EVOLUTION OF EXPERTISE AMONG
CRITICAL CARE NURSES

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A DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Education in the
Department of Educational Leadership,
Policy, and Technology Studies
in the Graduate School of
The University of Alabama

TUSCALOOSA, ALABAMA

2016
ABSTRACT

According to the literature, development of expertise is directly correlated with three fundamental requirements: a) a tremendous amount of dedicated work, b) time, and c) relevant experience. Experts in most domains attain their highest level of performance after 10,000 hours of dedicated practice. This is equivalent to ten years of dedicated and relevant experience within the expert’s respective domain. Within the domain of critical care nursing the skill level of the bedside nurse has been directly correlated with quality patient outcomes, greater reimbursements, and decreased operational costs.

The purpose of this grounded theory study was to explore the emic perspective of the critical care nurse as it relates to expertise, expert performance and the critical care nurses journey in the achievement of expert performance. Benner’s model of skill acquisition, Novice to Expert, provided the theoretical structure and framework. However, as expertise was considered within the dynamic critical care environment, Ericsson and Smith’s expert performance approach was used to strengthen Benner’s Novice to Expert Model providing valuable structure and insight into the concept of expertise. As themes were identified the expert performance approach provided valuable evaluative strategies to facilitate understanding of expert nuances and processes within critical care practice.

Study findings supported three major themes: a) experience with sub-themes diversity and intensity; b) knowledge with the sub-theme critical reasoning; and c) self-actualization with sub-themes personal presence, and life-long learning. Furthermore, data findings supported the researcher’s assertion that “tacit” knowledge is a more appropriate term to represent the requisite
knowledge base and diversity of experience demonstrated by nurses in actual clinical practice rather than the term “intuitive grasp” as found in current literature.

Research findings of this study will help educators and nursing leadership better understand the transition from novice to expert critical care nurse within the context of clinical nursing practice. In so doing, nursing leadership will have the tools and the added insight to facilitate that transition in the most efficient manner possible thereby improving not only professional satisfaction but patient outcomes and cost as well.
DEDICATION

“I can do all things through Christ who strengthens me.” Philippians 4:13
LIST OF ABBREVIATIONS AND SYMBOLS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>N or n</td>
<td>Total number of members of sample or population.</td>
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<tr>
<td>ANOVA</td>
<td>The one-way analysis of variance (ANOVA) is used to determine whether there are any significant differences between the means of three or more independent (unrelated) groups.</td>
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<tr>
<td>%</td>
<td>Percentage is per-cent which means parts per hundred.</td>
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<tr>
<td>et al.</td>
<td>And others</td>
</tr>
<tr>
<td>r</td>
<td>The main result of a correlation is called the correlation coefficient. It ranges from -1.0 to +1.0. The closer r is to +1 or -1, the more closely the two variables are related. If r is close to 0, it means there is no relationship between the variables.</td>
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<td>=</td>
<td>Equal to</td>
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<td>&lt;</td>
<td>Less than</td>
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<tr>
<td>&gt;</td>
<td>Greater than</td>
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<tr>
<td>SD</td>
<td>Standard deviation from the mean.</td>
</tr>
<tr>
<td>β</td>
<td>Beta coefficients are the estimates resulting from an analysis performed on variables that have been standardized so that they have variances of 1.</td>
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<tr>
<td>F value</td>
<td>F ratio is the ratio of two mean square values.</td>
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<tr>
<td>p value</td>
<td>p-value is defined as the probability of obtaining a result equal to or &quot;more extreme&quot; than what was actually observed, assuming that the null hypothesis is true.</td>
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<tr>
<td>&amp;</td>
<td>And</td>
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<tr>
<td>RN</td>
<td>Registered Nurse</td>
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http://: HyperText Transfer Protocol is the underlying protocol used by the World Wide Web and defines how messages are formatted and transmitted.

n.d. No date
ACKNOWLEDGEMENTS

It is difficult to adequately express the depth and breadth of the personal growth that occurs through the dissertation process or the trials and tribulations that in turn forced that self-discovery and transformation. This would not have been possible without the tremendous support of my husband, my family, and my dear friends who supported and encouraged me when I struggled, who tolerated the long hours locked away, and through it all, who provided me the motivation and purpose to continue.

I would like to acknowledge and thank Dr. Melondie Carter, my dissertation chair, who had the difficult task of keeping me focused and on track throughout this process. Thank you for the tissue and encouragement when I didn’t think this was possible. Thank you for your patience, your guidance and your honest feedback. More importantly, thank you for believing in me.
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CHAPTER 1
INTRODUCTION

The profession of nursing is the most trusted profession in the United States; caring for our fellow human beings with compassion and integrity at their most vulnerable time (Hanks, 2013; Morrison & Symes, 2011). Nurses are highly skilled educated professionals who are called upon every day to incorporate accurate clinical assessment skills; decisive critical thinking and judgment skills in a dynamic, oftentimes emotionally charged situation to effectively manage multiple patients with complex emotional and medical conditions (Kramer et al., 2013). The nurses’ role is highly complex and demanding as they maintain a constant vigil at the patient’s bedside twenty-four hours a day, seven days a week to ensure optimal healthcare outcomes. Through this vigil, those patient outcomes will be directly impacted by the expertise and care of the bedside nurse (Lachman, 2012).

In 2013 the United States Department of Labor commissioned a comprehensive research project to explore issues related to the aging workforce in healthcare today. Evidence from that research study asserted that the average age of professional nurses in the United States is fifty years of age (Harrington & Heidkamp, 2013). The nursing workforce has continued to age as baby boomers, nurses born between 1943 and 1964, have quickly approached retirement age and are leaving the workforce in large numbers. At the same time, millennials, nurses born between 1980 and 2000, are entering the nursing workforce in large numbers to fill that void (Chambers, 2010; Chung & Fitzsimons, 2013). However, millennials have presented unique challenges to nursing leadership through rapid turnover as they are more transient than previous generations.
Fifty-seven percent of millennials change jobs within the second year of their professional nursing practice creating rapid turnover and lower retention rates in the nursing workforce than ever before (Chambers, 2010; Chung & Fitzsimons, 2013). Pandemically healthcare institutions and nursing leadership are concerned with the impact that high turnover rates will have on patient outcomes and operating costs (Lachman, 2012; Chung & Fitzsimons, 2013). As previously noted, quality outcomes are directly impacted by the expertise and care of the professional nurse at the bedside (Christensen & Hewitt-Taylor, 2006; Lachman, 2012).

According to the literature the development of expertise is directly correlated with three fundamental elements: a) it requires a tremendous amount of dedicated work, b) development over time, and c) relevant experience (Ericsson & Charness, 1994). Experts in most domains attain their highest level of performance after 10,000 hours of dedicated practice which is equivalent to ten years of relevant experience (Ericsson & Lehmann, 1996; Weiss & Shanteau, 2014). In light of the current transient trends in the healthcare workforce this information has presented an interesting dilemma to nursing leadership compounding an already difficult situation. It is grossly apparent that there is a vast disparity between the requisite ten years of experience required to attain expert skills and expertise in professional practice and the two year throughput of younger nurses currently entering the nursing profession (Chung & Fitzsimons, 2013). Nursing leadership is faced with a daunting task as they struggle to improve retention rates and attain and maintain quality patient outcomes. It is imperative that we as professionals explore, define and understand what it is to be an expert in clinical nursing practice. With this knowledge and understanding, we will have the tools and resources to develop strategic learning opportunities to facilitate professional growth and personal development.
Benner, modeling the Dreyfus Model of Skill Acquisition conducted extensive research into the development of clinical expertise through the practice of nursing care (Altmann, 2007). The model was based on situated performance and experiential learning (Benner, 2004) and asserted that individuals, while acquiring and developing skills, must “pass through five levels of proficiency: novice, advance beginner, competent, proficient, and expert” (Benner, 2001, p. 13). Further, Dreyfus and Dreyfus (1980) have asserted that higher levels of performance can only be attributed to concrete experience and prior knowledge. The degree to which the clinical nurses successfully master both skill and knowledge in the context of professional nursing practice will determine the success of the patient experience (Christensen & Hewitt-Taylor, 2006).

Following this model of skill acquisition expertise is understood to be a developmental skill founded in situated cognition and contextual experience (Cash, 1995). Benner’s work focused on differentiating between practical and theoretical knowledge. She attempted to explain the rich nursing knowledge embedded within clinical practice through descriptive exemplars (Altmann, 2007; Benner, 2001). In Cash’s (1995) critique of Benner’s seminal work, *Novice to Expert*, Cash asserted that the entire impetus of the study was so intently focused on the discovery of “embedded nursing knowledge within nursing practice” that Benner failed to explore or understand the actual ‘nurse’ providing the care (p. 531). Benner strove to examine expert knowledge, but failed to examine the expert nursing professional (Cash, 1995). Drawing from the Dreyfus and Benner models of skill acquisition it would appear that the definition of expertise would be socially determined and contextually grounded in experience (Altmann, 2007; Benner, 2004; Brykczynski, 2010; Cash, 1995; Dreyfus & Dreyfus, 1980). Most criticisms of this philosophy have focused on the fact that the research has not been validated through further research (Altmann, 2007). Benner (2001) acknowledged the perceived
limitations of intuitive practice found within her own definition of ‘expert comportment’. She encouraged further research into the complexities of the expert nurse to help bring clarity to clinical practice strengthening the current body of knowledge. Lyneham, Parkinson, & Denholm (2008) asserted that further research into the concepts of intuitive, clinical reasoning was needed to legitimize the definition of expert nursing practice.

Benner’s principles were unconditionally endorsed by nursing leadership and quickly resonated within the profession of nursing as the reality of day-to-day practice was vividly captured in Benner’s descriptions and conclusions. The researcher has acknowledged the significant contribution of Benner, but also recognizes the need to validate and build upon her conclusions; particularly in the area of expertise.

Current nursing literature has failed to provide clear criteria and expectations for defining the expert nurse and the transition in clinical practice from ‘proficient’ to ‘expert’ nurse. English (1992) has asserted that the concepts related to expertise in clinical nursing practice have not been clearly articulated or fully understood within the current body of literature warranting further exploration. Furthermore, an exploration of this particular phenomenon would provide strength to the current body of research asserting the validity of the profession of nursing within healthcare. Additional development would add rigor and validity to the concepts of expertise. The intent of this research study was to build upon the current body of literature to add clarity and strengthen current evidence. However, Benner failed to adequately explore the concepts of expertise from the emic perspective of the nurse. The aim of this study then, was to explore the concepts of expertise, expert performance and the evolution of expertise in critical care nursing practice utilizing a grounded theory approach.
Purpose of the Study

The purpose of this study was to explore the concepts of expertise, expert performance and the evolution of expertise from the perspective of the critical care nurse as it related to clinical practice in the critical care environment. The study addressed the following questions:

a) How would you define the expert nurse in clinical practice in critical care?

b) What criteria or characteristics would you use to define expert performance in clinical practice in the critical care unit?

c) How does one become an expert in critical care?

d) In your experience what factors have supported or hindered your professional development?

Significance of Study

The concept of expertise refers to the characteristics, skills, and knowledge that separate experts from novices. In some domains research has defined objective criteria for identifying experts, who are consistently able to exhibit superior performance (Ericsson, Charness, Feltovich, & Hoffman, 2006). However, in spite of significant advances in our understanding of the factors that influence the development of reproducible expert performance in the critical care environment, we have only just begun to unravel the complexities of expertise in clinical practice. Until we are able to capture the essential aspects of expertise and expert performance in professional nursing practice it seems unlikely that we will make progress in assessing its structure and development. The impetus for research on expert performance was the desire to learn how exceptional individuals consistently do what they do and equally important, how they achieved and maintained those performance standards? Identification and understanding of the mitigating factors contributing to the successful development of expertise would enable nursing
leadership and nursing educators to successfully mentor and coach the novice nurse as they begin the developmental journey to expertise and expert performance (Ericsson & Towne, 2010). This knowledge can be described and shared with others to benefit the development of educational opportunities that facilitate the critical care nurses progress toward expertise. By examining the development and progress of expert performers we should be able to develop practice environments and foster learning methods that facilitate the development of the fundamental skills required to advance their skills to higher levels (Ericsson, et. al., 2006).

For the critical care nurse to achieve clinical excellence and expertise, it is essential that the individual have a clear understanding of what it is to be an expert. The requisite skills and behaviors that define excellence and expert performance in practice should be clearly defined and articulated (English, 1992). Other domains of expertise, such as sports, music, and chess, during the last twenty years have developed approaches that have not been grounded on subjective social criteria and perceptions of expertise. Rather, their approaches have been grounded on the measurement and analysis of reproducibly superior performance on identified skills and behaviors essential to the specific domain (Ericsson, Whyte, & Ward, 2007). The expert performance approach begins the process of understanding and defining expert performance by identifying the essential characteristics of expertise, the reproducible cognitive skills and behaviors of expert performance and then work deductively to explain the development of underlying structures in the acquisition of expertise (Ericsson, Roring, & Nandagopal, 2007).

**Conceptual/ Theoretical Framework**

Benner’s model of skill acquisition (2001), Novice to Expert, provided the theoretical structure and framework utilized in this study to build a more definitive definition of
expertise and expert performance. However, when expertise was considered within the dynamic critical care environment, Ericsson and Smith’s (2008) expert performance approach provided focus and support to the Benner framework by facilitating the identification of essential skills and behaviors indicative of expertise and expert performance in critical care. The expert performance approach strengthened Benner’s Novice to Expert Model by providing valuable structure and insight into the concept of expertise. As underlying expert themes were identified within critical care practice the expert performance approach provided valuable evaluative strategies to facilitate understanding of expert nuances and processes within critical care practice. Incorporating the expert performance approach to support Benner’s novice to expert model facilitated a broader more comprehensive understanding of the interactions between human cognitive thought processes and the development of and application of expertise and expert clinical practice (Hauber, Cormier, & Whyte IV, 2010).

Novice to Expert

Patricia Benner is a noted nursing philosopher, educator, and researcher (Brykczynski, 2010). In her seminal work From Novice to Expert: Excellence and Power in Clinical Nursing Practice published in 1984, she attempted to discover and elucidate knowledge embedded within clinical nursing practice. Through detailed exemplars of actual nursing practice Benner was able to accurately describe the ‘art’ of clinical nursing practice. Her ideas were based upon the difference between practical and theoretical knowledge and the significance of rich embedded knowledge held within clinical nursing practice. She further stated that nursing practice has been studied primarily from a sociological perspective. As a result, we as a professional body have learned a great deal about role relationships and the acculturation into nursing practice, but, we have not learned as much about the actual knowledge embedded within clinical practice nor have
we explored the nuances of the ‘nurse’. Further, Benner (2001) has asserted that there is valuable nursing knowledge embedded within nursing practice that accrues over time and through experience that has been largely left unexplored. This practical knowledge has gone unnoticed because the difference between practical and theoretical knowledge has been misunderstood without sufficient research.

The skill acquisition model was based in situated performance and experiential learning (Benner, 2004) and asserted that individuals, while acquiring and developing skills, must “pass through five levels of proficiency: 1) novice, 2) advance beginner, 3) competent, 4) proficient, and 5) expert” (Dreyfus & Dreyfus, 1980; Benner, 2001, p.13; 2004; Altmann, 2007). The model has a developmental component in that skill acquisition focused on the strengths of the individual stages rather than deficits, and described practice capacities rather than traits or talents that could be compared across time and situation (Benner, 2001). During Benner’s research Stuart and Hubert Dreyfus served as expert consultants to ensure consistent and accurate application of the skill acquisition model (Benner, 2004).

The study of expertise across divergent domains, and particularly in the field of cognitive psychology, has consistently described the evolution of expertise as a developmental process; one that through experience will evolve from a linear structured thought process to a global and comprehensive thought process. Regardless of the specified domain of interest all individuals must traverse the same evolutionary process in their ascension to expert status. According to the Novice to Expert philosophy the five stages of skill acquisition were defined as:

Novice. The novice or beginner has no experience in the situation(s) in which they would be expected to perform. The novice must be taught rules to govern practice. Thought processes remain linear with a universal application of those rules. The novice does not have the ability to
use discretionary judgment and lacked the confidence to demonstrate safe clinical practice requiring continual verbal and physical support and guidance to safely interact within the clinical setting (Benner, Tanner, & Chelsa, 2009; Benner, 2004; Benner, 2001).

**Advanced Beginner.** The advanced beginner demonstrates minimally acceptable performance because the nurse has had prior relevant experience in actual clinical situations. At this stage the advanced beginner has developed skill and proficiency in some aspects of the practice area. However, they still require support and guidance within the clinical setting to demonstrate safe clinical practice. Knowledge develops incrementally and the advanced beginner will struggle with prioritization and time management (Benner, Tanner, & Chelsa, 2009; Benner, 2004; Benner, 2001).

**Competent Stage.** The competent nurse has been on the same job or in similar situations for approximately two to three years. He/she has developed confidence in his/ her actions and decision-making processes demonstrating effective prioritization and time management no longer requiring supportive direction and guidance. The competent nurse continues to recognize situations in terms of their component individual parts without fully comprehending the “big picture”. They are able to prioritize, and establish a specific plan of care based on a conscious examination of the patients’ problems. This conscious, deliberate planning is characteristic of the competent nurse and will help them achieve efficiency and organization in the provision of care allowing them to complete patient care tasks within an appropriate time frame (Benner, Tanner, & Chelsa, 2009; Benner, 2004; Benner, 2001).

**Proficient Stage.** The proficient nurse has the ability to see the “big picture” interpreting the situation holistically, in its entirety, while still recognizing individual salient pieces of information. They no longer recognize a situation in terms of its component individual parts.
The proficient nurse’s ability to understand the situation as a whole enables them to recognize its meaning in relation to long-term goals and outcomes. This understanding also allows the proficient nurse to appropriately determine the best possible course of action in response to the given situation. They have the ability to plan and the knowledge and skill to reason and anticipate the consequences of decisions and actions. As a result plans may be modified in response to possible outcomes. This holistic understanding improves the proficient nurse's decision making process. The process has become less cumbersome and strenuous as thought processes become more tacit in nature (Benner, Tanner, & Chelsa, 2009; Benner, 2004; Benner, 2001).

**Expert.** The expert nurse draws upon practical wisdom, phronesis in clinical practice (Benner, 2001). Phronesis is the practical wisdom that enables the nurse to successfully promote another’s well-being. The Greeks used the word phronesis to refer to the know-how that fosters good; making both the moral and the practical decisions that are required in nursing an intuitive judgment that draws from life’s experiences. It is the totality of our cumulative experiences of living and maturation that we draw upon when we have to make these moral and practical decisions in our day to day work (Bishop & Scudder, 2001). A move from novice to expert is characterized by the transition from linear, explicit rule governed behavior to intuitive, contextually determinate behavior (Altmann, 2007; Benner, 2001; Ericsson, Whyte, & Ward, 2007). A hallmark of expert behavior in clinical practice is the expert’s ability to recognize the unexpected when tacit global expectations of a patient’s recovery are not met (Benner, 2004).

Benner’s approach to exploring clinical nursing practice was interpretive and inductive. A synthesis of the evidence brought forth a philosophy of nursing practice that has “laid the foundation for understanding nursing expertise and skill acquisition” (Altmann, 2007, p. 122).
Benner (2001) has asserted that not all sources of knowledge embedded within expert nursing practice could be captured or explicated in theory or with analytical linear strategies. But, the intentions, expectations, meanings, and outcomes of expert practice could be described and highlighted through exemplars of clinical know-how and are in fact illuminated by interpretive descriptions of actual practice (Benner, 2001).

**Expert Performance Approach**

K. Anders Ericsson is a Conradi Eminent Scholar and Professor of Psychology at Florida State University. Dr. Ericsson has done extensive research on skill acquisition, deliberate practice, and working long term memory of experts. Along with Nobel Laureate H. Simon Ericsson pioneered think-aloud protocol to conduct studies of expertise (https://psy.fsu.edu/faculty/ericsson.dp.html). Dr. Ericsson is considered one of the “world’s foremost experts on expertise” (Ericsson, Charness, Feltovich, & Hoffman, 2006, p. i). Over the past twenty years Ericsson’s work on the study of deliberate practice and expert performance in medicine has been widely cited throughout the literature. His current research has focused within the domains of chess, music, medicine, and sports to investigate the cognitive structure of expert performance (http://internationalclinicalskillsconference.com/uploads/Professor-Anders-Ericsson.pdf). Dr. Ericsson is specifically interested in the development of expert performance and how performers acquire their superior performance through extended deliberate practice (Ericsson, 2005; Fadde, 2007). Ericsson has posited that the development of expertise has little to do with innate gifts or talents but more to do with deliberate practice, experience and time (Ericsson & Charness, 1994).

According to Ericsson (2008), an individual’s experience and length of service in a given domain is not always a reliable indicator of improved performance outcomes or expert
performance. Expertise has traditionally been judged by the length of experience, professional reputation, and perceived mastery of knowledge and skill. However, current research does not bear out a positive relationship between these well-known indicators of expertise and actual observances of performance (Ericsson, 2008). In response to this apparent disparity between professional experience and indicators of expertise, Ericsson and Smith proposed the expert performance approach (Causer, Barach, & Williams, 2014). The expert performance approach provides a systematic, evidence-based framework to measure and analyze superior performance in a specific domain rather than the arbitrary study of differences noted between individuals subjectively perceived as experts and novices respectively (Ericsson, 2008; Ford, Coughlan, & Williams, 2009; Causer, Barach, & Williams, 2014).

Over the last twenty years the expert performance approach has been used to examine expert performance in a variety of domains from sports and music to education and medicine. The approach contains three inter-related stages: a) capture the essence of expert performance, b) identify underlying mechanisms, and c) examine how and when expertise developed.

![Figure 1-0. Expert performance approach applied to critical care nursing](image)

The first stage of the expert performance approach is focused on developing an understanding of the essence of expert performance and is determined by the assessment and
observation of expert performance in a specific domain. The emphasis is on creating scenarios and vignettes that would represent real world situations and elicit consistent perceptual and cognitive responses based upon the individual’s level of expertise. The performance of the expert is then systematically observed in context so as to capture performance in terms of the essential skills and competencies underpinning successful performance (Ericsson, 2008; Causer, Barach, & Williams, 2014). The true essence of what it means to be an expert in a domain can be assessed by focusing attention on those aspects of performance where experts consistently outperform others (Williams, Ericsson, Ward, & Eccles, 2008).

The second stage of the expert performance approach incorporates the observational findings from the first stage to develop and reproduce representative, simulated tasks designed to elicit the skills of the expert performer under more controlled conditions. Once the specific skills are reproducible during a specific task, the mechanisms underlying the superior performance of the expert may be measured. Think-aloud verbal protocols, both retrospective and concurrent, have been used to successfully reveal the refined knowledge and reasoning strategies underpinning expert performance in multiple domains beyond the boundaries of professional nursing practice (Ericsson, 2008; Causer, Barach, & Williams, 2014). The expert performance approach provided the needed structure to strengthen Benner’s theory on expertise and the expert performance of the critical care nurse in practice.

The third stage of the expert performance approach examines the acquisition of expertise through the attainment and mastery of identified skills. The first and second stages identified the requisite skills of expertise and their underlying mechanisms pertinent to the specified domain. These skills are then traced to identify how and when they were acquired. To understand the how and the when an individual made the transition from proficient to expert would enable the
researcher to identify opportunities for practice and instruction (Ericsson, 2008; Ford, Coughlan, 
& Williams, 2009).

