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THE EFFECT OF NURSING EDUCATION ON EMOTIONAL INTELLIGENCE SCORES

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By

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The Effect of Nursing Education on Emotional Intelligence Scores

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   The purpose of this research study was to examine the difference between three levels of nursing students (sophomore, junior, senior) and their assessed emotional intelligence (EI) scores. A quantitative, quasi-experimental study was conducted with a population of nursing students from five separate campuses at Montana State University, and a control group of education students at the University of Montana. The following research question was explored in this study: What difference, if any, does nursing education have on the emotional intelligence scores of sophomore, junior, and senior Bachelor of Science in Nursing (BSN) students? Students voluntarily completed the online EQ-i 2.0 assessment resulting in composite standard scores with a mean of 100 and a standard deviation of 15 calculated for the total, scale and subscale EI scores. Mean total standard EI scores were 103.59 (nursing students, n = 51) and 94.43 (education students, n = 7). A one-way analysis of variance (ANOVA), analysis of covariance (ANCOVA), and correlational statistical analyses were conducted. No statistically significant difference was found between the sophomore, junior, and senior students and their assessed EI scores. However, further analysis showed that a moderately strong positive correlation existed between participants' ages and EI scores: ($r = .34$, $n = 51$, $p =. 02$) with $R^2 = 0.11$.

Keywords: emotional intelligence, nursing education, Bachelor of Science in Nursing (BSN), EQ-i 2.0

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Dedication

I would like to formally dedicate this dissertation and particularly the challenging topic of emotional intelligence to all of my amazing former nursing students who are now professional nurses giving back each and every day and night. Their kind words, gentle touch and healing spirit given to patients, families, co-workers and communities personify the true meaning of emotional intelligence. They are the real heroes at the front lines of healthcare making all of the difference!

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Chapter One: Introduction to the Study

The study and assessment of emotional intelligence (EI) in several professions has gained heightened attention (Ovans, 2015). EI has evolved from many different terms such as "social intelligence," "emotional awareness," "emotional literacy," "emotional competence," and "emotional-social intelligence" (Bar-On, Maree & Elias, 2007, p. xiv). Whereas Intelligence Quotient (IQ) or cognitive intelligence focuses on problem solving and skill performance, EI is more ambiguous, relating to interpersonal relationships. Emotional intelligence is defined as the "ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p. 189). Goleman (1995) described EI as the "other characteristics" outside of IQ, of self-motivation, persistence, impulse control, delayed gratification, and regulation of moods (p. 34). Bar-On (2006) developed a model of EI that provided the theoretical foundation to the first EI instrument, the Bar-on Emotional Quotient Inventory (EQ-i) published in 1997. Within this model, EI was originally defined as "a cross-section of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves, understand others and related with them, and cope with daily demands" (p. 3). In 2011 an updated instrument was published based on the original EQ-i model, the Emotional Quotient Inventory 2.0 (EQ-i 2.0). This newer model also offered an updated working definition of EI as "a set of emotional and social skills that influence the way we perceive and express ourselves, develop and maintain social relationships, cope with challenges, and use emotional information in an effective and meaningful way" (EQ-i® 2.0, 2011, p. 31). For the purposes of this study, this current definition was used for EI.

In the healthcare field, traditionally grounded in science, the study of EI specific to nursing education is starting to emerge (Freshwater & Stickley, 2004; Augusto-Landa & López-Zafra, 2010; Letcher & Nelson, 2014). In 2008, the Robert Wood Johnson Foundation and the Institute of Medicine (IOM) started a two-year study that focused specifically on the future of nursing and developed a response to the transforming national health challenges (Institute of Medicine, 2010a). These challenges centered on the explosion of chronic conditions, co-morbid diseases, and ongoing technological advances requiring increased training and care modalities. Nursing was expected to deliver more complex, coordinated care in a multidisciplinary setting. With the delivery of healthcare markedly changing, the study emphasized "the ways in which nurses were educated during the 20th century were no longer adequate for dealing with the realities of healthcare in the 21th century" (Institute of Medicine, 2010b, p. 2).

EI is clearly on the radar of many nursing programs nationally and internationally. Ohio State University College of Nursing (n.d.) provides an online summary of EI qualities as part of their career resource guide for students seeking employment. Entitled "Emotional Intelligence for Nurses," this short but impactful document addresses how the performance of patient care is linked to job success (Ohio State University College of Nursing, n.d., p. 1). The summary stresses that "how you work with others and how you incorporate self-awareness into your role may play an even larger part than nursing skills" (para. 3). Similarly, Johns Hopkins University School of Nursing (n.d.) provides a six-page career binder handout related to EI entitled "Nursing core performance standards and capabilities and emotional intelligence" (p. 1). This document states, "It is suggested that one's level of emotional intelligence is a better predictor of job performance than IQ" (p. 2). Kent State University College of Nursing (n.d.) has developed an entire program devoted to the value of mindfulness and self-care for their students.

Moreover, students applying for acceptance into the nursing program at the University of Dundee, Scotland, are reportedly being given emotional intelligence tests as part of the selection process (Rankin, 2013). Clearly, these programs hold EI in high esteem, and they use it as the basis of selection processes, restorative self-care, and predictors for student behavior and career success.

Montana State University College of Nursing (MSU-CON) started as the first public generic baccalaureate nursing program in the state of Montana in 1937 (Montana State University Nursing, n.d., About the College/Overview & History). Currently, over 600 students (sophomores, juniors, seniors) are enrolled in the traditional BSN program across five separate campuses: Bozeman, Billings, Great Falls, Missoula, and Kalispell. The undergraduate nursing program is approved by the Montana Board of Nursing (MTBON) and is nationally accredited by the Commission on Collegiate Nursing Education (CCNE) (Montana State University, 2015–2016). The program of study requires successful completion of specific theoretical and clinical credits for graduation. The first two years of study consist of general education courses and five lower division nursing courses. Once these credits are completed with a minimum 3.0 grade point average (GPA), students can apply for upper division placement on one of the five campuses. Eight of the required nursing courses have both theoretical and clinical laboratory credits allotted in the curriculum.

Courses with a clinical component provide experience with direct patient care or simulation scenarios. This clinical experience is important to the growth of the student nurse because it offers specific opportunities for patient/family assessment, care, and evaluation. Moreover, these interpersonal interactions require high levels of EI. In a report on clinical education and regulation, the National League for Nursing (NLN) declared, "While planning for

course innovation, our mantra for nurse education is 'please be aware that face-to-face care is

vital for nurses' formation'" (Spector, n.d., p. 181). The development and growth of EI can be

strengthened by increased exposure to patient care and clinical hours in the healthcare setting.

Interestingly, only nine states and two US territories have a mandated minimum number

of clinical hours that nursing students are required to complete for graduation (NCSBN, n.d.).

The majority of the states, Montana included, have no prescriptive minimum number of clinical

hours. Although initially surprising, the NLN explains that the "licensure and the state-based

regulatory system in the United States are founded in the 10th Amendment of the US

Constitution, thus falling under individual state jurisdiction with its inevitable variations and

uniqueness" (Poe, 2008, p. 268). Implicit in this broad interpretation is the push toward

innovation in nursing education and acceptance of varied teaching strategies such as simulation,

direct patient care, and reflective exercises, all of which incorporate elements of EI. One area

the regulation does specify is that students should have sufficient supervised clinical experiences

to meet the programs' outcomes. The MTBON and the CCNE evaluate each nursing program

specifically focusing on how the curriculum meets this regulation.

Statement of the Problem

Nursing is first and foremost a caring profession rooted in compassion, empathy, and

competence, qualities foundational for EI. EI embodies caring and compassion in recognizing

and self-regulating one's own emotions, perceiving their effects on others, and fostering social

relationships (Bar-On, 2006; Goleman, 1998; Mayer & Salovey, 1997). The absence of these

qualities can lead to disillusionment, diminished resilience, burnout, and decreased job

satisfaction (Augusto-Landa & López-Zafra, 2010; McAlister & McKinnon, 2009). Nursing and

healthcare in general is experiencing tremendous changes and subsequent challenges resulting

from a stressful work environment, impending shortages of experienced nurses, and high turn-

over rates of new graduate nurses in the profession (Auerbach, Buerhaus, & Staiger, 2014;

Cowin & Hengstberger-Sims, 2005; Hodges, Keeley, & Troyan, 2008; Kovner, Brewer, Fatchi,

& Jun, 2014; McQueen, 2003; Pacini, 2005; The U.S. Nursing Workforce, 2013).

The environment of healthcare has moved toward highly complex care modalities, aging

patients with co-morbid diseases, time limitations, and staffing shortages (Benner, 2010; Hodges

et al., 2008). In a study focused on professional resilience in BSN prepared acute care nurses,

Hodges, Keeley, and Troyan (2008) stated, "new nurses typically begin their practice in acute

care settings in hospitals, where their work is characterized by time constraints, high safety risks

for patients, and layers of complexity and difficult problems" (p. 81). Descriptors such as a

"tumultuous journey," (Cowin & Hengstberger-Sims, 2005, p. 60), "environment of dissonance,"

(Pacini, 2005 as cited in Hodges et al., 2008, p. 80) and stress that "mimics conditions of war"

(McQueen, 2003 as cited in Hodges et al., 2008, p. 80) characterize the struggles that nurses face

every day (McQueen, 2003). These authors concluded that these escalating pressures demand

"cognitive and emotional work" (Hodges et al., 2008, p. 80). New nursing graduates are

vulnerable to the stark transition between a protected school environment and the realities of

their first jobs. The disconnect between these two settings can foster disillusionment and

emotional frustration that graduate nurses may not be prepared to handle. Patricia Benner

(2010), one of the seminal authors on nursing education and the transition of new graduates into

practice, explained, "the work is physically grueling and intellectually taxing. It is both routine

and filled with the unexpected and the education is preparation for remarkably hard work" (pp.

x-xi). It is incumbent on educators to align the model of nursing education with the realities of

the profession. Incorporating EI into the nursing classroom can help with the challenges of the

profession.

Furthermore, the nursing industry is experiencing an impending shortage of experienced registered nurses (RN). The average age of the current RN is 47 years, with nurses ages 49–67 accounting for over 40 percent of the RN workforce today (Auerbach, Buerhaus, & Staiger, 2014: The U.S. Nursing Workforce, 2013). Projections indicate that the impending retirements of these skilled practitioners will create a nursing shortfall of monumental proportion (Auerbach, Buerhaus, & Staiger, 2014: The U.S. Nursing Workforce, 2013). This data clearly shows that the education of resilient new graduate nurses is a healthcare priority. How can the nursing education pipeline produce new graduates who can quickly assimilate and remain in practice?

Once graduated, new nurses enter into a job market that can be overwhelming. The transition into a physically and psychologically demanding work environment can produce reality shock and frustration. This disillusionment can lead to exceptionally high turnover rates noted in new graduates during the first two years of employment:

> You can recruit till the cows come home, and that's what we see nurse recruiters in hospitals doing. Pull out all the stops, do the sign-on bonuses, basically bribe them in some way to get them in the door. But until you can stop the bleeding, they're coming in the front door and leaving out the back door. (Bozell, 2004, as cited in Erickson & Grove, 2007, p. 1)

New graduate nurses seem to be leaving out the back door in ever increasing numbers. In a ten-year study of new nurses, Kovner, Brewer, Fatchi, and Jun (2014) reported that 17.5 percent change jobs within the first year of employment. Moreover, new graduates show a two-year turnover of 33.5 percent (Kovner, Brewer, Fatchi, & Jun, p. 68). A ten-year study of RN turnover by The Robert Wood Johnson Foundation (2014) supports the phenomenon of nurses

leaving their first job, reporting that close to one in five new nurses leaves their first job within a year (para. 1).

This current data revealed the necessity in identifying possible causes of this exodus. Nursing students may not be learning the emotional tools to survive in such a demanding environment (Augusto-Landa & López-Zafra, 2010; Foster, McCloughen, Delgado, Kefalas & Harkness, 2015). High levels of EI are tied to high levels of resilience and sustainment in the profession of nursing (McAllister & McKinnon, 2009); therefore, with the workforce facing the projected loss of over 1 million nurses in the next 10–15 years (Auerbach et al.,2014) fostering resilience in student and graduate nurses is imperative. Auerbach et al. (2014) alerted nursing education programs to adequately prepare graduates for roles in "the increasingly complex ambulatory care delivery system of the future" (p. 6). Clinical education with direct patient care, simulation, and clinical practice may provide the learning opportunities to foster EI.

Clinical hours are supervised by nursing faculty or designated nursing preceptors who by choice can teach and promote EI in the varied clinical settings. These clinical hours are the practical application of nursing care in a variety of settings. At each educational level (sophomore, junior and senior) the clinical hours build and are cumulative. Senior students will have completed over 1000 clinical hours as part of their nursing education. The qualities that define EI (emotional and social competence, communication, understanding of emotions and coping skills) are practiced during multiple clinical encounters with patients, simulations and clinical conferences (Beauvais, Brady, O'Shea & Griffin, 2011; McQueen, 2003; Ozcan, Oflaz & Cicek, 2010; Stoller, Taylor & Farver, 2013). Multiple researchers determined that EI could be taught, developed and improved over time (Bar-On, 2006; Beauvais, Brady, O'Shea & Griffin, 2011; Caruso & Salovey, 2004; Goleman, 1998; Mayer & Salovey, 1997; McQueen,

2003; Ozcan, Oflaz & Cicek, 2010; Stoller, Taylor & Farver, 2013). While early studies may link maturity and life experience to increased EI (Doll, 1935; Thorndike, 1920), Chang (2007) and Nelis, Quoidbach, Mikolajczak & Hansenne (2009) measured EI scores in students who received specific EI training. These two studies showed an increase in student EI scores after the inclusion of educational strategies.

Purpose of the Study

The purpose of this quantitative study was to determine the difference, if any, between the three levels of nursing education (sophomore, junior, senior) with self-assessed EI scores of traditional Bachelor of Science in Nursing (BSN) students at Montana State University College of Nursing (MSU-CON). Research has demonstrated that EI can be taught, improved, and strengthened over time (Caruso & Salovey, 2004; Goleman, 1998; Mayer & Salovey, 1997; McQueen, 2003; Nelis et al., 2009). Therefore, this research into the link between EI and clinical education offered new insight into nursing curricula. Currently, no research has focused on the difference between levels of nursing education and measured EI scores. Nursing preparation needs to include a duality of competence based and care based instruction with students developing strong EI strategies to sustain them in a demanding profession.

Research Question

For the purposes of this study, the following research question was explored: What difference, if any, does nursing education have on the emotional intelligence (EI) scores of sophomore, junior, and senior Bachelor of Science in Nursing (BSN) students?

The study aimed to provide insight into the field of nursing education measuring EI at three specific points in time (sophomore, junior, and senior levels) along the BSN education

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continuum at Montana State University-College of Nursing. At the time of EI assessment, the

students were at the beginning, mid-point, and end of their clinical hours in the curriculum.

The independent variable included the three education levels (sophomore, junior,

senior), and the dependent variable was the student's self-assessed EI scores at three levels of

study in the curriculum. No identified research has been found that examines the levels of

nursing education and student levels of EI. This study examined EI through a new and different

lens, focusing on the level of nursing education and student EI assessment at each level.

Definition of Terms

Important terms and acronyms need to be defined so there is a common and clear

understanding within a research study. For the purpose of this study, the following terms were

defined:

Clinical hours. MSU-CON designates that clinical hours can be laboratory experiences

with the majority involving direct patient/client care or interaction (MSU-CON Policy #C-1,

Attachment 1, para.1).

Emotional intelligence (EI). Although multiple definitions exist, for the purposes of

aligning the measurement tool EQ-i® 2.0 developed by Reuven Bar-On, the definition of EI

from this tool will be the primary definition of this study. It defines EI as "a set of emotional and

social skills that influence the way we perceive and express ourselves, develop and maintain

social relationships, cope with challenges, and use emotional information in an effective and

meaningful way" (EQ-i® 2.0, 2011, p. 31).

Bachelor of Science in Nursing (BSN). Students who have completed 120 credits

consisting of general and nursing education courses (Melland, 2013, Webinar).

Full-time nursing students. Students who are enrolled with 12 credits or more are considered full-time students (Montana State University, 2015–2016).

Traditional students. BSN students who progress through eight semesters, with the pre-nursing courses in the first four semesters, and the upper division clinical courses in the last four semesters (Montana State University, 2015–2016).

Part-time nursing students. Students who are not taking the full complement of course credits due to a failure or withdrawal from a previous course are considered part-time (Montana State University College of Nursing Undergraduate Program Handbook, 2015–2016).

Educational Levels.

Sophomore nursing students. Students admitted to Montana State University-Bozeman who have received placement in the nursing program and have changed from pre-nursing to nursing status. Sophomore nursing students are in the fourth semester and are in the process of completing 65 credits of lower division courses that include 15 nursing credits (Melland, 2013, Webinar; D. McCray, Personal Communication, July 6, 2016).

Junior nursing students. BSN students who have completed their sixth semester of didactic and clinical courses (Montana State University College of Nursing Undergraduate Program Handbook, 2015–2016).

Senior nursing students. BSN students who are in their final (eighth) semester of study (Montana State University College of Nursing Undergraduate Program Handbook, 2015–2016).

Delimitations of the Study

For this research study, the population included the total number of traditional sophomore and upper division (junior and senior) nursing students enrolled at all of the five separate

campuses (Bozeman, Billings, Great Falls, Kalispell, and Missoula) within the MSU-CON. No

students were excluded from these cohorts. Participation was voluntary and confidential.

Limitations of the Study

According to Creswell (1994), a limitation is identified as a potential weakness of the

study (p. 110). The following limitations were identified for this study:

- Only Montana State University BSN students will be used for the population/sample,
  which limits generalizability to the larger national population of nursing students.

- All students in three separate cohorts were offered the online EI assessment to complete
  with the assurance of confidentiality. This study is not randomized, affecting its
  generalizability to the larger population.

- The convenience nature of the sample of individuals who choose to participate in this
  study may not be reflective of all nursing students and limit generalizability overall.

- The population of BSN students at MSU-CON is limited to one university in one state
  and at one point in time.

- Three different cohorts of students, limited by a single cross-sectional assessment, are the
  sample.

- The low return rate of students who completed the EI assessment in this study.

- Self-reporting assessments may result in social desirability in the quality of responses.

Significance of the Study

Currently, no research has been identified that examines the specific levels of nursing

education related to self-assessed EI scores for nursing students or any students in the healthcare

professions. In recent years, the nursing profession has experienced increased workplace stress

related to the physical and psychological demands of complex patient care. New graduate nurses

are often faced with a stark disconnect between the protected student environment and the reality

of the job. Turnover rates for nurses post-graduation are escalating. How can education help

train nurses to be more resilient for sustainment in such a demanding profession? Examining

clinical hours and levels of emotional intelligence may be one key to strengthening the

educational formula.

Several studies and theorists have also focused on the importance of EI as an intrinsic

leadership quality. Goleman (1998) wrote an early article emphasizing how EI skills were vital

for effective leadership. More specific studies linking EI to nursing leadership have emerged

and continue to be a focus emphasizing the strategic development of nursing leaders (Akerjordet

& Severinsson, 2008; Akerjordet & Severinsson, 2010; Horton-Deutsch & Sherwood, 2008;

Vitello-Cicciu, 2003). Later studies have shown that the initiation of leadership skills in a

nursing curriculum will have positive outcomes on the development of future nursing leaders

(Crosby & Shields, 2010; Kalb, O'Conner-Von, Schipper, Watkins, & Yetter, 2012).

The above studies relating to EI and clinical performance or competency, while similar,

demonstrate that no study with nursing students focuses on the effect of nursing education on EI

scores proposed in this research. Examining the levels of nursing education with self-assessed

EI scores will inform educators and curriculum developers in nursing programs. Freshwater and

Stickley (2004) stress the importance of EI integration in nursing education: "rather than an

addendum to the nursing curriculum, emotional intelligence needs to be firmly placed at the

core" (p. 96). The outcome of the current study provides specific research on the difference

between levels of nursing education and self-assessed EI scores of nursing students. With the

current high turnover rate of new nurses and the impending retirement of seasoned nurses,

education is the key to resilience and sustainment of novice nurses joining the nation's largest

healthcare profession.

Summary

Nursing requires compassion, empathy, and competence. Working with a vulnerable

population (patients) at a time when they are scared and mainly in distress demands a high level

of stress management, coping, and critical thinking skills (Augusto-Landa & López-Zafra, 2010).

The absence of these qualities of emotional intelligence can lead to disillusionment and higher

turnover at a time when the nursing industry needs stability and sustainment of a valued

workforce. The large projected exodus of experienced nurses demands proactive planning on the

part of nursing education to maintain a pipeline of healthy, resilient new nurses.

Therefore, this study sought to examine the effect of nursing education in sophomore,

junior, and senior MSU-CON nursing students on measured EI scores. Though the results from

this study are not generalizable to other populations, they offer implications for the future of

nursing undergraduate curricula and education. Educators and leaders in nursing are faced with

the challenge of defining what talents and skills should be foundational for a nursing graduate.

These decisions will influence the resilience of future nurses in a complex profession.

Chapter Two: Review of Literature

This research study examined the effect that nursing education has on the EI scores of sophomore, junior, and senior BSN students. In order to offer a comprehensive analysis, a review of literature was performed to capture any related studies to broaden the "collective understanding" of literature in the field (Boote & Beile, 2005, p. 3). For the purpose of this study, search terms were initially limited to "clinical hours," "nursing education," "emotional intelligence," and "nursing students." The initial discovery of a void in the research affirmed an identified need and relevance for this study. Indeed, Sternberg (1981) asked "after perusal and study of related literature, and appraisal of the scope and ambition of other recent theses in the field, do I find a hole, a gap, a missing link that my topic can contribute to plugging, bridging or forging" (p. 49)? Additional limitations of the literature search were initially determined as the following: dates after 2005, peer reviewed journals, and English language. With the initial small number of studies found, expansion to earlier dates, editorials, reviews, and web-based sites were included. Moreover, broadening the search to "students" helped to incorporate all health care professions, not just nursing. Additional studies related to medical, physical therapy, and occupational therapy students were identified; however, no study focused on the differences between levels of nursing education and EI. The most similar studies examined clinical performance related to EI.

Organization of this section lent itself to a logical summary of the identified research on EI and its historical perspective. This organizational strategy progressed to several distinct components of EI, including its ability to be taught, empathy, caring, leadership, professional support, stress, burnout, RN turnover rates, resiliency, professional sustainment, and clinical

education and curricula. Common trends were identified throughout these studies that helped

organize this literature review into specific themes for clarity and comprehension.

EI and the Historical Perspective

While the study of EI started almost one hundred years ago, in more recent years it has

become popular in a wide range of business, educational, and professional settings. By studying

current research, considering EI's historical context helps to understand its current development

and practice. The following time period is distinguished as the beginning of the more formal

acknowledgement of EI. After this beginning, EI was identified by specific theorists who

created their own definitions and assessment instruments for EI.

Early 20th century. The concept of EI has evolved slowly over the past century yet has

gained momentum and interest in recent years. EI has been referred to by different phrases and

terminology, eventually leading to the current nomenclature of "emotional intelligence" (Bar-On

et al., 2007). This title has been perceived to be a more inclusive and diverse phrase (Bar-On et

al., 2007), although some may feel the term is an oxymoron (Caruso & Salovey, 2004).

Emotions and intelligence can be viewed as incompatible in certain circumstances. Yet the

American dialectical society named "Emotional Intelligence" among the most "useful new words

or phrases of the late 1990s" (Zeidner, Matthews, & Roberts, 2001, p. 265).

