
     o Blood pressure (BP)
• Recognize equipment used to assess major vital signs
  o Stethoscope
  o Thermometer
  o Blood pressure cuff

• Demonstrate accurately taking another student’s vital signs and recording on the “Vital Signs Sheet” the student’s HR, RR, T, and BP

► Instructor Preparation
• Prepare an introductory lesson on the major vital signs describing what they are and how to take and record them

► Supplies
  o “Tools Clues” handout
  o “Vital Signs Sheet”
  o Stethoscope(s)
  o Thermometer(s)
  o Blood pressure cuff(s)

► Classroom Instruction
  o Discussion of major vital signs (HR, RR, T, and BP)
  o Demonstrate how to take major vital signs (HR, RR, T, and BP)

► Assessment
  o Complete handout “Vital Signs Sheet”
  o Complete handout “Tools Clues”

Unit 4: Learning What Nurses Need to Know about Everyday Infections, Such as the Common Cold

► Objective
• To help students identify everyday infections, how to protect yourself and others from these infections, and how to prevent the spread of these infections

► Competencies and Skills
• Students will:
  • Recognize and describe common childhood infections
  • Discuss how nurses can protect themselves and others from the spread of germs and infections by certain isolation precautions
  • Acknowledge that hand hygiene is the most effective means to prevent the spread of germs and infection

► Instructor Preparation
• Prepare an introductory lesson of common childhood infections and ways to prevent the spread of infection
  o Common Cold
  o Conjunctivitis (Pinkeye)
  o Cellulitis from everyday cuts and scrapes
• Prepare a lesson on how nurses protect themselves and others from the spread of germs and infections by wearing gloves, gowns, and masks
• Prepare a lesson on correct hand hygiene techniques to include: (1) proper hand-washing technique using antimicrobial soap and (2) proper antimicrobial foam application technique
► Supplies
  o Gloves, gowns, and masks
  o Face shields
  o Optional: hair covers and shoe covers
  o Soap
  o Anti-microbial hand foam
  o Handouts
    • “Chilling Out with Colds”
    • “Pinkeye”
    • “Cellulitis”
    • “What are Germs?”
    • “Why Do I Need to Wash My Hands?”

► Guest Speaker (optional)
  o Nurse Epidemiologist from local children’s hospital

► Classroom Instruction
  o Common childhood infectious diseases and ways to prevent the spread of infection
  o Isolation techniques
  o Hand hygiene techniques

► Assessment
  o Demonstrate proper donning and removal of gloves, gown and mask
  o Demonstrate proper hand hygiene technique using antimicrobial foam

Instructional Sources


O*NET OnLine, on the Internet at http://online.onetcenter.org/link/details/29-1111.00#menu


American School Counselor Association. (Rev. 2006). *ASCA position statements*.


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BIOGRAPHICAL SKETCH

Pamela Lee Turner was born and raised in Jacksonville, Florida. Pamela graduated from Wolfson High School in Jacksonville in 1971. She earned a Bachelor of Science in Nursing from Florida State University in 1975 and a Master of Science in Nursing from the University of Florida in 1977. Pamela has achieved national certification from the Pediatric Nursing Certification Board as a Certified Pediatric Nurse and from the American Nurses Credentialing Center as a Nurse Executive, Advanced–Board Certified.

Pamela’s nursing career has primarily been spent in acute care facilities specializing in pediatric nursing care. She is currently Director of Pediatric Education and Research at Wolfson Children’s Hospital. Pamela has served as adjunct faculty as a clinical instructor for several colleges of nursing. Her career includes being the first female fireman to be employed by the Jacksonville Fire and Rescue Department where she functioned as a member of the rescue division. After receiving her PhD, Pamela will continue her work as a pediatric practitioner and seek professional opportunities that will allow her to advance the science and practice of nursing.

Pamela has been married to Joe W. Turner for 31 years. They have a daughter and a son. Their daughter, Elizabeth, is studying to be a physician. Their son, Walker, is studying to be an electrical/computer engineer.