The expert performance approach has demonstrated that expert performers in a variety of 
domains consistently develop a “repository of skills” that reaches far beyond simple recognition 
and intuition. Expert performers demonstrates the ability to promote extensive encoding and 
indexing of information and knowledge in such a way that future retrieval can be anticipated and 
superior performance monitored and achieved (Ericsson, Whyte, & Ward, 2007; Ericsson, 2007). 
The development of expertise requires more than the accumulation of complex knowledge or the 
ability to recognize patterns, it also requires that the expert develop the cognitive mechanisms to 
keep refining and developing their expert performance over time (Ericsson, Whyte, & Ward, 
2007; Ericsson, 2007).

This study relied on Benner’s novice to expert theory to define and differentiate the 
novice and expert performer for analysis. Ericsson and Smith’s expert performance approach 
provided additional insight and clarity into the concept of expertise. The fundamental premise of 
the expert performance approach was grounded on the assumption that it would be possible to 
recognize “representative tasks of sufficient difficulty” demonstrating essential activities 
associated with expert performance in every day clinical practice. Once these tasks are 
recognized they can be replicated and presented to experts and novices under standardized 
conditions (Ericsson, Whyte, & Ward, 2007, p. 60).
CHAPTER 2

REVIEW OF LITERATURE

The purpose of this chapter was to present a systematic review of the literature pertinent to this study providing an objective analysis and synthesis of current available research specific to the study of expertise across domains (Cronin, Ryan, & Coughlan, 2008). The review began broadly across domains then narrowed to focus on current literature as it related to the domain of critical care nursing. The chapter concluded with a synthesis of the literature discussing the strengths, weaknesses and recommendations for further research.

The initial integrated literature review focused primarily within the available body of literature from 2000-2014. As the literature reviews began to develop and build from previous articles the search parameters began to change and evolve as well to include pertinent literature from the seminal works of deGroot, Simon and Chase, Gobet, and Ericsson in the field of expertise and expert performance. The relevance and significance of their impact in the field of expertise and expert performance justified the inclusion within this body of work. Google e-books as well as The University of Alabama’s library website were used to access multiple databases to include EBSCO generally, CINAHL Plus, OVID, ERIC and PubMed specifically. The EBSCO database covered various subject domains and a diverse collection of databases. The CINAHL Plus database was specific to the fields of nursing, allied health and other domains within the health and medical field. The ERIC database was specific to education, human environmental studies and social work. Search terms initially focused on nursing, novice to expert, role acquisition, transition, professional development, expertise and deliberate practice
with differing combinations of the terms to explore the available literature from multiple angles. As the literature review began to develop and build from previous articles, the terminology for the search parameters began to change and evolve as well to include the addition of, nursing, cognitive load, cognitive dissonance, educational psychology, experiential learning, Dewey, developmental theory, Piaget, schemas, prodigy and cognitive assessment tools. However, as the review continued, further refinements in the search terms narrowed to focus and concentrate on the terms; expert performance, expertise, experiential learning and intuitive judgment. Multiple domains were reviewed to include, but were not limited to educational psychology, cognitive psychology, professional medical and nursing development, arts and music, competitive sports and games (chess).

Searching the body of evidence within educational psychology the extensive work of Dr. K. Anders Ericsson, Ph.D. consistently emerged in relation to the search terms ‘expert performance’ or ‘expertise’. Dr. Ericsson has done extensive research on skill acquisition, deliberate practice, and working long term memory of experts. He also pioneered think-aloud protocol with Nobel Laureate H. Simon to conduct his studies of expertise. His work on the study of deliberate practice and expert performance in medicine has been widely cited. Ericsson is currently conducting research within the domains of chess, music, medicine, and sports to investigate the cognitive structure of expert performance. He is specifically interested in the development of expert performance and how performers acquire their superior performance through extended deliberate practice (Ericsson, 2005; Fadde, 2007).

Ericsson’s publications frequently referenced ‘pioneering research’ conducted by deGroot in 1946 that compared the performance of experts and novices, but acknowledged that no empirical research has been done in relation to expert performance until recent years.
Ericsson posits that the development of expertise has little to do with innate (gifts) or talents but more to do with deliberate practice, experience and time (Ericsson & Charness, 1994). There was agreement within the literature that experience and time were fundamental elements to the development of expert performance. Most cited seven to ten years as the requisite timeframe to develop expert performance skills (Ericsson & Charness, 1994; Schoessler & Farish, 2007). Ericsson’s research is valuable and adds empirical data to the literature, but he, like Benner and Dreyfus, focused on experiential and situational experience in the development of expert performance.

Benner’s first publication in 1984, *From Novice to Expert*, was the culminating work of an interpretive descriptive study that predicated upon Dreyfus and Dreyfus’ five step model of skill acquisition. Benner was introduced to qualitative phenomenological research by Hubert Dreyfus in 1982 and utilized the Dreyfus Model of Skill Acquisition in her study of clinical nursing practice (Brykczyński, 2010). This seminal work of Patricia Benner has been referenced more than any other publication within the nursing literature review. Dreyfus and Dreyfus asserted that in the acquisition of skills and knowledge an individual must pass through five stages of proficiency: novice/ beginner, advanced beginner, competent, proficient, and expert. Professional development from novice to expert is characterized by the transition from rule governed behavior to intuitive, contextually determinate behavior (Altmann, 2007; Benner, 2004; Dreyfus & Dreyfus, 1980). Recognizing the unexpected when tacit global expectations of a patient’s recovery are not met is also a hallmark of expert behavior in clinical practice (Benner, 2004). Patricia Benner used a qualitative interpretive phenomenological research approach to successfully synthesize and integrate the Dreyfus model of skill acquisition into nursing practice.
providing a foundation of understanding that has profoundly impacted nursing education and nursing practice (Altmann, 2007).

As noted previously in chapter one, Benner (2001) claimed that the practice of nursing is relational and therefore cannot be adequately described by strategies that leave out content, context, and function. Benner was introduced to qualitative phenomenological research by Hubert Dreyfus while at Berkeley. With the implementation of qualitative descriptive research methods, Benner successfully applied the Dreyfus Model of Skill Acquisition to clinical nursing practice (Brykcynski, 2010, p. 149). Her approach to exploring clinical nursing practice was interpretive and inductive where synthesis of the evidence rather than analysis brought forth a philosophy of nursing practice laying the foundation for understanding nursing expertise and skill acquisition (Altmann, 2007). Benner (2001) also stated that not all sources of knowledge embedded in expertise can be captured in theory or with analytical linear strategies. However she also noted, the intentions, expectations, meanings, and outcomes of expert practice can be described with aspects of clinical know-how and are illuminated by interpretive descriptions of actual practice (Benner, 2001).

Table 2-0

*Studies Informing Major Themes: Literature Review*

<table>
<thead>
<tr>
<th>Study/Author/Year/Title</th>
<th>Aim/Purpose/Question</th>
<th>Method</th>
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<tr>
<td>Benner, P. (1982). From novice to expert</td>
<td>The aim of this research was to describe and delineate characteristics of nurse performance at different levels of education and experience.</td>
<td>Descriptive phenomenology 21 paired interviews with new graduates and preceptors with 66 additional nurses (n = 108)</td>
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<tr>
<td>Benner, P., Hooper-Kyriakidis, P., &amp; Stannard, D. (2011). Clinical Wisdom and Interventions in Acute and Critical Care: Thinking In Action Approach. 2nd Ed.</td>
<td>Aim of this research was to gain a better understanding of clinical judgment, interventions and the link between the two phenomenon. This study built upon the previous work of Benner, From novice to expert.</td>
<td>Descriptive ethnography. Observation and interview. (n = 205)</td>
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<td><strong>Study/Author/Year/Title</strong></td>
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<tr>
<td>Benner, P. E., Tanner, C. A., &amp; Chesla, C. (2009). Expertise in Nursing Practice: Caring, Clinical Judgment &amp; Ethics</td>
<td>The aim of the study was twofold: a) describe the nature of skill acquisition in critical care nursing practice, b) delineate the practical knowledge embedded within expert practice.</td>
<td>phenomenological study (n=130)</td>
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<tr>
<td>Bloom, B.S. (1985). Generalizations about talent development. In B.S. Bloom (Ed.). Developing Talent in Young people</td>
<td>The purpose of this study was to identify individuals who had attained world-class levels of competence within a field (6 domains were chosen), then attempt to understand the developmental and educational processes that were important in enabling those individuals to reach these high levels of competence within their field.</td>
<td>Ethnography. Retrospective interview study (n=120)</td>
</tr>
<tr>
<td>Bobay, K., Gentile, D.L., &amp; Hagle, M.E. (2009). The relationship of nurses’ professional characteristics to levels of clinical nursing expertise.</td>
<td>The purpose of the study was to determine the relationships of nurses’ professional characteristics, including years of experience, certification, basic nursing preparation, specialty certification, previous health care experience and motivational factors.</td>
<td>Descriptive correlational study Regression analysis (n=156)</td>
</tr>
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<td>Burger, J.L., Parker, L.C., Hauck, D.K., O’Nan, C., &amp; White, A. (2010). Responses to work complexity: The novice to expert effect.</td>
<td>The aim of this research was to explore the differences in how advanced beginners, competent, and expert nurses prioritize and reprioritize patient care.</td>
<td>Mixed-methods Descriptive, comparative design using qualitative and quantitative data collection. Survey, priority list, and field observation. (n = 23)</td>
</tr>
<tr>
<td>Chase, W.G. &amp; Ericsson, K.A. (1982). Skill and working memory</td>
<td>The purpose of the study was to discover the cognitive mechanisms underpinning skilled memory performance.</td>
<td>Comparative analysis of multiple variances</td>
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<tr>
<td>Chase, W., &amp; Simon H.A. (1973) Perception in chess.</td>
<td>The aim of this research was to discover and characterize the structures or chunks that are seen on the chess board and stored in short-term memory.</td>
<td>Comparative analysis frequency distribution and probabilities. Comparing three chess players of various skills. (a Master, a Class A player, and a beginner) (n=3)</td>
</tr>
<tr>
<td>Chi, M., Glaser, R., &amp; Rees, E. (1981). Expertise in problem solving</td>
<td>Hypothesis: the problem-solving difficulties of novices can be attributed mainly to inadequacies of their knowledge base and not to limitations in either cognitive structure or processing capabilities.</td>
<td>Developed a series of eight empirical studies indicating the importance of differences in the knowledge bases of experts and novices to their general problem-solving success. Using both quantitative and qualitative methods. (n=67)</td>
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<td>Study/Author/Year/Title</td>
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<tr>
<td>deGroot, A. (1978).</td>
<td>The aim of this research was to apply a “think aloud protocol” to conduct an experimentally based psychological analysis of chess thinking</td>
<td>denkpsychologie (scientific study of thinking)</td>
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<td></td>
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<td>Descriptive comparative analysis</td>
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<td>Thinking aloud protocols. (n = 22)</td>
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<td></td>
<td>Inductive reasoning. Introspection and comparative analysis (n=4)</td>
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<tr>
<td>Dixon, R.A., &amp; Johnson, S.D. (2011). Experts’ vs novices: Differences in how mental representations are used in engineering design.</td>
<td>The aim of the study was to gain a deeper understanding into the differences that exist in the cognitive processes of engineering students and professional engineers as they use mental representation to solve the engineering design problem.</td>
<td>Data analysis “think aloud protocols” verbal protocol analysis</td>
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<td>(n=6 novice and 4 expert engineers)</td>
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<td>Ericsson, K.A., Krampe, R., &amp; Tesch-Romer, C. (1993). The role of deliberate practice in the acquisition of expert performance</td>
<td>The aim of this research was to explain expert performance in terms of acquired characteristics resulting from extended deliberate practice. Does practice and experience inevitably lead to maximal performance?</td>
<td>Study 1- (n= 30)</td>
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<td>Orthogonal comparative of three groups of violinists.</td>
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<td>An analysis of variance (ANOVA) comparing allocation of time, preparation, and performance</td>
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<td>Study 2- (n=24)</td>
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<td>Orthogonal comparative of two groups of pianists using Pearson’s Correlation coefficients followed by a repeated measures ANOVA with tests of homogeneity of variances</td>
</tr>
<tr>
<td>Ericsson, K.A. &amp; Smith, J. (1991). Prospects and Limits of the Empirical Study of Expertise: An Introduction</td>
<td>Purpose of this work is to characterize the study of expertise to compare the expertise approach with alternative approached with similar objectives. Secondly, to specify the nature of the original expertise approach and methodology.</td>
<td>Meta-analysis of past and current research</td>
</tr>
<tr>
<td>Gibson, D., Velde, B., Hoff, T., Kwashay, D., Manross, P.L. &amp; Moreau, V. (2000). Clinical reasoning of a novice versus an experienced occupational therapist:</td>
<td>The purpose of this study was to describe the clinical reasoning process used in the creation of goals by one novice and one experienced occupational therapist.</td>
<td>Ethnography (n =2)</td>
</tr>
<tr>
<td>Lyneham, J., Parkinson, C., &amp; Denholm, C. (2008). Explicating Benner’s concept of expert practice: Intuition in emergency nursing.</td>
<td>The purpose of this study was to explore the experience of intuition in emergency nursing in relation to Benner’s fifth stage of practice development</td>
<td>Hermeneutical phenomenological using van Manen’s approach and an Gadamerian analysis study (n=15)</td>
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<tr>
<td>Study/Author/Year/Title</td>
<td>Aim/Purpose/Question</td>
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<tr>
<td>Maynard, C.A. (1996). Relationship of critical thinking ability to professional nursing competence</td>
<td>The purpose of this research is to examine the development of critical thinking ability longitudinally from beginning nursing student to practicing professional and its relationship to measures of professional competence.</td>
<td>Multiple regression and correlation techniques were used to determine effect/relationship with measures of competence as determined by Benner’s stages and performance on the 6-D scale. Factor analysis. Cronbach’s alpha was used to measure reliability. Repeated measures analysis of variance (n = 170)</td>
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<tr>
<td>Simon, H.A. &amp; Chase, W.G. (1973). Skill in chess</td>
<td>The purpose of this research was to examine human perceptual and memory processes during chess play. What is the perceptual basis of chess mastery?</td>
<td>Comparative correlational studies between latency and Frequency intervals. Pearson correlation coefficient</td>
</tr>
<tr>
<td>Simon, D.P., &amp; Simon, H.A. (1978). Individual differences in solving physics problems.</td>
<td>Describe the explicit knowledge of physical laws students must acquire. Describe the way in which those laws must be indexed in memory to provide a basis for problem-solving.</td>
<td>Quantitative. Descriptive Analysis of variance ANOVA (n=2)</td>
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Novice

The research literature consistently described the novice or beginner as having no prior experience in the situations in which they are expected to perform. The novice could be a beginner in the domain or without experience in the given situation in which they are expected to perform (Altmann, 2007; Benner, 1982; 2004; 2009; 2011; Marble, 2009). They lack confidence to demonstrate safe practice and require continual verbal and physical instruction to successfully manage a given situation and are unable to use discretionary judgment. The novice must be taught rules to guide practice and they lack the experience and judgment to deviate from those rules. As a result their interaction within the clinical setting is limited and inflexible. The rules are applied universally regardless of the context of the situation (Benner, Tanner, & Chelsa, 2009; Benner, 2004; Benner, 2001). Additionally, the research literature described the novice as task oriented and linear in thought, focused on the individual components of the problem without comprehension of the entire concept or the situation at hand (Burger, Parker, Cason, Hauck,
Simon and Simon (1978) conducted a quantitative study that used protocol analysis and computer simulation to compare the knowledge base and memory structure of one novice and one expert high school mathematics student. They presented simple mathematical equations to the students under think aloud instructions to explore the requisite knowledge base and structural differences of cognitive processes that are required for problem-solving. Using descriptive statistical analysis of variance ANOVA (n=2) they noted a statistically significant difference in the performance of the novice and the expert student as they attempted to solve physics equations. Of particular interest, was the timeframe required for the novice to transition from one aspect of the problem to another as compared to the expert student. They also noted that while the novice dissected and focused on the individual components of the problem the expert used a proactive stance of forward thinking to visualize potential possibilities until a resolution was reached.

To demonstrate the quantifiable differences of novice and expert performers in problem-solving skills Chi, Glaser, and Rees (1981) developed a collective series of eight studies and published their findings as a meta-analysis of those studies. Two of the studies used a mixed methods approach, one used a descriptive quantitative approach and five of the studies used an interpretive qualitative approach. The first study compared the quantitative and qualitative differences of two physics professors and two college freshmen as they worked to solve physics problems. Initially a comparative analysis of time intervals, solution times, and error rates were quantified comparing the novice and the experts’ performance. The evidence asserted that the
novices made more errors than did the experts; novice three out of five possible errors and the experts’ one out of five possible errors. The novices solved problems much faster than did the experts; novices 4.16 minutes and the experts’ 8.96 minutes. The researchers attributed this difference to the high error rate of the novices with only one of the five problems completed correctly. Following a quantitative analysis of the data an interpretive heuristic analysis of the protocol diagrams did not generate uncommon themes between the experts and the novices in their approach to a complex problem; a) experts and novices are both just as likely to spend time developing tacit understanding of the problem, and b) both groups were just as likely to do so iteratively across the entire problem-solving protocol. However, there was a difference in the number of “chunks of equations” (p. 48) and in the accuracy of the inferences drawn from their assessments. The novices drew inaccurate inferences in three of the five problems presented.

A second mixed methods study was developed to explore the impact of experience on the categorization of problems. There were sixteen study participants; eight Ph.D. (expert) students from the physics department and eight undergraduates (novices). These participants were asked to sort and categorize twenty-four physics problems based upon resolution similarities. A comparative analysis of data revealed no quantifiable differences in the performance of the groups. Both groups averaged 8.5 categories with the four largest categories capturing 77% of the problems. There was little time difference in the sorting of problems; novices 40 seconds and the experts’ 37 seconds per problem. However, qualitatively, themes began to develop as the novices and the experts discussed how and why they categorized problems as they did. Novices made decisions based upon “surface” characteristics of the problem, while the experts made their decisions based upon the fundamental laws of physics that governed the resolution of the problem.
Based on the findings of the previous study the researchers developed an interpretive phenomenological study to replicate and validate the findings. Assuming the findings are accurate the researchers should be able to predict the categorization of problems based upon the participants experience level. Three student’s one expert, one intermediate and one novice were asked to sort and categorize problems. As the data was reviewed and analyzed recurrent themes became evident. Novices categorize problems according to literal components whereas experts categorize problems by the laws of physics.

Building upon the work of previous studies a hierarchical sorting study was developed using a phenomenological approach to explore the development of schemata’s and their relationship to the development of categories. Sixteen participants were asked to sort and re-sort forty problems. Discussions and rationale for their decisions were recorded and analyzed for themes. According to the data the categories developed by the novices corresponded to the “subordinate” categories of the experts (p. 51).

The fifth study was developed as a mixed methods design with the purpose of exploring the organizational and structural differences of the novice and the experts knowledge base. Four experts and four novices were asked to verbally summarize the salient aspects of a chapter in a physics textbook after five minutes of review. Each participant was given fifteen minutes for their verbal summation. An initial comparative analysis of measures demonstrated no appreciable differences in length of summary or number of quantitative relations. Common to all of the summaries was a description of Newton’s three laws of motion. Therefore an analysis of the declarative statements was made to determine if any common themes arose out of the data. Three main themes were revealed by the data: a) novices as compared to experts generated a greater number of incorrect inferences, b) the novice and the expert organized and presented
their knowledge differently, and c) the novice did not express a strong command of fundamental physic principles.

The sixth study, building on the evidence of study two and three was developed as an interpretive phenomenological study to explore the knowledge content found within the organization and thought processes of the novice and the expert. Two experts and two novices were asked to elaborate on twenty prototypical concepts. Participants were given three minutes to share everything that they could about the concepts and how a problem involving the concept might be resolved. The data was coded and analyzed. Three main themes arose from the data: a) the knowledge structure of the novice is different than that of the expert, b) the expert and the novice both possess basic knowledge, c) the expert has additional knowledge that the novice does not.

The researchers developed the seventh study using a qualitative approach. There were four participants: two physicists and two novices that were asked to “think out loud” (p. 63) as they developed an approach to problem solving. The experts’ and the novices’ thought processes were compared and analyzed for key features. As key features were cited they were tabulated for frequency and analyzed for themes. Three common themes arose: a) there was no overlap in the features mentioned by novices and experts, b) key features mentioned as relevant by the novices was different than those mentioned by the experts, and c) novices mention literal features and objects while the expert described conditions and states that are implicitly stated within the problem.

The eighth and last study of the project was phenomenological study that compared the novice and the experts’ interpretation of specific words or cues within a problem. Six novices and six experts were asked to read twenty problems. They were asked to point out important
words or cues within the problem statement that were important to them in judging the complexity of the problem. They were also asked to explain how these words helped them in making their decision. Their responses were tabulated and ordered based on frequency. Analysis of the data revealed that: a) experts (30%) noted the underlying principle (physics) of the problem as important while the novice (40%) noted abstract aspects of the problem to make judgements of complexity (Chi, Glaser, & Rees, 1981).

The overall study incorporated a series of eight quantitative exercises that compared the problem-solving skills of sixty-seven mechanical physicists: thirty-five students and thirty-two experts. A comparative quantitative analysis of the data revealed that the performance and skill of the novices corroborated previous research findings in relation to skill and performance. The results of data analysis demonstrated three quantifiable deference’s between the novice and the expert when solving complex equations; a) the timeframe difference required to solve complex problems, b) the timeframe difference required to move from one aspect of the problem to another as they worked through the problem, and thirdly, and c) the difference in the accuracy rate of the given solution (Chi, Glaser, & Rees, 1981).

Spanning nineteen years of dedicated research Benner and Benner et al. have conducted three separate studies that have focused on situated experience and skill acquisition. Benner’s original research (1982) was a phenomenological study developed to explore and describe the embedded knowledge hidden within clinical nursing practice. Through an interpretative analysis of one hundred nine interviews and participant observations of in-depth and personal accounts of clinical exemplars Benner outlined five levels of expertise in clinical practice. The first level, novice, was described as: a) the first year nursing student with no prior knowledge of the clinical situation, b) behavior in the clinical setting is limited and inflexible, c) they require rules and
guidelines to interact safely within the clinical setting, and d) the rules are applied universally to all situations with no discretionary judgment.

Two additional studies were developed by Benner et al., which focused on situated experience and skill acquisition. These studies replicated and validated the findings of Benner’s original work. Building on the previous research findings Benner, Tanner and Chesla (2009) conducted an interpretive phenomenological study of nursing practice to explain distinct patterns of meaning and action in the practice of nurses from 1988-1994. Narrative interviews and observations were collected from one hundred thirty nurses individually and in small groups of five and six to explore personal accounts of nursing practice. An interpretive analysis of the data distinguished four levels of clinical practice, from advanced beginner through expert. Additionally, nurses’ at different levels of skill literally live in different clinical worlds, noticing and responding to different clinical cues for action (Benner, Tanner & Chesla, 2009). Continuing to explore and build upon previous research projects, Benner Hooper-Kyriakidis and Stannard (2011) developed a third study that used a “naturalistic descriptive” ethnographic approach to develop a deeper understanding of clinical judgement, interventions and the relationship between the two phenomenon (p. 2). Two hundred five nurses participated in the study providing rich personal illustrations of clinical experience providing an enhanced understanding of the clinical experience not captured in previous works.

“The expert not only knows what needs to be achieved, based on mature and practiced situational discrimination, but also knows how to achieve the goal. A more subtle and refined discrimination ability is what distinguishes the expert from the proficient performer. This ability allows the expert to discriminate among situations all seen as similar with respect to the plan or perspective, distinguishing those situations
requiring one action from those demanding another... the expert not only sees what needs to be achieved, but also how to achieve it. When things are proceeding normally, experts don't solve problems and don't make decisions; they simply do what experience has shown normally works, and it normally works “(p. 15-16).