Before its current name, emotional intelligence was originally referred to as social

intelligence. Thorndike (1920) published work on "social intelligence" seeking to define,

describe, and explain socially acceptable behavior. Acknowledging the difficulty of measuring

such character traits, Thorndike (1920) observed "social intelligence shows itself abundantly in

the nursery, on the playground, in barracks and factories and salesroom, but it eludes the formal

standardized conditions of the testing laboratory" (p. 231). In an attempt to measure social

intelligence, he used a scale of 117 items that examined behavior from infancy through

adulthood. He argued that social competence was separate from intelligence and therefore

required separate testing: "However, it is obvious that an independent measure of social

maturation and social dependence has both practical and scientific warrant" (Doll, 1935, p. 182).

Over a decade later, Doll (1935) asked an important fundamental question regarding social

intelligence: "It is pertinent to ask whether the traits reflecting 'social responsibility' are

primarily the products of growth or of learning" (p. 189). Both Thorndike's and Doll's

conjectures influenced subsequent researchers.

A few years later, David Wechsler (1940, 1943) designed a cognitive intelligence test

that had elements of social intelligence assessments. He published two articles; both entitled

"Non-intellective Factors in General Intelligence" (Wechsler, 1940, 1943). He differed from

Doll (1935) in that he felt these two areas were not separate but were indeed interrelated:

"Actually, the non-intellective capacities are involved in all measures of intelligence and cannot

be entirely eliminated from any intelligence scale" (p. 445). Wechsler (1940, 1943) recognized

that cognitive and emotional intelligence was interdependent, thus emphasizing their co-

dependence.

Wechsler's (1940, 1943) work marked a shift away from merely assessing and describing

social intelligence toward the interpersonal role of adaptability (Bar-On, 2006). Social

intelligence began to be viewed not separately, but as a part of general intelligence and cognition

(Bar-On, 2006). One of the challenges identified by many early researchers studying EI is that

the qualities of EI were not thought to be easily measured or tested as compared to cognitive

intelligence (IQ), which is much more tangible and finite (Thorndike, 1920; Wechsler, 1940,

1943). Emotions can have a spectrum of responses, perceptions, and interpretations versus

specific right or wrong answers. Creating and refining tools and instruments that more clearly

assessed EI have developed over time, as have attempts to further characterize EI.

Late 20th century to present. Since the 1990s, interest in EI has gained momentum in

multiple professions. Descriptive terms for EI such as "elusive" (Zeidner et al., 2001, p. 265),

"softer skills" (Ead, 2014, p. 36), "an essential skill for nurses" and "empathy" (Scudder, 2012,

p. 34), "heart of the art" (Freshwater & Stickley, 2004, p. 91), "reflection," "getting it," and

"caring" (Ball, 2013, p. 293), and "resilience" (McAllister & McKinnon, 2009, p. 371) all

described the wide variety of references that are used.

Conversely, people who have an absence of EI are described in recent literature as

"desensitized" (Şenyuva, Kaya, Işik, & Bodur, 2014, p. 589), "jaded" (Ball, 2014, p. 297), and

"uroborus" (Ogle & Bushnell, 2014, p. 456). Goleman (1995) described the antithesis of EI in

explaining the term *alexithymia*. This is a term given to people who have no ability to recognize

their own or others' emotions (pp. 50–51). While extreme, people labeled as having *alexithymia*

struggle with basic confusion related to their own feelings (Goleman, 1995).

These all-encompassing positive and negative terms illustrate a wide spectrum of

interpretation of EI across diverse studies, giving credence to the ongoing challenges of defining

and measuring this concept. The term "emotional intelligence" was used in the later part of the

20th century, and this nomenclature has remained dominant in the literature. Over the last 20

years, three seminal authors have emerged whose theories have contributed markedly toward the

scholarship of EI today: the Salovey-Mayer model (Mayer & Salovey, 1997), the Goleman

model (Goleman, 1998), and the Bar-On model (Bar-On, 2006).

Mayer, Salovey, and Caruso. Mayer and Salovey (1997) identified EI as an ability

(competence, skill) that included the understanding and perceptions of emotions. They saw the

connection between intelligence and emotion in their original theoretical definition: "the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1989/1990, p. 189). Caruso joined Mayer and Salovey, and in 2002 they created an instrument to measure this perceived ability that measures EI, called the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Bar-On et al., 2007). This instrument assessed people's ability to solve emotional problems and has been used in countless research studies and dissertations involving multiple professions (Beauvais, Stewart, Denisco, & Beauvais, 2014; Caruso & Salovey, 2004; Codier & Odell, 2014; Collins & Andrejco, 2015; Shanta, 2007). In this assessment, 144 questions with specific scenarios and pictures ask the person being tested to choose the correct response, emotional identification, or feeling. This test has high reported validity and reliability due to its extensive use in multiple research studies and a large normative data pool over the last 20 years. The test-retest reliability full-scale is $r = .86$ with branch scores ranging from $r = .74–. 89$ (Multi-Health Systems, 2009). For this assessment, right and wrong answers were established by an expert panel to confirm an individual ability EI score (Multi-Health Systems, 2009).

  Daniel Goleman. Goleman (1995, 1998, 2006) described EI as both an ability (competence, skill) and a trait (distinguishing characteristic). Defining EI, Goleman (1998) more broadly stated that it "refers to the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships" (p. 317). He wrote an initial article in the Harvard Business Review relating social intelligence to being a leader. This article is noted as the most widely read article in the history of the Harvard Business Review (Ovans, 2015; Warren, 2013). Following this article, Goleman wrote three books that put EI in the popular spotlight (Goleman, 1995, 1998, 2006). Goleman's

articles and books achieved widespread interest and were responsible in part for the extensive exposure of EI in the non-academic settings.

Goleman (1998) developed the Emotional Competency Inventory (ECI), a 360-degree tool developed from identified emotional competencies. This framework sought not only to assess an individual's EI, but also to incorporate feedback about this person from peers, coworkers, or anyone in his or her sphere of influence, thus comprising a 360-degree assessment (Goleman, 1998). Goleman (1998) felt "the ideal evaluation relies not on any one source but on multiple perspectives" (p. 261). The original ECI was divided into two parts: personal and social competence. Personal competence included self-awareness, self-regulation, and motivation. Social competence included empathy and social skills (Goleman, 1998, pp. 26–27). This multi-rater tool, updated to ECI version 2.0, has been used for multiple business and management assessments nationally and internationally (Wolff, 2005). The primary purpose of this tool was to assess EI from a broad developmental perspective versus an administrative benchmark (Wolff, 2005).

Reuven Bar-On. Bar-On is a clinical psychologist who provided seminal work in the early 1980s. His work specifically addressed the initial question: "Why do some people have better psychological well-being than others," which was adapted to "Why are some individuals better able to succeed in life than others?" (EQ-i® 2.0, 2011, p. 20). Influenced by Darwin's effective adaptation, Bar-On's model of emotional-social intelligence provided the theoretical foundation for the Emotional Quotient Inventory (EQ-i®), a self-assessment tool measuring EI. The first part of Bar-On's EI work was done in South Africa from 1983–1986, with the second phase completed in Israel from 1986–1993 (EQ-i® 2.0, 2011, p. 20).

First generation EQ-i® instrument. Bar-On's theory embraced EI as a trait (distinguishing characteristic) more than an ability (competence, skill). Developing the first published (1997) measure of its kind to assess EI, the EQ-i® scores were self-assessment reports (Bar-On & Parker, 2000). This instrument was also the first EI tool to be peer reviewed in the Buros Mental Measurement Yearbook in 2001 (Plake & Impara, 2001). The foundation of this assessment model and definition is grounded in Darwinian terms of social skills, perceptions of others and ourselves, social relationships, the ability to cope, and how emotional information is processed (Bar-On, 2006; EQ-i® 2.0, 2011, p. 31). Bar-On (2006) described the model as "a cross-section of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands" (p. 14). The model examined how an individual functions at five composite levels (Intrapersonal, Interpersonal, Stress Management, Adaptability, General Mood) and also within the realm of 15 subscales (Bar-On, 2006, p. 21). Optimism and Happiness are general mood composites considered to be an important outcome from one's EI (Bar-On, 2006).

This original instrument created by Bar-On (2006) in the 1980s transitioned into six primary stages over a span of seventeen years (p. 5). The final version was normed on 3,831 adults (over age 17) in North America in 1996 with continuous norming and validation across multiple cultures (Bar-On, 2006, p. 5). Bar-On (2006) also related this instrument to various aspects of human performance: physical health, psychological health, social interaction, school performance, workplace performance, self-actualization, and subjective well-being. This original instrument has been translated into 30 languages and has provided extensive cross-cultural data that contributed to the ongoing instrument construct.

Second generation EQ-i® 2.0 instrument. The second generation EQ-i® 2.0 was built on feedback from over 700 researchers, coaches, consultants, and participants. From 2009 to 2010, over 10,000 participants completed the EQ-i® 2.0 with intensive normative data analysis. It is touted as being more user-friendly and culturally sensitive than the first generation tool (EQ-i® 2.0, 2011a). The objective of this revision was to preserve the integrity of the EQ-i® while strengthening its psychometric and application properties. The primary goals of this revision centered on the following: updating and simplifying language, question, and response items; item content; and social/cultural bias (EQ-i® 2.0, 2011). Normative samples were given to over 4,000 respondents representative of the current North American population by age, gender, race, ethnicity, and educational level. Multi-Health Systems (MHS) published the revised version in 2011. Due to the recent release of this revised tool, limited research studies exist that have used the updated EQ-i® 2.0 version.

Bar-On's EQ-i was the first commercially produced assessment of EI in 1997 that was adapted to the current revised EQ-i 2.0. Both of these instruments have been shown to be validated, reliable tools in the field of EI (Cox, 2001; DiPerna & Sandilos, 2014; Guion, 2001; EQ-i® 2.0, 2011; Van Zyl, 2014).

Can EI Be Taught?

Although IQ may peak at a specific age of development, many theorists maintained that EI could be taught, improved, and strengthened over time (Bar-On, 2006; Beauvais et al., 2011; Caruso & Salovey, 2004; Goleman, 1998; Mayer & Salovey, 1997; McQueen, 2003; Ozcan et al., 2010; Stoller et al., 2013). Early researchers such as Thorndike (1920) and Doll (1935) discussed the growth of social intelligence as related to maturity and acknowledged that while intelligence may peak, social adequacy "increases with age" (Doll, 1935, p. 182). In studies over

time using the MSCEIT assessment test for EI (Mayer, Salovey, & Caruso, as cited in Bar-On &

Parker, 2000), higher scores were documented in middle-aged adult students as compared to

young adult students (Caruso & Salovey, 2004, p. 81). One explanation may be that the older

students had learned from work and life experiences as compared to younger students. Goleman

(1998) agreed with this idea and further supported the influence of maturity related to EI:

> In a serendipitous fashion, life offers chance after chance to hone our emotional
>
> competence. In the normal course of a lifetime, emotional intelligence tends to
>
> increase as we learn to be more aware of our moods, to handle distressing emotions
>
> better, to listen and empathize—in short, as we become more mature. (p. 240)

Whether it is Goleman's explanation of maturational development or more formalized training,

these findings are highly encouraging and supportive for the inclusion of EI competencies into

education and specifically nursing clinical education.

A few specific studies have demonstrated the ability for EI to be taught and strengthened

over time. In a dissertation study, Chang (2007) had a treatment group (n=79) of undergraduate

college students receive formal EI training over one semester, while the control group (n=74)

received no training. The EI training offered specific interventions, exercises, and a course

syllabus focused on EI concepts of understanding and managing emotions with behavior

modification. Three validated instruments (MSCEIT; EQ-i; ECI [Self]) were used to measure EI

at the beginning and end of the semester for each group. Chang (2007) reported that the

treatment group compared to the control group showed a significant increase in EI scores on all

three instruments on "some categories of all three EI scales" (p. 36). Although Chang (2007)

acknowledged limitations to generalizability, the study concluded that the treatment did result in

data that showed positive improvements on all three EI instruments.

In another smaller study using a similar design with psychology students, Nelis et al. (2009) offered EI training to one group (n=19), with the control group (n=18) receiving no training. The EI training consisted of four sessions, two and a half hours each week for four weeks. Instruction specific to emotion regulation and understanding were taught using role play, group discussion, readings, and personal diaries (p. 38). The effectiveness of the training was evaluated using a Trait Emotional Intelligence Questionnaire (TEIQue) and additional specific measurements of EI (Emotion Regulation; Emotional Management; Emotion Identification; Emotional Understanding). Results showed EI improvement on most of the measurement tools with the training group. An additional important finding in Nelis et al. (2009) was that the students were also reevaluated six months after the intervention and all EI scores remained consistently high. This finding demonstrated improvement of EI in the short-term and also persistency over time. The researchers suggested that it may be possible for participants to revert to "baseline" behaviors if EI competencies are not reinforced, suggesting follow-up training sessions to assure consistency.

While these two studies are limited by small sample sizes and overall generalizability, their results do offer initial research support for the ability to change, improve, and sustain higher levels of EI. The inclusion of educational strategies focused on EI may be part of the positive influence of such trainings. Students who may need coaching to develop a more refined set of emotional and social skills may benefit from EI training having a rightful place in nursing education curricula.

EI Related to Empathy and Caring

Many studies pointed out that EI is synonymous with two tenets of the nursing profession: caring and empathy. Pryce-Miller and Emanuel (2014) emphasized that the

foundations of compassionate and empathetic care have been associated with nursing since

Florence Nightingale. This was substantiated in Nightingale's *Notes on Nursing* originally

published in 1859. Her views emphasized that while nursing as a science was grounded in the

practice of sanitation, clean air, and food, it was also an art in the keen, caring observation by

nurses of the sick (Nightingale, 1859, 2003). Nightingale (1859, 2003) gave examples of how

astute nurses, through the power of wise observation, could detect worsening patient conditions

in order to take appropriate action to promote healing. Similarly, Smith, Profetto-McGrath, and

Cummings (2009), as well as Codier (2015), suggested that emotions are an intrinsic part of

nursing care because there exists a basic need for human connection and centeredness.

In the United Kingdom, nursing is defined by the 6Cs: caring, compassionate, competent,

communicative, courageous, and committed, all qualities of EI (Lyons, 2013; Phipps, Whitney,

Meddings, & Evans, 2015; Wood, 2014). Building on this 6C model, England's chief nursing

officer has implemented a three-year "compassion in practice strategy" (Lyons, 2013, p. 41).

This strategy spawned from complaints related to sub-standard nursing care coming from

multiple tiers: patients, politicians, media, and nurses themselves. The objective was to ensure

that nurses upheld and demonstrated the 6Cs— "all qualities associated with being an

emotionally intelligent nurse" (Lyons, 2013, p. 41).

Moreover, EI research in the nursing profession has been focusing on the difference

between emotion and the fundamental aspects of the profession such as caring relationships,

health, and healing (Codier, 2015; Freshwater & Stickley, 2004; Pryce-Miller & Emanuel, 2014).

Freshwater and Stickley (2004) coined the expression "the heart of the art" (p. 91) and explained

the foundation of EI in nursing:

Every nursing intervention is affected by the master aptitude of emotional intelligence. It

is not enough to attend merely to the practical procedure without considering the human

recipient of the process.… As Perls (1973) reminds us, every breath in every

moment is significant. One sigh may be communicating a lifetime of emotions. It is the

emotionally intelligent practitioner that hears the sigh, makes eye contact, communicates

understanding and demonstrates human care. (Freshwater, 2003, as cited in Freshwater

& Stickley, 2004, p. 93)

EI is being directly and indirectly studied in professional training programs such as nursing,

medical school, physical therapy, and MBA programs; however, the research is very limited.

Nursing students. EI assessments have been studied in nursing programs around the

world. In a study from Turkey, Ozcan et al. (2010) evaluated empathetic skills in nursing

students over the course of their undergraduate education. This study used two designs: cross-

sectional and longitudinal using the Empathetic Communications Skills Scale (ECSS) and the

Empathetic Tendency Scale (ETS). In the longitudinal design, students (n=81) were evaluated at

the beginning and end of their four years of study (2001 and 2005). The cross-sectional

assessment examined empathetic skills of all students (n=438) in each of the four undergraduate

years, and these skills were also compared to new students beginning the program in 2005 (p.

494). The authors felt that "empathy is an observable and teachable skill" (p. 494).

Interestingly, in Turkey, the basic concepts of therapeutic communication and empathy

were fundamental concepts stressed in their National Nursing Core Curriculum (Ozcan et al.,

2010, p. 494).

Throughout Turkey's nursing curriculum, communication and empathy were woven into all

didactic and clinical experiences. Ozcan et al. (2010) focused on how these concepts were

changed or developed throughout the whole nursing education. The researchers collected data

using two scales that specifically measured communication and empathy. This study showed an

increase in the ECSS scores and a decrease in the ETS scores in both groups. The authors

compared the two groups, and the fourth-year students showed higher ECSS levels versus the

beginning students who had higher ETS levels ($p < 0.05$) (p. 497). The authors determined "that

during the nursing education years, students learn how to respond to others' feelings and needs"

(p. 498).   The authors concluded that the nursing education process, with the emphasis on

communication and empathy in the overall curriculum, was contributing to the increase in

communication and empathetic skills. Limitations of one school, personality traits affecting

empathetic tendencies, and using different measurement tools were pointed out for future

research (p. 498).

Clearly, EI has been recognized as an important part of the delivery of care. Nursing

without caring and empathy can have demoralizing effects on patients; however, when care and

compassion are present, nurses can, in turn, "re-moralize" patients (Freshwater & Stickley, 2004,

p. 96). Proponents of introducing EI assessments for nursing applicants stated that using solely

cognitive assessments, namely one's GPA, are too narrow in a profession that demands caring,

compassion, and empathy (Ball, 2013; Freshwater & Stickley, 2004; Hurley, 2008; Lyons, 2013;

Rankin, 2013).

EI assessments have also been used in combination with qualitative studies. In a

grounded mixed method design (n=27) with accelerated nursing applicants, Ball (2013) used the

MSCEIT test to identify each participant's EI score. A smaller group of participants (n=22) were

selected to undergo semi-structured interviews and focus groups. Ball (2013) asked the question,

"How do accelerated baccalaureate of science students use EI in nursing?" (p. 295). Themes of

responses included "caring for a human being," "human connector," "getting it," "doing

something to make someone feel better," and "dealing with difficulty" (pp. 296–299). In Ball's study, EI was identified by the students to be rooted in a caring, "humanistic" (p. 300) part of the profession that helps patients not only improve physically but also feel better overall (Ball, 2013, pp. 299–300).

In a similar longitudinal study, Wilkes, Cowin, Johnson, and Zheng (2014) examined nursing students' perceptions of the essential qualities of a professional nurse. The 678 students surveyed attended a BSN program in Sydney, Australia. The six words or concepts identified by the students most frequently across two years of the three-year program, in decreasing order, included: "caring, knowledge/understanding, empathy, work, communication and skills" (p. 557). Interestingly, caring was the top quality identified by the students throughout the program. Wilkes et al. (2014) emphasized that these characteristics needed to be analyzed in totality and not as separate entities. The authors linked the importance of these qualities to nursing education:

> The emphasis on caring as well as the other five constructs in the montage of the qualities
> of a registered/professional nurses developed from the findings of this study must be seen
> as essential components of the curricula for the education of new nurses and their
> transition into practice. (p. 560)

Creating a bridge between quality nursing education and the actual practice of nursing has been a critical outcome of EI research.

The multiple studies noted above support the core values of caring and empathy within the profession of nursing and stress the inclusion of EI into educational development. Moreover, additional research supports these values. In a recent national survey, practicing nurses in the United States were asked, "What is the most rewarding aspect of a nurse's job?" (Peckham,

2015, slide 21). Twenty-six percent of nurses answered, "relationships with patients" (Peckham, 2015, slide 21). This identified connection between nurse and patient is fostered by an understanding and delivery of perceptive communication and empathetic skills honed during their clinical time in nursing education

Medical students. EI research has expanded into other health care professions. Hegazi and Wilson (2013) examined levels of empathy across separate years during undergraduate medical education with respect to gender, year of study, cultural and religious backgrounds, previous education, and curricula. An empathy scale (the Jefferson Scale of Physician Empathy) was used to measure empathy in 404 students. Scores ranged from 34 to 135 with a mean score of 109.07. Interestingly, female medical students presented with significantly higher levels of empathy than male students across all five years (111 vs. 106, $p < 0.001$) (p. 1004). The authors found that no significant difference existed in the total empathy scores associated with each year of medical education. The highest mean scores came from students in their fifth year that had completed personal and professional training within the curriculum. This finding supports the previous assertion that EI may be learned and developed over time.

Similarly, Stoller et al. (2013), from the Cleveland Clinic, offered an opinion paper that stressed the development of EI competencies in medical training. Citing several studies, Stoller et al. (2013) recommended that EI skills should be taught and developed at each level of medical training and are essential for physician leadership roles. Using Goleman's model of the four component competencies of EI—self-awareness, social awareness, self-management, and relationship management—Stoller et al. (2013) identified where each competency intersected with a specific phase of medical training, explaining, "we believe that a curriculum for

developing EI competencies for physicians should be designed to correspond to the

developmental phases of becoming a doctor with important iterations along the way" (p. 245).

Helmich, Bolhuis, Laan, Dornan, and Koopmans (2014) identified that no theoretical

models explaining the development of EI skills in medical students exists. The authors sought to

explore first-year medical students' initial clinical experiences with reflective prompts,

journaling, and focus interviews. Summary of findings showed that medical students' emotional

development appeared to be influenced by experiences in clinical practice and the development

of relationships with patients. The outcome of this model offered suggestions for the emotional

development of medical students throughout their professional education.

In a final medical school study, Fletcher, Leadbetter, Curran and O'Sullivan (2009)

designed a pilot study with third-year medical students using EI developmental training

workshops to see if these increased the Bar-On Emotional Quotient (EQ-i) scores. These

workshops consisted of EI developmental training (individual and group exercises) focused on

problem-based learning held once a month over seven months. This quasi-randomized control

study offered EI training sessions to the intervention group with 68 percent (n=34) attending the

first training session, followed by 34 percent (n=17) who attended over four of the development

workshops (p. 377). The control group (n= 36) received no additional training. EI was assessed

using the Bar-On EQ-i self-report tool. Results of this study showed significant EI development

between the group receiving training and the control group based on the EQ-i scores. Baseline

versus post-intervention total EQ-i scores for the intervention group increased with an initial

mean of 95.9 to 104.0; $p = 0.065$ (p. 378). Limitations of the study included different attendance

rates for the EI training, dropout rates in the intervention group, and length of time between

assessments. The authors acknowledged that this was a pilot study, further recommending that

additional research was necessary to support this theory.

These four studies showed that interest in EI research extends to other health care

professions. The development of empathy and overall EI using creative educational strategies

has been viewed as a positive curricular outcome. Professions that experience and value human

contact are recognizing the consistent benefits of EI training.

Physical therapy students. Another health care profession studying aspects of EI is

physical therapy. Bayliss and Strunk (2015) measured empathy changes in physical therapy

students (n=169) during their education (first, second, third years of study), as well as six months

post-graduation. The authors identified two themes that led them to the comparison of novice to

expert students: "(1) caring is a Core Value to guide moral orientation in patient care decisions

and (2) caring is a learned skill" (p. 7). The authors sought to compare empathy scores between

sexes, years of study, and new graduates. Using the Jefferson Scale of Empathy, measurements

were given twice in each academic year and once post-graduation. Results showed that gender

had a significant effect, with scores from females 6.3 points higher than males. Results also

showed a difference in empathy across the three years of education, with first-year students

being significantly more empathetic at the end of the academic year as compared to the

beginning, and third-year students showing significantly less empathy than the first year and new

graduate groups (pp. 7-9). The rebound in empathy scores of the new graduates may be

attributed to increasing autonomy and creating professional identities (Bayliss & Strunk, 2015).

Bayliss and Strunk (2015) acknowledged that this study offered some important concepts about

the development of empathy in physical therapy education and the opportunity to expand and

refine curricula. The authors attributed these findings to the curriculum sequence, clinical phase

of training such as burnout, and student distress related to the "hidden curriculum" of workload

balance and the reality of patient care. The research supports the assertion that EI scores can be

affected by the stress of clinical exposure and one solution may be the facilitation of empathy

skills through EI training and practice.