Dixon and Johnson (2011) developed comparative case studies using think aloud protocol analysis study to explore the differences in the cognitive processes of six novices and four expert mechanical engineers. Applying a verbal protocol analysis the participants were asked to “think aloud” (p. 53) as they worked to resolve the design problem and successfully modify a motorcycle to withstand treacherous travel conditions. Audio recordings of the verbal protocol were transcribed and coded. Their findings bore out the conclusions of previous studies as the novices were fractionated in their approach focused on the details of the problem without realizing the scope and entirety of the problem itself. The novices also demonstrated difficulties in time management as they progressed through the design problem.

**Compare/ Contrast Novice to Expert**

Dr. Adrian deGroot’s 1946 doctoral theses (1978) was a groundbreaking study that used systematic descriptive and interpretive analysis of think aloud protocols to explore the thought processes of chess players. He recruited twenty-two study participants with a broad array of chess experiences ranging from inexperienced novice to world class chess champion. The study results presented startling evidence in the domain of expertise in regard to thought processes and memory skill of expert versus novice chess players. deGroot’s study of master chess players has become the cornerstone of ongoing research for expert performance and expertise. In a comparative analysis of procedural protocol and thought processes between the novice and the master players his research did not demonstrate an appreciable difference in the speed of their
thinking processes nor in the capacity of their basic short term memory. There was much overlap in the data with no indication of appreciable differences in the fundamental characteristics of their basic cognitive processes.

In the observation of chess play the strength of the grandmaster versus the strength of the novice was undeniably superior. According to deGroot (1978) it stood to reason that differences in thinking did exist. To test this observation deGroot, a master chess player in his own right, prepared the chess board with multiple positions of chess pieces. Four players demonstrating varying degrees of skill were shown the chess board for five seconds. The master level players demonstrated significantly better recall of the chess pieces on the board than did the novices: a) the grandmaster had a total of 217 points with an average recall of 93.4%, an error rate of 6.6%, with five perfect reproductions, b) the master had a total of 217 points with an average recall of 93.4%, an error rate of 6.6%, with five perfect reproductions, c) the expert had a total of 217 points with an average recall of 93.4%, an error rate of 6.6%, with five perfect reproductions, and d) the novice had a total of 217 points with an average recall of 93.4%, an error rate of 6.6%, with five perfect reproductions (deGroot, 1978). deGroot posited that this skill in playing chess was largely attributable to prior chess knowledge and extensive situational experience.

Building upon the original research of deGroot Simon and Chase (1978) developed quantitative comparative correlational studies to examine the perceptual and memory processes of chess players during chess play. They conducted extensive research developing and applying their “chunking theory” asserting that the expert chess player has exceptional pattern recognition and an enhanced memorization of chess positions. Comparative analysis of time intervals delineating chunking boundaries demonstrated strong relational patterns with Pearson correlational coefficients of .89, .91, and .87. Their findings suggest that with extended practice
experts would gradually acquire larger numbers of increasingly complex patterns of chess pieces and moves (chunks) and then utilize these chunks as signals to retrieve moves when similar situations present themselves in subsequent chess games (Simon & Chase, 1978) As such, experts have the ability to visualize situations in terms of the whole without focusing on the individual pieces.

Working with two participants over three years Chase & Ericsson (1982) demonstrated significant results in the improvement of short term working memory skill through the use of strategic cues or mnemonics to trigger recall. They used quantitative research methods to compare multiple variables through correlational comparison and regression analysis exploring the impact of retrieval structures in short term and long term working memory. Descriptive statistical analysis of data exploring the relationship between language skill and memory \( r = 0.72, p < 0.001 \), verbal reasoning skill and memory \( r = 0.66, p < 0.001 \), and numerical reasoning skill and memory \( r = 0.5, p < 0.01 \). After intensive practice the participant was capable of recalling eighty digits. This was a vast improvement over baseline memory recall performance whereby the participant had a recall capacity of eight digits.

Expertise is about prior knowledge, context (domain expertise), dedicated practice, chunking of data, implicit rather than explicit memory (Simon & Chase 1973; Ericsson & Lehmann, 1996; Ericsson, 2005; Syed, 2010). Therefore, the expert is capable of visualizing the problem in its entirety (the entire chess board without seeing the individual chess pieces) considering multiple options, thinking at a much higher level while the novice is overwhelmed with the individual components of the problem (understanding the individual chess pieces and what they can and cannot do). The novice is unable to think beyond the immediate.
Burger, Parker, Cason, Hauck, Kaetzel, O’Nan, and White (2010) conducted a mixed methods study to examine key differences between novice and expert performance. The study had a purposeful sampling of twenty-three nurses with varying degrees of experience. Given the dynamics and complexities of work processes within the clinical setting the intent of the study was to explore the differences in how advanced beginners, competent and expert nurses differ in their identification and prioritization of patient care. Data collection began just after verbal shift report with the nurse completing a short survey to collect demographic data and a priority work list for the upcoming shift. Researchers then followed the nurses as they progressed through the work day making observations and taking field notes. At the end of the shift the nurse was asked to re-evaluate the priority work list and re-prioritize it based on actual events. This was followed by semi-structured interview exploring the nurses’ perceptions of the day.

Data analysis focused on the nurses’ priority list, the survey, the typed field notes and the transcribed interview. The demographic characteristics of the nurses determined classification into one of three categories; advanced beginner, competent or expert. Interview transcripts were thematically analyzed without predetermined coding to allow themes and or patterns to emerge from the data. Four consistent themes emerged from the data that illustrated differences in the nurse’ responses to the complex work environment: cognitive strategies, communication, integration of roles, and response to the work environment. Their research findings suggested that despite the nonlinear complexities of clinical practice, advanced beginners persist in approaching clinical practice in a linear fashion while the competent and expert nurses used more complex and nonlinear methods (Burger et al., 2010).

Similarly Gibson, Velde, Hoff, Kvashay, Manross, and Moreau (2000) in an effort to describe the clinical reasoning processes of novices versus experts conducted an ethnographic
study of two occupational therapists; one novice and one expert. They presented the participants with a case study instructing them to develop a comprehensive treatment plan complete with defined goals of care. According to Gibson et al., (2000) the novice consistently focused on established occupational therapy guidelines and processes while the expert demonstrated a more “complex and intuitive” process (p. 24). The novice was more structured and had a difficult time establishing priorities of care while the expert demonstrated a more comprehensive and intuitive approach that relied heavily on clinical reasoning to establish priorities of care (Gibson et al., 2000).

The ability of experts to see things that are invisible to the rest of us may seem difficult to explain or grasp but it’s actually quite simple when thought of in terms of chunking and implicit memory. In his best-selling book, Bounce, Mathew Syed (2010) provided several examples of this phenomenon: indigenous Eskimos living in the arctic can distinguish varying shades of white that are invisible to westerners; highly trained concert musicians can detect infinitesimal differences in the pitch or tone of specific notes within a score of music when the non-musician cannot; chick spotters can determine the sex of baby chicks when they are one day old even though they appear identical to the eye of the novice; Wayne Gretzky, a famous hockey player, can perceive patterns of movement in the players around him that others miss. The most dramatic difference between experts and non-experts can be readily demonstrated in the medical context. Experienced clinicians consistently deliver better judgments and more relevant diagnosis from x-rays and mammograms than do medical students. This is not due to a lack of intelligence on the part of the medical students or more astute inferences from the pictures. It’s due to the experienced clinicians ability to recognize patterns and structure within the situation.
that are invisible to their less experienced colleagues. This implicit memory gives them the ability to draw more accurate conclusions from the situation about the patient (Syed, 2010).

The novice requires concrete rules to effectively manage in the clinical environment. They are dependent upon their peers for guidance and support while the expert is independent providing guidance to others. They are rigid without the confidence and experience to adapt or change with changing circumstances. The expert on the other hand, seamlessly recognizes, adapts and responds to changes without hesitation. The transition from novice to expert is characterized by the nurses’ ability to move from linear, explicit rule governed behavior to intuitive, contextually determinate behavior (Altmann, 2007; Benner, 2001; Ericsson, Whyte, & Ward, 2007).

**Expertise**

The expert is defined in the literature as one who possesses both skill and knowledge where intuitive, highly skilled performance is the result of dedicated practice and years of experience (Ericsson, 2008), one who embodies a broader deeper repertoire of relevant knowledge and knowledge retrieval (Ericsson & Smith, 1991). A working definition of expertise is one who has acquired special skills in or knowledge about a particular subject through professional training and years of practical experience (Ericsson & Charness, 1994).

Expertise refers to an individual’s exemplary demonstration of skill and understanding, one that has evolved from a broad knowledge base and the accumulation of relevant experiences. In order to understand how experts perform we must first understand the representation of their knowledge and how their knowledge is organized. We must also understand how those representations differ from those of novices (Chi, 2006). The following passage from Bloom’s (1985) *Developing Talent in Young People* clearly illustrates the clear distinction of expertise:
“He worked with me technically as a pianist, but the distinction of becoming a musician became very clear every time I took a lesson. Because we talked about music. We began to try to become more intellectual about how phrase structure [worked] and what it meant and what you were trying to say, rather than how do you accomplish this at this instrument” (p. 88).

Experts have exceptional memory skills in recognizing patterns in their domain of expertise and tend to make knowledge-based decisions (Patel & Groen, 1991). Chase and Ericsson’s (1982) study demonstrated significant results in the improvement of short term working memory skill through the use of strategic cues or mnemonics to trigger recall. They used quantitative research methods to compare multiple variables through correlational comparison and regression analysis exploring the impact of retrieval structures in short term and long term working memory. Descriptive statistical analysis of data exploring the relationship between language skill and memory \( r = 0.72, p < 0.001 \), verbal reasoning skill and memory \( r = 0.66, p < 0.001 \), and numerical reasoning skill and memory \( r = 0.5, p < 0.01 \). These findings clearly demonstrated the experts’ superiority for both short and long term memory recall. The memory expert could accurately recall more than eighty digits in a short term recall task.

Simon and Chase (1978) developed quantitative comparative correlational studies to examine the perceptual and memory processes of chess players during chess play. They have posited that experts have exceptional memory and pattern recognition due to “chunking” of data. Comparative analysis of time intervals delineating chunking boundaries demonstrated strong relational patterns with Pearson correlational coefficients of .89, .91, and .87. Their findings suggest that with extended practice experts would gradually acquire larger numbers of increasingly complex patterns of chess pieces and moves (chunks) and then utilize these chunks as signals to retrieve moves when similar situations present themselves in subsequent chess
games (Simon & Chase, 1978) As such, experts have the ability to visualize situations in terms of the whole without focusing on the individual pieces.

Adrian deGroot (1978) used systematic descriptive and interpretive analysis of think aloud protocols to explore the thought processes and memory of chess players. He recruited twenty-two study participants with a broad array of chess experiences ranging from inexperienced novice to world class chess champion. The study results presented startling evidence in the domain of expertise and the thought processes of expert versus novice chess players. His initial comparative analysis did not reveal appreciable differences between the expert and the novice; however, in view of the observable differences in the strength of the players he knew there were differences not explored by “structured protocol statistics” (p. 319). To test this observation deGroot prepared the chess board with multiple positions of chess pieces. Four players demonstrating varying degrees of skill were shown the chess board for five seconds. The master level players demonstrated significantly better recall of the chess pieces on the board than did the novices: a) the grandmaster had a total of 217 points out of a possible 234 with an average recall of 93.4%, an error rate of 6.6%, with five perfect reproductions, b) the master had a total of 217 points with an average recall of 91.4%, an error rate of 8.6%, with four perfect reproductions, c) the expert had a total of 158 points with an average recall of 69.6%, an error rate of 30.4%, with no perfect reproductions, and d) the novice had a total of 119 points with an average recall of 52.5%, an error rate of 47.5%, with no perfect reproductions. deGroot posits that this skill in playing chess was largely attributable to prior chess knowledge and extensive situational experience.

Glaser and Chi (1988) further assert that the skill of the expert has become automatic. An automaticity of thought and memory recall that releases energy required to process short term
memory tasks. This energy is then relegated to other areas freeing the mind to focus on other concerns giving the illusion that the expert’s short term memory has far exceeded that of others.

Discretionary judgment is at the core of expertise (Ericsson & Charness, 1994; Benner, 2001; Weiss & Shanteau, 2014). Benner’s (1982) research findings were developed through a phenomenological research approach as she analyzed data from the interviews and observations of one hundred eight nurses. Benner (1982) asserted that as expertise develops decisions of the expert become more discretionary based upon the context of the situation. Additional research projects conducted by Benner et al. have continued to focus on situated experience and skill acquisition. These studies have added to the body of her previous work replicating and validating previous studies.

Benner, Tanner and Chesla (2009) conducted an interpretive phenomenological study of nursing practice to explain distinct patterns of meaning and action in the practice of nurses. Narrative interviews and observations were collected from one hundred thirty nurses individually and in small groups of five and six to explore personal accounts of nursing practice. An interpretive analysis of the data distinguished four levels of clinical practice, from advanced beginner through expert. Additionally, nurses’ at different levels of skill literally live in different clinical worlds, noticing and responding to different clinical cues for action (Benner, Tanner & Chesla, 2009).

Ericsson and Smith (1991) conducted a meta-analysis of past and current research to validate the application of the expert performance approach in the study of expert performance. Ericsson and Smith (1991) have asserted that the expert performer will engage problems within their specific domain of expertise in a broader fashion than do novices faced with the same or similar problems. The expert collectively and proactively works toward a solution spending a
great deal of time up front to carefully analyze the problem. They feel that it is important to “understand” the problem before they proceed, while the novice will immediately tackle the problem breaking it down by its component parts. The novice focuses on the individual components of the problem without recognizing the problem in its entirety (Glaser & Chi, 1988). The findings in the research literature clearly support this assertion.

Dixon and Johnson (2011) developed comparative case studies to explore the differences in the cognitive processes of six novices and four expert mechanical engineers. They used a think aloud protocol to collect and analyze recorded transcripts. Participants were asked to “think aloud” (p. 53) as they worked to resolve the design problem and successfully modify a motorcycle to withstand treacherous travel conditions. Audio recordings of the verbal protocol were transcribed and coded. Their findings bore out the conclusions of previous studies as the progress and performance of the experts demonstrated a broader deeper understanding of the principles and mechanics of design in resolving the problem.

The research findings of Chi, Glaser & Rees (1981) were another example where the results of the data clearly demonstrated this characteristic of the expert as they focused on the principles of physics to solve the problem at hand while the novice focused on the individual objects within the problem itself. The eighth study of Chi, Glaser and Rees (1981) was a descriptive quantitative comparative analysis of the novice and the experts’ interpretation of specific words or cues within a problem. Six novices and six experts were asked to read twenty problems pointing out salient cues within the problem that indicated the overall complexity of the problem. They were also asked to explain how these words helped them in making their decision. Their responses were tabulated and ordered based on frequency. Analysis of the data revealed that: a) experts (30%) noted the underlying principle (physics) of the problem as
important while the novice (40%) noted abstract aspects of the problem to make judgements of

deGroot’s (1978) work demonstrated the experts’ superior ability to see the board and
subsequent moves. He concluded that this was a key characteristic of the expert and would
enable them to work in an anticipatory manner as the next steps are visualized initially. By
developing a systematic descriptive process to explore the memory recall of chess players
representing grandmaster to novice his findings bore significant variances based on skill. The
grandmaster had a total of 217 points with an average recall of 93.4% and an error rate of 6.6%.
The novice had a total of 119 points with an average recall of 52.5% with an error rate of 47.5%.

The literature speaks to three important factors that impact expert performance and the
development of expertise. First, for an individual to endure the long hours of practice required to
achieve expert performance levels individuals must have the skills to perform and possess a
strong passion for their work to remain committed and motivated to their respective domain.
Additionally, moving beyond the notion of longevity and the number of years of experience
required to attain expert performance within a specified domain, the 10,000 hour rule or ten
years of dedicated practice has a more profound impact on the development of expertise than
years of experience. This would explain the incongruence associated with longevity of
experience and the lack of expert performance exhibited by some individuals (Ericsson &
Lehmann, 1996; Syed, 2010; Causer, Barach, & Williams, 2014).

Detailed analysis of their data revealed unexpected details in relation to the development
of expertise. While the ten year rule was not the primary focus of Simon and Chase’ (1973)
seminal research into memory and chess their observations bore significant correlations and
implications for the validity of the length of time required to achieve expert performance. The
strength of the correlations between the requisite timeframe for mastery of an individual’s first language and the requisite timeframe needed to acquire the experience and knowledge needed to master complex domains of expertise was undeniable (Feltovich, Prietula, & Ericsson, 2006).

Simon and Chase (1978) developed a quantitative study to examine the perceptual and memory processes of chess players during chess play. They conducted extensive research developing their “chunking theory” (p. 400) asserting that the expert chess player has exceptional pattern recognition and an enhanced memorization of chess positions. Through comparative correlational analysis of time intervals that delineated chunking boundaries the data demonstrated strong relational patterns with Pearson correlational coefficients of .89, .91, and .87. Their findings suggest that with extended practice experts would gradually acquire larger numbers of increasingly complex patterns of chess pieces and moves (chunks) and then utilize these chunks as signals to retrieve moves when similar situations present themselves in subsequent chess games. Simon and Chase asserted that thousands of hours of practice are required to build a repertoire of sufficient patterns to perform at the masters’ level. As such, experts have the ability to visualize situations in terms of the whole without focusing on the individual pieces (Simon & Chase, 1978).

Finally, the research literature speaks to the importance of opportunity and availability of resources to refine skills as paramount in the development of expert performance. Coaches, teachers and mentors provide training activities that are specifically designed to improve specified aspects of performance through repetition, immediate constructive feedback and refinement; deliberate practice (Ericsson & Charness, 1994; Syed, 2010). According to Gladwell (2008) “it makes a difference where and when you grew up” (p. 19). Expert performers have
benefit of social interactions and opportunities that have enabled them to learn and develop in ways that others cannot (Gladwell, 2008).

Benjamin Bloom (1985) and colleagues conducted a groundbreaking qualitative study that involved retrospective participant interviews of one hundred twenty elite performers. The sample population spanned six diverse domains of expertise; to include swimming, art, sculpting and research neurologists. This was an ethnographic study that sought to understand the impact of social influences on exceptional performance. Based upon his extensive research Bloom (1985) concluded that the availability of focused early instruction by exceptional dedicated teachers and coaches as well supportive parents at an early age appeared to be a strong pre-requisite for achieving elite levels of performance as an adult (Bloom, 1985; Ericsson, 2006).

According to Ericsson, Krampe, and Tesch-Romer (1993) the development of expertise is the direct result of deliberate, well-structured practice that not only incorporates timely continuous feedback but also establishes stretch goals that build upon previous successes. This type of structured training provides optimal opportunities for improvement and success (Ericsson & Lehmann, 1996; Ericsson, Whyte, & Ward, 2007; Syed, 2010). To explore the dynamics of the relationship between inherited talents and the development of skills as well as the impact of extended deliberate practice on elite performance Ericsson et al., (1993) conducted an exhaustive quantitative two-step study that utilized an orthogonal comparative design to compare three groups of elite violinists (N = 30) and two groups of pianists (N=24) to explain expert performance and the impact of acquired characteristics that resulted from extended practice versus innate talent and opportunity. Using descriptive statistical methods to analyze the data comparative analyses of variance (ANOVA) was conducted using orthogonal contrast between the two participant groups. The participant groups were divided by age; the best young violinists
and middle-aged professional violinists. Orthogonal comparative analysis from within the middle-aged group was compared to the best young violinists. Statistical data and analysis included a comparative of practice time, teacher, and everyday household chores. Justification of significant deviations from the mean was given based upon post hoc analysis using Bonferroni’s method. According to the data practice time and sleep time were most impactful to the development of expertise. An average of 50.6 hours per week was spent on music related activities. An average of 24.3 hours per week was spent on solo practice time and this time did not differ between to the two best groups. The average solo practice time for the experts was reliably greater than that of music teachers who averaged 9.3 hours of practice per week, $F(1, 27) = 44.05, p < 0.001$. Expert violinists averaged 60 hours of sleep per week in comparison to the teachers who averaged 54.6 hours of sleep per week, $F(1, 27) = 5.02, p < 0.05$. Ericsson et al. noted that every subject involved in the study spent at least ten years practicing the violin.

The second step of the study was developed to build upon the findings of the first step to extend them to another domain of expertise. In this descriptive study twenty four pianists were selected for the study; twelve experts and twelve novices. All of the experts had more than fourteen years’ experience while the novices had five to twenty years of experience. The novice started piano lessons at an average 9.9 years of age while the experts started at an average of 5.8 years of age, $F(1, 22) = 7.00, p < 0.02$. The experts received an average of 19.1 years of formal instruction from an average 4.7 teachers while the novice received an average 9.9 years of instruction from an average of three different teachers. The years of formal instruction, $F(1, 22) = 29.36, p < 0.001$ and number of teachers $F(1, 22) = 10.00, p < 0.01$ were statistically significant. Orthogonal comparative analysis of variance comparing practice time and sleep time between the two groups was also significantly significant. The experts spent 26.71 hours in solo
practice at the piano while the novice spent 1.88 hours, F (1, 22) = 93.98, p < 0.001. The amount of sleep time per week did not differ between the groups and averaged 56.86 hours per week. A repeated measures ANOVA revealed a main effect of weekday F (6, 132) = 4.01, p < 0.002 which did not interact with skill level.

As a result of the study they acknowledged that innate characteristics of the expert as well as the expert’s performance are qualitatively different than those of normal, average, everyday individuals. Additionally, those differences in and of themselves could not account for the development of expert performance. Expert performers had dedicated themselves to a life-long commitment to deliberate purposeful efforts to improve performance (Ericsson, Krampe, and Tesch-Romer 1993).

The research literature also asserted that the expert performer consistently demonstrates three fundamental attributes: his/ her performance is consistently superior to his peers; concrete results, successful outcomes must be identified, and their expertise can be measured and replicated in a simulation lab (Ericsson, Prietula, & Cokley; 2007). The study and acquisition of expertise in healthcare presents a unique challenge that involves the coordination and mastery of both analytical and experiential knowledge. This is of particular significance when considered in relation to the exponential knowledge explosion in healthcare today. The expert healthcare professional is expected to develop a mastery of diverse skills and knowledge that sets them apart from other domains of expertise such as chess, bridge, music, or sports. Despite the unique features presented by this domain the practitioner’s cognitive processes and the knowledge upon which they are based have consistently emerged as essential to the development of expertise (Norman, Eva, Brooks, & Hamstra, 2006).
Expertise in Nursing

Clinical nursing expertise is developed through clinical practice and experience over time and was defined as the fluid, flexible, and anticipatory practice demonstrated by nurses who have a comprehensive understanding of the total situation (Bobay et al., 2009; Sackett et al., 1996). There is a heightened awareness of self whereby the expert has the ability to use diverse fields of knowledge and self in an apparently seamless manner (Hardy, Garbett, Titchen, & Manley, 2002). Expert nursing practice entails a holistic and finely tuned grasp of clinical situations that have been acquired through experience and deliberate practice (Ericsson, 2008; Smithbattle & Diekemper, 2001). According to the research literature there are five core concepts that are consistently applied to the concept of expertise across disciplines and is especially significant for nurses in clinical practice: 1) an intuitive grasp of salient aspects of a situation, 2) intuitive judgment and action, 3) comprehensive understanding, with the flexibility, fluidity and ability to, 4) transfer knowledge from one situation to another, and 5) knowledge gained through experience (Avis & Freshwater, 2006; Benner, 2004; Christensen & Hewitt-Taylor, 2006; Ericsson, Whyte, & Ward, 2007).

Salience. Salience is the nurses’ ability-to recognize aspects of the patient’s situation that stand out as important cues to guide the nurses’ judgment and action (Benner, Tanner, Chelsa, 2009; Morrison & Symes, 2011). It’s the ability to assess a given situation realizing the important aspects or points of that situation while simultaneously prioritizing and discarding them based upon their relevance and importance in developing a plan of care. The implicit nature of this interaction has presented difficulties in communicating the cognitive processes involved in the decision (Benner, 1984; 2004; Chi, Glaser, & Ress, 1981).
Lyneham, Parkinson, and Denholm (2008) conducted a three year hermeneutical phenomenological study that used a van Manen’s approach and a Gadamerian analysis that solicited fifteen Australian emergency department nurses through open advertisement. The inclusion criteria required that the nurses have five or more years of nursing practice experience. The purpose of this particular study was to examine the intuitive aspect of expertise as described by Benner. Based on the results of their research they concluded that expert practice is unique and has three progressive phases of development; cognitive, transitional, and embodied intuition. They described in detail the expert nurse’s ability to assimilate information and “internalize” decisions to “freely use what is appropriate at the time” (p. 384) to effectively manage clinical practice.

Benner (1982) developed a phenomenological study to explore and describe the embedded knowledge hidden within clinical nursing practice. Through an interpretative analysis of one hundred nine interviews and participant observations of in-depth and personal accounts of clinical exemplars Benner outlined five levels of expertise in clinical practice. The fifth level, expert was described as demonstrating: a) contextually determinant behavior that no longer relies on analytical rules to govern behavior, b) a holistic rather than fractionated approach to patient care, and c) an intuitive perception of the situation due to a deeper understanding of the total situation.

Benner, Tanner and Chesla (2009) conducted an interpretive phenomenological study of nursing practice to explain distinct patterns of meaning and action in the practice of nurses. Narrative interviews and observations were collected from one hundred thirty nurses individually and in small groups of five and six to explore personal accounts of nursing practice. An interpretive analysis of the data distinguished four levels of clinical practice, from advanced
beginner through expert. Additionally, nurses’ at different levels of skill literally live in different clinical worlds, noticing and responding to different clinical cues for action (Benner, Tanner & Chesla, 2009).

Based on the research findings Benner (2001) asserted that practices grow through experiential learning and through transmission of that learning from one clinical situation to another when similar experiences present themselves (Benner, 2001, p. vi; 2009). The expert clinician develops tacit knowledge working from a deep understanding of the entire situation. Salient pieces of the situation are contextually grounded and grasped automatically as the expert is immersed within and focused on the entirety of the situation. Individual details are lost to conscious thought and at times difficult to verbalize as they have become sub-conscious embedded in memory (Benner, 2001; 2009; National Research Council, 2000; Lyneham, Parkinson, & Denholm, 2008; Durning, et al., 2011).

**Judgment and comprehensive understanding.** Benner, Tanner and Chesla (2009) conducted an interpretive phenomenological study of nursing practice to explain distinct patterns of meaning and action in the practice of nurses. Narrative interviews and observations were collected from 130 nurses individually and in small groups of five and six to explore personal accounts of nursing practice. An interpretive analysis of the data distinguished four levels of clinical practice, from advanced beginner through expert. Additionally, nurses’ at different levels of skill literally live in different clinical worlds, noticing and responding to different clinical cues for action (Benner, Tanner & Chesla, 2009). Their findings also demonstrated that expert nursing practice entails a holistic and finely tuned grasp of clinical situations. Expertise is gained by developing interpretive abilities to identify the nature of practical situations and the development of skillful responses to what, when, and how it must be done (Benner, Tanner, &
Chelsea, 2009). Benner, Tanner and Chelsea (2009) used the six key aspects of intuitive judgment devised by Dreyfus in the skill acquisition model to describe how intuition occurs in expert practice by experts using pattern recognition, similarity recognition, commonsense understanding, skilled know-how, sense of salience, and deliberate rationality combined to form automaticity of action.

Intuition is an ordered logical development of clinical experience, while embodied intuition is the ability to process information implicitly and explicitly, a process that becomes innate within expert practice (National Research Council, 2000; Lyneham et al., 2008; Morrison & Symes, 2011). It is a “fluency” and automaticity of thought processes that no longer requires effort or conscious thought (Benner, 2004; Lyneham et al., 2008; National Research Council, 2000). Expert nurses describe a self-directed, metacognitive, approach to learning from a variety of experiences, to include reflection on results or mistakes, which has enhanced their development (Lyneham et al., 2008; National Research Council, 2000; Morrison & Symes, 2011).

Burger, Parker, Cason, Hauck, Kaetzel, O’Nan, and White (2010) conducted a mixed methods study to examine key differences between novice and expert performance. The study had a purposeful sampling of twenty-three nurses with varying degrees of experience. Given the dynamics and complexities of work processes within the clinical setting the intent of the study was to explore the differences in how advanced beginners, competent and expert nurses differ in their identification and prioritization of patient care. Data collection began just after verbal shift report with the nurse completing a short survey to collect demographic data and a priority work list for the upcoming shift. Researchers then followed the nurses as they progressed through the work day making observations and taking field notes. At the end of the shift the nurse was asked
to re-evaluate the priority work list and re-prioritize it based on actual events. This was followed by semi-structured interview exploring the nurses’ perceptions of the day.

Data analysis focused on the nurses’ priority list, the survey, the typed field notes and the transcribed interview. The demographic characteristics of the nurses determined classification into one of three categories: advanced beginner, competent or expert. Interview transcripts were thematically analyzed without predetermined coding to allow themes and or patterns to emerge from the data. Four consistent themes emerged from the data that illustrated differences in the nurse’ responses to the complex work environment: a) cognitive strategies, b) communication, c) integration of roles, and d) response to the work environment. Suggesting that despite the nonlinear complexities of clinical practice, advanced beginners persist in approaching clinical practice in a linear fashion while the competent and expert nurses used more complex and nonlinear methods (Burger et al., 2010). Burger and colleagues concluded that the expert nurse used more complex and nonlinear approaches to problem management and problem resolution when interacting within the complex acute care environment.

Expert practice depends upon the use of critical reflection to interpret a range of evidence in order to decide how to act in each individual healthcare situation. From our own experiences and the research literature we know that learning is most effective when people have a vested interest and have become personally engaged in the learning process. Experience is the basis for learning, but learning cannot take place without reflection (Dewey, 1997; Osterman & Kottkamp, 1996). Kolb (1984) supported learning as an interactive and repetitive process that consists of four stages: experience, observation, reflection and action.

This kind of complex and intricate evaluation of the evidence should be regarded as quintessentially rational (Avis & Freshwater, 2006). Consequently, as self-reflective practices
develop the responses to patients become more contextualized and attuned. Thus, the intuitive grasp is based on experience and it is situated in the clinician’s grasp of the situation. A sense of salience develops over time identifying some behaviors as standing out and being more plausible and appropriate than others.

Christensen & Hewitt-Taylor (2006) asserted that in the context of professional nursing practice, expertise should embrace both skills and knowledge. The combination of tacit, experiential, and theoretical knowledge yields best practice (Benner, 1984; 2001; Christensen & Hewitt-Taylor, 2006). Knowing how to practice is a matter of expertise, which embodies an approach to intuitive and reasoned decision-making that utilizes evidence from a variety of sources (Avis & Freshwater, 2006; Harteis & Billett, 2013).

Carper’s (1978) classic work, *Fundamental Patterns of Knowing in Nursing*, established the premise in nursing literature that there are ways of knowing, or patterns of knowing, which are not scientific, and possibly not empirical. Carper identified four different patterns of knowing in nursing practice: 1) empirics, those with scientific knowledge, 2) aesthetic knowing, empathy, the art of nursing, 3) personal knowing, the therapeutic use of self and, 4) moral knowing (Carper, 1978, 2013). Aesthetic, personal, and moral knowing are valid forms of knowledge which are characteristic of nursing and equally significant (Carper, 2013; Paley et al., 2007). Cognitive psychology supports the premise of different patterns of knowing and offers strong support for the concept of two distinct cognitive systems (dual process theory). According to the premises of Dual Process Theory, there is cognition that is automatic, intuitive, holistic, parallel, implicit, and fast; while there is also cognition that is deliberate, rule-based, analytical, serial, explicit and slow (Harteis & Billett, 2013; National Research Council, 2000; Paley et al., 2007).
**Experience and flexibility.** Experience and time are fundamental elements to the development of expert performance. Within their bodies of work Ericsson and Charness (1994), Chase and Simon (1973), as well as Benner (2001) have all acknowledged a fundamental principle underpinning expertise and expert performance. It requires seven to ten years of dedicated practice and experience to develop expert performance skills in any domain. Ericsson and Charness (1994) through extensive research with the “structure and acquisition of expertise” asserted that the development of expertise was multi-factorial and required years of dedicated practice. Chase and Simon (1973) while studying the structure of memory in chess players incidentally discovered a significant correlation between experience and the attainment of elite skill performance. Through Benner’s (2001) analysis of clinical exemplars she has asserted that time alone would not be sufficient to promote expertise in clinical practice (Benner, 2001).

Experience is the active transformation and refinement of expectations and perceptions in changing situations (Benner, Tanner, & Chelsea, 2009; Bobay et al., 2009; Christensen & Hewitt-Taylor, 2006; Ericsson & Charness, 1994; Gadamer, 1997). Practices grow through experiential learning, dedicated practice, and through the ability to transfer and apply that learning in varying practical situations (Benner, 2001, p. vi; Ericsson et al., 2007; Ericsson, 2008; Donovan & Bransford, 2000).

Bobay, Gentile, and Hagle (2009) conducted a descriptive correlational study to explore the relationship between experience and reflective thinking skill. A survey format was used with face to face interviews of 156 participants to collect data. Inferential statistics including regression analysis and Pearson product-moment correlations were used to explore the relationships between nurses’ professional characteristics and levels of expertise. Data results indicated that experience as an RN was found to be highly correlated with the initial stage of
expertise ($r = 0.622$, $p < 0.001$). On average participants had 5.7 years of RN experience when they were initially “staged” (range = 0.2-31, SD= 7.35) (p. 50). The average number of years of experience for each stage revealed a definitive progression. Age at initial stage was also significantly correlated to expertise ($r=0.477$, $p < 0.001$) with a mean age of 32 years for all participants (range = 21-54, SD= 8.93). Previous experience as a patient care assistant or practical nurse positively correlated with expertise at initial stage ($r=0.145$, $p < 0.05$). 75% (n=116) of participants reported previous healthcare experience prior to becoming an RN. Initial educational preparation was not found to be significantly correlated with initial stage of expertise ($r = -0.123$, $p > 0.05$). Additional education was not found to be positively correlated with current level of expertise ($r = -0.225$, $p > 0.01$). Specialty certification was inversely correlated with stage of expertise ($r = -0.189$, $p < 0.01$). Regression analysis was conducted using the initial stage of expertise as the dependent variable. Independent variables included: certification, initial education, previous healthcare experience, years of experience at initial stage, and age at initial stage. All were entered simultaneously into the regression analysis. Experience at initial stage was a significant predictor of initial stage ($\beta = 0.087$, $p < 0.0001$).

Comparing five variables all perceived to be related to complex reflective thinking and found no significant relationship between experience and knowledge. This led Bobay et al. to conclude that experience in and of itself could not guarantee the development of expertise. “Specific and sufficient experiences informs expertise” (p. 48).

**Transferability.** The transfer of knowledge is the understanding of learned concepts that promote clinical reasoning and allows flexibility and applicability of new knowledge to new situations within their domain of expertise. Maynard (1996) longitudinally examined the development of critical thinking from novice nursing student to practicing expert and the impact
that critical thinking skill had on clinical competence. Maynard developed a multiple regression and correlation technique to determine effect and relationship with measures of competence as determined by Benner’s stages of skill acquisition and performance on the 6-D scale. A random cross-sectional sample of 170 graduates from baccalaureate nursing schools from 1985 to 1990 was chosen to participate in the study. Factor analysis was conducted of actual responses of nurse graduates and their supervisors rating performance quality of each behavior. Cronbach’s alpha was used to measure the reliability for each of the six sub-scales. Alpha coefficients ranged in value from 0.844 to 0.978, demonstrating high reliability values. Cross-sectional data comparisons were used to compile descriptive data of the total sample and to investigate the relationship between years of experience and Benner’s stages of skill acquisition. Multiple regression and correlation techniques were used to determine effect/relationship with measures of competence as determined by Benner’s stages and performance on the 6-D scale. Maynard’s findings suggested that the experience of experiences within clinical practice was the primary influencing factor on the development of nursing competence.

In an effort to describe professional nursing characteristics contributing to the development of expertise Bobay et al., (2009) asserted that it is the nurses’ intense involvement in reflective practice that allows them to make judgments and to take fluid action in clinical situations. These judgments and actions are based on experience and prior knowledge (Benner, 2001; Ericsson, 2008; Bobay, Gentile, & Hagle, 2009, p. 49). Christensen & Hewitt-Taylor (2006) also acknowledge the importance of knowledge and experience in the development of expertise, but then go a step further to assert that they alone are not sufficient for expertise to exist. The validity of expert practice is gained through the acknowledgment and the recognition of others. Expert nursing practice incorporates the intangible ‘art’ of intuitive thinking and as
such is largely unquantifiable; it is best demonstrated using qualitative, humanistic approaches (Benner, 2001; Lyneham et al., 2008).

**Expertise in Critical Care Nursing**

Expertise in clinical practice is never more essential than in the specialty of critical-care nursing. Critical-care nurses specifically address the human response to complex life-threatening problems that demand a high degree of autonomy and accountability in professional practice. Critical-care nurses practice in an environment that demands astute assessment skills, proactive critical thinking, high intensity therapies and interventions, and continuous nursing vigilance to promote optimal outcomes for patients and families in crisis. They must rely upon a specialized body of knowledge, skills, and experience to achieve these outcomes while creating a humane and caring relationship with the patient amid a complex, highly technical and oftentimes sterile environment that is complex and overwhelming to patients and families (http://www.aacn.org). They are forced into unfamiliar circumstances at their most vulnerable time and must rely upon the critical care nurse to successfully navigate unfamiliar territory (http://www.aacn.org). This is oftentimes an emotionally and physically demanding role for the nurse to command.

It is imperative that the critical care nurse demonstrate expertise in clinical practice. The expert’s skill in recognizing the unexpected when tacit global expectations of a patient’s recovery are not met is a hallmark of expert behavior in clinical practice (Benner, 2004) and is an expectation in the critical care environment. A conceptual definition of expertise is the fluid, flexible, and anticipatory practice demonstrated by nurses who have a comprehensive understanding of the total situation (Bobay, Gentile, & Hagle, 2009; National Research Council, 2000). Altman’s review of Benner’s work suggests that expert nurses use empirics, ethics, and personal knowledge to fully immerse themselves within the context of the situation (Altman,
The expert has progressed beyond skill development and through experience and dedicated practice has developed the knowledge and practical wisdom needed to comprehensively understand and manage clinical situations (Altmann, 2007; Benner, 2001; Ericsson, Whyte, & Ward, 2007).

Gadamer (1997) explained the relationship of skill and the application of those skills using the concepts of techne’ and phroneis as described by Aristotle as they apply to professional nursing practice (Dunne, 2009; Benner, 2001; Gadamer, 1997). Techne’ is a skill or activity that can be captured by procedural and scientific knowledge. Phroneis is the kind of practical reasoning or wisdom engaged in by the critical care nurse whose actions are governed by the concern for doing well in a particular circumstance. Phronesis through experiential learning continually improves for the sake of good practice (Benner, 2004, p. 189; Dunne, 2009; Gadamer, 1997). Praxis is a type of human engagement that is embedded within a tradition of mutually shared understandings and values that remain vitally connected to life experiences. It requires that an individual make wise and sensible practical judgments about how to act in a given situation (Dunne, 2009). The expert nurse has mastered the requisite skill for nursing practice as well as the practical wisdom to understand and apply those skills in the most advantageous manner promoting optimal patient outcomes for the most vulnerable patient populations.

**Strengths, Weaknesses, Recommendations**

The research literature was not representative of all aspects of expert clinical nursing performance or expertise. Much of what is called clinical expertise is more aptly noted as contextual/ situational or diagnostic expertise in the management of clinical situations (Norman, Eva, Brooks, & Hamstra, 2006) the phenomenon of the nurse, the entity of the nurse, was lost
within the exploration of the experience. In many domains research has defined objective
criteria for identifying experts, who are consistently able to exhibit superior performance
(Ericsson, Charness, Feltovich, & Hoffman, 2006). However, in spite of significant advances in
our understanding of the factors that influence the development of reproducible expert
performance, we have only just begun to unravel the complexities of expertise in clinical nursing
practice. Until we are able to capture the essential aspects of expertise and expert performance it
seems unlikely that we will make progress in assessing its structure and development.

The impetus for research on expert performance in critical care nursing was the desire to
learn how exceptional individuals consistently do what they do. Only when we are able to
identify and understand the specific mitigating and enabling factors contributing to the
development of expertise will we be able to successfully coach novices as they embark on this
journey towards expertise and expert performance (Ericsson & Towne, 2010). This knowledge
should be reproduced, described and shared with others to benefit not only clinical decision
making but education as well to promote the education of students and young nurse to facilitate
their progress toward expertise. By examining the development and progress of expert
performers we should be able to develop practice environments and foster learning methods that
facilitate the development of the fundamental skills required to advance their skills and learning
to higher levels (Ericsson, et. al., 2006).

**Summary**

The concept of expertise refers to the characteristics, skills, and knowledge that separate
experts from novices (Ericsson, Charness, Feltovich, & Hoffman, 2006). The literature provided
a consistent overarching definition and supporting tenants of ‘expert’ and ‘expertise’ across
diverse domains. The literature also illustrated the point that research related to expert performance and expertise have been limited in the domain of professional nursing.

Furthermore, researchers have focused on the differences inherent in the cognitive processes of novices and experts without fully understanding the phenomenon of expertise itself (Ericsson, 2007). Benner, as did many researchers before, sought to understand skill acquisition. Her work so vividly represented the clinical experience of the professional nurse that clinicians and educators alike wholeheartedly embraced her findings. What I find lacking in the literature is an understanding of the intricacies of the actual nurse; the professional expert who eloquently transforms the human experience in time of need and crisis.

Understanding what it is to be an expert in critical care nursing is important because it will provide insights into the nature and structure of thinking and problem-solving. Experts have acquired extensive knowledge that affects what they notice, and how they organize, represent and interpret information in their environment. This in turn, affects their ability to remember, reason, and solve problems. This study of expertise illustrates what successful learning should look like (Ericsson et al., 2007; National Research Council, 2000). According to Benner (2001) the practice of professional nursing is contextual and relational in nature and therefore cannot be adequately described by strategies that leave out content and context (Benner, 2001). The intuitive concept of expert practice must be more fully articulated if we are to understand and support the relational and interpretive skills that lead to positive outcomes for the individuals, families and populations served by the profession of nursing (Avis & Freshwater, 2006; Smithbattle & Diekemper, 2001).

Build on the current literature to strengthen current evidence this research study sought the emic perspective of the critical care nurses’ perception of expertise in critical care nursing.
practice as well as the factors that influenced his/her transition from novice to expert. An exploration of this particular phenomenon was warranted to provide strength to the current body of research further asserting the validity of the profession of nursing within healthcare.

As noted previously, without compromising the humanistic aspect of nursing practice, nurses need to engage in further research to examine the concepts of intuitive clinical reasoning to legitimize the concept of expert nursing practice solidifying their place in healthcare (Lyneham, Parkinson, & Denholm, 2008). The contributions and value of nursing expertise must be recognized beyond the boundaries of professional nursing to garner the respect that nurses deserve (Christensen & Hewitt-Taylor, 2006).
CHAPTER 3
METHODOLOGY

The purpose of this chapter was to outline the research methodology chosen for this study and the rationale used in making that decision. The researcher sought to understand the critical care nurse’s personal perception of expertise, expert performance and the professional transition from novice to expert. The researcher explored the concepts of expertise from the emic perspective of the critical care nurse to determine: a) the definition of expertise, b) the characteristics of expertise in critical care nursing practice, and, c) what factors in their professional experiences influenced that transition?

Utilizing a grounded theory approach, the aim of this study was to explore the evolution of expertise in critical care nursing practice. The overarching concept of the study followed the expert-performance approach as proposed by Ericsson and Smith (1991) and provided support to Benner’s Novice to Expert philosophy of skill acquisition. Benner’s philosophy of skill acquisition provided the framework and guide for data collection as the study was seeking to further define and explore the unique characteristics of expertise as it related to clinical practice in the critical care environment and the professional journey required to attain that status. The purpose of this chapter was to describe the research methodology chosen for this study. The research questions, study population, consent process, data collection process, research design and methods of data analysis are discussed in detail.
Grounded Theory

Qualitative research methods are distinct modes of inquiry that are oriented toward understanding the unique nature of human thoughts, behaviors, negotiations and institutions that embrace the perspective of the study participant in the context of their environment and circumstance (Munhall, 2012). Unlike other research methods, the starting point in grounded theory is not a focused research question, but rather an exploration of a domain of human behavior that is defined in a purpose statement (Wuest, 2012). Grounded theory provides an organized approach to capture social processes in context; therefore it is a very useful tool when the intent is development of a framework or theory that explains human behavior (Glaser & Strauss, 1999).

Glaser and Strauss developed the grounded theory research approach in the 1960s as they studied the complex phenomenon of death and dying. In their influential book, The Discovery of Grounded Theory: Strategies for Qualitative Research, they articulated research strategies for the development of theory that was data driven (Glaser & Strauss, 1999). Theory is derived inductively from the data while guarding against interpretive bias in the analysis of that data. Data analysis occurs concurrently with data collection. As a specific research focus or problem begins to emerge informal hypothesis and concepts are drawn inductively from the data, and then deductively verified as new data are collected. Grounded theory is a process well suited to understanding human behavior, and identifying social processes and cultural norms (Hennink, Hutter, & Bailey, 2011). It is particularly useful when there is little known about the subject to be studied or when what is known is from theoretical perspectives and does not fully explain the phenomena (Wuest, 2012). Grounded theory was chosen for this study for its particular strength in explicating human behavior in context. Human behavior related to health issues,
developmental transitions, and situational challenges are well suited to grounded theory research in nursing (Glaser & Strauss, 1999; Wuest, 2011).

In a grounded theory study, concepts are generated from empirical data rather than from existing literature. It is important to remember that building empirically grounded theory requires a reciprocal relationship between the data and theory. The data must be allowed to generate propositions in a logical manner that permits use of priori theoretical frameworks, but at the same time, “keeps a particular framework from becoming the container into which the data must be poured” (Creswell, p. 67). Informal hypothesis and concepts are derived inductively from the data, but then deductively verified and modified as new data are collected.

The concept of expertise refers to the characteristics, skills, and knowledge that separate experts from novices. In some domains research has defined objective criteria for identifying experts, who are consistently able to exhibit superior performance (Ericsson, Charness, Feltovich, & Hoffman, 2006). However, in spite of significant advances in our understanding of the factors that influence the development of reproducible expert performance, we have only just begun to unravel the complexities of expertise in clinical practice. Until we are able to capture the essential aspects of expertise and expert performance it seems unlikely that we will make progress in assessing its structure and development. The impetus for research on expert performance is the desire to learn how exceptional individuals consistently do what they do. Only when we are able to identify and understand the specific mitigating and enabling factors contributing to the development of expertise will we be able to successfully coach novices on how to start and continue on the road to expertise development (Ericsson & Towne, 2010). This knowledge can be verbally described and shared with others to benefit decision making in clinical practice and education to help educate students and facilitate their progress toward
expertise. By examining the development and progress of expert performers we should be able to
develop practice environments and foster learning methods that facilitate the development of the
fundamental skills required to advance their learning to higher levels (Ericsson, et. al., 2006).