     MBA students. In addition to health care students, the study of EI has expanded into

other academic settings. Joyner and Mann (2011) piloted the integration of EI content into an

MBA program. The study used the Bar-On Emotional Quotient Inventory (EQ-i) to measure EI.

According to the authors, many schools were closely examining their MBA curriculum of study

due to ethical breaches with a closer examination of "what and how business schools teach" (p.

60). The focus on EI stemmed from the identification of three critical behaviors tied to the shift

in perspectives that encompass "thinking differently, leading differently, and creating engaging

work environments for others" (p. 61). For this research, the authors used three instruments:

Myers-Briggs Type Indicator®, the Predictive Index®, and the EQ-i®. The MBA program of

study brought in specific EI competencies integrated over the three-year curriculum. Of specific

relevance is that the EQ-i was administered to the students at the beginning of the MBA program

and again at the end assessing the inclusion of the EI competencies. During the three years of

study the students were exposed to EI content threaded throughout the MBA curriculum in the

form of seminars and intensive instruction. The pre and post assessments were designed to

measure the effectiveness of these additional EI competencies (p. 64).

     Results of the EQ-i scores at the MBA program using a "repeated-measures ANOVA

suggested improvement in emotional and social functioning as measured by a significant

increase in most of the competencies measured by the EQ-i" (pp. 66-67). Joyner and Mann

(2011) concluded that although a small study, these EI competencies threaded through the MBA

curriculum had a profound impact on the students' EI and their success as graduates and future

leaders in the organizations and communities they served.

These studies, though varied in student groups, educational interventions, and EI

instruments, do offer data supporting the inclusion of education and training as having an effect

on EI scores. Furthermore, many of these studies utilized time benchmarks (e.g., from first year

to fifth year, or before and after completing required clinical hours), revealing a noticeable shift

in EI scores. Adding educational interventions of caring and empathy across the health care

professions may have an effect on EI scores and EI proficiency.

EI and Leadership

Emotional intelligence is thought by many to be a key leadership skill (Goleman, 1998;

Ovans, 2015; Stichler, 2006). As the professional role of nursing becomes more complex and

challenging, so too do the leadership requirements. Many nurses are thrust into positions of

leadership and management long before they feel prepared or ready. The emphasis on EI

integrated within the nursing curriculum will offer developmental skills that will translate into

leadership roles and make this transition more seamless.

Kouzes and Posner. Leadership theories have been applied to multiple professions

including business, psychology, and education. Kouzes and Posner (2002) created a

transformational leadership model that they developed over a span of twenty years. During these

twenty years, they acknowledged that while the content of leadership did not change, the context

of it did. They cited the impact of September 11, 2001, as creating feelings of increasing

uncertainty and less security for people. Out of this tragedy came an outpour of compassion,

collaboration, and connectedness. Kouzes and Posner (2002) focused on leadership that put

people, especially families and friends, first. They acknowledged the desire that people have for

a purposeful search for meaning in their lives and for opportunities to make a difference in this globally diverse world.

Using stories of regular, or "ordinary" people, Kouzes and Posner (2002) argued that leadership had patterns of behavior that could be shared and learned. They identified five leadership practices that offered extraordinary results: "Model the Way, Inspire a Shared Vision, Challenge the Process, Enable Others to Act, and Encourage the Heart" (p. 13). The fifth practice, encourage the heart, correlated most closely with EI. Effective leadership behavior included being supportive, compassionate, and caring. Encouraging others through praise, authentic appreciation, and establishing a human connection with positive reinforcement further characterized effective leadership behavior. Kouzes and Posner (2002) felt leaders who had positive expectations would yield positive achievements by listening with both their eyes and heart.

The study of EI aligns with Kouzes and Posner's (2002) leadership model. Empathy, communication, and awareness of one's and other's emotions all encompass leadership that is centered on the "relationships with subordinates" (p. 21). The authors gave an example when workers were asked what would be more essential to succeed in business in five years, social skills or Internet skills. Seventy-two percent selected social skills, and twenty-eight percent chose Internet skills. Kouzes and Posner (2002) explained this response, stating it is "not the web of technology that matters the most, it's the web of people" (p. 21). Relationships, caring coworkers, expectations of success not failure, personal and positive forms of feedback, and recognition of contributions to the team all encompassed how these practices encourage the heart, the fifth practice of this model.

Leadership styles/skills. Multiple studies and articles emphasize the imperative connection between nursing leadership and EI. Goleman (1998) wrote one of the earliest articles describing the EI qualities that make a leader, which was the most widely read article in the history of the Harvard Business Review (Ovans, 2015; Warren, 2013). Goleman (1998) stated that effective leaders have high levels of EI: "IQ and technical skills are important, but emotional intelligence is the sine qua non of leadership" (p. 93). Goleman (1998) also pointed out that the most effective leaders have high degrees of EI. He maintained that EI can be learned through dedicated individualized coaching. Many large companies are now offering training sessions in EI to help develop their executive's overall empathy, and to gain perspective of their own emotions as well as the emotional component of those they lead (Ovans, 2015).

Specifically regarding the nursing profession, Feather (2009) studied the importance of EI in nursing leaders related to the job satisfaction of the nursing staff. Identifying concerns about the increasing nursing shortage and turnover rates, Feather (2009) stated that little research has been conducted that studies nursing leadership and EI in health care overall. Feather (2009) contended that the best health care organizations support the principles of EI such as "self-awareness, self-management, social awareness, and social skills of their leaders (referred to as EI)" (p. 379). While EI is important in all professions, it is particularly necessary in health care where human interaction on multiple levels is so crucial. Feather (2009) stated that estimates of between \$5.6–\$16.8 of the \$50 billion dollars spent each year on organizational education are lost due to programs not following EI guidelines. Successful leaders directly affect staff satisfaction and retention, as well as patient outcomes: "Assisting the nursing manager to increase their emotional skills may help to create a more effective leader, and decrease nursing

turnover" (p. 381). These are important overarching goals for a healthy work environment and the workforce it supports.

Vitello-Cicciu (2003) also supported the contention that leadership styles need to acknowledge the hard physical and psychological work that nurses perform every day. Nursing leaders who demonstrate EI with sensitivity and responsiveness have an impact on the work environment: "Emotionally intelligent nurse leaders role model the ability to manage their own emotions while, at the same time, managing the emotional responses of their staff members, patients, and families" (p. 31). Similar to Feather (2009), Vitello-Cicciu (2003) pointed to the need for innovative leadership to stem the tide of dissatisfied nurses leaving the profession.

Furthermore, Stichler (2006) specified that EI is a vital leadership quality and discussed why EI is so important to successful leadership. If a leader has impaired EI, this will lead to decreased organizational and personal health. Steps toward self-awareness, thoughtful situational analysis, active listening, and managing relationships all help to foster organizational effectiveness and high EI. Akerjordet and Severinsson (2008) examined eighteen articles in a literature review. Similar to Stichler (2006), Akerjordet and Severinsson (2008) stated that EI may offer a new link to nursing leadership, one of reflection, evaluation, self-awareness, and empowerment that foster organizational health.

Horton-Deutsch and Sherwood (2008) also suggested using reflection as an educational strategy to develop emotionally competent nurse leaders. Reflective learning that began in Australia in the 1980s offered a new dimension for nursing leaders: "The emotionally competent and reflective leader moves beyond self-awareness and considers group processes and ways to integrate the emotions of others" (p. 951). Reflective writing, discussions, and group exercises

all promote a unique model of learning, one where learners can achieve a deeper situational

understanding.

In Finland, Vesterinen, Isola, and Paasivaara (2009) reported that over half of the nurse

managers planned to retire within the next 10 years. The leadership styles of these managers

were studied. Semi-structured interviews were held with 13 nurse managers. Five styles of

leadership—"visionary, coaching, affiliate, democratic and commanding" (p. 505)—were

identified as primary themes. Clear communication from manager to staff and the support for

staff educational development were identified as important qualities. The authors contended that

knowledge of these leadership styles would help the development of future training for nurses

new to the management role.

In a more recent integrative review, Akerjordet and Severinsson (2010) specifically

examined EI related to nursing leadership. Acknowledging that EI is considered a new field of

research, Akerjordet and Severinsson (2010) reviewed 24 articles that linked EI to leadership

over a ten-year span, from 1999–2009. They focused on exploring the knowledge development

and criticisms of EI related to nursing leadership. The knowledge of EI, rigor of documentation,

procedural rigor, ethical rigor, and auditability were discussed. The authors found from their

review that some confusion existed regarding the operational definition of EI and no one best

way to assess EI. The criticisms focused on the tools of measurement that included self-report

measures such as the EQ-i and questionable internal consistency reliability in the other

instruments. Akerjordet and Severinsson (2010) concluded that although there were some

concerns, there were also reasons to be optimistic about the study of EI: "The EI paradigm has

the potential to contribute to the development of a professional identity in nursing leadership,

leading to improved integration and conscious use of theories in practice, thus promoting more

evidenced-based nursing" (p. 372). This extensive overview revealed the heightened awareness of EI as a necessary part of the leadership toolkit and one that can be improved over time.

Tyczkowski et al. (2015) researched the relationship between EI and leadership styles in nurse managers (NMs) at health care facilities in the Midwest. A descriptive, exploratory study with a convenience sample of nurse managers was utilized. A total of 128 nursing managers completed the Multifactor Leadership Questionnaire (MLQ) and 110 nurse managers completed the EI self-assessment (EQ-i 2.0). Interestingly, this is the only identified study with nurses using the second-generation Bar-On EQ-i 2.0 instrument. Statistically significant positive relationships were found between EI scores and the quality of transformational leadership and leadership outcomes, whereas no statistically significant relationships were identified between EI and transactional leadership styles. The majority of the nurse managers scored above average on the EQ-i 2.0 assessment and high scores on the transformational leadership scale. Sixty-two percent of the respondents reported previous EI training with three-fourths of the respondents acknowledging previous leadership training. The authors concluded that this previous education may have had an influence on the results of the study. Tyczkowski et al. (2015) concluded that offering education and training specific to EI and transformational leadership "could have significant implications for nursing educational institutions, health care systems, and the quality of management skills in their nursing students and current and future NMs [nurse managers]" (p. 177). Further implications of this study centered on the training and recruitment of nurses into nursing leadership roles. Over one third of the respondents were 61 years of age or older, showing the need to address the development of future nursing leaders into this position.

Educating nurses and health care professionals on leadership. The Institute of Medicine (IOM) and the Robert Wood Johnson Foundation (RWJF) were tasked with responding

to the need to reassess and transform the future of the nursing profession (IOM, 2010a, p. 1).

Recommendations from this report focused on integrating nursing with leadership roles,

advanced education, research, teamwork, and collaboration (IOM, 2010a, p. 2). The challenge of

this report was that "emerging new competencies in decision making, quality improvement,

systems thinking, and team leadership must become part of every nurse's professional

formation" (IOM, 2010a, p. 2).

Nursing and leadership are becoming synonymous concepts as the responsibility and

complexity of the profession has evolved and expanded (IOM, 2010a; AACN, 2008). In the

study on the Future of Nursing (IOM, 2010a) and the essentials of a BSN education (AACN,

2008), several recommendations specify the important duality of nursing and leadership. In the

more recent AACN (2015a, July) annual report, the primary suggestion was to "expand

leadership development at all levels" (p. 3). This specific recommendation within the

professional nursing organizations stressed the emphasis of teaching leadership skills.

Bellack et al. (2001) discussed methods to introduce and enhance leadership

competencies in baccalaureate nursing students. The authors profiled the Helene Fuld

Leadership Initiative in Nursing Education (LINE) program. This program sought to improve

the leadership skills of baccalaureate-level nurse educators and their students. Changes in the

U.S. health care system were motivators for the development of this leadership initiative, which

had two primary competencies: "managing oneself and handling one's relationships with others"

(p. 24). These closely followed Goleman's (1998) EI model. The focus of this program was not

to merely reformat the senior courses in leadership and management but to integrate these

competencies throughout the curriculum. The program emphasized the importance of

developing these competencies both in the classroom and practice environments. Twenty-six

BSN programs took part in the initial training to make innovative leadership changes in their

curricula. Continued follow-up and expansion of the program was planned with evaluation of its

impact on the nursing workforce and their clinical partners.

       In a similar study with new physicians, Jensen et al. (2008) examined the EI and

leadership perceptions of surgical residents (n=74) using Bar-On's first generation EQ-i and a

20-question leadership assessment. The purpose of this study was to better understand the

surgical residents' perceptions of leadership training within the context of their individual EI

scores. Results showed that the surgical residents as a whole scored high on the EI

measurements while individual scores showed more variability. The participants reported

perceptions that leadership, specifically team-leadership and communication, were not only

important but could be enhanced with training. Jenson et al. (2008) cautioned that this was a

preliminary study offering baseline data with follow-up studies recommended.

       In a similar descriptive study, Duygulu, Hicdurmaz, and Akyar (2011) compared junior

and senior nursing students' leadership and EI. The students (n = 154) were given Bar-On's EQ-

i tool and a leadership questionnaire. The authors reported that the students scored average on

the EI scores and scored lower on the people-oriented leadership scores versus the task-oriented

leadership scores. Recommendations from this study focused on adjusting education programs

to include EI training and educating nursing students as leaders: "students should be supported

and empowered by nursing educators to become leaders who possess emotional intelligence

behaviors and whose relationships with others are of paramount importance to them both

personally and professionally" (p. 284). These results do support the importance of EI strategies

in nursing education.

Interestingly, Abdrbo's (2012) study from Egypt cited the Institute of Medicine (IOM) and the American Nurses Association (ANA) recommendations as benchmarks for nursing education goals. Self-assessed leadership behaviors were measured between nursing students and staff nurses. Results showed statistically significant differences between the study groups in their reported leadership behaviors. The staff nurses had the highest scores in leadership behaviors, while the freshman students had the lowest scores. Surprisingly, the students who had completed a management course scored lower than the students who only had clinical training. The authors attributed this finding as an indication of high confidence and perception of leadership skills after the clinical experience as compared to those who completed the management course. Recommendations similar to previous studies focused on the need for leadership training throughout the education program and not isolated in one course.

A similar study examined focused areas of leadership training. Crosby and Shields (2010) surveyed a group of nursing leaders who were interested in promoting nursing leadership development at a university. Suggestions for leadership education as well as identification of the barriers and facilitators for implementation were identified. Content suggestions encompassed multiple areas of leadership topics: change, professional behavior, conflict, communication, team building, diversity and generational challenges, evidence-based practice, staff development, and rural versus urban health care environments. One innovative suggestion was to create a leadership academy that offered ongoing staff development and workshops covering the suggested content. A specific class plan was developed and delivered with positive results. Crosby and Shields (2010) highlighted the partnership between educators and clinical practice leaders to deliver a unique and successful education program.

In a final study, Kalb et al. (2012) examined how nursing faculty prepare students to be nursing leaders. Also referencing the IOM report, the authors performed a qualitative study with nursing faculty at a university in the United States. The following question was asked, "How do you teach nursing students to be leaders in nursing?" (p. 2). Responses centered on the following common themes and sub-themes: being passionate and excited about nursing, practicing self-reflection and self-knowledge, empowering and encouraging, role modeling, teamwork, integrating leadership content into class, and encouraging student self-reflection as leaders (p. 4). Specific answers focused on both leadership and EI behaviors where educating students to be leaders means "extending a hand and heart in this chaotic healthcare environment" (p. 11). Again, recommendations supported the themes identified from previous studies of integrating leadership concepts and skills throughout the curriculum with faculty playing pivotal roles in the development of leadership behaviors. These multiple studies show the important link between leadership and strong EI where education and training have a positive effect on both. This supports the question of the effect of education on EI scores with positive results.

The importance of educating nursing students to be leaders was demonstrated in the IOM and ANA recommendations as well as multiple research studies. Leadership skills need to be purposefully integrated across the curriculum with an emphasis on preparing future leaders in the profession. Kouzes and Posner (2002) encouraged leading from the heart to "build a strong sense of collective identity and community spirit that can carry a group through extraordinarily tough times" (p. 20). Clinical skills need to be co-taught with leadership and EI skills to serve the ever-challenging health care profession. Decreasing turnover, increasing patient satisfaction, and contributing to organizational stability are all critical goals as nursing education recognizes the importance of leadership and EI competencies. EI and Professional Association Support

Examination of professional nursing organizations both nationally and internationally has recently revealed specific references and recommendations related to EI. This is important to note as these professional groups significantly influence the practice of nursing. Their rhetoric translated into delivery of patient care provides the foundation for professional values and endorsements. The two following organizations from the United States and the United Kingdom are summarized below.

United States. The American Nurses Association (ANA) sets the code of ethics for the profession of nursing in the United States. The 2015 code was recently updated in a second edition 65 years after the first code was adopted in 1950 (Fowler, 2015). In this new code, Provision 1 specified that nurses practice with "compassion and respect" (p. 1) through caring relationships with patients and colleagues. Provision 2 emphasized collaboration and professional boundaries (pp. 6–7). Provision 6 discussed how "moral virtue" and moral character should be an expectation of nurses. Furthermore, Provision 6 emphasized the following vital traits of nurses: "patience, compassion, honesty, altruism and courage" (p. 23). This code of ethics aligns closely with the previous definitions of EI particularly related to caring, compassion, and empathy (Goleman, 1998; Mayer & Salovey, 1997; EQ-i® 2.0, 2011). The fact that these standards are at the forefront of the professional standards of nursing demands that educational programs also make them a priority.

United Kingdom. In the United Kingdom, the Francis Report was a consolidated response to the Secretary of Health and Chief Nursing Officer (Cherry, Fletcher, O'Sullivan, & Dornan, 2014; Phipps et al., 2015; Wood, 2014). Complaints from patients of suffering and sub-standard care prompted the Secretary of Health and Chief Nursing Officer to create this report ensuring that patients receive "the delivery of effective, safe and compassionate care"

(Department of Health, 2015, p. 51). With 290 recommendations, the report focused on

improving the quality of nursing and patient care through nursing education. The report stressed

that the importance of basic compassionate care takes precedence over theory: "People with

appropriate values, attitudes and behaviors should be recruited into nurse education and trained

to deliver compassionate care, on which they should receive feedback" (Cherry et al., 2014, p.

469). The recommendation of embedding the 6 Cs— caring, compassion, competence,

communication, courage, and commitment—into all aspects of patient care offered structure to

optimal health care practice (Lyons, 2013; Phipps et al., 2015; Wood, 2014).

The Francis Report was the basis of a cross sectional longitudinal study that examined the

relationship between EI, previous caring experiences, and mindfulness in student nurses and

midwives in the United Kingdom (Snowden et al., 2015). Nine hundred and thirty-eight first-

year nursing, midwifery, and computing students completed two separate EI trait and ability

tests. Previous caring experience and mindfulness training were recorded. Results showed that

the nursing students had higher EI scores on the tests compared to computing or non-nursing

students. Conclusions from this study determined that previous caring experience was not

associated with EI, whereas mindfulness training was associated with higher ability EI (p. 158).

The authors concluded, "it makes sense that if emotional intelligence can be identified and

nurtured then nursing would benefit, particularly in relation to current anxieties around care and

compassion" (Snowden et al., 2015, p. 158). The outcomes of this report and study have moved

nursing care closer toward the specific goals of the 6 Cs now used in the United Kingdom.

These two examples from the United States and United Kingdom illustrate how the

current priority of nursing care is more patient centered with compassion and caring as core

provisions. The ANA's updated code of ethics and the Francis Report have influenced not only

patient care but also the training provided to deliver this care. The possible effect of nursing

education and EI scores offer a baseline assessment to identify gaps and subsequent

interventions.

EI Related to Resilience and Sustainment in the Profession

Several studies examined the question of sustainment in the nursing profession by

studying the relationship between EI and job satisfaction. The problem of job satisfaction is

being seen on national and international levels. McAlister and McKinnon (2009) emphasized the

importance of teaching resilience in the health professions. Resilient behavior is described as

having the ability to overcome adversity and coping well in times of stress (McAlister &

McKinnon, 2009, p. 372). They maintained that resilience can be learned and proposed teaching

resilience through the use of transformative education, which transcends cognitive, content

driven psychomotor skills. They identified that "resilient individuals possess personal attributes

such as an internal locus of control, pro-social behavior, empathy, positive self-image, optimism

and the ability to organize daily responsibilities" (McAlister & McKinnon, 2009, p. 373). The

ultimate goal of bringing resilience into education was to "give students strength, focus and

endurance in the workplace" (p. 371). Resilience is built on solid coping skills, qualities intrinsic

to EI. As new graduates develop high levels of resilience their ability to navigate the demands of

the profession may be stronger and offer sustainment and persistence.

McAlister and McKinnon (2009) offered concrete recommendations and strategies for

resilience education. They proposed three recommendations: have discussions about resiliency

throughout undergraduate education programs; include clinical exposure to positive role models

and mentors; and engender cultural generativity by having more experienced students and

clinicians share experiences with younger classes (pp. 375–376). The authors suggested that

these recommendations could be accomplished through the medium of storytelling, poetry, art, autobiographical writing, and film (p. 376). In offering suggestions for future research, the authors suggested a focus on linking workplace resilience to "healthy hospitals" or supportive work environments that help foster physical and psychological well-being for health workers. They also advocated ongoing evaluations of evidence-based programs teaching resilience (McAlister & McKinnon, 2009, p. 377).

Furthermore, Por, Barriball, Fitzpatrick and Roberts (2011) examined EI and its relationship to stress, coping, well-being, and professional performance in nursing students, which had many of the same conclusions as the previous study (p. 858). The results of this study showed that two-thirds of the 130 students self-reported "often feeling nervous and stressed" (Por et al., 2011, p. 858). Students who scored high in EI seemed better able to manage their emotions and the demanding curriculum. Por et al. (2011) concluded that the levels of perceived stress reported by the students need to be addressed by better support systems built into the curriculum such as mentorship, constructive coping strategies, problem-solving strategies, and improved clinical supervision (p. 859). The authors found minimal EI education in the nursing curricula and made strong recommendations for EI inclusion because "a nursing curricula with EI as a core component may contribute to the development of a well-balanced nursing workforce" (p. 860).

Radford (2010) examined EI as a predictor of nursing student success in a Bachelor of Science in Nursing public university (n=115). Academic variables were used as success measures along with an EI trait questionnaire. While no significant relation was found between EI and nursing student success, Radford (2010) recommended that nursing programs needed to

be cognizant of the value and importance of developing EI in nursing students "as an adjunct to academic development" (p. 97).

In summary, the three studies conclude that focused EI education with nursing students may help strengthen resilience (McAlister & Mckinnon, 2009), coping abilities (Por et al., 2011), and overall student success (Radford, 2010). Specific suggestions of educational interventions embedded into the curriculum may offer positive outcomes for students and new nurses.

Nursing Education and the Development of EI and Clinical Performance

Little research has been conducted examining the relationship of nursing education or clinical hours with EI. A few studies have indirectly addressed this partnership, with the majority conducted outside of the United States. It is clearly a newer field, but no less important in influencing nursing education. Clinical hours, supported with didactic instruction, comprise a large portion of nursing education. In the MSU nursing program, over 1,200 hours are dedicated to direct clinical experience (see Appendix C). Exposure to direct and simulated clinical care offers an opportunity for EI behaviors to be practiced and refined.

Studies and reports have been summarized from the United Kingdom that received the attention of their nursing education system. In an editorial, Wright (2012) addressed the need for educational reform: "Nursing is about much more that intellectual and physical skills—it requires emotional and spiritual intelligence" (p. 24). Further identifying a gap, Wright (2012) stated that nursing education has given little attention to the interpersonal skills required in the profession. Attention to develop the inner life of caring and compassion of the nurse necessitates equal preparation for nurses.