**Grounded Theory Methodology with a Constructivist, Interpretivist View**

Creswell (2009) defined a paradigm or world-view as a basic set of beliefs that guide
action. A constructivist research paradigm assumes that there are many realities and that
researcher and study participant co-create understandings (Creswell, 2009). A paradigm provides
congruency for the research study linking the need for knowledge (aim) with the means of
posits that this link between methods and aims represents the researcher’s world view or
philosophical paradigm and in turn shapes the methods and interpretative lens used in research.

Grounded theory was chosen for this study for its particular strength in explicating
behavior related to health issues, developmental transitions, and situational challenges are well
suited to grounded theory research in nursing (Wuest, 2012). A key tenet of Charmaz’s
approach to grounded theory is to give voice to the subject. It is this principle that helps make
constructivist grounded theory useful in research focused on professional nursing practice
(Carmaz, 2006).

**Research Questions**

The purpose of this study was to examine and explore the critical care nurse’s personal
perceptions of expertise, expert performance and the transition from novice to expert in clinical
practice. The study addressed the following questions:

a) How would you define the expert nurse in clinical practice in critical care?
b) What criteria or characteristics would you use to define expert performance in clinical practice in the critical care unit?

c) How does one become an expert in critical care?

d) In your experience what factors have supported or hindered your professional development?

**Population and Sampling**

This grounded theory study was conducted in the Southeastern United States. The researcher was seeking registered nurses who currently practice within a defined critical care area. She specifically sought out nurses who had met eligibility requirements for critical care certification, who had successfully passed their respective critical care competency examinations and who had a minimum of seven years of clinical experience in critical care for participation (Benner, 2001; Ericsson et. al., 2007). Critical care was defined as anyone working in an intensive care unit, emergency department, critical care transport, or anesthesia care unit (Critical care Nursing Certification, n.d.). Critical care nurses who currently possess a critical care certification were contacted through public notice, their local professional organizational chapter and/or by professional referral. Local chapters, chapter presidents and the contact information are listed by state on their respective professional websites. Personal appearances at professional meetings, flyers, phone calls, and e-mail invitations may be used to solicit potential study participation.

The researcher initially began with the AACN chapter presidents who preside over meetings within a two hundred mile radius of Tuscaloosa, Alabama. She contacted them via e-mail with the expressed purpose of introducing the chapter leadership to the study and if possible, to secure an invitation to attend up-coming chapter meetings. The researcher had
planned to introduce the study to the local membership, answer any potential questions and leave flyers and contact information of the researcher for follow up.

Upon invitation, the researcher planned to attend the AACN chapter meeting prepared to present a brief description of the research project to chapter members at the discretion of the chapter president. The researcher also had available; the researchers contact information and abstract of the research project for distribution. The researchers contact information and research abstract was also available to be left with the chapter president for any chapter members who may have voiced interest in the research project at a later date. Interested parties were screened by the researcher to determine if inclusion criteria were met.

Potential study participants who responded to public notice, referral or who attended the AACN chapter meeting and expressed an interest in the study would have been contacted via e-mail within twenty-four hours of initial contact. The researcher briefly outlined the purpose and intention of the research study and thanked them for their interest. Potential study participants were screened and selected according to the inclusion and exclusion criteria as noted previously. AACN members who expressed an interest in the study but did not meet inclusion criteria received an e-mail from the researcher expressing the researchers appreciation and rational for exclusion in the study. AACN members who expressed an interest in the study and who met inclusion criteria were contacted for a follow up appointment at the potential study participant’s earliest convenience. The logistics of subsequent communication and meetings were determined by the location, safety and comfort of the potential study participants.

**Sampling and Sample Size**

True to the tenants of grounded theory the researcher initially “selected participants that would best help the researcher understand the problem and the research question” (Creswell,
2014, p. 189). Data analysis began with the first interview and as early concepts begin to emerge, subsequent interviews explored those emergent concepts to further develop and support emerging themes and theory. According to Corbin and Strauss (1990) data collection and analysis should proceed in an alternating sequence of data collection and analysis that would provide a constant comparative between results and new findings. This repetitive cycle of induction and deduction served to guide further data collection.

The sampling process took on three distinct patterns during the study: a) initially, the researcher began with a sample of convenience; snowballing facilitated sampling, b) progressing to purposeful sampling as data began to reveal emergent concepts, and c) finally, theoretical sampling as data collection became more refined seeking to clarify properties of emerging concepts and their relationships to one another (Wuest, 2011). The process of theoretical sampling continued until data saturation was achieved, meaning that no new concepts or variations were emerging from the data being analyzed. The process of theoretical data collection and sampling is defined by the concurrent collection and analysis of data as information is jointly collected, coded, and analyzed. The data then determines the direction and focus of future data collection in order to develop and clarify emergent theory (Glaser & Strauss, 1999). To provide depth and diversity to the core theoretical categories in gaining theoretical saturation a minimum of ten to twelve interviews were anticipated, however, due to the fact that theory was expected to evolve as the data was collected and explored, an exact sample size was not determined beforehand (Creswell, 2014). Sample size should not the focus in a grounded theory approach, rather data are collected by theoretical sampling until theoretical saturation is achieved (Wuest, 2012).
Recruitment

The AACN website supports local chapter websites. The local websites were posted for each state and contained the contact information of the governing leadership. The researcher utilized personal appearances at chapter meetings, the posting of public notices, phone calls, and email invitations to solicit participation in the study. Participation was completely voluntary, and at the end of each interview, the participant was presented with a twenty-five dollar Visa or MasterCard gift card for their participation and time.

Data Collection

Following review and approval by the Institutional Review Board of the University of Alabama, AACN local chapter presidents were contacted to seek potential study participants through local AACN organizational meetings. The researcher described the study with the intent to solicit an invitation to the upcoming chapter meeting and to generate interest in the study. If the chapter president declined the researchers request to attend the meeting the researcher requested permission to submit an abstract of the study and contact information for future review and distribution. Inclusion criteria was defined as: a) any registered nurse who has met critical care certification eligibility criteria, b) any nurse with ten years of critical care experience who has successfully passed their respective certification examination, and c) anyone who has maintained that certification. Exclusion criteria was defined as: a) anyone who was a current employee of the researcher at the time of the study, b) anyone beyond a 200 mile radius from Tuscaloosa, Alabama, c) anyone who did not currently hold a critical care certification, and d) anyone who had less than ten years of critical care experience.

Consistent with a grounded theory approach to research, data collection and analysis proceeded concurrently. As data was collected, concepts began to arise inductively from the data
as it was analyzed. As these emergent concepts were recognized, decisions had to be made deductively to seek clarity and discover relational understanding. The data then drove further data collection (Glaser & Strauss, 1999).

**Interview**

All information was gathered through semi-structured interviews; either in face-to-face interview or Skype interview format depending upon the preference of the prospective participant (Wuest, 2012). The researcher posed an open-ended broad question to prompt the study participant to begin sharing their personal impressions and experiences. Any follow-up or probing questions by the researcher were designed to stimulate further exploration and sharing by the participant.

Charmaz (2014) described the interview as an intensive interview process that is a “gently-guided, one sided conversation that explores the research participant’s perspective on their personal experience with the research topic” (p. 56). An interview protocol guide was utilized to provide consistency between interviews and structure to the interview process (Charmaz, 2014). Interviews lasted approximately sixty minutes and were audio recorded for accuracy and to assure verbatim transcription and analysis. A transcriptionist recommended by the University of Alabama’s Capstone College of Nursing was contacted for timely and accurate transcription of the interviews (Hennink et al., 2011). The interviews followed an established interview protocol that consisted of open-ended questions focusing on the personal perceptions of the expert nurse. The researcher was seeking to discover the nurses own personal experiences and perceptions of expertise as it related to them personally. The discursive content of the interview then drove the development of codes and the identification of themes moving forward.
An interview protocol template was developed and utilized to provide standardization and consistency from the interviewer’s perspective. Once the researcher had obtained the informed consent from the participant, non-descript demographic data was collected prior to the actual interview and documented on the interview notes. The interview protocol template contained the introduction script, the “ice-breaker” and relevant questions. The development of the interview questions predicated upon Benners’ conceptual model and definitions of skill acquisition. Open-ended questions were specifically designed to stimulate conversation prompting the study participant to provide thoughtful descriptive content and to provide consistent structure to the interview process. The questions were also formatted to address all research questions in the study and probing follow up questions were added and documented dependent upon the content of the data generated (Hennink et al., 2011).

**Participant Observer**

The human observer is the most valuable assessment tool in qualitative research. Astute observational skills and note taking are essential in documenting and understanding the context in which the phenomena occur (Rudestam & Newton, 2007, p. 111). Throughout the data collection process detailed note taking is essential to capture emerging concepts and their relationships (Wuest, 2012). Analytical and reflexive memo writing provides transparency of the research process and a trail of analytical decisions (Hennink et al., 2011). An observational protocol was developed and utilized to record interview observations, personal notes and reflective journaling. Physical descriptions of interview settings or interactions with participants were also noted. All observations were documented on a blank template developed and printed specifically for the purpose of consistent and comprehensive documentation (Wuest, 2012).
Data Recording and Analysis

Data Recording and Transcription

Face-to-face interviews were voice recorded for accuracy. Detailed interview notes and reflective memos provided data for coding and analysis. A transcriptionist recommended by the University of Alabama’s Capstone College of Nursing was contacted for timely and accurate transcription of the interviews (Hennink et al., 2011). The University of Alabama’s Qualitative Research Lab was consulted for analytical support and guidance as the data was processed.

Data Analysis

Data analysis was aimed at generating a theoretical rather than a descriptive account of the patterns of behavior gleaned from the study participants (Wuest, 2012). The exploratory analysis of data was particularly well suited to grounded theory and emphasized emergent concepts derived from the interaction between the researcher and the participant. Using a thematic analysis strategy, to link the coding process to the evidence, all responses to questions were extracted. Thematic analysis is a rigorous strategy of inductive procedures designed to identify and examine themes from textual data in a way such that is transparent and credible maintaining the accuracy and integrity of the stories and experiences as told by the study participants (Charmaz, 2014; Guest, MacQueen, & Namey, 2012).

Data analysis in grounded theory follows a standard systematic format that includes three stages to data analysis: 1) open coding focused on the text and was a process of line by line coding of relevant data, 2) axial coding or categorizing was the conceptual process of pulling the initial codes together based upon familial patterns and/or relations developing categories from the coded data, and 3) selective coding or thematic coding was the final stage of analysis that concentrated on the theoretical development and the higher level thinking that evolved from the
data (Creswell, 2014; Corbin & Strauss, 1990; Charmaz, 2014). According to Corbin & Strauss (1990) “data collection and analysis are inter-related processes” (p.6). The analysis of data should begin with the first piece of collected data.

**Open coding.** Open coding was the initial process of discovering and labeling concepts within the data. A set of initial codes and subsequently the corresponding definitions to support those codes were developed through a line-by-line verbatim coding of the data. According to Saldana (2014) in vivo coding is the process of verbatim analysis that “honors the participant’s voice” (p.91) and uses line by line verbatim analysis of the transcribed data to identify codes and categories. This particular method of initial coding is particularly useful when the researcher is seeking the emic perspective of the study participant (Saldana, 2014).

Conceptually similar concepts were then grouped together to form categories and subcategories. These “categories and their properties” became the impetus for further sampling (Corbin & Strauss, 1990; p. 12). As concepts developed the researcher developed a codebook to organize data and provide a “central reference” for all codes in the study (Hennink, et al., p.225). The researcher enlisted the help of an expert in the data collection and analysis of qualitative data to ensure content validity. The University of Alabama Qualitative Lab was contacted for methodological support.

**Axial coding.** Axial coding followed the initial analysis of data in open coding with the intent to explore and define the relationships between the categories and subcategories (Corbin & Strauss, 1990; Charmaz, 2014). According to Charmaz (2014) axial coding is a systematic process that further defines the categories and subcategories and establishes the characteristics and boundaries for those categories. A matrix was generated to summarize and organize codes that occurred independently, together and/or in clusters to analyze and identify core elements,
and the relationships used to identify expert nursing (Guest, McQueen, & Namey, 2012, p. 36). Concepts derived from analysis of data then drove further data collection for clarification.

**Selective coding.** As a critical care nurse I see limitations to Benner’s hallmark description of expertise. The use of “intuition” to define the expert nurse minimizes the nurses’ professional knowledge and clinical experience without providing an in-depth understanding of what it is to be an expert. Selective coding is the process of aligning defined categories around a central theme (Corbin & Strauss, 1990). Through selective coding the data supported an emergent theme and the emergent theme provided the framework for integration of concepts. This framework gave structure to the emerging concepts of expertise. To ensure unbiased development and interpretation of theory the researcher remained completely immersed within the raw data to maintain congruence with the original concepts and meanings (Charmaz, 2014).

This grounded theory approach involved two essential sub-processes that composed the basis of inductive analysis: unitizing and categorizing. This process is known as the constant comparative method. Unitizing is a coding operation in which informational units were isolated from the text. In the second sub-process, categorizing the informational units derived from the unitizing phase was then organized into categories on the basis of similarity of meaning. As the number of categories reached saturation, the researcher attempted to write rules defining the categories. The constant comparative method required continual revision, modification, and amendment of the categories until all new units could be placed into an appropriate category. These steps included the previously mentioned process of open coding to develop the initial codes, categories, axial coding to build the relationships of those categories, and then selective coding as integration and refinement of theory emerged from the data. The resulting theory may
be presented in the study as a hypothesis generated by the data or proposed as a comprehensive model (Rudestam & Newton, 2007).

**Credibility/ Trustworthiness**

The credibility of a qualitative study means that the researcher has taken purposeful action to ensure the trustworthiness or validity of the research findings. Creswell (2014) asserted that “it is important to determine whether the findings are accurate from the standpoint of the researcher, the participant, and the reader” (p. 201) and identified eight procedural strategies that researchers could use to validate the accuracy of research findings. It is recommended that researchers use at least two of these strategies in their research proposal to address concerns of credibility (Creswell, 2014). This researcher chose to employ three distinct strategies to ensure credibility of the study.

According to Charmaz (2014) member checking is the process of verifying research findings with study participants. As concepts and themes evolved throughout the process of data analysis findings were presented to study participants giving them an opportunity to determine if the perceptions of the researcher were accurate. During the initial interview participants were asked if they would be interested in reviewing the data findings for accuracy. Those individuals who expressed an interest in the study findings were contacted for follow up. These follow up interviews provided a good opportunity for participants to provide feedback and clarification as needed.

The clarity of potential subjectivity on the part of the researcher was gained through reflective thought and understanding; reflectivity. The researcher acknowledges that her extensive experience as a critical care nurse and manager has the potential to influence sampling and data interpretation. Given the nature of the management role that the researcher holds in her
professional career no study participants were allowed to have a direct subordinate relationship with her.

Peer debriefing is the process of involving another person in the research process to ask questions and clarify concepts along the way and adds credibility to the findings. This research project was conducted in partial fulfillment of the degree requirements of Doctor in Education at the University of Alabama. Oversight of the research study was closely managed by the dissertation chair to ensure accuracy of findings and the integrity of the interpretation.

**Limitations**

Grounded theory methodology can be very complex and time consuming due to the overwhelming volume of dialogue transcribed, the tedious coding processes, and memo writing required for data analysis. The researcher contacted a transcriptionist recommended by the University of Alabama for transcription support. The research lab at the University of Alabama was contacted for support and guidance through the data analysis and interpretation process.

For grounded theory methodology to develop theory it is a subjective process and therefore reliant upon the abilities of the individual researcher. This study has followed the methodological guidance of Charmaz (2012) to gather and analyze interview data acknowledging the importance of the emic perspective in understanding the phenomenon of expertise. The researcher was a novice. The complexities of data collection and theoretical sampling that allows the emerging themes to direct on-going data collection rather than purposeful sampling can confuse inexperienced researchers. The University’s Research lab provided feedback and support as the process evolved.
Strengths

At the time of the study the researcher was the nurse manager of a medical intensive care unit with greater than twenty nine years of clinical and twenty-one years of managerial experience in critical care. She managed a thirty-two bed medical intensive care unit at a six hundred bed acute care teaching facility. She was an active member of AACN and has been CCRN certified for twenty-two years; her experience has exclusively focused on adolescent, adult and geriatric populations. This study was undertaken in partial fulfillment of the degree requirements for the doctorate of education (Ed.D.) Instructional Leadership dissertation seminar at the University of Alabama in Tuscaloosa, Alabama.

Grounded theory methodology provided a structured systematic process for the collection and analysis of data that was literally grounded in the data. Concepts and theories arose inductively from the rich experiences of those who directly lived and experienced the phenomena of interest (Glaser & Strauss, 1999; Wuest, 2011). Grounded theory was a process well suited to understanding human behavior, and identifying social processes and cultural norms (Hennink, Hutter, & Bailey, 2011).

Ethical Considerations

The Institutional Review Board of The University of Alabama reviewed and approved the research and research methodology prior to initiation of data collection. Potential participants were self-determinant and had the right to decline study participation prior to and at any time during the interview process. Prior written informed consent was obtained. Anonymity and confidentiality were guaranteed by the researcher.

The researcher enlisted several strategies to ensure credibility of data as the data was used to inductively generate theory. Prior to the study an in-depth literature review was conducted to
establish clear and congruent concepts related to expertise in the current body of literature. Searching multiple databases, expertise was examined in non-nursing domains to explore common aspects and overarching concepts. The basic definition and tenants of expertise and the expert performer were found to be congruent across domains. Logically, it would follow that if the data are credible; the results derived from that data would accurately describe the phenomenon of interest (Guest, McQueen, & Namey, 2012). As the study began to produce concepts and themes the transcripts were reviewed with the study participants for conceptual and thematic accuracy. As this was a dissertation process, the entire study was audited for authenticity, consistency, and reliability.

Summary

Grounded theory provides research guidelines for the development of empirical theory that is derived from the emic perspective of participants in their social context (Hennink, Hutter, & Bailey, 2011). The researcher was specifically seeking the personal experiences and perceptions of study participants to explore common themes and concepts to elucidate core principles in defining the expert nurse and expert performance in clinical practice. Simultaneous data collection and analysis progressed until conceptual saturation was achieved with no new data being collected. The data was continuously subjected to examination until the theory actually emerged. It provided a theoretical understanding of the core concepts of expertise in clinical practice (Charmaz, 2006). Data analysis follows in the subsequent chapters.
The purpose of this study was to explore the concepts of expertise, expert performance and the evolution of expertise from the perspective of the critical care nurse as it relates to clinical practice in the critical care environment. To that purpose this chapter will present an organized review of the data, and data analysis to address the research questions posed by this study in previous chapters:

a) How would you define the expert nurse in clinical practice in critical care?

b) What criteria or characteristics would you use to define expert performance in clinical practice in the critical care unit?

c) How does one become an expert in critical care?

d) In your experience what factors have supported or hindered your professional development?

The chapter will begin with a demographic description of the study population to be followed by the presentation of data and data findings organized initially by relevant themes and then followed by a presentation of themes organized in relation to the individual aforementioned research questions. The chapter will conclude with a summation of the data gathered and the data findings.

**Demographics**

Upon the approval of the University of Alabama’s Institutional Review Board (IRB) The Greater Birmingham Chapter of the American Association of Critical Care Nurses (AACN)
leadership group was contacted via e-mail through the AACN webpage. A written request was submitted to the group for consideration to attend the upcoming chapter meeting with the expressed purpose of introducing the study, Evolution of Expertise, to the local AACN membership and to leave the researchers contact information for anyone who may be interested in participating in the study. Additionally, professional colleagues were contacted via telephone and/or e-mail to introduce them to the study and request professional referrals. These professional colleagues were not contacted through the employer of the researcher.

The written request submitted by this researcher to attend the upcoming Greater Birmingham AACN Chapter meeting has not been acknowledged to this point. All potential study participants were received through professional referral. Upon receipt of the initial referral the potential study participants received a prompt follow up phone call from the researcher to verify that all inclusion criteria were met and if possible to schedule the interview appointment at a mutually acceptable time and location.

The researcher traveled to various locations to meet study participants. It was noted that 100% of the participants preferred to meet in a professional location following a shift or rotation. Interviews were conducted at the airport, in breakrooms and cafeterias. Ultimately, there were ten study participants included in the study sample. As noted in the inclusion criteria all study participants were registered nurses who currently hold an active unencumbered nursing license and currently work within the specialty of critical care. The participants in the sample set have or have had an extensive critical care background in a vast array of critical care sub-specialties: Level I Trauma Emergency Department, Level I Trauma Intensive Care, Critical Care Flight Nurse/ Air Transport, Neonatal Intensive Care, Emergency Department, and Pediatric Intensive Care. Fifty percent of the study participants have previous paramedic, fire rescue, Licensed
Practical Nursing, or emergency management experience prior to becoming a registered nurse.

The years of experience specific to critical care spanned thirty-nine years of nursing practice with an average tenure of 24.5 years altogether. Eighty percent of the participants were woman. The youngest study participant was thirty-eight years of age and the oldest participant was sixty-one with an average age of forty-nine years of age altogether. All held multiple critical care and trauma certifications, with a minimum of three nationally recognized certifications each and 100% of the participants discussed continuing education during the interview. Fifty percent of the participants were certified instructors for required advanced critical care and trauma certifications. Forty percent of the participants were bachelors prepared nurses, forty percent were associates prepared, and twenty percent were masters prepared nurses.

Following the interview any observations, tapes or references to the interview were labeled with a random automotive call name or pseudonym for ease of collective filing and referencing during coding. Once labeled accordingly all materials were placed in a file folder with the same call name. Details of this process will follow later in the chapter. The following summary outlines each study participant in detail in alphabetical order.

**Participants**

**Altima** is a forty year old male nurse with sixteen years of nursing experience. He holds a Bachelor of Science in nursing (BSN) degree and is currently a Certified Critical Care Flight Nurse. Prior to becoming a registered nurse he was a fire rescue paramedic for six years. Altima has a diverse critical care background that includes Neonatal Intensive Care (NICU) with extracorporeal membrane oxygenation (ECMO) competencies, Level I Trauma Emergency Department (ED), and Level I Adult Trauma/ Surgical Intensive Care Unit (TSICU). He is currently a Certified Critical Care Register Nurse (CCRN), Trauma Nurse Core Curriculum
Altima is a forty-five year old male nurse who has twenty-five years of experience. He is a certified Provider (TNCC), Advanced Cardiac Life Support (ACLS) Instructor, Basic Life Support (BLS) Instructor, Pediatric Advanced Life Support (PALS) Instructor, Neonatal Resuscitation Provider (NRP), and Fundamental Critical Support Certified (FCCS) by the Society of Critical Care Medicine. Even though Altima works full time as a flight nurse he continues to work part time shifts in the ED and ICU at local hospitals in the Birmingham, Alabama area.

**Cadillac** is a forty-five year old female nurse with twenty-four years of nursing experience. She holds a Master of Science in nursing (MSN) degree and is currently working in a Cardiac Intensive Care Unit (CCICU) and Cardiac Interventional Unit (CCU). Cadillac has previous critical care experience in the Medical Intensive Care Unit (MICU) and medical step down unit. She is currently CCRN certified in critical care, a certified ACLS provider, and BLS provider.

**Camaro** is a fifty-eight year old female nurse with twenty-four years of experience. She has relevant experience as a Licensed Practical Nurse (LPN) prior to obtaining her Associate of Science (ADN) in nursing degree. She currently works in a Trauma/ Surgical Intensive Care Unit and has previous experience working in the progressive acute medical/ surgical units. Camaro is a certified TNCC provider, ACLS Instructor, BLS Instructor, and PALS Instructor.

**Camry** is a forty-six year old female nurse with twenty-five years of nursing experience. She holds a Bachelor of Science in nursing (BSN) degree and is currently working full time as Critical Care Clinical Educator. Prior to becoming a registered nurse she worked as a paramedic with Emergency Management Services (EMS). Camry is currently in graduate school pursuing a post graduate Master of Science in nursing degree. She is currently certified as a TNCC provider, ACLS Instructor, PALS Instructor, and BLS Instructor. Her experiences have solely focused within the ED and EMS services.
**Corvette** is a forty-five year old male nurse with twelve years of nursing experience. He holds a Bachelor of Science in nursing (BSN) and is currently a full time Certified Critical Care Flight Nurse. Prior to becoming a registered nurse he worked as a paramedic with Emergency Management Services (EMS) for seven years. Corvette has a diverse critical care and rescue services background that includes MICU, ED, EMS and Critical Care Transport. He is currently a certified International Trauma Life Support (ITLS) provider, ACLS provider, PALS provider, NRP provider, and BLS provider.

**Passat** is a fifty-two year old female nurse with thirty years of nursing experience. She holds an Associate in Science of nursing (ADN) and is currently pursuing her Bachelor of Science (BSN) in nursing. She has been a full time Certified Critical Care Flight Nurse for over twenty-two years. Prior to becoming a flight nurse Passat has had a diverse clinical background. She has worked in Level I Trauma ED, Level I Adult Trauma/ Surgical ICU, NICU, Pediatric Intensive Care Unit (PICU), Medical ICU, Labor and Delivery, Obstetrics. Prior to becoming a nurse she has also worked as a paramedic with EMS. Passat is currently CCRN certified, Flight Nurse certified, certified as an ACLS provider, NRP provider, and BLS provider.

**Porsche’** is a sixty-one year old female nurse with thirty-nine years of nursing experience. She holds an Associate in Science of nursing (ADN) degree and currently works in the NICU. Porsche’ has had a diverse nursing background in her career. She has had experience in both small rural hospital environments and large metropolitan hospital environments. She worked in a smaller general Medical Surgical ICU prior to transferring to the TSICU and eventually NICU. She also has experience in critical care education, surgical step-down, acute care and ED.
Taurus is a fifty-four year old female nurse with thirty-two years of nursing experience. She holds a Bachelor of Science in nursing (BSN) degree and is working full time in the MICU. Taurus is past TNCC certified; current CCRN certified and has maintained that certification for twenty-two years. She is also certified as an ACLS Instructor, PALS Instructor, and BLS Instructor. Her nursing experiences have solely focused within critical care, primarily the MICU but she also has experience with TSICU and the ED.

Volvo is a thirty-eight year old female nurse with nineteen years of nursing experience. She holds a Master of Science in nursing (MSN) degree and is working full time as Critical Care Clinical Educator. Volvo has a diverse background in her nursing career. She has worked as a Director of Nursing at a small rural hospital; she has experience in acute care with general medical surgical experience, MICU, and TSICU. She is currently CCRN certified, and also certified as a TNCC provider, ACLS Instructor, PALS Instructor, and BLS Instructor. She continues to work part time within the critical care departments to maintain her credentials and to facilitate teaching.

Yukon is a fifty-three year old female nurse with twenty-four years of nursing experience. She holds an Associate of Science in nursing (ADN) degree and is currently working full time in the TSICU. Prior to becoming a registered nurse she had prior experience as an LPN. Yukon is currently certified as a TNCC provider, ACLS provider, and BLS provider. Her experiences have solely focused within the TSICU.

The following figures, 4-0 and 4-1 briefly demonstrate demographic comparisons to age, years of experience, the diversity of experiences and number of certifications held by each participant.
Figure 4-0. Sample demographics: trend line 10 years or 10,000 hours.

Figure 4-1. Sample demographics: comparing years of clinical experience, diversity of experiences, number of certifications, and academic degree.
Data

Data Collection

The purpose of this study was to explore the personal perceptions of critical care nurses who within their own domain are considered experts as it pertains to the specific qualities and traits of the expert nurse and the expert nurse’s clinical performance. With that purpose in mind and following the tenants of the grounded theory process the researcher initially sought interview candidates who could best address those questions (Creswell, 2014). As previously mentioned following IRB approval the researcher attempted to make contact with the Birmingham area AACN chapter, made phone calls and sent e-mails to professional colleagues requesting referrals. It is important to reiterate that the professional colleagues contacted for referrals were not done so through the researcher’s current employment.

The first interview was the most difficult to schedule. However, at the conclusion of the initial interview the study participant recommended additional study participants who they considered “good candidates” for the study. These potential study participants were contacted within eight hours of the referral; 80% were contacted within the hour. Through on-going referrals and word of mouth sharing the sampling process truly took on a snowballing effect. The researcher was able to obtain ten strong interviews within a course of two weeks (Wuest, 2011). Data saturation began to become evident after the seventh interview. With no new concepts being identified in subsequent interviews the researcher was confident that she had reached data saturation. However, the interview process was continued to complete the tenth interview. The last three interviews served to re-iterate and add depth to the previous data. Specific analogies and descriptors voiced by the study participants may have differed, but the concepts remained the same as had been noted in previous interviews.
Interview. Following a brief introduction of the study, the purpose of the study and the interview process the study participant was asked to review and sign the informed consent form. They were allowed an opportunity for questions and declination prior to the beginning of the actual interview. All data collected for analysis was gathered through audio-recorded semi-structured face to face interviews, observations and reflective memos. The discourse of the interview was audio-recorded for verbatim transcription to ensure data integrity and accuracy through the coding and data analysis process. Study participants appeared to be nervous when the tape recorder was initially turned on but once the researcher commenced with the interview the tape recorder seemed to have been forgotten until the researcher turned it off concluding the interview.

Interview protocol guide. The researcher developed two forms to aid in the data collection and documentation process; the Interview Guide and Protocol and the Interview Notes. The Interview Protocol Guide was utilized throughout the data collection process by the researcher to remain on track with the intended purpose and to ensure that all research questions were consistently addressed in all interviews. Open ended interview questions and probing questions aligned with the stated research questions of the study.

Research question 1: How would you define the expert nurse in clinical practice in critical care?

Related interview questions:

- Where would you fit on the novice to expert continuum of professional development?
- What’s different about that expert nurse?
• How would you describe your special skills or qualities? What sets you apart from that new person?

Interview questions related to research question two were predicated by a complicated clinical scenario or vignette relevant to the study participants current critical care specialty. This scenario was developed by the researcher at the time of the interview dependent upon the location of the interview and specialty background of the study participant. The vignette was used to set the context and bring focus for the upcoming questions.

Research question 2: What criteria or characteristics would you use to define expert performance in clinical practice in the critical care unit?

Related interview questions:

• Given the scenario that’s just been described, who do you call for help when you’re in trouble?
• Thinking about that person, why did you choose him/her?
• What makes them your “go to person”?
• What is it about set them, those folks specifically that set them apart from all of the other folks that you work with?
• What qualities or characteristics define them; set them apart, say from the new graduate?
• What is it about their interaction with patients, families and physicians that makes them stand out to others?

Research question 3: How does one become an expert in critical care?

Related interview questions:
• If a new graduate approached you and told you that they wanted to be an expert
fight nurse, trauma nurse, ICU nurse. I want to be as good as you are. What would
you say to them? What advice do you have for them?
• What does it take to become an expert?
• Considering your own experiences, what motivated or motivates you to be an
expert in your field? To be recognized as an expert in your profession?

Research question 4: In your experience what factors have supported or hindered your
professional development?

Related interview questions:

• Thinking back over your career. What opportunities or experiences have you had
that have helped you with professional growth?
• On the flip side of that; please share any obstacles or opportunities for
improvement that you might have experienced or witnessed along the way.

Through the application of this form the researcher was able to remain on task and guide the
interview through all relevant points. This process provided a loose structure for the novice
researcher to keep her on track through the interview process itself and to provide consistency
between subsequent interviews. Interview questions were not read verbatim but loosely
paraphrased to remain true to the intent. The interview protocol was solely used as a guide.

Interview notes. In addition to the Interview Protocol Guide form the researcher
developed the Interview Notes form to provide a specific location for the documentation of
demographic data, any interview notes taken during the interview itself, notable observations,
and reflective comments relevant to the interview or interview process. This form was given the
same automotive pseudonym as the audio recording following the interview. The Interview
Notes form was divided into two parts. The top of the form contained standardized questions to address demographic data pertaining to the study participants: date/time/location of the interview, gender and age of the participant, critical care specialty, professional certifications, highest academic degree, and number of years of clinical experience. The bottom two-thirds of the form was lined and left blank for free hand notes.

The meeting in and of itself typically lasted 45-75 minutes. The length of the actual recorded data was dependent upon the engagement of the participant and their willingness to share information. There was one recorded interview that had fifteen minutes of recorded data while another had forty-two minutes of recorded data. Each participant who completed the interview received a $25 VISA or MasterCard gift card purchased by the researcher as a token of appreciation for their time. The gift card was presented at the conclusion of the meeting as the parties went their separate ways.

Data Recording and Analysis

Anonymity. Immediately following the interview the researcher labeled and organized the data pertaining to that interview while sitting in her vehicle. The signed consent form was pulled and placed in a separate folder for later filing. There were no personally identifiable tags, label or marks to associate an individual consent form with a specific transcription or the interview material. Following all subsequent interviews the signed informed consents were pulled and placed in the same secure folder. They will be maintained in a locked secure filing cabinet in a locked secure building for three years as per IRB protocol. The interview tape was pulled and labeled with a random automotive make or model; Altima, Corvette, Taurus, etc. All material related to that interview was labeled using the same pseudonym and placed in a folder labeled similarly. This was also an opportunity for the researcher to reflect on the interview and
make quick general notes regarding the interview process while the information was foremost in her mind.

**Transcription.** In view of the unexpected length of the recorded data and the timeliness of the turnaround time for returned transcripts the researcher opted to transcribe the discursive data personally. This was a labor intensive process that proved to be a valuable exercise as it gave her an intimate knowledge of the data and provided a more efficient and timely turnaround of transcripts and access to the data. In preparation for the transcription process the researcher developed a transcript template to facilitate line by line open coding of data and provide marginal space for notes during the analysis process. This template was used for all transcriptions.

![Transcription template](image)

Figure 4-2. *Transcription template.*

The accuracy of the verbatim transcription was verified by concurrently listening and reading the transcripts until no further edits were made and the researcher could literally read verbatim the discourse of the interview. The audio tapes were stripped and destroyed once verbatim transcription was verified. The completed verbatim transcriptions were labeled with the corresponding automotive pseudonym and placed alphabetically in a three ring notebook for ease of access and reading. Additionally, the first page of each transcript was tabbed with page
holders for reference and quick access to data. Labeling the transcript with the pseudonym afforded the researcher an opportunity to reference the interview notes and other material without compromising the participant’s anonymity. As the researcher worked through the data during the coding and analysis processes this type of organizational detail was an invaluable common denominator in maintaining the accuracy and consistency of the data.

**Coding and Analysis**

Even though the researcher undertook the transcription process personally, a process that afforded her an intimacy with the data that she would not have otherwise had, the intent of the transcription process was very different than the current readings of the data. It was beneficial for the researcher to casually read through the data. All transcripts were initially read in their entirety as if the researcher were reading through a novel or a book. They were simply read for an overall general impression of the data. This casual reading facilitated a familiarity with the transcribed data that was not present before and created what the researcher would call “the first blush” or first impression of the data as a whole. These initial high level impressions were then noted in the margins of the text for latter analysis.

After reading through all ten transcripts the researcher collected multi-colored highlighters and pens and began the task of re-reading the data, but this time the data was read very carefully line-by-line deliberately coding for descriptive data as she read. Each new code received a new color. When codes began to repeat themselves they were highlighted with the same color. At one point there were so many codes and colors that the researcher had to develop a color reference key to maintain consistency in the on-going color coding of what data.

**Axial Coding (categorizing).** The color reference key proved to be a very interesting and beneficial tool as the researcher progressed through her initial coding process. Categories began
to emerge through the limited color pallet as the researcher was forced to make decisions as to how to color code the remaining data. At this point the researcher stepped back to “soak in” the coded data. The result of the color coding left a notebook full of multi-colored colored pages with descriptive data bytes highlighted in short one word blurbs, single lines and multiple lines. The researcher began to see patterns and categories developing in the color coding.

Conceptually similar concepts are grouped together to form categories and sub-categories (Corbin & Strauss, 1990).

To verify what the researcher was seeing with the color patterns she produced a table to “brainstorm” all coded words. She began the process of line by line re-reading the data but this time she pulled coded data bytes to be organized, sorted, grouped and divided into small familial fragments. The result was a table with similarly colored words and phrases literally thrown onto a table. Reading and absorbing the now sorted data the researcher posed the question; what do these words and phrases have in common? The following table is an excerpt of the brainstorming activity conducted by the researcher to clarify emerging categories. The full table in its entirety may be found in the appendices.

<table>
<thead>
<tr>
<th>Concepts</th>
<th>Associated Codes, Categories and Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience and Time</td>
<td>Graduated experience-intensity and type of diversity dual license, broad experience, Level 1 Trauma dedicated experience, variety of experiences elevates everybody to an expert level repetition, just over and over again Work here for 20 years and you can have it… because you have to see it, experience it first-hand good boot camp on sub-medical, saw everything, forced into difficult situations, senior nurse, time, put yourself out there, don’t shy away from things that scare you, jump at opportunities to practice actually have hands on experience is what makes the expert working many years, 20 plus years, work in ICU, you’ve got to see it and do it, seen it all done it all, knowledge level gathered through years of practical</td>
</tr>
</tbody>
</table>
At this stage the concepts were becoming more tangible for the researcher. Comparing the two organizational techniques and the resulting concepts the researcher felt more comfortable with her initial impressions of the coded data and categories in mind she began to work with the codes to refine the categories. As the number of categories began to saturate, the researcher began to write rules to define them. The resulting definitions were color coded to match the coded transcripts for ease of cross referencing. The following is an excerpt of the definitions. The complete list of definitions is included for your review in the appendices.

<table>
<thead>
<tr>
<th>Codes</th>
<th>Definitions</th>
<th>Commonly Confused with</th>
<th>Typical Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teamwork</td>
<td>Relevant clinical experience as defined by the participants. Experience is defined as clinical experience that demonstrates a diversity of scope and an intensity of service for a minimum of 3 years. The higher the intensity and diversity of the actual experience the more relevant. (Note: years of experience are not relevant to experience)</td>
<td>Knowledge/Learning</td>
<td>Participant (Altima): “(um). Having been in certain situations. I have g I got a fire, EMS background before nursing a little bit. And (ah) that has helped to develop me. The majority of my clinical experience has been (um) in the emergency department. (um). Been at Shands Jackson for a year down there. That’s a level one. I’ve been at UAB for a while. That’s level one.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Participant (Cadillac): “…That was the best training that you could have had. Because if they were sick they were there. (um) I think that people who work in a more (pause) specialty unit or a unit where you get sicker patients it tends to progress a lot faster than when you’re just on a regular floor…”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Participant (Corvette): “…and by experience I’m not talking about years as a nurse I’m talking about years as a nurse that you actually have hands on experience is what makes that expert.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Participant (Passat): “Education. (um) and not necessarily degree education… But educating in the hospital. Learning the drips the drugs. (um) I’m used to nurses (um) that had been nurse 14-15 years. (um) and maybe not even that long but yet they had worked in many areas (um) where they had such a wide range of knowledge. (um) to where they had been exposed to just about everything that you can think of.”</td>
</tr>
</tbody>
</table>
Categories also began to align themselves thematically and were organized into the format of a concept map to visualize the potential relationships. With the concept map in mind, the researcher decided to re-read the transcripts to verify that she understood what the data was saying. This conceptual presentation of the data brought clarity to the developing relationships. Categories were reorganized and relabeled as connections and relationships were validated in the data.

Figure 4-3. Concept map.
She also developed a table to examine the categories and think through the relationships in more detail. The enclosed excerpt from Table 4-2 illustrates the thinking process as she worked through related categories developing themes from the data. The table in its entirety is enclosed in the appendices for your review.

| Table 4-2
| Theming

Theming is an outcome of coding, categorization, or analytical reflection; it is not something in and of itself coded. (Saldana, p.14)

<table>
<thead>
<tr>
<th>Codes</th>
<th>Categories</th>
<th>&quot;is&quot;/ or &quot;means&quot;</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experience</td>
<td>Means praxis</td>
<td>Practical hands on clinical experience across multiple domains with an intensity of service and severity of illness to provide/promote learning.</td>
</tr>
<tr>
<td>Graduated (types) experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversity of experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of experience</td>
<td>Demeanor</td>
<td>Means presence</td>
<td>Behavior and attitudes demonstrated in highly intense, stressful situations.</td>
</tr>
<tr>
<td>Attitude/ emotions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humble/ self-deprecating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comfortable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior/ action</td>
<td>Thinking</td>
<td>Is both conscious &amp; unconscious thought</td>
<td>Assessments/ judgements are made in a situationally comprehensive manner to effectively address the immediate needs of the patient.</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This process of organized thinking made the emerging themes more tangible to the researcher as she worked through the categories and supporting sub-categories developing and refining conceptual meaning and importance. At this point the researcher was grappling with three emerging themes and would appear to have stalemated in the process. With this in mind and full clarity out of reach the researcher retuned to the data for answers. She momentarily sat the current data aside and decided to go back to the original data for clarity.

**Structural Coding**
The researcher decided to dissect the data from the ground up going back to the initial descriptive coding process to recode the data. Only this time she came at the process with a different perspective implementing a process called structural coding (Saldana, 2013). The researcher recoded and reorganized the data in reference to the four original research questions and interview questions. Reorganizing and recoding the data in this manner brought significant insight to the forefront and stimulated further understanding of the processes and themes. The following figure illustrates the process of the structural coding as it developed.

Research Question 1: How would you define the expert nurse in clinical practice in critical care?

Structural Code: Types of Experiences are important, knowledgeable with a solid grasp on concepts

Interviewer to Participant Altima: "What do you do that’s, different that sets you apart?"

Participant Altima (page 1, line 2): “I think it’s the graduated experience”.

Interviewer: “With experience? The type of experiences helps?”

Participant Altima (page 1, line 16): “Absolutely. I think that (um) people that work at (ah) let’s say in retail, work at a small box store mom and pop cell phone to a person who works in a high traffic high area (ah) store such as Walmart (ah) would have different (ah) retail experiences. They would in nursing.”

Interviewer: “That’s a good point. I don’t need to forget that. That’s an excellent point. You’re exactly right. Say somebody works in a small rural hospital, like a Fayette or a, I don’t know Foley. They ship everything. They keep nothing acute. Their nurses their nursing experiences are very different than somebody say such as yourself who works at say UAB Trauma Burn unit.”

Interviewer to Participant Yukon: “What sets you or any expert apart from everybody else?"

Participant Yukon: “They (um) just know what to do. They (um) might have questions sometimes (um) people that we work with go to them. They just know what to do.”

Interviewer: “How do you get there? How do you get to be so good?”

Participant Yukon: “Just experience. And just it’s just going to take experience. There’s no way they’re going to wake up one day and now it. It’s going to come with time. It’s just going to take time.”

Figure 4-4. Conceptually organized themes in relation to research questions.
According to Saldana (2013) structural coding is an initial coding process that develops conceptual phrases that are derived from segments of data that relate to a specific research question that was originally used to frame the interview. Reorganizing the data in this manner gave the data a different presentation stimulating further understanding.

At this point the researcher decided to develop a code frequency report in table format to add visual clarity to the emergent themes. With a code frequency report the researcher was able to go back to the data and see the number of individual participants who actually mentioned a particular theme. The researcher ran these numbers and compared them to the three themes that she previously tabled for later consideration. See excerpt of Table 4-4: Code Frequency Table below. The table in its entirety is included in the appendices for your review.

<table>
<thead>
<tr>
<th>Table 4-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code Frequency Table</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Structural Codes</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Question 1: How would you define the expert nurse in clinical practice in critical care?</td>
<td></td>
</tr>
<tr>
<td>Experiences are important (did not specify)</td>
<td>4</td>
</tr>
<tr>
<td>Diversity/intensity of experience</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td>(10 of 10 responses to experience)</td>
<td></td>
</tr>
<tr>
<td>Knowledgeable with a solid grasp on concepts</td>
<td>7</td>
</tr>
<tr>
<td>Confidence</td>
<td>1</td>
</tr>
<tr>
<td>Collaboration</td>
<td>1</td>
</tr>
<tr>
<td>Continuing education</td>
<td>1</td>
</tr>
<tr>
<td>Research Question 2: What criteria or characteristics would you use to define expert performance in clinical practice in the critical care unit?</td>
<td></td>
</tr>
</tbody>
</table>

Data Findings and Major Themes

As the researcher reviewed the findings of this research project she found herself continually checking and validating her perceptions and interpretations of the data. Going back to the literature the researcher was reminded that the expert is defined as one who possesses
both skill and knowledge where intuitive, highly skilled performance is the result of dedicated practice and years of experience (Ericsson, 2008), one who embodies a broader deeper repertoire of relevant knowledge and knowledge retrieval (Ericsson & Smith, 1991). The researcher immersed herself within the data and from the ground up. Through the dissection of codes and categories three primary themes evolved from the data to define the expert critical care nurse and expert performance. Experience, knowledge, and self-actualization were the three primary themes identified from the data. Further, each theme had sub-themes of significance to note: experience with a sub theme of diversity; knowledge with a sub theme of critical reasoning; and self-actualization with two sub themes personal presence and lifelong learning. Detailed explanations of these themes and their respective sub themes are as follows in order of priority as defined by the data.

**Major Themes by Priority**

**Experience.** When the study participants were asked what defined the critical care nurse one hundred percent of them responded: experience. They used descriptive words such as “graduated experience”, diversity, and “hands on experience” to express their thoughts in regards to experience.

Participant Altima (page 1, line 12): “I think it’s the graduated experience. (um) and the advancement of medicine.”

Participant Porsche (page 2, line 5): “Well, I tell them one of the first things is number one is gonna be experience. Every chance you get the opportunity to do something new, to see something new on the unit. You need to be all up in it. You need to be questioning the physician as to why he made the decision he did. (um) That’s how you learn.”

Participant Passat (page 4, line 2): “Education. (um) and not necessarily degree education. Even though I highly recommend it. (laughs)”

Participant Yukon (page 2, line 37): “… with life experiences and work experiences it’ll you know if you’re willing to put in what it takes then you can learn. You can benefit
from it. But you’ve got to be willing to put your time in. It’s about your experiences and learning as much as you can. (um) it won’t happen overnight.”

Participant Cadillac (page 2, line 21): “… I went to a good boot camp on sub-medical. That was the best training that you could have had. Because if they were sick they were there. (um) I think that people who work in a more (pause) specialty unit or a unit where you get sicker patients it tends to progress a lot faster than when you’re just on a regular floor unit where people are not as sick. Cause you have to see it. Does that make sense?”