Furthermore, studies specifically addressing the interpersonal skills of nursing students have increased. Sandvik, Ericksson and Hilli (2014) collected data from focus interviews with

nursing students to determine the learning and preparation of student nurses in Finland. The

study was conducted at three separate universities, two in Finland and one in Sweden with focus

group interviews after the second clinical year of study (p. 287). The purpose was to find out the

opinions, feelings, and attitudes of the students in five main areas: "perception, learning

outcomes, connection between theory and praxis, feedback and reflection" (p. 288). The

findings emphasized that a caring relationship between the student and preceptor is key in the

developmental learning in nursing education. Additionally, orientation to the expected learning

outcomes and evaluation criteria were identified as important to the students. The use of

reflection and ethical judgment were also strategies identified as critical in the development of

becoming a nurse. Sandvik et al. (2014) demonstrated that other areas of nursing education self-

identified by students were critical to the educational pathway beyond skills based learning.

One study supported educational strategies in the development of EI. Rice (2015)

examined "predictors of successful clinical performance in associate degree nursing students in

the United States" (p. 207). Using a correlational descriptive design, several tools were used to

evaluate the self-efficacy of clinical performance (the Self-efficacy in Clinical Performance

Scale) and an EI assessment (MSCEIT). Findings revealed that a "statistically significant

correlation (r {54} = 0.412, $p < .007$) was found between EI and clinical self-efficacy (p. 209).

The authors suggested from this study that nursing programs may want to offer specific

instruction in EI or educational strategies that will promote the development of EI.

Similarly, two studies examined EI in BSN students. In Canada, Benson, Ploeg, and

Brown (2009) measured EI scores to see if there was a difference across the four years of study.

The authors used the original EQ-i assessment. The difference in total EQ-i scores showed

statistically significant higher scores ($p < 0.05$) from year one to year four. Shanta and Gargiulo

(2014) also assessed EI using the MSCEIT EI tool. Education students (control group) and

nursing students (experimental group) were assessed at the pre-major and senior level. The

nursing majors were the experimental group with nursing education used as the treatment

variable. Interestingly, the results did not show any significant differences in the influence of

nursing education related to EI scores in the senior nursing students compared to the control

groups. Shanta and Gargiulo (2014) looked at other possible influencing factors and found in a

regression analysis "that GPA [grade point average] predicted the greatest variance in the overall

level of EI" (p. 517). As the GPA increased, so did the EI scores. The authors stated that the

practical applications of this study may suggest that the standards for GPA should not be lowered

in nursing BSN programs because the levels of EI may decline as well.

Furthermore, Marvos and Hale (2015) conducted an exploratory quantitative study

exploring the relationship between EI, self-reported clinical performance, and the anticipated

retention in nursing students (n=104). The researchers utilized the MSCEIT instrument to

measure EI ability scores along with the self-reported clinical performance assessment. Results

of this study showed that 30 percent of the EI scores were less than average in "identifying

emotions correctly and understanding emotions" (p. 8). The authors saw this as an area of

concern since these EI abilities were important aspects of nursing. Comparing the EI scores to

the clinical self-assessment scores showed that the EI score of "'managing emotions' was

positively and significantly correlated with the clinical performance task of 'responding' (r =

0.20) at the $p < 0.05$ level of significance" (p. 9). The authors interpreted this result as not

surprising since they concluded that the ability to control emotions seemed to parallel the ability

to act in a responsive manner. Marvos and Hale (2015) also showed a positive correlation

between EI and anticipated student retention. Students were asked how long they planned to

work as a registered nurse and these answers correlated with each EI score. Limitations of this

study centered on the use of the self-report tools that may reflect bias of the students themselves.

The authors stated that more research is warranted due to the importance of nurse retention and

the role that EI plays in clinical education.

Orak et al. (2016) in Canada examined the effect of EI training with first-year nursing

students (n = 69). With two groups (control and experimental) an EI education program was

offered over eight weeks with two-hour sessions per week. The authors reported no statistical

significance ($p = .61$) between the EI scores of the control group and the EI scores of the group

receiving the educational intervention.   The authors attributed this to (1) the large amount of EI

information taught over a short time span and (2) the students were first year students with no

clinical experience so they did not perceive the importance of learning EI skills.

Foster et al. (2017) conducted a longitudinal repeated measures study where pre-

registered Australian nursing students (n = 111) had EI measured at four different times over the

course of the program: at the beginning, end of first year, beginning of second year and at the

end of the program. Results showed that the students' EI increased after the first year of study

but did not show "any significant increase in students' EI at the end of the program" (p. 68). As

the authors explained the students received initial EI and empathy education as part of the

curriculum in the first year only asserting that the EI scores may have peaked at this time. Final

acknowledgement of the students' developmental maturation or other factors outside the

program (not specified) provided possible variables influencing these results.

A final study by Lewis, Neville and Ashkanasy (2017) provided a narrative review of EI

and affective events that may occur during clinical experiences with students in nursing

education. Ten articles were selected that focused only on "EI, students, emotional engagement,

and management of affective events" (p. 36) and common themes were identified. Four themes emerged: (1) EI buffers stress, (2) EI decreases anxiety associated with end of life care, (3) EI promoted effective communication and (4) EI improves nursing performance (Lewis et al., 2017, pp. 37-8). The authors concluded that while more research is needed, it appeared that early EI education may impact positively upon "the retention and well-being of students undertaking clinical placement experiences (CPEs)" (p. 39).

The above studies demonstrated that an interest in research related to EI, clinical experiences, and nursing education has started to emerge. As many of the authors note, multiple variables can influence these results, such as previous health care experience, GPA, age, and the self-assessment of EI and clinical competence. Nursing education may be the important link between the development and refinement of these qualities central to emotional intelligence.

Summary

Emotional intelligence has evolved from the early 20th century where the emphasis was on the term 'social intelligence' (Doll, 1935; Thorndike, 1920) to an examination of identified behaviors (Wechsler, 1940, 1943). Since this time, EI has expanded with seminal authors creating EI assessment tools defining EI as an ability and/or trait (Bar-On, 2000, 2006; Goleman, 1995, 1998, 2006; Mayer, Salovey & Caruso, 1997, 2002).

Kouzes and Posner (2002) developed a leadership model that focused on how human connections can have a positive influence on leadership behaviors that may be learned over time. Subsequent studies emphasized the success of leaders and specifically nursing leaders, who have strong EI that can enhance leadership skills of self-reflection, engagement and situational understanding (Feather, 2009; Goleman, 1998; Horton-Deutsch & Sherwood, 2008; Stichler, 2006; Vitello-Cicciu, 2003).

While little research has been found that examines nursing students' educational level and EI scores, the above studies demonstrate that EI is gaining more attention across the health care professions (Bayliss & Strunk, 2015; Fletcher et al., 2009; Hegazi & Wilson, 2013; Helmich et al., 2014; Joyner & Mann, 2011; Stoller et al., 2013). In several of the studies, EI is examined in students who are at different points in their curriculum such as first, second, third, or fourth years (Bayliss & Strunk, 2015; Michalec, Diefenbeck & Mahoney, 2013), or the beginning and end of a program of study (Joyner & Mann, 2011; Ozcan et al., 2010). As discussed earlier in relation to burnout and compassion fatigue, direct exposure to the clinical setting may offer opportunities to experience the realities of a profession and influence how students grow and adapt. The clinical levels chosen for this study are at three points in the curriculum that correspond with the progression of exposure to clinical hours; beginning (sophomores), middle (juniors), and end (seniors). It is important for students to learn how to manage their own emotions as well as identify the emotions of others, and progressive nursing education may offer this opportunity. Studying EI in nursing students can offer insight into early interventions that may positively influence turnover, resilience, and sustainment in this complex profession.

Chapter Three: Methodology

This chapter describes the overall blueprint for this research study. Specific descriptions of all aspects of this study are described in detail including the research question, research design, hypothesis, population and sample, variables, data collection procedures, ethical considerations, reliability and validity, process of data analysis, null hypothesis, statistical assumptions, and statistical limitations. The purpose of this study was to determine the difference (if any) between three levels of nursing education (sophomore, junior, and senior) with self-assessed EI scores of traditional BSN nursing students at MSU-CON.

Research Question

For the purpose of this study, the following research question was examined: What difference, if any, does nursing education have on the emotional intelligence (EI) scores of sophomore, junior, and senior Bachelor of Science in Nursing (BSN) students?

At the time of this proposed EI assessment, the three cohorts of students were at the beginning, mid-point, and end of their curriculum. While EI has been studied with nursing students related to other factors such as clinical competency (Rice, 2015), resilience (McAllister & McKinnon, 2009), and empathy (Ozcan et al., 2010), no identified research has been found that examines specific levels of nursing education and assessed EI scores.

Research Design

For this research study, a quantitative quasi-experimental design was used to examine the effect of nursing education on EI scores. The assessment of EI was obtained by distributing the Emotional Quotient Inventory 2.0 (EQ-i 2.0), an online assessment tool using a cross-sectional method collected at one point in time for each student cohort (independent samples) (Privitera, 2015). Advantages of this cross-sectional method were that it was less time consuming and did

not require a lengthy relationship between the researcher and participants. These identified

considerations were due to the location of the MSU-CON students on five distant campuses

across Montana (Billings, Bozeman, Great Falls, Kalispell, and Missoula). The disadvantages

were that it limits comparability, was one isolated measurement in time, and did not offer

causality (Dal, 2011; Salkind, 2012). This research design measured one factor, (EI) scores,

between three levels of students who have experienced a specific set of educational skills at each

clinical level (sophomore, junior, senior).

A control group of education students at these three levels was also recruited for EI

assessment from the University of Montana Phyllis J. Washington College of Education and

Human Sciences. The rationale for including this control group of education students is the

similarities they have with nursing students in that they have a prescribed curriculum of study

that encompasses general education core courses as well as lab and practical experiences (student

teaching) in the field: "The undergraduate early childhood and elementary education programs

embed content coursework, general education coursework, and professional licensure

coursework into 120-credit bachelor's degrees" (Phyllis J. Washington College of Education and

Human Sciences, n.d., para 1). The gender demographic of education students is composed of a

higher number of females as compared to males, similar to nursing student gender demographics

(Feistritzer, 2011). Moreover, education majors are required to complete a prescribed

curriculum of study mandated by state and national requirements leading to the attainment of a

teacher licensure (Teacher Education Program Handbook, University of Montana-Missoula,

n.d.). This requirement is similar to the educational requirements of BSN nursing students who

also complete a national licensing examination needed for practice.

Research Hypothesis

The research hypothesis seeks to address the relationship between the variables posed in the research question (Boudah, 2011; Hoy, 2010; Salkind, 2012). For the purposes of this study, the research hypothesis was as follows: There will be a difference between three levels of nursing education (sophomore, junior, and senior) at MSU-CON and EI scores.

Null Hypothesis

In quantitative research, the null hypothesis is used to determine whether or not the results of a study support or refute the research hypothesis (Steinberg, 2011). For the purposes of this study, the null hypothesis was: There will be no difference between nursing education levels identified by sophomore, junior, and senior BSN students and their assessed EI scores. Steinberg (2011) explained that the most "a researcher can do is disprove the null hypothesis and thereby gain support for the research hypothesis" (p. 156). In the case of this research study, the researcher would then state that a difference was discovered between nursing education and assessed EI scores. The results would then support the rejection of the null hypothesis and provide evidence to support the research hypothesis.

Population

Privitera (2015) stated that a population is "a set of all individuals, items or data of interest" (p. 705). For this research study, the population included the total number of traditional sophomore and upper division (junior and senior) nursing students enrolled at all of the five separate campuses (Bozeman, Billings, Great Falls, Kalispell, and Missoula) within the MSU-CON (see Table 1). This number totaled approximately 279 for the fall 2016 semester (junior and senior cohorts) and spring 2017 semester (sophomore cohort) (D. McCray, personal communication, July 24, 2016; D. Hall, personal communication, January 21, 2017). It is

important to note that this non-probability study has limited generalizability of the research

findings. Sue and Ritter (2007) warned, "researchers should exercise caution when making

inferences about populations when results are based on nonprobability samples of any size" (p.

34). The information from this study may, however, offer added insight, perspective, and

recommendations for future research about nursing education and EI.

Table 1

Sample Number of Students Enrolled in Three Cohorts at MSU-CON's Five Campuses Fall Semester (Billings, Bozeman, Great Falls, Kalispell, Missoula)

Campus	Sophomore* (4th semester)	Junior** (6th semester)	Senior** (8th semester)
Bozeman	57	0	0
Billings	15	40	40
Great Falls	12	16	16
Kalispell	1	8	8
Missoula	18	24	24
Total	103	88	88
Total	**$n = 279$**		

Note. * Sophomore (4th semester) denotes sophomore students who have not yet started any clinical hours in spring, 2017. ** Junior (6th semester) and Senior (8th semester) denote students who have completed the second semester of their junior or senior year, respectively, in fall 2016.
Verified by Debbie McCray: MSU-CON, July 2016
Undergraduate Program Coordinator

Sample and Participants

Privitera (2015) defined a sample as "a set of selected individuals, items or data taken

from a population of interest" (p. 706). For this study, the sample was the students on the five

MSU-CON campuses, and the education students who voluntarily completed the stage one

exclusionary paper invitation and the stage two EQ-i 2.0 assessment (See Appendix A & B).

Students. The selection of participants for this study was a convenience nonrandom

sample identified in two invitation stages. The students were predetermined in groups based on

the specific level of study in the MSU-CON traditional nursing curriculum. The total number of

all sophomore (4th semester), junior (6th semester), and senior (8th semester) students enrolled

on each of the five MSU-CON campuses in the fall 2016 or spring 2017 semester, as shown in

Table 1, was 279. A paper invitation was distributed to nursing and education students in

sophomore, junior, and senior classes on the five campuses (See Appendix A). This stage one

exclusionary invitation specified that eligible participants needed to be over the age of eighteen

and were completing their first baccalaureate degree. For the students who met this criteria and

volunteered to participate, they provided an e-mail. A second stage two invitation was sent via

e-mail to them from the MHS research company providing a link to complete the online

assessment tool: EQ-i 2.0 (See Appendix B).

The participants were those who voluntarily completed the stage one paper form and then

completed the stage two online EQ-i 2.0 assessment.

Clinical hours. For the purposes of this study, clinical hours or clinical learning

experiences are generally considered to have a 3:1 ratio, meaning there are three hours of clinical

learning experience for every clinical credit/week. Clinical laboratory credits typically use a 2:1

ratio, or two hours of clinical laboratory credit, each week (H. Melland, personal communication,

February 2, 2016). Appendix C gives examples of this formula and how clinical hours are

calculated within the MSU-CON curriculum of study.

The students who were sophomores (4th semester) were just beginning their clinical

nursing hours. When they were asked to complete the EQ-i 2.0 assessment, they had zero

clinical hours. The juniors (6th semester) were approximately at the mid-point of their clinical

hours, and the seniors (8th semester) had completed all of their clinical hours. The three levels

were chosen to represent three separate points in the nursing curriculum to see if there is a

difference (if any) with student EI scores.

  Sample size. This research study consisted of all the students who voluntarily completed

both stages of the invitation to participate in this study; the exclusionary stage one and stage two,

the online EQ-i 2.0 assessment (See Appendix A & B). Response rates that constitute the sample

size can vary widely for online surveys or questionnaires. Overall response rates (paper and

online) indicate that a 50% return is deemed adequate, 60% is good, and 70% very good (Sue &

Ritter, 2007). Sue and Ritter (2007) reported that response rates for e-mail surveys "range

between 24% and 76%" (p. 8).

  Using an online sample size calculator (Raosoft, 2004) for the population of students

(279), the recommended response rate is 162. This calculator allows for a 5% margin of error

with a 95% confidence level (Raosoft, 2004). Sample size estimation is an important

consideration in research studies to assure that the subset being studied is an accurate

representation of the population. Recruitment of participants using predetermined groups

(students) based on the research topic of interest (nursing education and EI assessment) can

increase participation in the study (Fitzpatrick & Montgomery, 2004).

Variables in the Study

  Baumgartner and Hensley (2013) emphasized "the focus of the researcher's effort is

always on the variable" (p. 43). The following section examines the independent, dependent and

confounding variables in detail.

  Independent variable. In the current study, the independent variable was the level of

nursing education that the students had experienced in the program. It is important to note that

the sophomore students were at the beginning of the program, juniors were midway through, and

seniors were at the end of their BSN education. These levels were pre-determined by the clinical

credits in the program of study (See Appendix D). The education students (control group) were

assessed at the same education levels. The independent variable was determined to be

categorical, set up by a ranking of education levels described above.

Dependent variable. The dependent variable in this study was the EI scores obtained

from the online EQ-i 2.0 assessments from the three separate cohorts of students at the

sophomore, junior, and senior level enrolled at MSU-CON (Nursing) and UM (Education). The

level of measurement for the calculation of EI scores was the interval level of measurement

based on the EQ-i 2.0 reported standard scores for emotional intelligence. This scoring process

is described in more detail in the instrument and data analysis section.

Confounding variables. In research there may be additional variables that are important

to recognize and acknowledge but which are more nebulous and difficult to measure (Myers,

Well, & Lorch, 2010). In this study, there are several confounding variables that may have

influenced emotional intelligence assessment. Since the researcher measured three separate

levels of education over time, maturity may have had an impact on EI scores between these

levels but this is hard to fully assess. The span of time between sophomore students and senior

students is two years, and this time may have offered students experience to grow and develop

their emotional intelligence skills. Additionally, different faculty taught nursing education

across five MSU-CON campuses with different teaching methods on each campus, and this may

have influenced changes in EI scores. For example, there may be faculty who focused on

building EI skills through clinical discussion, simulation, or role-play, whereas another class may

not deliver this same content. However, differences in educational/instructional delivery are

important to acknowledge but cannot be quantified or measured in this study.

Instrumentation

A precise description of the process of data collection is not only important for the reader

but also for the possibility of replication of the study. The following content will describe the

instrument, data collection procedures and ethical considerations.

Instrument. The primary method of data collection was a two-stage process. A paper

invitation was distributed to nursing and education (control group) students in sophomore, junior,

and senior classes on the five campuses (See Appendix A). This stage one exclusionary

invitation specified that participants needed to be over the age of eighteen and were completing

their first baccalaureate degree. For the students who met this criteria and volunteered to

participate, they provided an e-mail. A second stage two invitation was sent via e-mail to them

from the MHS research company providing a link to complete the online assessment tool: EQ-i

2.0 (See Appendix B).

After analysis of several EI instruments, a specific EI assessment (EQ-i 2.0) was selected

for the following reasons. The EQ-i 2.0 had a well-established history with the first version (EQ-

i) developed in 1997 by Dr. Reuven Bar-On and the second generation (EQ-i 2.0) in 2011 (EQ-

i® 2.0, 2011). The original Bar-On EQ-i was the first commercial assessment available for EI

after six stages and 17 years of development (Bar On, 2006). Additionally, it was the first

scientifically validated and most extensively used EI assessment in the world translated into 30

languages (EQ-i® 2.0, 2011). The EQ-i 2.0 builds on the first EQ-i assessment with

improvements in simplified language, culturally acceptable answers, and a more extensive online

scoring report (DiPerna & Sandilos, 2014; EQ-i® 2.0, 2011). EQ-i 2.0 "consists of brief

optional demographic questions (student ID, gender, age) followed by 133 brief self-report items using a five-point response scale" (EQ-i® 2.0, 2011, p. 10). This model consists of five primary scales (Self-Perception, Self-Expression, Interpersonal, Decision Making, and Stress Management) each divided into three subscales. The EQ-i 2.0 has two final indicator scales (Happiness and Response Style) that make up this assessment (EQ-i® 2.0, 2011; DiPerna & Sandilos, 2014). Scores for each scale are calculated from the same average (mean) score of 100 points with a standard deviation of 15. This use of standard scores allows comparison between scales and other instruments using the same standard scoring system (EQ-i® 2.0, 2011). The five response choices for each item are scored with numbers one to five corresponding to the answers: "Never/Rarely, Occasionally, Sometimes, Often, Always/Almost Always" (EQ-i® 2.0, 2011, pp. 79-80). The assessment takes approximately fifteen to twenty minutes to complete. Composite standard scores with a mean of 100 and standard deviation of 15 are calculated for the total, scale, and subscale EI scores. See Appendix E for the example of the entire EQ-i 2.0 assessment.

Multi-Health Systems (MHS) has managed the EQ-I 2.0 for over 19 years (first and second generation assessments) and it has been the EI assessment in a wide range of research studies, business profiles and assessments nationally and internationally (EQ-i® 2.0, 2011). MHS requires a specific process to use this instrument that includes an initial qualification application, detailed research proposal outline and support letter from the supervising research faculty. Formal approval from the MHS research and development department was received via an e-mail notification on July 5, 2016 (See Appendix K).

The EQ-i 2.0 instrument has established validity and reliability at acceptable levels and can be distributed using broad online access with students at the five distant campuses. This

history of data and psychometric analysis from several sources for the EQ-i 2.0 added to the

consideration of consistency, stability, and authenticity of this instrument.

Reliability. The importance of reliability was critically considered when evaluating the

EQ-i 2.0 instrument. As Hoy (2010) recommended, researchers who choose a published,

standardized tool must assess the technical data to ensure there is sufficient reliability or

assurance that the instrument is dependable and trustworthy. Pallant (2013) stated, "two

frequently used indicators of a scale's reliability are test-retest reliability (also referred to as

'temporal stability') and internal consistency" (p. 6). These will be discussed below.

Internal consistency. Cronbach's alpha (α) is one special test of reliability that measures

levels of internal consistency to the degree that a set of items is related with one another

(Cronbach, 1951; Salkind, 2011; Tavakol & Dennick, 2011). For example, in this EI assessment,

the higher the Cronbach alpha value, the higher confidence that this test is measuring one item

consistently, that of EI. The optimum ranges of Cronbach alpha levels are considered between

0.70 to 0.90 (DeVellis, 2003; Pallant, 2013). MHS reports that the newer EQ-i 2.0 alpha

reliabilities were a low of 0.77 to a high of 0.91 for the subscales (EQ-i® 2.0, 2011). These

values supported that these assessments do have higher levels of instrument reliability that are

preferable benchmarks. Appendix L shows the summary of the internal consistency (Cronbach

alpha) values for the EQ-i 2.0 normative groups as reported by MHS. These higher values across

scales and subscales provided evidence of strong reliability for the EQ-i 2.0 tool.

Test-Retest. In addition to measurements of internal consistency, the test-retest reliability

was also important to assess. The test-retest reliability was measured by having the same

participants complete the assessment or survey at different time frames and calculating the

correlation between the two scores. In the study, the EQ-i 2.0 test-retest data reported .78–.92 at

two to four weeks, and .70–.84 at eight to sixteen weeks. One could argue that an assessment of

EI may be less stable in a test-retest analysis than a test of more concrete variables; however, the

test-retest numbers indicated a fairly high consistency rate over time. Specific reliability data

will be reported from three sources for the EQ-i 2.0: MHS User Manual, Buros mental

measurement yearbook, and an independent international study in Table 2.

 MHS user manual. MHS reported multiple tests of reliability with the EQ-i 2.0. In the

summary of standardization, it was reported that 10,000 EQ-i 2.0 assessments were used to

examine standardization of this tool (EQ-i® 2.0, 2011, p. 136). A sample of over 4,000

participants was selected as the normative sample from which to capture supporting data (p.

136). Reliability examining the internal consistency measured using Cronbach's alpha levels for

composite scales ranged from .88–.93 with values higher than .77 for all subscales (See

Appendix L). The total EI scale had a Cronbach alpha level of .97 (EQ-i® 2.0, 2011, p. 136).

The test-retest reliability as reported by MHS for EQ-i 2.0 was 0.92 at two to four weeks,

decreasing to 0.81 at the 8-week point (p. 137). These numbers are high for internal consistency

and show a test-retest correlation supporting the overall reliability of this instrument.

 Buros Mental Measurement. The Buros Mental Measurement Yearbook provides critical

psychometric analysis of tests and instruments. In a review of the EQ-i 2.0 by the Buros

Center for Testing, DiPerna and Sandilos (2014) stated that the primary objective for the

development of the EQ-i 2.0 was to "incorporate theoretical and empirical advancements

regarding the construct of emotional intelligence since publication of the original version"

(p. 4). DiPerna and Sandilos (2014) reported that overall scores of the EQ-i 2.0 "demonstrate

acceptable levels of reliability for screening and intervention planning purposes" (p. 4).

Table 2

Buros Mental Measurement Test Review: EQ-i 2.0

Test	EQ-i 2.0 (2011)
Cronbach Alpha (Internal Consistency)	.77–.91 (subscale scores) .88–.97 (composite score)
Test/Retest	
2–4 weeks	.78–.92
8–16 weeks	.70–.84

EQ-i-2.0: DiPerna & Sandilos (2014) as cited in Carlson, Geisinger, & Jonson (Eds.). Normative Sample *n* = 4,000 (US & Canada)

As stated previously, these authors specified that data was collected for the EQ-i 2.0 from 4,000 participants in the 50 U.S. states (n=3600) and 10 Canadian provinces (n=400). Across this sample, internal consistency reliability coefficients ranged from .77 to .91 for subscale scores, and .88 to .97 for composite scores (Diperna & Sandilos, 2014) (See Table 2). Additionally, test-retest data was collected on a smaller sample of participants at 2-, 4-, and 8-week intervals. Stability correlations showed a decrease as the time frame between tests increase. The authors positively acknowledge that the technical makeup of this test is impressive reporting on test development, pilot, and standardization samples. However, the authors stated that questions remain about structural validity and suggested that further research is needed related to the use with clinically and culturally diverse samples that would offer broader information about its diagnostic and international use (Diperna & Sandilos, 2014) (See Table 2).

Independent review. Van Zyl (2014) examined the psychometric properties of the EQ-i 2.0 in South Africa. Using a quantitative non-experimental cross-sectional design, a sample of 1,144 men and women were given the EQ-i 2.0. The authors reported that the results of this study were similar to previous research that reported acceptable psychometric results from the

original EQ-i and the revised EQ-i 2.0. Van Zyl (2014) reported that the EQ-i 2.0 had alpha

coefficients from 0.71 to 0.85 at the subscale level, and 0.84 to 0.88 at the composite level (p. 2).

This data provides support for the overall reliability of the EQ-i and EQ-i 2.0 nationally and

internationally.

Validity. Validity, as Pallant (2013) and Salkind (2012) explained, is examining the

accuracy and authenticity of an instrument. Does the test measure what it states it is measuring?

In the case of this study, does the EQ-i 2.0 measure emotional intelligence? Unlike reliability

with specific indicators, the study of validity is more nebulous. Validity involves the collection

of evidence examining the test's performance and use. MHS (EQ-i® 2.0, 2011) extensively

covered validity for EQ-i 2.0 emphasizing that it is important to examine five indices of this tool:

time to completion, inconsistency index (IncX), positive and negative impressions, item 133, and

inconsistencies.

The time to complete the assessment is noted on each individual report. If individuals

have taken less than seven minutes to complete EQ-i 2.0 it is surmised that they may have

responded in a "random or rushed manner" (EQ-i® 2.0, 2011, p. 78). For assessments that take

longer than 90 minutes to complete, a red flag will appear next to time of completion and MHS

recommends further analysis during the feedback session (not part of this study) with the person.

The IncX measures how consistently an individual has answered test items across the

assessment. EQ-i-2.0 chose ten pairs of highly related items to "detect whether an individual

responds differently to items measuring similar in content" (p. 78). An IncX score of three or

higher indicates that the test results are possibly invalid due to the high degree of inconsistency

of answers. MHS states that this may possibly mean the individual is indecisive, unsure of

himself or herself, or lacking self-awareness (p. 78). Follow-up is recommended in the feedback session.

The positive and negative impression identifies respondents who may give overly positive or negative impressions of themselves with the answers on the EQ-i 2.0. For scores above three for either index, individuals may have overly inflated (positive) or deflated (negative) opinions of their self. These scores are again flagged with recommendation for further feedback investigation.

Item 133 states: "My response to the preceding sentences were open and honest" (EQ-i® 2.0, 2011, p. 79). Responses of three (3) or lower indicate that the results of the EQ-i 2.0 may be invalid. MHS also emphasizes that responses of four (4) may also need to be evaluated as this may suggest that the responses may not have been as "open or honest" (p. 79).

Finally, attention to omitted items is important. MHS maintains that EQ-i 2.0 is set up where respondents should be able to answer every question. The final scored report calculates the overall composite and subscale level omission rate. If this rate is 8% or higher, the results are identified as invalid (EQ-i® 2.0, 2011, p. 79).

In addition to the above indices, MHS related extensive analysis of content validity that suggests "all relevant facets of the Bar-On conceptualization of EI are being captured by the EQ-i 2.0" (EQ-i® 2.0, 2011, p. 145). MHS reported that their studies used exploratory factor analysis followed by confirmatory factor analysis which supported that the EQ-i 2.0 scales (both subscales and composite scales) represent EI (p. 145). Overall, MHS reports that these analyses suggest "the EQ-i 2.0 is a valid measure of EI" (p. 145).

While the discussion of validity by MHS shows positive evaluations of the EQ-i 2.0, there is always the potential for bias related to the company who is marketing the instrument.

DiPerna and Sandilos (2014) noted in the Buros test review that MHS provided a detailed description of validity with exclusive samples used to conduct exploratory and content factor analysis. One drawback that the authors identified was that actual data was not reported in the manual. They identified this as a weakness that may affect the purported fit between the EQ-i 2.0 and the overall model. More analysis was recommended to examine the psychometric strength of EQ-i 2.0. In conclusion, DiPerna and Sandilos (2014) suggested that the results of the EQ-i 2.0 should be used in conjunction with other assessment measures and not be only as one independent source.

Van Zyl (2014) in the psychometric study of EQ-i 2.0 in South Africa stated that his research results showed "good support for the construct validity of the subscales of EQ-i 2.0" (p. 7). The author also reported that the congeneric models showed "reasonable fit" (p. 7). Van Zyl (2014) stated that this was similar to previous psychometric research of EQ-i 2.0 including, but not limited to, findings by the test publisher, MHS.

Overall, the validity and reliability of the EQ-i 2.0 was reported as being acceptable not only from the tests done by the publisher (MHS) but also in independent critical reviews reported from the Buros Mental Measurement Yearbook (Diperna & Sandilos, 2014) and independent international psychometric studies from South Africa (Van Zyl, 2014). While few research studies have used the more updated EQ-i 2.0 due in part to its recent publication in 2011, the psychometric data reports do support the strength of the reliability and validity of this instrument measuring the quality of EI.

Data collection procedures

 Permission to contact the nursing and education students was requested and approved by Dr. Helen Melland, Dean of the MSU-CON, and Dr. Adrea Lawrence, the Department Chair of the

University of Montana (UM) department of teaching and learning (See Appendix F & G). Data collection covered a two-stage process. Nursing and education faculty were recruited via e-mail requests to distribute the stage one paper invitation to students at the end of class. Specific nursing faculty who taught at each of the three levels (sophomore, junior, senior) on the five campuses were contacted and all agreed to help distribute the stage one questionnaire in their respective classes. For the control group, eight education faculty were contacted by an initial e-mail with a follow-up e-mail reminder to help distribute this questionnaire in their classes. One education faculty responded to the first request and two other faculty responded to the second request.

Specific instructions were sent or delivered to the nursing and education faculty with the questionnaires stating that these forms could only be collected at the end of class and that faculty could only make one statement when they distributed the questionnaire to the students: "This form describes a doctoral research study. If you would like to participate, please read and complete the information on this form and place it in the manila envelope as you leave class. Thank you." The students identified their level of study, age, gender, and their e-mail on the stage one questionnaire if they agreed to participate.

After these forms were collected or sent back to the researcher, they were coded by program of study, education level, and campus. The researcher was purposely not involved with the students in stage one in an attempt to remove any potential concerns for bias or student perceptions of coercion regarding participation in this study. Once the stage one paper forms were received and coded, stage two was initiated. For stage two, student e-mails were uploaded into the MHS portal where a second online invitation was sent to the e-mail that each student provided (See Appendix B). The EQ-i 2.0 assessment was generated via an online link created

by the Multi-Health Systems (MHS) Inc. that holds the copyright and management

responsibilities for this assessment tool. Using this method of online survey distribution allowed

for maximum student contact, a faster response time, and ensured confidentiality, all advantages

of the survey method (Dal, 2011; Gosling & Johnson, 2010; Sue & Ritter, 2007).

   The initial data was collected in November/December of 2016 for the nursing junior and

senior students and the education sophomore, junior, and senior students with the nursing

sophomore students contacted in the first three weeks of the semester in January, 2017. For the

online invitation, one initial personal e-mail invitation with two follow-up reminder e-mails were

generated by MHS (See Appendix H). Students who completed the assessment populated the

"completed list" and did not get reminder e-mails. Students who remained on the "pending list"

received a maximum of two reminder e-mails that were sent five to seven days apart, which

included the due date for completing the survey.

   A small incentive raffle was offered for each college (nursing and education) for a $50

Amazon gift card. MHS provided a list of student numbers for the "completed" assessments. A

contact person (administrative assistant) was in charge of randomly drawing a student number

from these completed assessments (one from nursing and education respectively) and sending the

raffle winners the gift card via e-mail notification. The student winners that were chosen for the

incentive were not disclosed to the researcher to uphold confidentiality and guard against any

potential bias.

   With any online instrument such as the EQ-i 2.0, it was important to assess the computer

requirements for participants to determine ready access. MHS verified that the assessment link

was compatible with all types of personal computers as well as the common browsers (e.g.,

Chrome®, Firefox®, Safari®, Explorer®) for ready student access (C. Kolbin, personal

communication, July 8, 2016). For the MSU-CON nursing program and the UM education

program, computer access was a requirement of each course of study to access online course

shells and ongoing e-mail communication on a regular basis during each semester. The MSU-

CON undergraduate handbook specified the following computer skills and access requirements

that address the importance of computer access:

> Because some of the courses in the nursing program are web-based or web-
>
> enhanced, students must have access to and skills in using a computer and a printer.
>
> They must also have a reliable connection to the Internet with a current Internet
>
> browser. (Montana State University College of Nursing Undergraduate Program
>
> Handbook, 2015-2016, p. 22)

These requirements assured that this population of students should have the computer

capabilities to participate in this online assessment.

Due to its online access, the EQ-i 2.0 can be used with a large number of participants and

provides data results in a timely manner for analysis of the study. Data were collected into an

Excel format by MHS that the researcher had access to on a password protected domain. These

data were exported into SPSS for the purpose of analysis for this research study.

Students were asked to complete the assessment in a voluntary and confidential basis.

They received no results or feedback from this assessment and this was explained in their

personal invitation (See Appendix A and B). Assurances that the results were to be used solely

for the purposes of this study were specified in these invitations.

Ethical considerations. Participants for the proposed research had protection offered by

the Institutional Review Board (IRB) approval that was obtained from the University of Montana

(UM) IRB and Montana State University IRB (See Appendix I and J). The UM IRB stressed

specific criteria in recruitment of student participants. They discouraged faculty from recruiting

and collecting data from students except with the following requirements. They specified that

collection of the stage one questionnaire could only be done at the very end of classes and

collected in an envelope to minimize coercion or the perception of undue influence by faculty

who are distributing and collecting these forms. Instructions to all faculty who distributed these

forms were described earlier in the data collection process.

Permission for approval to use the stage one questionnaire and the stage two EQ-i 2.0

with the MSU-CON nursing students was requested and received from Dr. Helen Melland, Dean

of MSU-CON (See Appendix F) and Dr. Adrea Lawrence, Chair, Department of Teaching and

Learning, University of Montana (See Appendix G).

Consideration of confidentiality and informed consent was maintained in the following

steps. Both stage one and two invitations specified confidentiality with no individual names

identified. Additionally, the invitations specified that only a group-generated report was

obtained with no individual assessment scores shared with participants (See Appendix A and B).

MHS generated the e-mails with the second stage personal invitation and assessment link

directly to the students. This removed any direct contact by the researcher with the students to

reduce bias and assure confidentiality for the participants. The researcher provided MHS with

the student code numbers and e-mails in an Excel spreadsheet for each of the three cohorts for

nursing and education students. Participants were assured that this was a voluntary study and

that the participants could stop the assessment at any time "consistent with the ethical standard of

'freedom to withdraw'" (EQ-i® 2.0, 2011, p. 55).

Informed consent for this assessment meant "that the respondent has agreed to complete

the assessment without being forced to do so, and understands what the task involves (i.e.,

answering questions about one's feelings and behaviors) and how the results will be used" (EQ-i® 2.0, 2011, p. 55).   The stage two open e-mail invitation sent to each student reiterated these specific points related to confidentiality and informed consent and that results will be used for this research study with no names identified (See Appendix B).

Data Analysis

In the study, the Statistical Package for the Social Sciences (SPSS) Version 23.0 was used for data analysis. Descriptive statistics (mean, median, mode, and frequency) and inferential statistics were used to describe characteristics of the participants, including demographic and emotional intelligence characteristics.

For the purposes of this study, a one-way analysis of variance (ANOVA) was used to compare the EQ-i 2.0 scores of the three different student groups for the nursing and education students. This test examined the impact of one independent variable on the dependent variable and determined if the identified groups differ in their EI assessments. This test is a between-groups (independent) or between-samples ANOVA (Pallant, 2013; Privitera, 2015; Sheskin, 1997). The groups (sophomore, junior, senior) are independent samples where each group is composed of different students who have experienced distinct education and clinical experiences and are independent of each other. Evans (1996) emphasized that parametric tests are optimal when there are data that is measured on interval or scaled levels such as the reported standardized EQ-i 2.0 scores, or the dependent variable.

MHS reported that the EQ-i 2.0 scores are calculated from raw scores "converted into standard scores based on a mean of 100 and a standard deviation of 15" (EQ-i® 2.0, 2011, p. 10). The scale for measured scores varies with each scale, composites and subscales having a different range from zero to 140. Appendix M identifies these various ranges. MHS reports that

although the scale begins at zero, there are no scores that are zero if any of the questions on the

assessment are answered (D. Logan, personal communication, July 11, 2016).

The initial EQ-i 2.0 assessment report from MHS provided individual scores on the

following: total EI score, five composite scale scores, 15 subscale scores, 2 response style

indicators (Positive/Negative Impression), and an Inconsistency Index (DiPerna & Sandilos,

2014; EQ-i® 2.0, 2011; C. Kolbin, personal communication, July 5, 2016). Group reports were

generated from the individual student scores.

Post-hoc tests. Pallant (2013) stated that if the results of the one-way ANOVA show

statistically different mean scores from the dependent variable, then post-hoc tests may be

initiated to find out where these differences occur. In the study, post-hoc tests such as the Tukey

HSD or Scheffé test were considered (Pallant, 2013, Privitera, 2015).

Statistical Assumptions

The original research design for this study was set up as a quasi-experimental design with

the experimental group being the nursing students and the control group the education students.

For parametric tests there are five assumptions that need to be addressed by the researcher: level

of measurement, random samples, independence of observation, normal distribution and

homogeneity of variance (Pallant, 2013; Ferguson, 1971). Chapter Four will discuss these

assumptions in detail with respect to the results.

A priori Assumptions

In quantitative studies, researchers identify specific predetermined critical values for

statistical analyses in advance (A priori) of the data collection. Pallant (2013) and Salkind

(2012) identified that the critical value is set ahead to help ensure that the test statistic is not the

result of arbitrary chance or bias but is due to the treatment, or in the case of this study, the

nursing education. These critical values involve consideration of the level of statistical

significance or alpha and the effect size. For the purpose of this study, the level of significance,

determined by the alpha level, was set at $\alpha =. 05$ or 5%. This means that there was a 5% chance

or less that the obtained outcome from the study was due to chance.

Effect size is a measure of how different two groups are from one another, or the

difference between a sample mean and the population mean. Carver (1993) emphasized the

importance that attention is given to the effect size. The most common effect size statistics are

eta squared and Cohen's *d* (Pallant, 2013). Values can range from 0 to 1. For this study, the eta

squared was set at .01, which according to Cohen (1988) is considered a small effect or

magnitude of difference.

Testing Assumptions

1. The EQ-i 2.0 measures EI traits/abilities with reasonable reliability.

2. Participants will reply to the EQ-i 2.0 assessment with complete honesty.

3. Participants will use reasonable effort to complete the EQ-i 2.0 assessment.

Statistical Limitations

The EQ-i 2.0 is a self-report assessment. While this method is popular in behavioral

science, there are limitations that are unique to this type of assessment. Paulhus and Vazire

(2007) stated that the central disadvantage of self-reports is the broad issue of credibility. When

participants are evaluating their own behavior, can they be honest and truthful? Additionally,

motives such as "consistency seeking, self-enhancement and self-presentation" may alter the

participants' answers (Paulhus & Vazire, 2007, p. 228). These identified limitations may reduce

the social desirability of the responses.

Another limitation is the study design of cross-sectional or one point in time, representing one isolated measurement in time. EI may change and grow and one measurement may not offer a complete accurate assessment.

Researcher bias also needed to be considered. In this study, the researcher directly taught two cohorts of students in the sample (Kalispell and Missoula). The participants may have perceived the invitation to complete the assessment as coercion. To mitigate this potential perception, the researcher had other faculty distribute the stage one questionnaires with no direct contact by the researcher. The raffle incentive was drawn and awarded by an administrative assistant who did not share this information with the researcher. Additionally, not using individual names and only generating group reports may have helped reassure students regarding the confidentiality of this assessment.

Other potential limitations were extraneous or confounding variables that could have a potential affect on the dependent variable. As discussed earlier in this chapter, extraneous or confounding variables such as age, gender, maturity, health care, and life experience may all influence one's EI. The three student groups in this study had a variety of ages, genders, maturity levels and backgrounds. Using a two stage research exclusionary process was set up to only have first degree baccalaureate students in this study, excluding the second degree students who may be older, and more mature with additional life experience.

The research question central to this study examined only the difference (if any) between nursing education and EI. The results examined if three levels of nursing students who are at the beginning, middle, and end of the nursing education curriculum demonstrated any difference in assessed EI scores.

Summary

In summary, this study used a quantitative, quasi-experimental design examining the effect of nursing education on EI scores. A convenience cross-sectional sampling method was used with a control group of education students as well as nursing students utilizing a two-stage process. Stage one provided an exclusionary paper invitation followed by a stage two online e-mail assessment using the EQ-i 2.0 assessment tool. Reliability and validity of the updated EQ-i 2.0 instrument was reviewed using psychometric reports from the Buros Mental Measurement Yearbook, MHS data, and independent reviews. Data collection was initially collected by MHS, which provided the individual student scores for total EI, five composite scale scores, and 15 subscale scores. This data was analyzed using the SPSS Version 23 reporting descriptive and inferential statistics. The ANOVA, ANCOVA, and correlation tests were used for data analysis.

Chapter Four: Results

The purpose of the current study was to assess the difference, if any, between EI scores at three levels of nursing education. The researcher used a quantitative quasi-experimental design to examine the differences between these two variables. Participation in this study required students to complete an initial stage one exclusionary questionnaire followed by a stage two online EI assessment. Data collection was conducted at the end of the fall 2016 semester and the beginning of the spring 2017 semester.

Analysis of the data consisted of including descriptive statistics for both the independent and dependent variables and a thorough analysis of inferential statistics. For the purposes of this study, results of the one-way between groups analysis of variance (ANOVA) guided the investigation of the difference between levels of education and assessed EI scores.

From the stage one questionnaire (Appendix A), demographic data (age, gender, level of study) about the participants were collected. While the second stage online EI assessment also asked for gender and age, these fields were "optional" with some participant data reported as incomplete. Students who completed the stage one questionnaire and provided their e-mail address received an e-mail contact with a direct link to the EI assessment. Multi-Health Systems (MHS) Inc., which owns the EQ-i 2.0 assessment, generated these e-mails. MHS sent the first e-mail invitation (Appendix B) followed by two reminder e-mails three to seven days apart sent to students who had not yet completed the assessment.

Finally, for the purposes of this research, the author evaluated the null and research hypothesis through a comprehensive analysis of the data. The null hypothesis stated that there would be no difference between students' levels of nursing education (sophomore, junior, senior)

and their EI scores. The researcher hypothesized that there would be a difference between the three levels of nursing education and their assessed EI scores.

This chapter examines the analysis and results of the data collection as described above. A comprehensive discussion of the descriptive statistics and statistical tests with relation to the independent and dependent variables is explained. Clarity and transparency will be addressed with narrative description of the data supported by detailed tables, figures, and charts.

Response Rates

The population defined in this research study was identified as the total number of traditional sophomore, junior, and senior nursing students enrolled within the MSU-CON at five separate campuses (Billings, Bozeman, Great Falls, Kalispell, and Missoula). The population comprised the 279 nursing students who received the stage one questionnaire at the end of the fall 2016 semester (juniors and seniors) and the beginning of the spring 2017 semester (sophomores). From this population, 146 (52%) completed the stage one questionnaire providing their e-mail contact agreeing to participate in the second stage online assessment. Of these students, a total of 51 (35%) participants completed the second stage online assessment of EI (See Figure 1). The stage one questionnaire was an exclusionary step limiting the participants to first-degree baccalaureate students over the age of 18 years.

The control group included education students enrolled at the University of Montana corresponding to these same levels of study (sophomore, junior, senior). Due to the very low sample from the education students (n=7), the researcher chose to collect data primarily on the nursing students (n=51). Steinberg (2012) stated, "better sampling leads to more accurate, more valid tests of population differences" (p. 105). While the sample of nursing students was larger

(n=51), the education sample was so small that it was assessed using an independent samples t-test.

Figure 1 shows the response rates for all cohorts for stage one and two of the data collection. These figures show a marked decline from students who completed the stage one questionnaire and those who completed the stage two online assessments. A number of variables may explain this decline, which will be discussed in Chapter Five.

Figure 1

Education and Nursing Response Rates
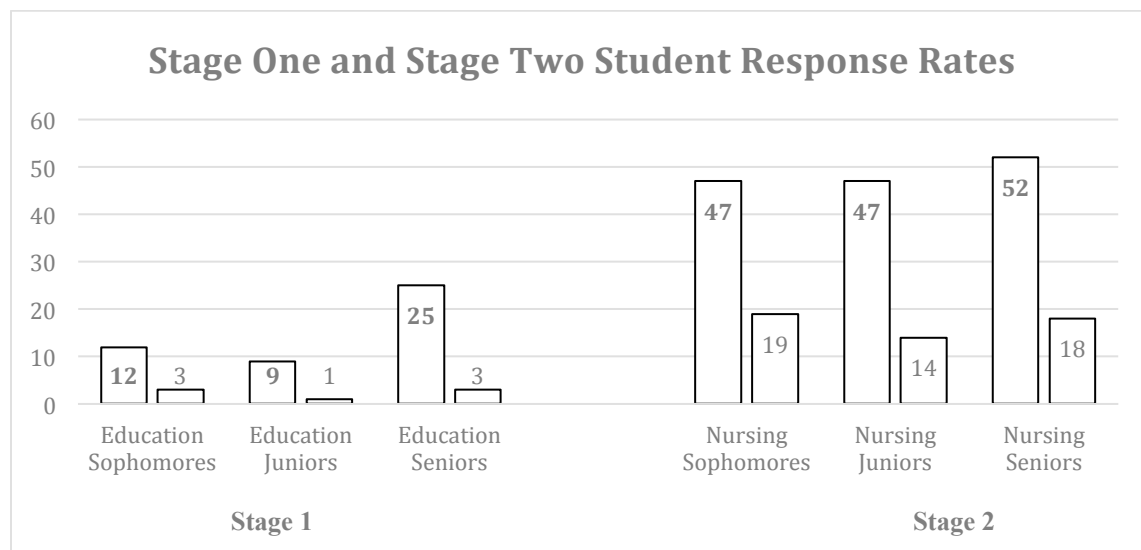
Demographic Data

For each variable, an overview of the collected demographic data helps describe the sample, specifically the ages, gender, education level and individual campus response rates. The data for the nursing students (n=51) will be used for the analyses in this chapter. The participants' age, level of study, and gender were collected in the stage one questionnaire. Appendices N and O illustrates these unique demographic characteristics for the nursing and education participants in this sample.