The literature indicates that expert nursing practice entails a holistic and finely tuned grasp of clinical situations that have been acquired through experience and deliberate practice (Ericsson, 2008; Smithbattle & Diekemper, 2001). As noted from the data relevant clinical experience is the practical hands on experience that is acquired across multiple domains with an intensity of service and severity of illness to provide/promote learning.

**Diversity/ Intensity.** One hundred percent of the study participants discussed experience as a foundational element of expert nursing practice. Of those participants sixty percent of them specifically described the importance of the “types” and “diversity” of those experiences. The experience in relation to the intensity and severity of service is of significant importance in the professional development of critical care nurse. The participants used descriptive words and phrases such as: “graduated experiences”, “variety of experiences”, “good boot camp”, “Level I trauma” to express their thoughts.

Participant Altima (page 4, line 42): “(um) the variety of experiences everybody has to bring elevates everybody to that expert level. To be comfortable with oneself at that level to know that you’re not the expert in some things and it’s the person you’re standing next to you and be humble enough to, you know, step aside…”

Participant Altima (page 1, line 2): “I think it’s the graduated experience”. Interviewer: “With experience? The type of experiences helps?”

Participant Altima (page 1, line 16): **Absolutely.** I think that (um) people that work at (ah) let’s say in retail, work at a small box store mom and pop cell phone to a person who works in a high traffic high area (ah) store such as Walmart (ah) would have different (ah) retail experiences. They would in nursing.”

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Participant Altima (page 3, line 38): “Having been in certain situations. I have a I got a fire, EMS background before nursing a little bit. And (ah) that has helped to develop me…. Been at Shand’s Jackson for a year down there. That’s a level one. I’ve been at UAB for a while. That’s level one…”

According to Gladwell (2008) the types of experiences available to an individual will impact the outcome of the learning. Expert performers have benefit of social interactions and opportunities that have enabled them to learn and develop in ways that others cannot (Gladwell, 2008). The data from this study tells us that the higher the intensity and diversity of the actual experience the more relevant the experience; the more meaningful to the individual. Experience in its most elemental form was noted by the participants as a foundational component in their ascension to expert status. Their experiences have shaped them into the experts that they are today.

Participant Camry (page 2, line 17): “…I don’t think that it something that you can do happen overnight. Part of I think that I am where I am today not because of what I know but mistakes that I’ve made and learned from those mistakes. I mean going back to several experiences…”

Participant Yukon (page 3, line 2): “The bad experiences. It’s through those (um) really bad when something went (um) bad not like it was supposed to and (um) you had to (um) figure it out. You have to need to (um) understand you (um) don’t forget those really bad that (um) happened. I’ve learned the most from (um) those situations bad experiences.”

Participant Taurus (page 1, line41): “They’ve seen it all, done it all.”

Knowledge. Seventy percent of the study participants discussed “knowledge” directly during the interview process and every time knowledge was discussed so was experience. It would appear that the two have a direct positive correlational relationship that binds them inferring that you cannot have one without the other. The study participants used words and phrases such as: “I know what the numbers mean”, cognitively mitigate”, “stay ahead of the patient”, “know how and why things work”, “firm grasp of concepts”, and so on.
Participant Camaro (p. 1, line 33): “(long pause) Knowledge, experience; (pause) I guess that’s the two main things....”

Participant Volvo (p. 1, line 8): “(um) with experience, (um) education.”

Participant Altima (p. 3, line 3): “…but I think you draw certain assumptions and you don’t just draw them on (um) your professional experiences; I don’t think.”

Participant Camry (p. 4, line 27): “I see in him is his knowledge base is very vast… not only can he tell you what to do; he can do it.”

Participant Porsche’ (page 2, line 10): “You need to know the ‘why’ of what you do. If you understand the ‘why’ of what you do then you’ll know what the outcome should be. And the whole goal is to get a patient to a specific outcome.”

According to the literature Simon & Chase (1978) have asserted that experts in a given domain have the ability to visualize situations in terms of the whole without focusing on the individual pieces. Expertise is about prior knowledge, context (domain expertise), dedicated practice, chunking of data, implicit rather than explicit memory (Simon & Chase 1973; Ericsson & Lehmann, 1996; Ericsson, 2005; Syed, 2010). Therefore, the expert is capable of visualizing the problem in its entirety (the entire chess board without seeing the individual chess pieces) considering multiple options, thinking at a much higher level while the novice is overwhelmed with the individual components of the problem (understanding the individual chess pieces and what they can and cannot do). The novice is unable to think beyond the immediate. The study participant’s defined knowledge and learning as a continuously evolving process whereby the clinician must be driven to develop a comprehensive understanding of disease processes, the underlying pathophysiology, and any associated relevant medical interventions that may be needed with a degree of competence that they are able to independently synthesize and apply said knowledge appropriately. They used short phrases and descriptive comments to express their thoughts and describe behavior.
Participant Cadillac (page 1, line 10): “Towards the top I hope. (smiling) and I would think that because if you can walk into a room and assess what’s going on and know exactly what to do or at least know where to start. As opposed to when I first started and I have not a clue… the numbers mean something.”

Participant Porsche’ (page 1, line 39): “(um) the one thing they have in common is that they know what to do next. They don’t have to have direction. (pause) They can pick up and look in that room and know what the next move is. I don’t have to I don’t have to direct the care of that patient. They know exactly what move to make next.”

Participant Taurus (page 2, line 33): “It’s like they know what you need before you need it. No one has to tell them what to do, you don’t have to ask.”

Participant Corvette (page 2, line 3): “I wouldn’t have to tell him what to do; he already knows.”

According to the literature the nurse’s ability to recognize the unexpected when tacit global expectations of a patient’s recovery are not met is a hallmark of expert behavior in clinical practice. The expert uses a proactive stance of forward thinking to visualize potential possibilities until a resolution is reached (Benner, 2004). The ability of experts to see things that are invisible to the rest of us may seem difficult to explain or grasp but it’s actually quite simple when thought of in terms of chunking and implicit memory (Syed, 2010).

Participant Passat (page 2, line 12): “(thinking, long pause looking up) they’re calm, their calm collected. They can quickly assess a patient and quickly come to a judgement a decision on the plan of care (um). It doesn’t take them very long to do that. (um) your assessing the patient before you ever even get to them you’re assessing the scene you’re assessing the (um) (ah) the body language of other people that’s around them (um) somebody that can take in general the whole picture and not just the specifics. (um) person. (um) I mean specific events. (um)”

Participant Camaro (page 1, line 14): “My knowledge (um) my research continuing my (ah) research into things that I’m not familiar with. You can never learn enough. You try to learn more so that you can be better at what you’re doing.”

**Critical Reason (Independent Thinker).** Eighty percent of the study participants specifically mentioned “independent thinker” or “they just knew what to do” in the interview process to describe the subconscious process of critical reasoning. The term “critical reason” was
a conceptual interpretation by the researcher. They had difficulty putting words to their thoughts as they attempted to describe the abstract concept of “thinking”. Instead they used broad concepts to express the nature of the patent engage at the expert level; “whole picture”, “don’t need guidance”, and “just know what to do.

Participant Camaro (page 1, line 36): “Yea. And I guess to you’d look at they’re all independent thinkers. I don’t know If that goes with knowledge or not. But I know that I wouldn’t have to worry. They’re going to take over and do what needs to be done. And I’m not going I’m not going to have to guide them.”

Participant Passat (page 2, line 12): “(thinking, long pause looking up) they’re calm, their calm collected. They can quickly assess a patient and quickly come to a judgement a decision on the plan of care (um).it doesn’t take them very long to do that. (um) your assessing the patient before you ever even get to them you’re assessing the scene you’re assessing the (um) (ah) the body language of other people that’s around them (um) somebody that can take in general the whole picture and not just the specifics. (um) person. (um) I mean specific events. (um)”

Participant Altima (page 3, line 29): “I think thinking outside the box and the ability to (ah) (um) mitigate the problem with (um) minimal resources.”

Participant Cadillac (page 1, line 40): “They just come in and look at it and say, well, we need to do this. They just know what needs to be done. You don’t have to tell them what to do and the situation is handled calmly and coolly.”

According to the literature experts have exceptional memory skills in recognizing patterns in their respective domain of expertise; (Patel & Groen, 1991) however, individual details are actually lost to conscious thought and at times difficult to verbalize as they have become sub-conscious and embedded in memory (Benner, 2001; 2009) For the study participants knowledge is also accompanied by critical reason and was defined as the ability to make quick accurate assessments and judgements in a situationally comprehensive manner to effectively address the immediate needs of the patient. Clinicians must develop a comprehensive understanding of disease processes, the underlying pathophysiology, and any associated relevant medical interventions that may be needed with a degree of competence that they are able to
independently synthesize and apply said knowledge appropriately. Thinking at this level is both a conscious and an unconscious thought process and one that is continuously evolving and developing.

**Self-actualization.** Self-actualization is the researcher’s conceptual interpretation of two related themes that collectively spoke to the intra-personal domain of self-actualization. The literature describes the expert clinician as having dedicated themselves to a life-long commitment to deliberate purposeful efforts to improve performance (Ericsson, Krampe, & Tesch-Romer 1993). Sixty to seventy percent of the study participant’s directly or indirectly discussed the positive impact of the expert’s presence in stressful situations. They possess a self-confidence that transcends the situation and those around them.

Participant Taurus (p. 2, line 14): “…his rhythm had started changing whatever. He goes into v-tach. And I mean I look around and Edgar had done gone in there and shocked him and come back out to the desk. I’m still like; I’m like, what just happened. Edgar just shocked him out of v-tach. I mean, you know, just like anybody else would have been whooping and hollering and caring on. He just gets up goes in there and shocks the boy and comes on back out. I mean, you know what I’m saying it’s just like. (laughs) and…”

**Personal Presence.** The first sub theme of self-actualization is personal presence the researcher’s conceptual interpretation to reflect the meaning of “demeanor”, a term specifically used by the study participants. Sixty percent of the study participants specifically discussed demeanor or attitude in the interview process in relation to the expert’s ability to presence in highly charged stressful situations. They collectively used words such as: “calm”, “cool”, “confident”, “collective”, and “comfortable” to express their perceptions.

Participant Cadillac (page 1, line 38): calmness. The new ones get real excited because they can bring anxiety in there with them. But the one’s that been doing it over and over and over again. They just come in and look at it and say well we need to do this. They just know what needs to be done. You don’t have to tell them what to do and the situation is handled coolly and calmly.”
Participant Altima (page 2, line 17): “…calm cool demeanor and (um) is able is able to (ah) of course to cognitively mitigate (um) what’s necessary and triage in his own mind (ah) and there is a trust factor.”

Participant Camaro (page 3, line 4): “With a level of experience that we have people know how to keep their cool.”

Participant Camry (page 4, line 5): “… It (experience) gave me confidence increased knowledge base for emergency nursing. “

Participant Corvette (page 2, line 1): “Oh! For one they’re not freaking out! (laughs) You ask them to do take care of a difficult patient and their like, ‘oh, okay’. They’re calm, cool, collective.”

While experiential experiences and knowledge are obviously an important aspect of the expert nurse’s repertoire, their ability to ascend to expert status and expert performance is directly tied to their attitude and “presence”; particularly when managing crisis situations. According to the literature Murphy (2012) acknowledges that skill is important, but it’s your attitude that’ll set you apart from the competition and push you to give one hundred percent all the time.

Participant Taurus (p. 1, line7): “Well I know that I try my very best to give it all I’ve got. Like you’ve said I give it 110%. It’s always been a personal thing for me to make sure that if I’m taking care of a patient that I’m doing my very best for that patient.”

Participant Taurus (p. 2, line 44): “…I do finally believe for myself that (pause) to be a nurse is a calling. There is no doubt in my mind that spiritually this is what God wanted me to do and I can give you an example why. I…”

Participant Yukon (page 3, line 10): “… and it’s really important to be the best. I want to try to be the best that I can every time I do something. You have to care about the patient. That’s really important to me.”

**Life-long learner.** The second sub them of self-actualization is the pursuit of lifelong learning. Seventy percent of the study participants addressed their personal expectations for lifelong learning and the impact that it has had in their professional development. They used
words such as: “initiative to learn”, “seek opportunities to learn”, “watch”, “listen”, and “ask questions”.

Participant Taurus (p. 4, line 36): “I took my patient care personal. The first two years I was a nurse I went home and I looked up the disease processes that the patients had. I read everything that I could get me hands on these disease processes. And back then we didn’t have the internet I had to drag out them old books. I even found things that the physicians missed and before I knew it developed credibility with the physicians because I did.”

Participant Volvo (page 2, line 45): “I want to know as much as I can. To continually learn as much as I can. I want to do the best that I can regardless of what I commit to.”

Participant Corvette (page 3, line 9): “I don’t think anybody would deny that it’s a continual learning process. “

Participant Camry (page 2, line 34): “Look the knowledge base. If you don’t know something go home and google it. There is so many more opportunities that I did not have as a younger nurse. That that literature you know I mean you had to really struggle to find something back in the Britannica Encyclopedia Britannica days when you had to look something up you could only afford to buy one but every every ten years. Now a days everything is at your fingertips…”

Continuing education and learning, whether that learning occurs at the patient’s side or in the literature, are essential to expanding your knowledge base and is vital to the success of professional development and growth. The personal drive, the personal “need” described by these study participants demonstrates a higher level of commitment making this a “calling” as one participant stated rather than a job. The drive or need to fulfill one's talents and potentialities and the self-confidence that comes with that, hence the terminology for this theme; self-actualization.

Participant Taurus (page 3, line 36): “…when they come here it don’t take long working with them to know that they’re here for a paycheck. It’s just not here (tapping chest). It’s strictly a job for them. There is no buy in there’s no personal motivation …“

Participant Yukon (p. 1, line 12): “… I feel like what drives me is my compassion for the job. I put myself in other people’s situations. When I see people hurting I try to be as competent as I can and make good decisions. And like I said just a total overall compassion for people. I think makes people be a better nurse.”
According to the literature Maslow (1970) defined the self-actualized individual as one who seeks their fullest potential in all pursuits. They have a genuine altruistic affection and compassion for their fellow human beings and demonstrate a sincere conscious desire to help others. He asserted that individuals who are fully self-actualized were in a state of “metamotivation”. Individuals who have attained this level self-actualization or excellence no longer view their work as a job, something they do, but rather, their work is fully integrated into their being. It is who they are (Angeline, 2014). Bloom (1985) also asserted that motivation and effort have a stronger impact on success than talent or special qualities of the individual.

**Major Themes in Relation to Research Questions**

**Research Question One.** How would you define the expert nurse in clinical practice in critical care? Key concepts were identified in the data: comprehensive understanding of salient concepts through extensive and diverse clinical experiences and knowledge. One hundred percent of the study participants discussed experience as a foundational element of expert nursing practice with seventy percent of the participants specifically correlating “experience and knowledge” as the foundational elements of the expert nurse. The following transcription excerpts demonstrate the concepts reflected in the structural code: Knowledge gained through experience or theory clarified in experience.

Participant Camaro (page 1, line 33): “(pause)… Knowledge. Experience. (pause) I guess that’s the two main things. It all falls to knowledge.”

Participant Corvette (page 1, line9): “(um) education and experience…”

Participant Corvette (page 4, line 1): “…and by experience I’m not talking about years as nurse. I’m talking about years as a nurse that you actually have hands on experience is what makes an expert.”
According to the literature the development of expertise is directly correlated with three fundamental elements: a) it requires a tremendous amount of dedicated work, b) development over time, and c) relevant experience (Ericsson & Charness, 1994). The expert is defined in the literature as one who possesses both skill and knowledge where intuitive, highly skilled performance is the result of dedicated practice and years of experience (Ericsson, 2008), one who embodies a broader deeper repertoire of relevant knowledge and knowledge retrieval (Ericsson & Smith, 1991). The literature defined expertise as one who has acquired special skills in or knowledge about a particular subject through professional training and years of practical experience (Ericsson & Charness, 1994).

Research Question Two. What criteria or characteristics would you use to define expert performance in clinical practice in the critical care unit? The data suggests that the skills and characteristics inherent in the expert nurse are also the skills demonstrated in expert performance. Sixty percent of the study participants had a difficult time responding to question number one as evidenced by the one word answers and –uh, -ah, and the long pauses following the question. However, when they were presented with a complex patient care scenario and asked who would you call for help, they could readily answer questions about the expert nurses that came to mind and the expert performance that they expected to receive. The following transcription excerpts demonstrate the concepts reflected in the structural code: Experienced and knowledgeable, independent thinkers who know what to do, and have a calm cool demeanor. As an acknowledged expert themselves, they were seeking support from:

Participant Passat (page2, line 2): “…someone equal to me… or better…”
Structurally coding the data line by line to answer the research question the following structural code was developed from the data: “experienced and knowledgeable”, “independent thinkers”, who know what to do, and have a “calm cool demeanor”.

Participant Passat (page 2, line 12): “(thinking, long pause looking up) they’re calm, their calm collected. They can quickly assess a patient and quickly come to a judgement a decision on the plan of care (um). It doesn’t take them very long to do that. (um) your assessing the patient before you ever even get to them you’re assessing the scene you’re assessing the (um) (ah) the body language of other people that’s around them (um) somebody that can take in general the whole picture and not just the specifics. (um) person. (um) I mean specific events. (um)”

Participant Yukon (page 1, line 36): “They are the calm in the storm. There’s people that we work with that there’s no calm about them and everything is you know the younger nurses we work with are jumpy and their scared. These nurses are confident, competent and actually are able to remain calm in a difficult situation and they’re not freaking out constantly…”

According to Dreyfus (1980) six key aspects of intuitive judgment in the skill acquisition model describe how intuition occurs in expert practice by experts using pattern recognition, similarity recognition, commonsense understanding, skilled know-how, sense of salience, and deliberate rationality combined to form automaticity of action. Expert nursing practice entails a holistic and finely tuned grasp of clinical situations and is gained by developing interpretive abilities to identify the nature of practical situations and the development of skillful responses to what, when, and how it must be done (Benner, Tanner, & Chelsea, 2009). The researcher interpreted the data to say that relevant experience is experience over time that supports the development of requisite skills and understanding to support the development of knowledge and critical reasoning skills. There is a demonstrated ability of the expert nurse to make quick accurate assessments and judgements in a situationally comprehensive manner to effectively address the immediate needs of the patient and he/she must possess a genuine compassion and a sincere desire to promote the needs of the patient putting their well-being ahead of all other
concerns. They must present a self-confident calming presence to highly stressful environments and de-escalate crisis.

**Research Question Three.** How does one become an expert in critical care?

Structurally recoding the data to answer the research questions provided the perspective or “lens” that the researcher needed to bring clarity to concepts helping her to realize relationships in the data. As interpreted from the data the transformation to the expert nurse is demonstrated when: a) praxis (experience) is focused and repetitive providing the intensity and duration to promote learning; b) there is sufficient evidence to indicate a comprehensive understanding of core concepts that further support independent critical reasoning; and, c) the individual has the personal vision, motivation, and desire to achieve professional excellence.

The following transcription excerpts demonstrate the concepts reflected in the structural code: The types of experiences are important, “knowledgeable” with a “solid grasp on concepts”.

Participant Altima (page 1, line 2): “I think it’s the graduated experience”.

Interviewer: “With experience? The type of experiences helps?”

Participant Altima (page 1, line 16): “Absolutely. I think that (um) people that work at (ah) let’s say in retail, work at a small box store mom and pop cell phone to a person who works in a high traffic high area (ah) store such as Walmart (ah) would have different (ah) retail experiences. They would in nursing.”

Interviewer: “That’s a good point. I don’t need to forget that. That’s an excellent point. You’re exactly right. Say somebody works in a small rural hospital, like a Fayette or a, I don’t know Foley. They ship everything. They keep nothing acute. Their nurses their nursing experiences are very different than somebody say such as yourself who works at say UAB Trauma Burn unit.”


Participant Cadillac (page 1, line 10): “Towards the top I hope. (smiling) and I would think that because if you can walk into a room and assess what’s going on and know exactly what to do or at least know where to start. As opposed to when I first started and I have not a clue.”
Syed (2010) referencing Ericsson’s model of deliberate practice asserted that deliberate practice is about striving for what is just out of reach. It demands considerable, specific, and sustained efforts to do something you can’t do very well. Experience matters. “World class performance comes by striving for a target just out of reach, but with a vivid awareness of how the gap might be breached” (Syed, 2010, p. 82).

Recoding the data line by line to answer the research question the following structural code was developed from the data: experience and proactive pursuit of lifelong learning. Transcription excerpts demonstrate the concepts reflected in the structural code: “demeanor” and “lifelong learner” were specifically discussed by the participants. These concepts were merged to create the theme “self-actualization”.

Participant Corvette (page 2, line 12): “Like what I tell a lot of people now. Take the initiative to learn.”

Participant Porsche (page 2, line 5): “Well, I tell them one of the first things is number one is gonna be experience. Every chance you get the opportunity to do something new, to see something new on the unit. You need to be all up in it. You need to be questioning the physician as to why he made the decision he did. (um) That’s how you learn.”

The nurse who aspires to achieve expert status and recognition must first have the desire and motivation to commit to the process of lifelong learning, continually seeking to proactively expand their knowledge base through literature and clinical experience. That self-actualization process will provide the requisite skills for that nurse to ascend to expert status. The literature states that expert nurses demonstrate a self-directed, metacognitive, approach to learning from a variety of experiences, to include reflection on results or mistakes, which has enhanced their development (Lyneham et al., 2008; National Research Council, 2000; Morrison & Symes, 2011).
**Research Question Four.** In your experience what factors have supported or hindered your professional development? Reflecting back over their careers the study participants offered interesting and oftentimes emotional accounts of situations where they were significantly impacted at one point in time or another by their peers, a professional mentor, or the right opportunity at the right time. The researcher recoded and dissected the data line by line to answer specific research questions. Analyzing for question four brought forth two sets of codes from the data, one with a positive supportive perspective and one with a negative denigrating perspective. The positive codes: diversity of experiences, opportunities, professional mentors/role models, professional recognition. The negative codes: “nurses eat their young”, “vulnerability”, “fear”, “laziness”.

**Negative experience:**

Participant Altima (page 4, line 8): “I think (um) for me professionally to develop and do what I’m doing (um) or get to where I’m at now I think (ah) there’s always doors in life we have doors. And a lot of times the doors are there and you keep them closed and we allow them to stay closed and sometimes we open them. And I think especially for nurses we tend to leave doors closed and stay in our little boxes per se. Once we’ve done ER we tend to stay in the ER….About a year and half ago I started doing an ECMO working with the perfusionists. I think a lot of what has inhibited me from doing things is just my own poor self-motivation…. (um) (pause) We also eat our young too. (um) To a degree. You don’t want to be that that young being eaten again. When I went into ECMO I was now around a bunch of perfusionists. I’m doing it just part time so I’m not 100% committed but (ah) around a bunch of perfusionists who (ah) know a lot about cardiac perfusion. I have my little box in the ER. I’ve taken care of the heart attacks; (ah) sent them up to have cardiac surgery. I was now (ah) (long pause) (ah) (um) vulnerable. So…”

Interviewer: “Because you went from being top of the food chain so to speak as an experienced nurse…”

Participant Altima (page 4, line 30): “Right”.

Interviewer: “…Being at the bottom of the food chain because you’re new with this experience…..”

Participant Altima (page 4 line 33): “You’re vulnerable.”

Participant Altima (page 4, line 35): “We all get to a point in our life that you try not to become vulnerable. Or step out of that box to be back where you were years ago.”