Of the 51 nursing participants, 5.9% (n=3) reported as males, and 94.1% (n=48) reported

as females (Appendix N). Their ages ranged from 19 to 52 years, with an average age of 23.5

years. The ages 19–29 years represented 92%, and 30–52 years comprised 8% of the

participants (Appendix N). Of the 51 respondents, 18 identified as sophomores, 14 indicated

they were juniors, and 19 stated they were seniors (Appendix O). Of the seven education

participants, 14.3 (n=1) reported as males, and 85.7% (n=6) reported as females (Appendix N).

Their ages ranged from 19 to 24 years, with an average age of 20.8 years (Appendix N). Of the

seven respondents, three identified as sophomores, one as a junior, and three as seniors (See

Appendix O). Appendix O shows the response rates for nursing students who participated in both

stages of the study from each individual campus. The response rates of zero for the Bozeman

campus indicated that there were no second semester junior or senior classes enrolled on this

specific campus at the time of the study.

Descriptive Statistics

Table 3 summarizes the data, reporting the specific education levels and EI scores. The

nursing sophomores (n=18) had EI scores that ranged from 83 to 127, with a mean of 104.28 and

a standard deviation of 13.99. Nursing juniors (n=14) had EI scores ranging from 83 to 122,

with a mean of 103.64 and a standard deviation of 11.99. Finally, nursing seniors (n=19) had

reported EI scores that ranged from 69 to 128, with a mean of 102.89 and a standard deviation of

14.31. The means for all three levels of the nursing students' total EI scores are higher than the

average (100) reported by MHS. These data offer similar means and standard deviations for the

three levels of education. The ranges for the EI scores were very similar for the sophomore (83–

127, range = 44) and junior levels (83–122, range = 39), with the senior level (69–128, range =

59) showing a wider range. One explanation for this wider range is shown in Figure 2 where a

single low score of 69 is seen as an outlier compared to the other scores that are clustered more

closely together.

Table 3

Descriptive Statistics of Education Level and Total Standard EI Scores for Nursing and Education Students

School	Level	*n*	Range	Mean	Std. Deviation
Nursing	Sophomore	18	83-127	104.28	13.99
	Junior	14	83-122	103.64	11.99
	Senior	19	69-128	102.89	14.31
Education	Sophomore	3	85-123	101.00	19.70
	Junior	1	89-89	89.00	------
	Senior	3	72-123	89.67	15.59

According to the scoring guidelines from EQ-i® 2.0. (2011), the EI assessments scores

showed the following: "< 90 = Low Range; 90–110 = Mid-Range; > 110 = High Range" (p. 9).

Using a scoring structure very similar to the IQ scale, EQ-i® 2.0. (2011) reported that scores

above 100 are considered to show emotionally intelligent people, whereas lower scores may

suggest needed improvement in certain areas (p. 10). The mean scores of all the nursing students

fell above the standard mean of 100 exhibiting above average EI scores overall. Using this

guide, all student score means are located in the mid-range showing above average EI scores and

emotionally intelligent students.

Inferential Statistics

Descriptive statistics were presented in the previous sections to show the specific

characteristics of the sample. In this section, inferential statistics will be reported and analyzed.

While the control group of education students was extremely small (n=7), the number of nursing

students was large enough (n=51) to perform inferential statistical tests and analysis.

Sample size and implications. The three levels of nursing students and the data from their assessed EI scores were used for analysis. While the sample of nursing students was large enough to perform data analysis, it is acknowledged that it was too small to extend any generalizations with confidence from the sample to the population. This sample represents 18% of the total population. The number of participants who completed the online assessment (51, 35%) fell significantly below the projections for "adequate" online survey responses, which is determined to be 50% (Sue & Ritter, 2007). As discussed in Chapter Three, the Raosoft sample size calculator recommended a sample size of 162 for a population of 279 students. This ensures a 95% confidence level with a margin of error of 5% (Raosoft, 2004). The sample size for the current study was n=51. This was well below the recommended size of 162. For a sample size of n=51, the margin of error would be 12.43% with a confidence level of 56.5% (Raosoft, 2004). With the study sample size significantly below the recommended number of 162, with a higher margin of error and a lower confidence level, the researcher cannot state with assurance or confidence that the sample is representative of the population.

Control group. A control group of education students at these three levels was also recruited for EI assessment from the University of Montana, Phyllis J. Washington College of Education and Human Sciences. The education students have similarities to the nursing students: prescribed curriculum of study, lab and practical experiences, a higher demographic of females, and mandated licensure. This is similar to the educational requirements of BSN nursing students who also complete a national licensing examination required for practice**.** Although the control group in this study was small (n=7), an independent samples t-test was conducted to compare the EI scores for the education students (control group) and the nursing students. Table 4 and 5 show these results.

Table 4

Group Statistics (Total Standard Score)

School	*n*	Mean	Std. Deviation	Std. Error Mean
Nursing	51	103.59	13.345	1.869
Education	7	94.43	15.683	5.928

Table 5

Independent Samples Test (Total Standard Scores)

Levene's Test for Equality of Variances t-test for Equality of Means

								95% Confidence Interval of the Difference	
	F	Sig,	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal Variances Assumed	.005	.944	1.669	56	.101	9.160	5.488	-1.833	20.153

An independent samples t-test was conducted to compare the EI scores for nursing and education students. There was a significant difference in scores for education (*M* = 94.43, *SD* = 15.68) and nursing students (*M* = 103.59, *SD* = 13.35); *t* (56) = 1.67, *p* = .10, two-tailed (See Table 4 & 5). The magnitude of the differences in the means (mean difference = 9.16, 95% *CI*: -1.83 to 20.15) was moderately large (eta squared = .05). Although these results do point to a moderate difference in these group scores, it is important to acknowledge that the sample of education students was small and may not offer a meaningful representation of this population group. With the alpha set in Chapter Three as .05, there was not a statistical significant difference between these two groups with a *p* value of .1 (See Table 5). According to Cohen

(1988), this number shows a moderate or medium effect between the EI scores for the two

groups (pp. 284–287).

Analysis of variance (ANOVA) test. The one-way between groups analysis of variance

(ANOVA) was chosen for this study. The one-way ANOVA has an independent variable that

has several levels. This matched the independent variable in the study, which represented three

levels or categories of students (sophomore, junior, senior). The dependent variable is a

continuous variable or interval level of measurement that, in this case, was the EI scores. Pallant

(2013) stated, "analysis of variance is so called because it compares the variance (variability in

scores) between the different groups (believed to be due to the independent variable) with the

variability within each of the groups (believed to be due to chance)" (p. 258). Moreover,

Sheskin (1997) explained that an ANOVA is used "to evaluate whether or not there is a

difference between at least two means in a set of data for which two or more means can be

computed" (p. 333).

When using a parametric test, specific assumptions are addressed. Divergent arguments

from statisticians exist; some researchers stress that all of the assumptions have to be met, while

others state this expectation is simply not based in reality. Sheskin (1997) stated, "the power

advantage of a parametric test may be negated if one or more of its assumptions are violated" (p.

20). Conversely, Ferguson (1971) countered this statement: "with most sets of real data the

assumptions underlying the analysis of variance are, at best, only roughly satisfied" (p. 219).

As discussed in Chapter Three, the five assumptions with respect to this research were

level of measurement, random sampling, independence of observations, normal distribution, and

homogeneity of variance (Pallant, 2013). First, the level of measurement is recommended to be

interval or ratio (Pallant, 2013; Privitera, 2015). The dependent variable discussed previously

was determined to be interval using continuous standard scores. The second assumption is that

random sampling was met. A convenience sample was utilized for this study design, so this

assumption was not met. Pallant (2013) stated that random sampling "is often not the case in

real-life research" (p. 213). Independence of observations is the third assumption, and this

specifies that the observations that comprise the independent variable (levels of education) are

not influenced in any way by each other, or are independent of each other. For this study, this

assumption was met as the levels of education (sophomore, junior, senior) are distinct and

separate and one group has no influence over the other groups. The fourth assumption is that the

populations from which the samples are drawn from show a normal distribution. Pallant (2013)

stated that this assumption is met with samples of over 30 participants. The samples for each

education level were less than 30 participants; however, "violation of this assumption should not

cause any major problems" (p. 214). This may be the fact with behavioral research where there

may be a tendency for more normal distribution of data and not the extremes relative to the

overall sample of participants. When measuring EI scores, most people have a moderate level of

EI that is distributed normally and not the extreme low or high scores. As Privitera (2015)

stressed, "the behavioral data that researchers measure often tend to approximate a normal

distribution" (p. 167).

Homogeneity of variance is the final assumption. This specifies that the variability of

scores (EI scores) of the groups (sophomore, junior, senior) is similar (Pallant, 2013). Table 6

shows the ANOVA one-way analysis and the tests of between subject effects. Table 6 shows that

the significance value is $p = .95$. The aim is to have findings that are not significant (greater than

.05), which this value supports in order to meet this assumption. Pallant (2013) stated that when

the significance value is greater than .05, the homogeneity of variance assumption is not violated

(p. 262). Salkind (2010) also emphasized that the homogeneity of variance is met when the

Levene's test is not statistically significant (>.05), showing little variance between the

sophomore, junior, and senior groups. The Levene's test in this study was .76 meeting this

assumption.

Table 6

One-way Analysis of Variance (ANOVA)

Total Standard Scores	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.738	2	8.869	0.048	0.953
Within Groups	8886.615	48	185.138	----	----
Total	8904.353	50	----	----	----

In summary, the assumptions of level of measurement, independence of observations, and

homogeneity of variance were met, whereas the assumptions of random sampling and normal

distribution were not met. While not causing major issues respective of data analysis, these

violations will limit generalization of this study to the population as a whole.

There were no statistically significant differences between group means as determined by

the one-way between groups analysis of variance; F (2, 48) = .05, p = .95 (See Table 6). This

means that for each level of education (independent variable), the assessed EI scores (dependent

variable) did not indicate statistically significant differences between these three groups. It is

important to note that not achieving a statistically significant result does not mean one should not

report group means and standard deviations. However, running a post hoc test is usually not

warranted when statistical significance is not achieved (Evans, 1996; Pallant, 2013). With no

statistical significance achieved, no post hoc test was run for the study.

Hypothesis testing. The research hypothesis stated that there would be a difference between the three levels of nursing education (sophomore, junior, and senior BSN students) at MSU-CON and their assessed EI scores. Conversely, the null hypothesis stated: there will be no difference between the three levels of nursing education levels (sophomore, junior, senior) and their assessed EI scores. As reported by the ANOVA, the findings were not statistically significant ($p > .05$) for the total EI scores and the levels of education. The researcher failed to reject the null hypothesis and provided evidence negating the research hypothesis. Findings did not indicate that there was a statistically significant difference between the levels of nursing education and EI scores. As Table 3 shows, the means and standard deviations for the three levels of education were very similar with minimal differentiation.

Effect size. In addition to examining the importance of data, it is also important to report a calculated effect size also known as the "strength of association" (Pallant, 2013, p. 218). The effect size examines the magnitude in the differences between the means for groups with unequal sample sizes. In research, the reporting of effect size is encouraged and strongly suggested (Carver, 1993; Myers & Well, 2003). Pallant (2013) noted that there is a variety of effect size statistics to report. The most common are partial eta squared and *Cohen's d*. The partial eta squared indicates the proportion of variance of the dependent variable (EI scores) that can be explained by the independent variable (levels of education). It provides "one possible index of the importance of the independent variable" (Myers & Well, 2003, p. 200). From the ANOVA data, the partial eta squared for the current study was reported as .002. Values can range from 0 to 1. According to guidelines suggested by Cohen (1988), a value of .002 is considered a small effect size (p. 22). Myers and Well (2003) cautioned that judgment regarding the importance of

the independent variable "should also be guided by the research situation and the potential

application" (p. 201) with the calculated effect size as only one measurement index.

Based on this research study and the supporting references, the effect size is identified as small.

Additional Statistical Analysis

Following the calculations in the previous tests that indicated the findings were not

statistically significant, additional tests were performed to examine any statistical trends that may

be of importance. Closer examination of the scales, subscales, internal consistency, correlations

between variables, and analysis of covariance offered additional information about the research.

ANOVA for scales and subscales. After the data were analyzed using the single

dependent variable of total standardized EI scores finding no statistical significance, all of the EI

scores for each scale and subscale were subsequently examined using the ANOVA. All of these

scales reported $p > .05$ revealing no statistical significance for any one individual scale. The p

values for all of the scales and subscales ranged from .475 to 1.0.

Cronbach's alpha. Multi-Health Systems (MHS) Inc. reported the Cronbach's alpha

coefficient scores for each scale and subscale (see Appendix L) discussed in Chapter Three.

Using the raw data scores in SPSS, Cronbach's alpha scores were calculated on each scale and

subscale for the participants in this study to examine any trends or similarities with respect to

those reported by MHS. Appendix P shows the results of these scores in comparison with those

from MHS. Interestingly, the majority of the Cronbach's alpha scores calculated in the research

data were fairly close to the scores reported by MHS. This similarity offered additional

confirmation of the internal consistency of the EQ-i 2.0. There were five EI scales where the

calculated Cronbach alpha scores were significantly lower for the present study with differences

ranging (.14 – .31) for the following areas: total EI scores, assertiveness, independence, decision

and stress making composites (See Appendix P).

When calculating the alpha values from the raw scores, five scales that produced negative

alpha levels were reverse coded to account for negative response bias (Pallant, 2013). These

scores were then figured into the overall alpha calculation for the total score. Finding alpha

levels for this research with the majority close to the MHS reported alpha levels provided

additional assurance of internal consistency. It is important to note that MHS collected over ten

thousand EQ-i 2.0 assessments in 2009 and 2010 to measure standardization. From this group,

four thousand participants were chosen for the normative data sample. The results reported by

MHS showed "standard scores with means of 100 and standard deviations of 15 for the Total EI

score, Composite Scales, and Subscales" (EQ-i 2.0, 2011, p. 136). The sample size for this

research was very small compared to the MHS reliability studies; therefore, the noted differences

between alpha values from the MHS reports and the study at hand may be due to this disparity of

sample size.

Correlation data. Upon further scrutiny of the data collected for this research study,

examination of two additional demographic variables (ages and total EI scores) were considered

to see if any relationships or correlations could be identified. Moore and McCabe (1989) stated

that correlations represent "a measure of linear association between two variables that do not

necessarily fit into an explanatory response relationship" (p. 669). This additional information

may provide a more comprehensive picture of the relationships in this research. With the low

number of males in this sample of nursing students (n=3, 5.9%), the sample size was not

sufficient to provide statistically meaningful results. Using the variables of age and EI scores

offered a different outcome. Table 7 shows the descriptive statistics for these two variables with

Figure 2 showing the correlation data. Statisticians caution interpretation of the correlation

coefficient and emphasize that the measure is about the *strength* of the relationship between

variables and not the broad generalization of an association (Myers & Well, 2003; Pallant, 2013).

Table 7

Descriptive Statistics of Participant Ages and Total Standard Scores for Nursing
Students

Nursing Students	Mean	Std. deviation	*n*
Age	23.59	5.463	51
Total Standard score	103.59	13.345	51

Figure 2

Scatterplot *showing correlation coefficients between age and EI scores*
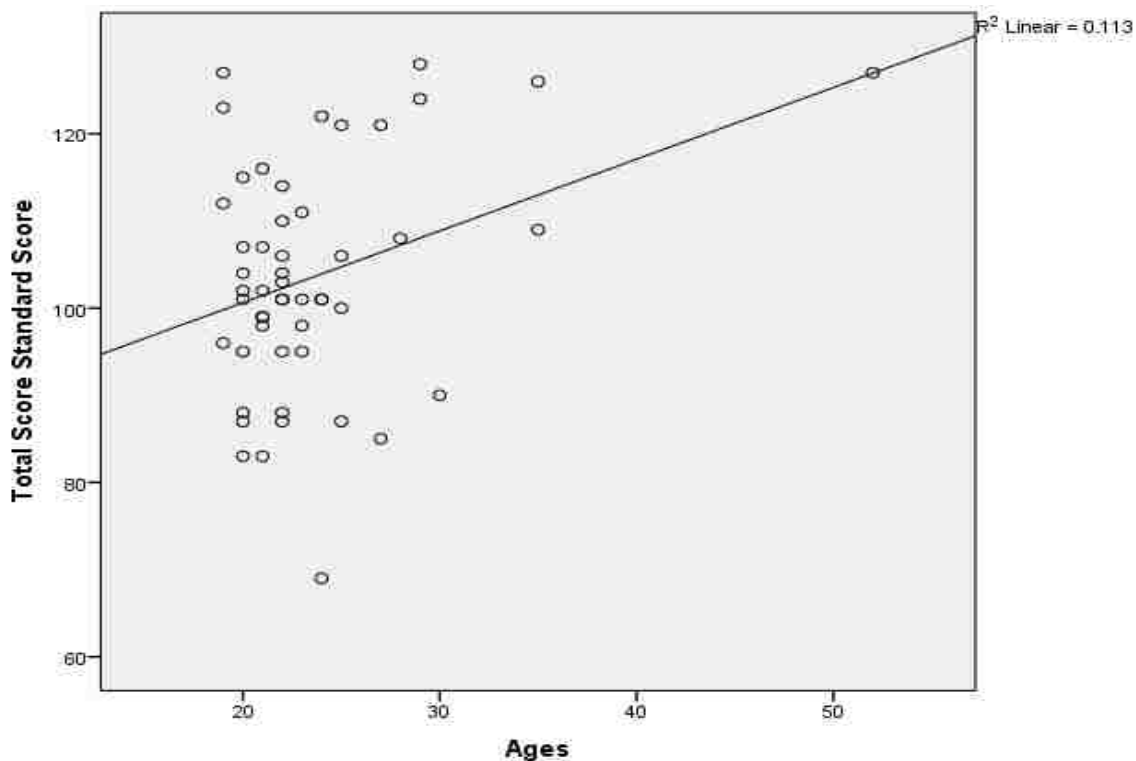
The relationship between the ages of the students and their EI scores was investigated using the

Pearson product-moment correlations coefficient. The data showed a moderately strong positive

correlation between the two variables, ($r = .34$, $n = 51$, p =. 02).   Cohen further offered guidelines

that determine if a correlation is between .30 and .49, then there is a medium or moderate correlation

(Pallant, 2013; Cohen, 1988). Figure 2 shows a scatter plot with a linear representation of the positive

correlation between age and EI scores. The older the student's age, the higher the measure of EI

scores. Sirkin (2006) discussed an important consideration when examining correlation coefficients.

A primary question should be posed: when is the correlations coefficient large enough to offer

"practical research significance" (p. 508)? Secondly, Sirkin (2006) pointed out that in the social and

behavioral sciences, the correlation coefficients that are reported are usually relatively low in the .20

to .40 ranges. With an r of .34 this appears to be the case. As Sirkin (2006) remarked, "Social and

behavioral phenomena are complex, so we only account for proportions of variation in snippets at a

time" (p. 508). It is much harder to control every possible variable in social and behavioral research

so the word "significance' may require broader interpretations and analysis.

Another calculation when studying correlations is the coefficient of determination. This

calculation examines the proportion of variance that predicts if one variable is predictable from

the other variable. The coefficient of determination is r^2 or .11 (See Figure 2). This means that

only 11% of the variation in EI scores can be explained by age and the remaining 89% remains

unexplained.

Analysis of Covariance (ANCOVA). The analysis of covariance (ANCOVA) is an

additional test beyond the ANOVA that "equalizes any initial differences that may exist"

(Salkind, 2012, p. 241) between groups. The ANCOVA removes the influence or bias of

additional variables that may influence the dependent variable or EI scores. A one-way

ANCOVA was conducted to compare the effectiveness of student ages on the assessed EI scores. As previously described, the independent variable was the level of education (sophomore, junior, senior), and the dependent variable consisted of the EI scores on the EQ-i 2.0. The participants' age as identified in stage one and stage two was used as the covariate in this analysis. After adjusting for age, there was no significant differences between the three levels of education and the EI scores, $F(2, 47) = .32$, $p = .72$, partial eta squared = .01 (See Table 8). According to Cohen's 1988 guidelines, there was a moderate relationship between the ages of the participants and the EI scores as indicated by a partial eta squared value of .13.

Table 8

Tests of Between-Subjects Effects

Dependent Variable: Total Standard Score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1115.325[a]	3	371.775	2.243	0.096	0.125
Intercept	16839.275	1	16839.275	101.610	0.000	0.684

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Age	1097.587	1	1097.587	6.623	0.013	0.124
Level	105.916	2	52.958	0.320	0.728	0.013
Error	7789.028	47	165.724			
Total	556161.000	51				
Corrected Total						

a. R Squared = 0.125 (Adjusted R Squared = 0.069)

Summary

The results of the data analysis were outlined in this chapter. Response rates from the stage one questionnaire to the stage two questionnaire were low with a much higher percentage

of females verses males participating, and ages averaging 23.5 years (see Figure 1; Appendices

N & O). Descriptive statistics and demographics revealed little differentiation between total

standard EI scores and the three levels of education (sophomore, junior, senior). A comparison

of total EI standard scores revealed minimal differentiation with the range, means, and standard

deviation of the scores (Table 3). Data from the one-way between groups ANOVA showed that

no statistical difference was noted comparing EI scores for the nursing and education students

(Table 6). Therefore, post hoc tests were not indicated or performed. The researcher failed to

reject the null hypothesis from findings that did not reveal a difference between levels of nursing

education and EI scores. Tests for Cronbach alpha scores with the small sample size were very

similar to those reported by the MHS research company using over four thousand participants

(see Appendix P). Interestingly, the correlational data examining participants' ages and EI

scores showed a moderately strong correlation (see Figure 2). Running a subsequent ANCOVA

adjusting for age showed no statistical difference between the education levels and EI scores

(Table 8).

  It is important to differentiate the statistical results with the practical implications. As

Carver (1993) emphasized, research should always scrutinize the practical and theoretical

implications of the data and not overemphasize only the p value and significance testing.

Chapter Five will offer additional discussion with respect to the results presented in this chapter

and offer recommendations for future research.

Chapter Five: Conclusions and Recommendations

The research study at hand focused on the research question specifically asking what difference, if any, does nursing education have on the emotional intelligence (EI) scores of sophomore, junior, and senior Bachelor of Science in Nursing (BSN) students. With no identified research that focused on the difference between these three levels of nursing education and measured EI scores, this study offered a unique view of this dynamic. Three primary issues in nursing were the catalyst of this study: the complex changes in health care demanding a higher physical and mental level of nursing care; the vulnerability of new graduates who as students may not have learned resilience to face the realities of the profession (McAlister & McKinnon, 2009); and the impending retirement of over 40 percent of the experienced nursing workforce in the next 10–15 years. Health care has taken on a highly complex delivery of care to patients with multiple co-morbid diseases that require a sophisticated knowledge of technology, interdisciplinary communication, and multitasking, pushing nurses to the limits of physical and mental endurance (Cowin & Hengstberger-Sims, 2005; Hodges et al., 2008; Institute of Medicine, 2010a, 2010b; McQueen, 2003; Pacini, 2005). With these identified changes in the profession, nursing education is being challenged to increase enrollment and graduate nurses who are equipped with the duality of emotional and clinical skills.

The research conducted in this study involved a quasi-experimental quantitative design. In previous chapters a thorough literature review, description of the methodology, and the statistical data were summarized. This chapter will examine the results with respect to the research findings, unique challenges of the study, and offer recommendations for future research.

Summary of Findings

The primary focus of this dissertation was the following research question: What

difference, if any, does nursing education have on the emotional intelligence (EI) scores of

sophomore, junior, and senior Bachelor of Science in Nursing (BSN) students? The original

hypothesis maintained that there would be a difference, while the null hypothesis stated that

there would be no difference between the EI scores and the three levels of education. As

discussed in Chapter Four, the results revealed no statistical significance when comparing the EI

scores of the three levels of students ($p = .95$). Therefore, the study failed to reject the null

hypothesis and provided statistical support for this conclusion. This does not mean, however,

that the study somehow failed, but that the data supported an outcome that was different than the

researcher surmised. Caprette (n.d.) cautioned students to be prepared to analyze and embrace

research findings, no matter the outcome: "The purpose of experimental science is to discover

the truth—not to make the data conform to one's expectations" (pp. 8–9).

The data did reveal that the group total EI standard scores for the nursing students (n =

51) of 103.59 fell above the average of 100 reported by MHS, whereas the education students' (n

= 7) average was below average at 94.43 (See Table 4). Breaking this down to educational

levels for the total EI scores shows the total EI score means for nursing sophomores (104.28);

juniors (103.64); and seniors (102.89). The education sophomores were 101.00; juniors (89.00);

and seniors (89.67) (See Table 3).

The majority of the cronbach alpha scores calculated for the scales and subscales in this

research study were similar to those reported by MHS for over 4,000 participants (EQ-i® 2.0,

2011, p. 136) (See Appendix P). This presents additional data that the EQ-i 2.0 instrument used

to measure EI scores offered a measure of internal consistency, reliability, and validity.

Correlational studies did indicate a moderately strong correlation between age and the

total EI scores. The oldest student (age 52) who achieved the highest total EI score was a

sophomore nursing student (See Figure 2). While this may be an outlier specific to this data, the correlation between age and EI scores warrants additional research and study.

Context of Findings

As explored in Chapter Two, little experimental research has been conducted that examines the difference between levels of nursing education and EI scores. Several articles focused on the important foundational qualities of caring and empathy within the context of EI and the nursing profession (Codier, 2015; Freshwater & Stickley, 2004; Lyons, 2013; Nightingale, 1859, 2003; Phipps et al., 2015; Pryce-Miller & Emanuel, 2014; Wood, 2014).

Two qualitative studies interviewing nursing students (Ball, 2013; Wilkes et al., 2014) as well as a national survey interviewing practicing nurses (Peckham, 2015) identified similar adjectives that closely aligned with EI qualities. Themes of human caring, empathy, and communication were central to the reported responses.

Expanding the context of EI research to other disciplines revealed studies focused on EI with medical students (Fletcher et al., 2009; Hegazi & Wilson, 2013; Helmich et al., 2014; Stoller et al., 2013) physical therapy students (Bayliss & Strunk, 2015) and MBA students (Joyner & Mann, 2011). For these students, empathy, EI competencies, and specific creative training workshops were evaluated and the consensus by the authors centers on the advantage that dedicated education initiatives have on student EI development. Interesting outcomes from two of these studies showed that female students scored higher on empathy scales (Bayless & Strunk, 2015; Hegazi & Wilson, 2013). This may offer suggestions for further research especially with nursing students who have a much higher number of female students verses male students.

Finally, in a similar study to the research at hand, Shanta and Gargiulo (2014) assessed the EI of both education and nursing students (n = 251) at the pre-major and senior levels. The experimental group was the nursing students completing their degree with nursing education serving as the treatment. The control groups were the education students at the beginning and end of their program and the nursing students at the pre-major level. Three Midwestern universities comprised the research sites. Results from this study failed to show statistical differences in the overall EI scores for the senior nursing students compared to the three control groups so did not reveal any evidence that nursing education increased EI from pre-nursing to senior students. These results offer similar data to the study at hand, however, a different EI instrument was used in this study. Shanta and Gargiula (2014) did report that a regression analysis found that as student's GPA increased so did the total EI scores of the students. The authors emphasized that this offers practical significance for accepting students with higher cognitive ability (GPA) and in turn higher levels of EI.

With the positive correlations between age and EI scores identified in this study it is important to examine the implications that maturity and age have on the development of EI. Mayer, Salovey and Caruso (2004) stated that research has started in this area and "the limited evidence presented thus far suggests that EI increases with age" (p. 209) and suggested continued EI measurements with a broader range of age groups to identify its developmental patterns. Bar-On (2006) also concluded from his EI research that the older groups of participants scored higher than the younger groups on his EQ-i instrument. Bar-On stated "the results suggest that as one gets older, one becomes more emotionally and socially intelligent" (p. 16). More research focusing on the positive relationship between age and EI is warranted. The

variables of maturity and life lessons, however, are more difficult to measure and quantify with

respect to EI development due to the unique experiences of each individual.

Leadership. One of the overriding themes addressed by EI and nursing leadership

research is that good leaders have higher levels of EI (Duygulu et al., 2011; Feather, 2009;

Goleman, 1998). Working to enhance and improve EI in leaders is crucial to all aspects of

health care. Akerjordet and Severinsson (2008, 2010) explored the critical aspects of EI related

to nursing leadership. They concluded, "nursing leaders who exhibit characteristics of emotional

intelligence enhance organizational, staff and patient outcomes" (Akerjordet & Severinsson,

2008, p. 565). The research study at hand offered data from the correlational tests that showed

EI scores rise with age. This correlation offers strong implications for nursing

administrators and leaders to consider this relationship as admission criteria and curriculum

standards are refined and evaluated.

Challenges of the Study

Behavioral and social science research is somewhat nebulous due to the multiple

variables that are often out of the researcher's control, yet still important to scrutinize

(Evans, 1996). Research studies often have a life of their own, particularly in the area of the

social sciences (Sirkin, 2006). This is often caused by multiple variables that can influence

research outcomes with respect to human behavior; therefore, it is important to try to clearly

identify these variables to gain a more comprehensive understanding of the study: "All research

projects involve trade-offs that generate strengths and weaknesses. This is normal. The point is

that you must recognize the limitations and discuss them in your report…the implication is that

research projects must be transparent" (Guthrie, 2010, p. 12). The researcher identified a

number of limitations throughout the study that are important to specify and explain.

(1) This study was limited to one nursing education program in one geographic area of the country, specifically Montana State University. This limited the study's generalizability to other programs nationally and globally. The EI scores may be only representative of nursing students at these three levels of education with respect to the sample population of undergraduate students as MSU-CON. To increase generalizability, the study could be expanded to include other BSN traditional nursing programs and also accelerated nursing programs in other states or parts of the country. This would increase the sample size and offer a broader target population.

(2) The time frame of the data collection spanned from November 2016 to January 2017. This time frame was chosen since it corresponded to the beginning, midway, and end points of the nursing education curriculum and the clinical hours that students complete. This particular time frame was at the end of the fall semester, during final exams, a holiday break, and extended to the start of the spring semester. Students may not have had additional time to use toward the completion of this online assessment with other commitments competing for their attention.

(3) On one campus (Bozeman), there were no junior or senior nursing students enrolled in the fall semester when the study was conducted (see Table 1). This limited the number of available participants in the final sample. These factors may be the cause of a lower response rate overall. A total of 149 nursing students completed stage one questionnaire, with 51 (35 %) completing stage two. The education students presented a much smaller response rate. Out of a total of 42 students who responded to the stage one questionnaire, only seven (15%) completed the stage two assessment (see Figure 1). This number was determined to be so small that only limited statistical data was evaluated on

this group. This attrition between stage one and stage two and an overall low response rate could possibly have been increased by setting up formal appointment sessions to ensure that students who met the initial criteria had computer access and dedicated time to complete the EQ-i 2.0 assessment.

(4) An additional limitation was recruiting the education faculty to help distribute the stage one questionnaire to their classes for the control group. As described previously, two e-mails were sent to the faculty requesting their assistance, which produced minimal responses. This may have been due to the increased workload at the conclusion of a busy semester. The very small final sample size of education students may have been a reflection of this time frame. Nursing faculty were more responsive perhaps due to the existing established relationship between the researcher and the nursing faculty members at each of the five campuses.

(5) The fact that this study was done in two stages requiring two points of contact with the participants was also an identified challenge. While the first exclusionary stage was fairly quick and short, the second stage did require online computer access and necessitated having 15–20 minutes of uninterrupted time to complete the assessment. The use of an incentive ($50 Amazon gift card) was emphasized in the invitation to attract more participants; however, it is unclear the extent to which this incentive helped the response rates overall.

(6) Having Multi-Health Systems (MHS) manage the second stage online invitation and request may have also limited the response rate. Using a third party to communicate with students could have been construed as impersonal and decreased the importance of the study, leading to a lower response rate.

(7) Another limitation was the lack of randomization. Due to the research question specifically focused on nursing education at three levels, students were selected in a convenience sample for data collection. This may have limited the sample size as well as the strength of the study. While random selection is optimal in quantitative experiments, it is not always possible. Boodah (2011) stated, "quasi-experimental research recognizes that random assignment (and therefore, control of some related chance variables) is next to impossible in most forms of social science research, including in education, where real-life classroom settings present difficulties in randomly assigning students and techniques" (p. 10). Pallant (2013) also acknowledged this same point and stressed that while randomization often is assumed in parametric approaches, it is not always "the case in real-life research" (p. 213).

(8) The students were only assessed at one point in time, which may not present an accurate representation of their EI measurement. Obtaining EI scores at a few different time frames would offer a more complete summary of their EI scores. Perhaps having students take EI assessments at the beginning of each level (sophomore, junior, senior) would offer more comprehensive data for analysis and comparison. As discussed, EI does have the ability to improve over time, so one way to accurately reflect this growth is to have more checkpoints for assessment.

(9) The self-reporting design of the EQ-i 2.0 is a noted bias identified in the statistical limitations in Chapter Three. Participants who are self-reporting may not offer the most accurate answers on the EI assessment when they are evaluating their own behaviors and responses. Having an assessment tool that offers additional peer reviews in addition to the EI self-assessment may offer a more comprehensive and holistic appraisal.

People may self-assess their own behavior very differently than others perceive it, and this disconnect may offer additional insight into one's own EI.

(10) Finally, research bias was a consideration due to some of the students being taught by the researcher when they received the EI assessment. Strategies such as using third parties for data collection and using numbers instead of names or e-mails for identifiers were used to mitigate this acknowledged limitation.

Due to the above limitations, the original suggested statistical tests had to be adjusted in the final data analysis in Chapter Four. Since the participant groups were not equal, ANOVA and ANCOVA tests were used to represent the three levels of unequal sample sizes respective to the final data analysis. With regard to confounding variables for this study, it was difficult, particularly with behavioral research, to account for every extraneous factor that may have influenced the participants' EI scores. While the demographics of age, gender, and level of education were assessed, larger factors such as maturity and life experience may be impossible to fully control, and this is a noted limitation overall.

Discussion

The majority of the student EI scores from the data collection fell in the middle range, (all total EI scores above 100), showing above average assessments for emotional intelligence overall (See Table 3 & 4). This data suggests the following questions: what have these students been taught and did they have high EI scores before starting the nursing program? There was little variability between the three levels of education students with the exception of an outlier in the senior group that broadened the overall range respective only to that group. Statistical data from all tests provided no statistical significance reported in Chapter Four. The lack of statistical significance may be attributable to the low response rates, and more specifically the lack of

randomization limiting confident generalizations to the population as a whole. The practical implications such as age and EI scores are noted throughout this chapter and deserve closer scrutiny. Initial assessment of the EI scores before staring the nursing program would offer some additional meaningful data.

Measurements of internal consistency (Cronbach alpha) noted in Chapter Four was encouraging as the majority of the scales and subscales supported the reliability reported by MHS regarding the EQ-i 2.0 tool. In a closer examination, there were five scales that had a wider discrepancy of Cronbach alpha scores as compared to MHS. It may be prudent to look more closely at these five scales (total EI scores, assertiveness, independence, decision-making, and stress composites) and conduct further tests in a future study to see if this was unique to this study or could be a persistent pattern needing further research or replication. Building on additional research could offer direction for nursing education about specific areas to strengthen in the nursing curriculum such as assertiveness training, decision-making, or how to handle stressful situations in nursing, all aspects of these specific scales.

The data presented in Chapter Four did not identify statistically significant results with relation to the student's level of nursing education and their EI scores. As indicated by the descriptive data and the ANOVA and ANCOVA, the three cohorts showed fairly similar means and standard deviations with minimal variation.

With the positive correlations between age and EI scores identified in this study it is important to examine the implications that maturity has on the development of EI. Mayer, Salovey and Caruso (2004) stated that research has started in this area and "the limited evidence presented thus far suggests that EI increases with age" (p. 209) and suggested continued EI measurements with a broader range of age groups to identify its developmental patterns. Bar-On

(2006) also revealed from his EI research that the older groups of participants scored higher than the younger groups on his EQ-i instrument. Bar-On stated "the results suggest that as one gets older, one becomes more emotionally and socially intelligent" (p. 16). More research focusing on the positive relationship between age and EI is warranted. The variables of maturity and life lessons, however, are more difficult to measure and quantify with respect to EI development due to the unique experiences of each individual.

Recommendations for Future Research and Application

The research findings from the study at hand offer an important perspective and foundation from which to build future studies that can be refined and examined from multiple perspectives. A valuable contribution from the outcome and analysis of research studies is the suggestions for future research. The following list offers suggestions on how to translate the data from this research study and move into practical application suggestions.

(1) While a quantitative study offers meaningful data, questions relating to education, and behavioral assessment can also be complimented by using a qualitative design. Nursing research could expand on this study into a qualitative design potentially asking managers and directors in clinical settings what they see as important characteristics in new graduates and offer suggestions of how to achieve these goals.

(2) Conduct more focused research on the accelerated BSN programs emerging nationally (AACH, 2015b) that enroll older students supported by the correlation data that older students have higher EI scores. One outlier was the oldest student age 52 had a high EI score and was at the sophomore level. This suggests more research into the correlation between age and EI may be warranted. Further research may be warranted to specifically examine this correlation with a larger sample size from multiple geographic locations.

(3) Since EI can be learned and improved (Bar-On, 2006; Beauvais et al., 2011; Caruso &

Salovey, 2004; Goleman, 1998; Mayer & Salovey, 1997; McQueen, 2003; Ozcan et al., 2010;

Stoller et al., 2013), consider bringing EI skills directly into the work environment in the form of

workshops, staff development goals, performance appraisals, and ongoing coaching to enhance

the nursing workforce already in the trenches and bolster their EI.

(4) Develop a research design that ensures randomization of participants to offer

confident generalizations of the population overall.

(5) Examine the EI levels of faculty to see if there is a correlation between faculty levels

of EI and student levels of EI?

This multi-faceted approach from the student education level as well as the existing RN

retention level may slow the turnover of new nurses in a profession that needs to retain every RN

in order to address the needs of quality patient care beginning with attention to the caregivers

themselves. The difference between a good nurse and a great nurse can be the EI that they

possess, and ongoing research can offer insight into this complex challenge.

Conclusion

Evans (1996) emphasized, "many interesting questions in the behavioral sciences

don't have simple answers" (p. 381). EI can be elusive to assess and is influenced by many

variables that confound simple answers. If the questions were easy, they would not be as

challenging or as meaningful to explore. EI encompasses an important part of nursing and

some may argue is more important than skills and technique (Ead, 2014; Freshwater &

Stickley, 2004; Gilkey, Caceda, & Kitts, 2010; Johns Hopkins University School of Nursing,

n.d.; Ohio State University College of Nursing, n.d.). Teaching clinical skills is a fairly

straightforward task, whereas EI is influenced by a myriad of variables such as age,

maturity, life experiences, self-awareness, and sensitive interpretation. It is neither easy

nor straightforward and that is why it is so fascinating to dissect, discuss, and analyze.

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Appendix A

Clinical Hour Formula Calculation MSU-CON

Formula: Clinical credits X hours per credit/week X # weeks /semester = # hours

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Example: 3 clinical lab credits X 3 hours per credit/week X 15 weeks/semester = 135 hours

Example: 1 college lab credit X 2 hours per credit week X 15 weeks/semester = 30 hours

(H. Melland, S. Raph, T. Seright, Personal Communication, February 2, 2016)

Appendix B

Paper Invitation (Stage 1)

Code: NSO, NJR, NSR_____
ESO, EJR, ESR _____

Dear Nursing/Education Major,

I am conducting a doctoral study on emotional intelligence in education and nursing undergraduate students.
Emotional intelligence refers to a distinct combination of emotional and social skills and competencies that influence our overall capability to cope effectively with the demands and pressures of work and life.

Criteria to participate in this study:
1.   You must be working toward your **first** four-year college degree and
        not have earned a previous degree.
2.   You must be 18 years of age or older.

If you meet the above criteria, I would like to invite you to complete an **online** emotional intelligence assessment instrument, the Emotional Quotient Inventory (EQ-i 2.0). Your assessment answers and results will be held in the strictest confidence and will be part of a group-generated report. You will not receive your individual assessment scores from this study. Each assessment will be confidential and no individual names will be identified.
The online assessment will take approximately **15-20 minutes** and is a total of **133 questions**.

Incentive for participating!!
As an incentive for completing this assessment your student email will be entered into a drawing for a **$50 Amazon gift card**. If you agree to participate please answer the following questions and provide your student contact email.

Please check the appropriate box below:
Year: Sophomore □   Junior   Senior

Gender: Male   Female   Age: _____

Student email:_____
(please print)

                                                                    Thank you!!

Sincerely,
Sally Rappold
Doctoral Candidate (EdD)
Department of Educational Leadership
The University of Montana

Appendix C

EQ-i 2.0 Open Email Invitation (Stage 2)

Dear <Respondent_FirstName>

My doctoral dissertation is entitled:
The Effect of Nursing Education on Emotional Intelligence Scores
Emotional Intelligence refers to a distinct combination of emotional and social skills and competencies that influence our overall capability to cope effectively with the demands and pressures of work and life.

I would like to invite you to complete an online emotional intelligence assessment instrument, the Emotional Quotient Inventory (EQ-i 2.0). Your assessment answers and results will be held in the strictest confidence and will be part of a group-generated report. No individual names will be identified. Student ID codes will be used for each assessment but will be totally confidential. All the files will be kept in a password protected computer file. The results of this assessment will be used to create a group report for my doctoral dissertation research study.

EI involves the most effective engagement of a combination of skills and competencies that best match the context of your unique situations. Therefore, there are no right or wrong answers. Participation in this research study is entirely voluntary. You are not required to answer any questions on this survey. You may refuse to take part in or withdraw from the study at any time without penalty.

As an incentive for completing this assessment your student email will be entered into a drawing for a **$50 Amazon gift card** that will be drawn from all of the completed assessments at each level.

The assessment will take approximately **15-20 minutes** and is a total of **133 questions**.

In order to access the EQ-i 2.0, click <Link>. You must complete the questions in one sitting or the system will not save your answers and you will need to start over from the beginning.

Please do not hesitate to contact me if you have any questions about this research study or the EQ-i 2.0 assessment.

Thank you for your time and participation in this important research study!
Sincerely,

Sally Rappold

Sally Rappold
Doctoral Candidate (EdD)
Department of Educational Leadership
The University of Montana

Appendix D

MSU-CON Lower and Upper Division Nursing Courses/Credits/Clinical Hours

Course #	Course Title	Credits/Lecture	Credits/Clinical/Lab
Sophomore (4th Semester)			
Assessment given at beginning of semester=0 clinical hours			
NRSG115	Nursing as a Profession	2	
NRSG220	Foundations of Ethical Nursing	2	
NRSG225	Foundations for Planning and Providing Clinical Nursing Care	2	2 clinical
NRSG258	Principles of Pathophysiology	3	
NRSG238	Health Assessment Across the Lifespan	2	2 lab
Junior (5th Semester)			
NRSG336	Nursing Pharmacotherapeutics	2	1 clinical lab
NRSG341	Psychosocial Nursing Concepts	2	1 clinical lab
NRSG352	Acute and Chronic Illness	2	3 clinical
NRSG377	Introduction to Community Nursing	2	
Junior (6th semester)			
Assessment given at end of semester= >500 clinical hours			
NRSG346	Nursing Care of Childbearing Family	2	3 clinical
NRSG348	Nursing Care of Children & Families	2	3 clinical
NRSG387R	Research in Healthcare	2	1 lab
Nursing Elective (if desired)		varies	varies
Senior (7th semester)			
NRSG437	Psychiatric Nursing	3	3 clinical
NRSG444	Care Management	3	
NRSG454	Urgent and Palliative Care	3	3 clinical
Nursing Elective (if desired)		varies	varies
Senior (8th semester)			
Assessment given at end of semester = >1000 clinical hours			
NRSG418	Issues in Health Policy & Health Care Economics	2	
NRSG477	Population Based Nursing Care in the Community	3	3 clinical
NRSG487	Nursing Leadership and Management Development	3	3 clinical
Nursing Elective (if desired)		varies	varies

(MSU-CON Catalogue 2016)

Appendix E

EQ-i 2.0 Assessment

EQ-i 2.0°
assess. predict. perform.

Please complete one of the following (First/Last Name or ID):

First Name: _____   Gender (optional): M   F

Last Name: _____   Age (optional): _____

ID Number: _____   Today's Date: ___ / ___ / ___
                                         MM   DD   YYYY

Instructions:

The EQ-i 2.0 provides you with an opportunity to describe yourself by indicating the frequency with which you feel, think, or act in the way described by each statement. There are five response options for each statement: Never/Rarely, Occasionally, Sometimes, Often, and Always/Almost Always.

Read each statement and decide which one of the five response options best describes the frequency of your thoughts, feelings, or actions. Indicate your response choice by circling the appropriate number.

If a statement does not apply to you, respond in such a way that will give the best indication of how you would possibly feel, think, or act. Although some of these statements may seem unclear or vague to you, choose the response option that seems to describe you best. There are no "right" or "wrong" answers and no "good" or "bad" choices. Answer openly and honestly by indicating how you actually are, and not how you would like to be or how you would like to be seen. Although there is no time limit, work at a steady pace and make sure that you consider and try to respond to each statement. This assessment must be completed in a single session.

	Never/ Rarely	Occasionally	Sometimes	Often	Always/ Almost Always
1. I keep calm in difficult situations.	1	2	3	4	5
2. I make rash decisions when I'm emotional.	1	2	3	4	5
3. I back down even when I know I am right.	1	2	3	4	5
4. It's hard for me to make decisions on my own.	1	2	3	4	5
5. I interrupt when others are speaking.	1	2	3	4	5
6. It's difficult for me to change my opinion.	1	2	3	4	5
7. I say "no" when I need to.	1	2	3	4	5
8. I accomplish my goals.	1	2	3	4	5
9. It's easy for me to make friends.	1	2	3	4	5
10. Looking at both my good and bad points, I feel good about myself.	1	2	3	4	5
11. I act in an environmentally friendly way.	1	2	3	4	5
12. It's hard for me to enjoy life.	1	2	3	4	5
13. I'm aware of how others feel.	1	2	3	4	5
14. I see situations as they really are.	1	2	3	4	5

EQ-i 2.0®
assess. predict. perform.

	Never/ Rarely	Occasionally	Sometimes	Often	Always/ Almost Always
15. I cling to others.	1	2	3	4	5
16. I pay attention to how I'm feeling.	1	2	3	4	5
17. When I'm really upset, I can't decide what to do.	1	2	3	4	5
18. I try to make a difference in society.	1	2	3	4	5
19. I feel sure of myself.	1	2	3	4	5
20. I like helping people.	1	2	3	4	5
21. I am assertive without being offensive.	1	2	3	4	5
22. I enjoy talking with people.	1	2	3	4	5
23. When I disagree with someone, I say so.	1	2	3	4	5
24. I am empathic.	1	2	3	4	5
25. I make mistakes.	1	2	3	4	5
26. I can't think clearly when I'm under stress.	1	2	3	4	5
27. I'm aware of the impact of my mood on others.	1	2	3	4	5
28. I am not happy with my life.	1	2	3	4	5
29. I stay positive even when things get difficult.	1	2	3	4	5
30. I am good at understanding the way other people feel.	1	2	3	4	5
31. I don't feel good about myself.	1	2	3	4	5
32. I am optimistic.	1	2	3	4	5
33. I do not like being in unfamiliar situations.	1	2	3	4	5
34. My impulsiveness creates problems for me.	1	2	3	4	5
35. I expect the worst.	1	2	3	4	5
36. I make realistic plans to achieve my goals.	1	2	3	4	5
37. I tend to worry about a problem rather than try to solve it.	1	2	3	4	5
38. I am easy to approach.	1	2	3	4	5
39. It's hard for me to share my feelings with others.	1	2	3	4	5
40. I know what triggers my emotions.	1	2	3	4	5
41. People confide in me.	1	2	3	4	5
42. It's hard for me to change my ways.	1	2	3	4	5
43. I recognize my own biases.	1	2	3	4	5
44. I am impulsive.	1	2	3	4	5
45. I avoid dealing with problems.	1	2	3	4	5
46. I am easily influenced by others.	1	2	3	4	5

Continued on the next page...

EQ-i 2.0®
assess. predict. perform.

	Never/ Rarely	Occasionally	Sometimes	Often	Always/ Almost Always
47. It's easy for me to express my feelings.	1	2	3	4	5
48. When I start talking, it's hard to stop.	1	2	3	4	5
49. I feel I have something to contribute.	1	2	3	4	5
50. I tend to react hastily.	1	2	3	4	5
51. I am enthusiastic.	1	2	3	4	5
52. I avoid hurting the feelings of others.	1	2	3	4	5
53. I am firm and direct when necessary.	1	2	3	4	5
54. I prefer a job in which I'm told what to do.	1	2	3	4	5
55. I thrive in challenging situations.	1	2	3	4	5
56. It's difficult for me to control my impulses.	1	2	3	4	5
57. I have a good sense of my strengths and weaknesses.	1	2	3	4	5
58. I seek out enriching experiences.	1	2	3	4	5
59. I like everyone I meet.	1	2	3	4	5
60. I am a contributing member of the groups to which I belong.	1	2	3	4	5
61. I contribute to my community.	1	2	3	4	5
62. I'm aware of how I feel.	1	2	3	4	5
63. I am self-motivated.	1	2	3	4	5
64. I lack self-confidence.	1	2	3	4	5
65. It's hard for me to do things on my own.	1	2	3	4	5
66. I am fun to be with.	1	2	3	4	5
67. It's hard for me to resist temptation.	1	2	3	4	5
68. It's hard for me to decide on the best solution when solving a problem.	1	2	3	4	5
69. It's hard to express my intimate feelings.	1	2	3	4	5
70. I'm in touch with other people's emotions.	1	2	3	4	5
71. I am happy.	1	2	3	4	5
72. I get stuck when thinking about different ways of solving a problem.	1	2	3	4	5
73. I make good use of my abilities.	1	2	3	4	5
74. I'm a team player.	1	2	3	4	5
75. I feel overwhelmed when I need to make a decision.	1	2	3	4	5
76. I strive to be the best I can be.	1	2	3	4	5

Continued on the next page...

EQ-i 2.0®
assess. predict. perform.

	Never/ Rarely	Occasionally	Sometimes	Often	Always/ Almost Always
77. I know when I need to be more objective.	1	2	3	4	5
78. I relate to the emotions of others.	1	2	3	4	5
79. I handle stress without getting too nervous.	1	2	3	4	5
80. I am hopeful about the future.	1	2	3	4	5
81. I need reassurance from others.	1	2	3	4	5
82. It's hard for me to compromise.	1	2	3	4	5
83. I see the best in people.	1	2	3	4	5
84. If I have trouble solving a problem, I get frustrated and give up.	1	2	3	4	5
85. I know when my emotions affect my objectivity.	1	2	3	4	5
86. I stand up for what I believe in.	1	2	3	4	5
87. I feel uneasy with last minute changes.	1	2	3	4	5
88. I perform well under pressure.	1	2	3	4	5
89. It's hard for me to accept myself just the way I am.	1	2	3	4	5
90. I have good thoughts about the future.	1	2	3	4	5
91. I respect the way others feel.	1	2	3	4	5
92. I am satisfied with my life.	1	2	3	4	5
93. When I am sad, I talk to people about it.	1	2	3	4	5
94. I have bad days.	1	2	3	4	5
95. I tell people what I think.	1	2	3	4	5
96. It's hard for me to make changes in my daily life.	1	2	3	4	5
97. I need other people more than they need me.	1	2	3	4	5
98. I expect things to turn out all right, despite setbacks from time to time.	1	2	3	4	5
99. I cope well with stressful situations.	1	2	3	4	5
100. I find it difficult to show people how I feel about them.	1	2	3	4	5
101. I'm excited about my life.	1	2	3	4	5
102. People think I am sociable.	1	2	3	4	5
103. I find it difficult to show affection.	1	2	3	4	5
104. I am driven to achieve.	1	2	3	4	5

Continued on the next page...

EQ-i 2.0®
assess. predict. perform.

	Never/ Rarely	Occasionally	Sometimes	Often	Always/ Almost Always
105. I recognize when I'm upset.	1	2	3	4	5
106. When I wake up in the morning, I look forward to the day.	1	2	3	4	5
107. Even when upset, I'm aware of what's happening to me.	1	2	3	4	5
108. It's hard for me to describe my feelings.	1	2	3	4	5
109. I try to make my life as meaningful as I can.	1	2	3	4	5
110. I am sensitive to the feelings of others.	1	2	3	4	5
111. I have a good sense of what is going on around me.	1	2	3	4	5
112. I let my emotions get in the way when making decisions.	1	2	3	4	5
113. I handle upsetting problems well.	1	2	3	4	5
114. I am more of a follower than a leader.	1	2	3	4	5
115. I care about social issues.	1	2	3	4	5
116. I have a positive outlook.	1	2	3	4	5
117. It's hard for me to smile.	1	2	3	4	5
118. I look for ways to improve myself.	1	2	3	4	5
119. Things bother me.	1	2	3	4	5
120. I need things to be predictable.	1	2	3	4	5
121. I understand how the emotions of others affect me.	1	2	3	4	5
122. Change makes me uneasy.	1	2	3	4	5
123. I do not react well to stressful situations.	1	2	3	4	5
124. I care about other people's feelings.	1	2	3	4	5
125. I know which emotions affect my performance.	1	2	3	4	5
126. I am content.	1	2	3	4	5
127. I only care about what is best for others.	1	2	3	4	5
128. I think highly of myself.	1	2	3	4	5
129. I have good relationships with others.	1	2	3	4	5
130. I respect myself.	1	2	3	4	5
131. I know the right answer.	1	2	3	4	5
132. I'm happy with who I am.	1	2	3	4	5
133. My responses to the preceding sentences were open and honest.	1	2	3	4	5

Appendix F

Letter of Permission from Dean, MSU-CON

MONTANA
STATE UNIVERSITY
College of
NURSING

July 21, 2016

Sally Rappold, BSN, MSN, EdD Student
Department of Educational Leadership
Phyllis J. Washington College of Education and Human Sciences
University of Montana
Missoula, MT

Dear Ms. Rappold:

Main Campus
Sherrick Hall
P.O. Box 173560
Bozeman, MT 59717-3560

Tel   (406) 994-3783
Fax   (406) 994-6020

Billings Campus
1500 University Drive
MSU-Billings Campus, Box 574
Billings, MT 59101

Tel   (406) 657-2912
Fax   (406) 657-1715

Great Falls Campus
400 15th Ave. South, Suite 106
Great Falls, MT 59405

Tel   (406) 771-4450
Fax   (406) 771-4449

Missoula Campus
32 Campus Drive #7416
Missoula, MT 59812-7416

Tel   (406) 243-6515
Fax   (406) 243-5745

As dean of the College of Nursing at Montana State University, I give you
permission to distribute the Emotional Quotient (EQ-i 2.0) Assessment to
sophomore, junior (second semester) and senior (second semester) students in the
College of Nursing as needed for data collection for your dissertation research.
This data will support your research examining the difference between the clinical
hours and EI scores at these three levels of clinical training.

My best wishes as you conduct your dissertation research and ultimately complete
your doctoral education. Please do not hesitate to contact me if I can be of further
assistance.

Sincerely,

Helen Melland, PhD, RN
Dean and Professor

Mountains & Minds

Appendix G

Email Approval from

Chair, Department of Teaching and Learning

Phyllis J. Washington College of Education and Human Sciences

The University of Montana

Lawrence, Adrea

Wed 10/26/2016, 9:32 AM
Rappold, Sally
Inbox
Thank you for this, Sally. This is a very interesting study! Please let me know when IRB has approved your plan, and we will help get you set up to conduct your survey.

Best,
Adrea.
_____
adrea lawrence, ph.d. | associate professor
chair, department of teaching and learning
phyllis j. washington college of education and human sciences

Appendix H

EQ-i 2.0 Open Email Invitation (Stage 2) Reminder

Dear <Respondent_FirstName>

This is a second reminder to participate in the doctoral dissertation entitled:

The Effect of Nursing Education on Emotional Intelligence Scores

I would like to invite you to complete an online emotional intelligence assessment instrument, the Emotional Quotient Inventory (EQ-i 2.0). Your assessment answers and results will be held in the strictest confidence and will be part of a group-generated report. No individual names will be identified. Student ID codes will be used for each assessment but will be totally confidential. All the files will be kept in a password protected computer file. The results of this assessment will be used to create a group report for my doctoral dissertation research study.

EI involves the most effective engagement of a combination of skills and competencies that best match the context of your unique situations. Therefore, there are no right or wrong answers. Participation in this research study is entirely voluntary. You are not required to answer any questions on this survey. You may refuse to take part in or withdraw from the study at any time without penalty.

As an incentive for completing this assessment your student email will be entered into a drawing for a **$50 Amazon gift card** that will be drawn from all of the completed assessments at each level.

The assessment will take approximately **15-20 minutes** and is a total of **133 questions**.

In order to access the EQ-i 2.0, click <Link>. You must complete the questions in one sitting or the system will not save your answers and you will need to start over from the beginning.

Please do not hesitate to contact me if you have any questions about this research study or the EQ-i 2.0 assessment.

Thank you for your time and participation in this important research study!

Sincerely,

Sally Rappold

Sally Rappold
Doctoral Candidate (EdD)
Department of Educational Leadership
The University of Montana

Appendix I

IRB Approval Letter -The University of Montana (p.1)

UNIVERSITY OF MONTANA

INSTITUTIONAL REVIEW BOARD
for the Protection of Human Subjects in Research
FWA 00000078
Research & Creative Scholarship
Interdisciplinary Science Building 104
University of Montana
Missoula, MT 59812
Phone 406-243-6672

Date: November 4, 2016

To: Sally Rappold, Education
Dr. Patty Kero, Educational Leadership

From: Paula A. Baker, IRB Chair and Manager

RE: IRB #223-16: "The Effect of Nursing Education on Emotional Intelligence Scores"

Your IRB proposal cited above has been **APPROVED** under **expedited review** by the Institutional Review Board in accordance with the Code of Federal Regulations, Part 46, section 110. Expedited approval refers to research activities that (1) present no more than minimal risk to human subjects, and (2) fit within the following category for expedited review as authorized by 45 CFR 46.110 and 21 CFR 56.110:

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

A waiver for the obtainment of <u>written</u> informed consent is granted for this project, as the following conditions apply:
1. Participation involves no more than minimal risk to the subjects; and
2. No procedures are involved for which written consent is normally required outside of the research context.

<u>Amendments:</u> Any changes to the originally-approved protocol must be reviewed and approved by the IRB *before* being made (unless extremely minor). Requests must be submitted using <u>Form RA-110</u>.

<u>Unanticipated or Adverse Events:</u> You are required to timely notify the IRB if any unanticipated or adverse events occur during the study, if you experience an increased risk to the participants, or if you have participants withdraw from the study or register complaints about the study. Use <u>Form RA-111</u>.

<u>Continuation:</u> Federal and University of Montana IRB policy requires you to file an annual Continuation Report (<u>Form RA-109</u>) for expedited studies. You must file the report within 30 days <u>prior</u> to the expiration date, which is **November 3, 2017**. *Tip: Put a reminder on your calendar now.* A study that has expired is no longer in compliance with federal or University IRB policy, and all project work must cease immediately.

<u>Study Completion or Closure:</u> Finally, you are also required to file a Closure Report (<u>Form RA-109</u>) when the study is completed or if the study is abandoned. See the directions on the form.

Please contact the IRB office with any questions at (406) 243-6672 or email <u>irb@umontana.edu</u>.

Appendix I (cont.)

Form RA-108
(Rev. 09/16)

Institutional Review Board
NOV 3 2016
Revised
University of Montana

THE UNIVERSITY OF MONTANA-MISSOULA
Institutional Review Board (IRB)
for the Protection of Human Subjects in Research
APPLICATION FOR IRB REVIEW

IRB Protocol No.:
223-16

At the University of Montana (UM), the Institutional Review Board (IRB) is the institutional review body responsible for oversight of a research activities involving human subjects as outlined in the U.S. Department of Health and Human Services' Office of Human Research Protection and the National Institutes of Health, Inclusion of Children Policy Implementation.

Instructions: A separate application must be submitted for each project. IRB proposals are approved for no longer than one year and must be continued annually (unless Exempt). Faculty and students may email the completed form as a Word document to IRB@umontana.edu, or submit a hardcopy (no staples) to the IRB office in the Interdisciplinary Sciences Building, room 104. Student applications must be accompanied by email authorization by the supervising faculty member or a signed hard copy. *All fields must be completed. If an item does not apply to this project, write in: N/A.* Questions? Call the IRB office at 243-6672.

1. **Administrative Information**

Project Title: The Effect of Nursing Education on Emotional Intelligence Scores	
Principal Investigator: Sally Rappold	UM Position: Graduate Student
Department: Education	Office location: Corbin 231
Work Phone:	Cell Phone:

2. **Human Subjects Protection Training** *(All researchers, including faculty supervisors for student projects, must have completed a self-study course on protection of human research subjects* **within the last three years** *and be able to supply the "Certificate(s) of Completion" upon request. If you need to add rows for more people, use the Additional Researchers Addendum.*

All Research Team Members (list yourself first)	PI	CO-PI	Faculty Supervisor	Research Assistant	DATE COMPLETED IRB-approved Course mm/dd/yyyy
Name: Sally Rappold Email:	☒	☐	☐	☐	10/20/2016 ✓
Name: Dr. Patty Kero Email:	☐	☐	☒	☐	04/18/2016 ✓
Name: Email:	☐	☐	☐	☐	
Name: Email:	☐	☐	☐	☐	

3. **Project Funding** *(If federally funded, you must submit a copy of the abstract or Statement of Work.)*

Is grant application currently under review at a grant funding agency? ☐Yes *(If yes, cite sponsor on ICF if applicable)* ☒No			Has grant proposal received approval and funding? ☐Yes *(If yes, cite sponsor on ICF if applicable)* ☒No		
Agency	Grant No.	e-Prop #	Start Date	End Date	PI on grant

For UM-IRB Use Only

IRB Determination:

____ Not Human Subjects Research
____ Approved by Exempt Review, Category # ____ *(see memo)*
X Approved by Expedited Review, Category # **7** *(see Note to PI)*
____ Full IRB Determination   **w/Waiver**
   ____ Approved *(see* **Note to PI***)*
   ____ Conditional Approval *(see memo)* – IRB Chair Signature/Date: _____
      ____ Conditions Met *(see* **Note to PI***)*
   ____ Resubmit Proposal *(see memo)*
   ____ Disapproved *(see memo)*

Note to PI: Non-exempt studies are approved for one year only. Use any attached IRB-approved forms (signed/dated) as "masters" when preparing copies. If continuing beyond the expiration date, a continuation report must be submitted. Notify the IRB if any significant changes or unanticipated events occur. When the study is completed, a closure report must be submitted. Failure to follow these directions constitutes non-compliance with UM policy.

Risk Level: Minimal

Final Approval by IRB Chair/Manager: *(signature)* Date: 11/4/2016 Expires: 11/3/201'

Appendix J

IRB Approval Letter /Email
Montana State University

Fri 9/30/2016, 8:42 AM
From: Rappold, Sally;
CC: Baker, Paula

Hi Sally, We have a cooperative institutional agreement regarding IRB oversight with UM, so it is not necessary for you to submit a separate protocol to us if you have UM IRB approval and oversight. Thanks for checking. Regards, Mark

Mark T. Quinn, Ph.D.
Chair, Institutional Review Board
Montana State University
Bozeman, MT 59717

Appendix K

Letter of Approval to Use the EQ-i 2.0 Assessment in Student Research Study
Multi-Health Systems Inc.

R&D <r&d@mhs.com>

Thu 6/1, 1:51 PM
Rappold, Sally
Hello,

Your 30% Student Research Discount has been extended until **October 28, 2017** for your study entitled 'The Effect of Nursing Education on Emotional Intelligence'.

This discount grants you 30% off of related product orders over $50 (before shipping) as well as access to scored datasets for a fee of $6 per administration online.

Conditions
1)   Your discount expires one year from today. If you require a discount beyond the expiry date please re-apply at that point.
2)   Please bear in mind that scored datasets are to be used for the collection of data only and cannot be used to provide feedback to respondents. If you are intending to provide feedback please ensure that you order one of our available reports. Your 30% discount will apply to the report cost.
3)   Your research is important to us, as agreed upon in your application please remember to send a report of your results to: researchsummaries@mhs.com following the completion of your study.

Thank you, and good luck with your research,

MHS Client Services

Appendix L

Internal Consistency EQ-i 2.0 Normative Sample

The following table summarizes the internal consistency (Cronbach's alpha) values for the EQ-i 2.0 Total EI score, composite scales, and subscales in the EQ-i 2.0 overall normative sample and within gender by age subsamples. Alpha values range from 0.00 to 1.00 with higher values supporting the reliability of the EQ-i 2.0.

Scale	# of items	General (Total Sample)	EQ-i 2.0 Normative Group									
			Male					Female				
			18–29	30–39	40–49	50–59	60+	18–29	30–39	40–49	50–59	60+
Total EI	118	.97	.97	.97	.97	.97	.97	.97	.97	.98	.97	.98
Self-Perception Composite	24	.93	.93	.93	.93	.92	.92	.94	.93	.94	.94	.93
Self-Regard	8	.91	.92	.91	.90	.89	.86	.92	.91	.92	.92	.90
Self-Actualization	9	.88	.88	.88	.88	.88	.87	.90	.89	.90	.88	.87
Emotional Self-Awareness	7	.81	.79	.81	.81	.80	.81	.80	.80	.81	.81	.80
Self-Expression Composite	23	.88	.88	.88	.88	.87	.86	.88	.88	.88	.88	.89
Emotional Expression	8	.84	.83	.85	.84	.84	.82	.83	.85	.82	.84	.82
Assertiveness	7	.77	.76	.75	.75	.77	.77	.78	.77	.79	.78	.79
Independence	8	.81	.82	.79	.80	.75	.75	.81	.82	.80	.81	.82
Interpersonal Composite	23	.92	.92	.92	.92	.92	.93	.92	.91	.93	.92	.93
Interpersonal Relationships	7	.86	.87	.89	.87	.86	.87	.86	.86	.88	.86	.87
Empathy	9	.88	.86	.88	.87	.88	.88	.87	.85	.88	.86	.86
Social Responsibility	6	.80	.77	.81	.78	.81	.82	.80	.80	.81	.80	.82
Decision Making Composite	24	.88	.87	.88	.89	.88	.88	.89	.86	.87	.87	.88
Problem Solving	8	.85	.83	.85	.86	.85	.85	.85	.84	.84	.82	.85
Reality Testing	9	.81	.80	.80	.79	.80	.84	.79	.80	.83	.81	.81
Impulse Control	8	.77	.79	.75	.79	.74	.75	.81	.75	.77	.76	.77
Stress Management Composite	24	.92	.90	.92	.91	.91	.92	.92	.91	.92	.92	.92
Flexibility	8	.80	.78	.80	.77	.78	.80	.82	.83	.79	.80	.82
Stress Tolerance	8	.87	.86	.84	.85	.86	.89	.86	.85	.86	.87	.87
Optimism	8	.89	.88	.90	.88	.89	.88	.89	.89	.90	.89	.89
Happiness	8	.92	.91	.91	.91	.92	.90	.90	.91	.92	.93	.92
N		4,000	400	400	400	400	400	400	400	400	400	400

Appendix M

EQ-i 2.0 Scale

Scale/Subscale	Maximum score
Total EI	140
Self-Perception Composite	130
Self Regard	121
Self-Actualization	127
Emotional Self-Awareness	132
Self-Expression Composite	138
Emotional Expression	131
Assertiveness	133
Independence	124
Interpersonal Composite	132
Interpersonal Relationships	124
Empathy	129
Social Responsibility	129
Decision Making Composite	137
Problem Solving	125
Reality Testing	134
Impulse Control	129
Stress Management Composite	135
Flexibility	137
Stress Tolerance	128
Optimism	123
Happiness	120

D. Logan, Psychometric Analysis, MHS, personal communication, July 11, 2016

Appendix N

Gender and Age

School	Gender	Frequency	Percent
Nursing	Male	3	5.9
	Females	48	94.1
Education	Male	1	14.3
	Females	6	85.7

School	Age	Frequency	Percent
Nursing	19	4	7.8
	20	9	17.6
	21	7	13.7
	22	10	19.6
	23	4	7.8
	24	4	7.8
	25	4	7.8
	27	2	3.9
	28	1	2.0
	29	2	3.9
	30	1	2.0
	35	2	3.9
	52	1	2.0
Total	--	51	100.0
Education	19	2	28.6
	20	2	28.6
	22	2	28.6
	24	1	14.3
Total	--	7	100.0

Appendix O

Education Levels and Student Responses by Campus (Stage 1 & Stage 2)

School	Level	Frequency	Percent
Nursing	Sophomore	18	35.3
	Junior	14	27.5
	Senior	19	37.3
	Total	51	100.0
Education	Sophomore	3	42.9
	Junior	1	14.3
	Senior	3	42.9
	Total	7	100.0

	Stage 1 Questionnaire Return			Stage 2 Online EQ-I 2.0 Assessment Return		
	Sophomore	Junior	Senior	Sophomore	Junior	Senior
Billings	6	16	20	5	2	5
Bozeman	29	0	0	11	0	0
Great Falls	9	12	12	0	5	3
Kalispell	0	7	6	0	2	5
Missoula	8	12	9	2	5	6
Total	52	47	47	18	14	19

Appendix P

Comparison of Internal Consistency (Cronbach's alpha) between
reported MHS normative sample and the current Research Study Data

Scale	MHS Reported Cronbach's alpha	Current Study Cronbach's alpha
Total EI	.97	.83
Self-Perception Composite	.93	.92
Self-Regard	.91	.93
Self-Actualization	.88	.84
Emotional Self-Awareness	.81	.82
Self-Expression Composite	.88	.78
Emotional Expression	.84	.88
Assertiveness	.77	.53
Independence	.81	.55
Interpersonal Composite	.92	.90
Interpersonal Relationships	.86	.83
Empathy	.88	.87
Social Responsibility	.80	.72
Decision Making Composite	.88	.60
Problem Solving	.85	.81
Reality Testing	.81	.81
Impulse Control	.77	.74
Stress Management Composite	.92	.61
Flexibility	.80	.82
Stress Tolerance	.87	.89
Optimism	.89	.86
Happiness	.92	.88