Positive experience:

Participant Passat (page 5, line 6): “Being around others that had the same goals as I did. (um) Seeing that mother of four you know she can go on. And you know she’s working in this particular area and then she goes to another area of the hospital because she wants to learn she wants to expand…” (line 11) “…Just the example of others. And I’ve had physicians who encouraged me they you know shared their knowledge with the nurses. They wanted to see the nurses. I’ve always worked for a level one except St Vincent’s.”

It is interesting to note that professional mentors were mentioned as both a positive and negative force in their careers. Fifty percent of the study participants recounted negatively impactful experiences in their early careers. Despite the negative experiences with mentors the study participants have excelled in their professional careers and are perceived by their peers as experts in their own right.

The following Venn diagram, figure 4-5, was designed to demonstrate the interrelated concepts and significance that experience, knowledge and the individual play in the successful transition to expert nurse.
Figure 4-5. Venn diagram: elements of expertise. The transformation to the expert nurse is demonstrated when: 1) praxis (experienced) is focused and repetitive providing the intensity and duration to promote learning; 2) there is sufficient evidence to indicate a comprehensive understanding of core concepts that further support independent critical reasoning; and, 3) the individual has the personal vision, motivation, and desire to achieve professional excellence.
Additional Findings

There were additional findings that emerged from the data that did not speak specifically to the research questions. The import of those interpretations warranted that the researcher include them for analysis and discussion. Through an analysis of data the concept of “humbleness” began to emerge. The interview meetings began with a description of the study to outline the purpose and intent of the research. Benner’s Novice to Expert Theory was referenced without providing specific detail or definitions. Once the audio recording was turned on the first question was “Thinking back to this novice to expert continuum, the brand new kid just out of school compared to where you are today; where would you fit between those two individuals?” Only twenty percent of the participants definitively stated that they were an expert; “Expert.”, “oh, definitely expert”. While eighty percent of the participants were hesitant to declaratively say that they were an expert; “somewhere near the top”, “I’d like to think expert”, “Towards the top I hope. (smiling) And I would think that because if you can walk into a room and assess what’s going on and know exactly what to do…” Additionally, the twenty percent declarative answers were the male participants. The eighty percent who hesitated or felt compelled to defend the answer were female.

The researcher specifically re-read and recoded the data applying Benner’s definition of expertise. Benner described the expert nurse as intuitive. Intuition was not an emergent theme in the current study; the word ‘intuition’ was found once in the data. The major themes: experience and knowledge were mentioned one hundred percent and seventy percent respectively.
Figure 4-6. Benner’s novice to expert theory of skill acquisition (Benner, 2001).

**Credibility/ Trustworthiness**

The credibility of a qualitative study means that the researcher has taken purposeful action to ensure the trustworthiness or validity of the research findings. Creswell (2014) asserts that “it is important to determine whether the findings are accurate from the standpoint of the researcher, the participant, and the reader” (p. 201). This researcher has chosen to employ three distinct strategies to ensure credibility of the study.

These study findings are the researchers interpretations of data gathered from ten professional experts in their respective domains. To support the validity of the data findings and the assumptions drawn from them study participants were asked during the interview process if they would be willing to read the interpretations for accuracy and meaning. Four study participants have been given an opportunity to read the study findings. The interpretations and findings have been discussed with two of the four participants; none of them have offered corrections or edits to the material. They have requested a copy of the completed study for reading in its entirety upon final analysis. Charmaz (2014) calls this verification process member checking.

Triangulation and meticulous cross referencing of data results was undertaken by the researcher to ensure trustworthiness of the findings. Initial codes were derived from the data.
Initial categories were then derived from the codes and ultimately themes evolved conceptually from the relationships of the categories. When the researcher met roadblocks or had difficulty developing or recognizing relationships and clear meaning she returned to the data for the answers revising, re-categorizing and recoding at times to develop a better understanding of the data. Three different coding strategies were implemented to cross reference data results. Despite multiple approaches the major themes and interpretations remained the same. The literature supports the major themes of the study adding strength and credibility to the findings. According to the literature the development of expertise is directly tied to three fundamental elements: a) it requires a tremendous amount of dedicated work, b) time, and c) experience to become an expert (Ericsson & Charness, 1994). Dreyfus & Dreyfus (1980) asserted that higher levels of performance can only be attributed to concrete experience and knowledge. As previously noted Murphy (2012) acknowledged the value of attitude and disposition in his book, Hiring for Attitude. He asserted that skill and knowledge are important to success but your attitude will set you apart from the competition and push you to give one hundred percent one hundred percent of the time. Further, the literature strongly supported identified themes within the data related to self-actualization as an individuals need to achieve their fullest potential. The embodiment of what nurses do moving beyond nursing as a job, to this is who I am. “I’m a nurse” (Maslow, 1970).

The clarity of potential subjectivity on the part of the researcher is gained through reflective thought and understanding; reflectivity. The researcher is currently a nurse manager with greater than twenty nine years clinical and twenty-one years of managerial experience in critical care. She currently manages a thirty-two bed medical intensive care unit at a six hundred bed acute care teaching facility. She is an active member of AACN and has been CCRN
certified for twenty-two years; her experience has exclusively focused on adolescent, adult and geriatric populations. She has acknowledged that her extensive experience as a critical care nurse and manager has the potential to influence sampling and data interpretation. Given the nature of the role that the researcher holds in her professional career no study participants were allowed to participate in the study that hold a direct subordinate relationship with her.

Peer debriefing is the process of involving another person in the research process to ask questions and clarify concepts along the way and adds credibility to the findings. This research project is being conducted in partial fulfillment of the degree requirements of Doctor in Education at the University of Alabama. Oversight of the research study will be closely managed by the dissertation chair to ensure accuracy of findings and the integrity of the interpretation.

Summary and Conclusions

The purpose of this grounded theory study was to explore the concepts of expertise, expert performance and the evolution of expertise from the emic perspective of the critical care nurse as it relates to clinical practice in the critical care environment. To that purpose four research questions were developed to gather that data.

a) How would you define the expert nurse in clinical practice in critical care?

b) What criteria or characteristics would you use to define expert performance in clinical practice in the critical care unit?

c) How does one become an expert in critical care?

d) In your experience what factors have supported or hindered your professional development?
The theoretical framework supported the development of three major themes from the data: experience, knowledge and self-actualization. There were four sub-themes that emerged from the data: diversity and intensity of experiences, critical reason, person presence, and life-long learner. According to the relevant body of literature the findings are congruent with and supported by current literature further affirming validity and strength of the findings. According to Ericsson and Charness (194) a working definition of expertise is one who has acquired special skills in or knowledge about a particular subject through professional training and years of practical experience.

The following chapter will present an in-depth analysis of the major themes and sub themes to include two additional findings that emerged from the data. Implications for education based upon the data findings as well as the recommendations for future research will be discussed. The chapter will conclude with recommendation for theoretic change.
CHAPTER 5
DISCUSSION

This purpose of this chapter is to review, analyze, and discuss the study findings as they relate to the current body of relevant literature. The chapter will also discuss the implications and recommendations based upon the current findings as they relate to education and critical care nursing practice. The chapter will begin with a discussion of themes organized and presented in relation to its significance as it was presented by the data. The chapter will also present a summary of data analysis as it relates to the research questions of the study and finally conclude with recommendations for future research and theoretic change.

The study addressed the following questions:

a) How would you define the expert nurse in clinical practice in critical care?

b) What criteria or characteristics would you use to define expert performance in clinical practice in the critical care unit?

c) How does one become an expert in critical care?

d) In your experience what factors have supported or hindered your professional development?

The answers to these research questions were addressed by the emergence of themes grounded in the interview data representing the personal perceptions of the expert critical care nurses interviewed. These finding were reported in chapter four.
Theme One: Experience

An analysis of the data revealed a one hundred percent frequency rate when expert nurses were asked to define the expert critical care nurse. Experience was “the” defining element in the development of the expert nurse and therefore expertise in clinical performance. The value and importance of practical experience stands out to the researcher as the foundational element for defining the expert nurse predicating all other considerations. Ericsson (2006) asserts that “first and foremost, extensive experience of activities in a domain is necessary to reach very high levels of performance” (p.683). Experiences give meaning and understanding to learned concepts. It gives us the conceptual and contextual framework or scaffold with which to build meaningful learning and understanding. According to Donovan & Bransford (2000):

“…the concept of learning with understanding has two parts: a) factual knowledge must be placed in a conceptual framework to be well understood; and b) concepts are given meaning by multiple representations that are rich in in factual detail. Competent performance is built on neither factual nor conceptual understanding alone; the concepts take on meaning in the knowledge –rich contexts in which they are applied” (p. 6).

Learning with understanding affects your ability to apply what we’ve learned in new situations. New understandings are constructed on a foundation of pre-existing knowledge, context, and experiences (Donovan & Bransford, 2000).

According to the literature demonstrated skills associated with clinical practice are enhanced and improved through experiential learning and dedicated practice (Benner, 2001, p. vi; Ericsson et al., 2007; Ericsson, 2008; Donovan & Bransford, 2000). The literature also speaks to five core concepts that are consistently applied to the concept of expertise across disciplines. These concepts are particularly applicable for nurses in clinical practice: a) an intuitive grasp of salient aspects of a situation, b) intuitive judgment and action, c) comprehensive understanding, with the flexibility, fluidity and ability to, d) transfer knowledge
from one situation to another, and e) knowledge gained through experience (Avis & Freshwater, 2006; Benner, 2004; Christensen & Hewitt-Taylor, 2006; Ericsson, Whyte, & Ward, 2007). An analysis of the data supported the importance of experience as noted in the literature supporting the assertion that the most significant of the core concepts was knowledge gained through experience.

Analysis of the data further defined relevant clinical experience as the practical hands on experience acquired across multiple domains with an intensity of service and severity of illness to provide and or promote learning. The fact that an analysis of the data revealed a one hundred percent frequency rate for experience presents a statistically significance indication to the researcher that without clinical experience to provide context to factual knowledge expertise in nursing would be attainable.

**Diversity/intensity of experience.** Through an analysis of the data a sub-theme of experience was identified; diversity and intensity and tell us that the higher the intensity and diversity of the actual experience the more relevant the experience to learning and understanding and the more meaningful to the individual. Further, the analysis of data suggested that: a) experience in its most elemental form was as a foundational component in the ascension to expert status; b) clinical experience shaped and molded the expert defining practice; and c) the intensity of the experience served to push the limits of understanding to expand current boundaries of understanding. According to Syed (2010), hours of consistent dedicated practice (experience) that takes you beyond your current level of performance will elevate your skill level and take you far beyond your imagination. The literature posits that the development of expertise is directly correlated with three fundamental elements: a) it requires a tremendous amount of dedicated work, b) development over time, and c) relevant experience (Ericsson & Charness,
Experts in most domains attain their highest level of performance after 10,000 hours of dedicated practice which is equivalent to seven to ten years of relevant experience (Ericsson & Lehmann, 1996; Weiss & Shanteau, 2014). And further Gladwell (2008) has asserted that the types of experiences available to an individual will impact the outcome of the learning. Experience is fundamental to the development to the expert nurse, but the specific type of experience is also important. Expertise is about prior knowledge, context (domain expertise), dedicated practice, chunking of data, implicit rather than explicit memory (Simon & Chase 1973; Ericsson & Lehmann, 1996; Ericsson, 2005; Syed, 2010). Building upon past experiences the expert has developed the ability to visualize situations in their entirety considering multiple options, thinking at a much higher level while the novice is overwhelmed with the individual components of the problem (Glaser & Chi, 1988; Syed, 2010).

**Theme Two: Knowledge**

A working definition of knowledge and learning was developed through an analysis of the data. According to the findings knowledge and learning are defined as a continuously evolving process whereby the clinician must be driven to develop a comprehensive understanding of disease processes, the underlying pathophysiology, and any associated relevant medical interventions that may be needed with a degree of competence such that they are able to independently synthesize and apply said knowledge to appropriately and efficiently mitigate problems. Data analysis suggested a strong correlational relationship between knowledge and experience that gave significant implication to the fact that the two themes were interdependent and self-perpetuating as one builds upon the other.

The review of the literature supports this assertion. According to the National Research Council (2000) "the development of competence in an area of inquiry, students must a) have a
deep foundation of factual knowledge, b) understand the facts and ideas in the context of a conceptual framework, and c) organize knowledge in ways that facilitate retrieval and application” (p. 1) and mastery, expertise in an area of inquiry would require intentional learning and dedicated practice. The analysis of data also speaks to the importance of knowledge along with experience as a foundational element to the expert critical care nurse. Beyond mere knowledge there has to be understanding. The nurse must have a “firm grasp of the concepts”. For dynamic thinking and proactive problem solving to occur it must be predicated on an in-depth understanding of the learning and according to the National Research Council (2000) a focus on understanding leads to one of the principal characteristics of the new science of learning: “the process of knowing” (p.10).

**Critical reason (Independent thinker).** An analysis of the data revealed a sub-theme of knowledge; critical reasoning. Critical reasoning is a conceptual interpretation by the researcher to reflect the intent of the data. Data results defined critical reason as the ability to make quick accurate assessments and judgements in a situationally comprehensive manner to effectively address the immediate needs of the patient. Data analysis suggests that thinking at this level is: a) conceptual and broad where salient concepts are quickly noticed without focusing on the specific; b) it is both a conscious and an unconscious thought process, one that is continuously evolving and developing; and b) assessments, judgements and decisions are quick, accurate and automatic.

According to the literature the nurse’s ability to recognize the unexpected when tacit global expectations of a patient’s recovery are not met is a hallmark of expert behavior in clinical practice. The expert uses a proactive stance of forward thinking to visualize potential possibilities until a resolution is reached (Benner, 2004) however individual details are actually
lost to conscious thought and at times difficult to verbalize as they have become sub-conscious and embedded in memory (Benner, 2001; 2009). Polanyi (1962) has also asserted that there is more to knowledge and learning than what we can explicitly explain. There is a tacit, unspoken, knowledge that is also gained from experience. Learning has an implicit and an explicit component. Simon & Chase (1978) in their seminal work on the “chunking theory” were able to demonstrate the expert’s ability to visualize situations in terms of the whole without focusing on the individual chess pieces demonstrating the expert’s ability to see and comprehend “the whole picture” without focusing on the individual pieces. The ability of experts to see things that are invisible to the rest of us may seem difficult to explain or grasp but it’s actually quite simple when thought of in terms of chunking and implicit memory (Syed, 2010). Experts have exceptional memory skills in recognizing patterns in their respective domain of expertise (Patel & Groen, 1991).

**Theme Three: Self-Actualization**

Data results have strongly suggested that experiences and knowledge are the very cornerstones to the foundation of expertise and expert performance. A third theme was identified as a result of data analysis: self-actualization. The term self-actualization is the researcher’s conceptual interpretation of two related themes that collectively spoke to the intra-personal domain of self-actualization. While this third theme may not hold the same esteem to some as its predecessors; the researcher would challenge you to reconsider. Without a strong driving need to fulfill your potential, to explore all possibilities of success, an individual would never have the commitment and dedication to invest in the requisite time and energy to ascend to the mark of excellence.
The literature describes the expert clinician as having dedicated themselves to a life-long commitment to deliberate purposeful efforts to improve performance (Ericsson, Krampe, & Tesch-Romer 1993). Without the self-motivation to seek learning opportunities in the clinical setting or the initiative to research the literature for unknown concepts the knowledge base will not develop. Murphy (2012) acknowledges that skill is important, but it’s your attitude that will set you apart from the competition and push you to give one hundred percent all the time. They possess a self-confidence that transcend the situation and those around them. According to the literature it is only possible to achieve personal potential if the individual possess the appropriate personal attitude (Serdiuk, 2014).

According to the literature Maslow (1970) defined self-actualization as an individual’s need for self-fulfillment. “What a man can be, he must be. He must be true to his own nature” (p. 46) and described the self-actualized individual as one who seeks their fullest potential in all pursuits. They have a genuine altruistic affection and compassion for their fellow human beings and demonstrate a sincere conscious desire to help others. Maslow’s theory of human motivation is represented in a pyramidal hierarchy of physiological and emotional needs and describes self-actualization as a higher order need that can only be achieved when all other needs have been met (Argrawal & Sharma, 1977; Kermally, 2005; Ivtzan, et.al., 2013). The literature supports the identified themes within the data as tenants of self-actualization further validating the interpretations of the data.

**Personal presence.** An analysis of the data revealed a sub-theme of self-actualization; personal presence. Personal presence was a conceptual interpretation by the researcher to more clearly reflect the meaning and intent of the data. The data suggested that the expert critical care nurse’s presence and interaction in a crisis situation was one of self-confidence and re-assurance
bringing calm and order to an otherwise chaotic situation. The expert nurse is able to de-escalate emotionally charged situations facilitating a cohesive productive team approach to patient care promoting and optimizing the team’s collective potential.

The data suggested multiple contributing and or influencing factors to the personal presence of the expert nurse. Experts in most domains attain their highest level of performance after 10,000 hours of dedicated practice which is equivalent to ten years of relevant experience (Ericsson & Lehmann, 1996; Weiss & Shanteau, 2014) which deductively indicates a maturity level within the individual who has achieved expert status. When the individual has successfully navigated ten years of relevant clinical practice to sufficiently demonstrate: a) praxis (experience) that is focused and repetitive providing the intensity and duration to promote learning; b) there is sufficient evidence to indicate a comprehensive understanding of core concepts that further support independent critical reasoning; and, c) the individual has the personal vision, motivation, and desire to achieve professional excellence indicating that he has achieved expert status. It would deductively follow that the expert individual has developed a level of self-confidence, professional maturity and collaboration that transcends the crisis situation bringing calm and order to chaos.

Dictionary.com defined “presence” as the ability to project a sense of ease, poise, or self-assurance, especially the quality or manner of a person's bearing before an audience (http://dictionary.reference.com/browse/presence). Carper, (2013), defined four fundamental ways of knowing in nursing: empirical, aesthetic, personal, and moral knowing are valid forms of knowledge which are characteristic of nursing and equally significant as empirical knowledge (Carper, 2013; Paley et al., 2007). Carper was a key figure in establishing the philosophy that there is more to nursing knowledge than empirics. In her seminal work she described four
patterns of knowing in nursing legitimizing knowledge other than and in addition to empirics. She described moral knowledge, personal knowing and the aesthetic knowing as valid source of knowledge; indeed an essential component to the professional nurse (Heath, 1998).

**Life-long learner.** Analysis of the data identified a second sub-theme of self-actualization; life-long learner. The data asserted that the expert nurse was a proactive motivated student of lifelong learning and continuing education in the pursuit of clinical excellence. Continuing education and learning is an on-going and evolving endeavor as healthcare is an on-going evolving science. Whether the experience is gained in the clinical arena or in the literature, expanding the individual’s knowledge base and breadth of understanding are invaluable assets for clinical excellence and professional growth.

According to Gallagher (2007) continuing education and life-long learning are ambiguous terms oftentimes used interchangeably to describe the process of “continuing education”. The literature employs multiple references to continuing education and the importance of learning. Gallagher’s analysis is that while multiple terms are bandied about to describe the “process” of nursing education the salient point is that “education is continuous.” Continuous education is necessary for nurses to maintain competency in an evolving healthcare environment. What sets the expert nurse apart is the desire to fulfill their highest potential and the proactive pursuit to learning and self-development.

**Summation of Findings**

The purpose of this study is to explore the concepts of expertise, expert performance and the evolution of expertise from the emic perspective of the critical care nurse. Four research questions were designed to gather data to that purpose. A summation of findings organized and addressing the research questions are as follows:
**Research question one.** How would you define the expert nurse in clinical practice in critical care? Grounded theory is a process well suited to understanding human behavior, and identifying social processes and cultural norms (Hennink, Hutter, & Bailey, 2011). A key tenet of Charmaz’s approach to grounded theory is to give voice to the subject. It is this principle that helps make constructivist grounded theory useful in research focused on professional nursing practice (Charmaz, 2006). Key concepts were identified in the data: comprehensive understanding of salient concepts through extensive and diverse clinical experiences and knowledge. Knowledge is gained through experience, theory is clarified in experience and experience is by refined by knowledge. From the emic perspective of the critical care nurse the data defined the expert critical care nurse as one who has developed an in-depth and comprehensive understanding of salient concepts through extensive and diverse clinical experiences and knowledge.

As noted in the literature the development of expertise is directly correlated with three fundamental elements: a) it requires a tremendous amount of dedicated work, b) time, and c) experience to become an expert (Ericsson & Charness, 1994). Expertise is about prior knowledge, context (domain expertise), dedicated practice, chunking of data, implicit rather than explicit memory (Simon & Chase 1973; Ericsson & Lehmann, 1996; Ericsson, 2005; Syed, 2010). Therefore, the expert is capable of visualizing the problem in its entirety (the entire chess board without seeing the individual chess pieces) considering multiple options, thinking at a much higher level while the novice is overwhelmed with the individual components of the problem (understanding the individual chess pieces and what they can and cannot do). The novice is unable to think beyond the immediate.
The study results support the current body of literature adding a caveat that the researcher has not previously seen explicitly noted in the literature. The import of prior knowledge, experience and time are acknowledged by both the literature and these findings. What these research findings in addition to the current body of research is component of self. The analysis of data clearly defined an integral aspect of the expert nurse as the nurses own personal motivation to reach their fullest potential fully maximizing their capabilities. Without the desire to learn, to understand, to seek practical experience, the professional will never ascend to the expert level. Individuals’ stalemate going through the motions without progressing as evidenced by Ericsson (2008), an individual’s experience and length of service in a given domain is not always a reliable indicator of improved performance outcomes or expert performance. Expertise has traditionally been judged by the length of experience, professional reputation, and perceived mastery of knowledge and skill. However, current research doesn’t bear out a positive relationship between these well-known indicators of expertise and actual observances of performance (Ericsson, 2008).

**Research question two.** What criteria or characteristics would you use to define expert performance in clinical practice in the critical care unit? Research questions one and research question two were very similar. By answering one the researcher effectively answered the other. Careful analysis of the data revealed three strong emergent themes related to expert performance: experience and the sub-theme diversity and intensity: knowledge and the sub-theme critical reason; and self-actualization of the expert nurse and the two sub-themes, personal presence and life-long learner. These themes were the conceptual interpretations of the researcher to more clearly reflect the meaning and the intent of the data as a result of analysis.
The data analysis asserted that relevant experience is experience over time that supports the development of requisite skills and understanding to support the development of knowledge and critical reasoning skills. There is a demonstrated ability of the expert nurse to make quick accurate assessments and judgements in a situationally comprehensive manner to effectively address the immediate needs of the patient and he/she must possess a genuine compassion and a sincere desire to promote the needs of the patient putting their well-being ahead of all other concerns.

These interpretations of the data were commiserate with a passage from Benner, Tanner, & Chelsea (2009) stating that expert nursing practice entails a holistic and finely tuned grasp of clinical situations and is gained by developing interpretive abilities to identify the nature of practical situations and the development of skillful responses to what, when, and how it must be done (Benner, Tanner, & Chelsea, 2009). Further, in a follow up two years later Benner et al. expanded upon her previous description of the expert nurse.

“The expert not only knows what needs to be achieved, based on mature and practiced situational discrimination, but also knows how to achieve the goal. A more subtle and refined discrimination ability is what distinguishes the expert from the proficient performer. This ability allows the expert to discriminate among situations all seen as similar with respect to the plan or perspective, distinguishing those situations requiring one action from those demanding another... the expert not only sees what needs to be achieved, but also how to achieve it. When things are proceeding normally, experts don't solve problems and don't make decisions; they simply do what experience has shown normally works, and it normally works “(Benner, Hooper-Kyriakidis & Stannard, 2011; p. 15-16).

These passages carry similar core principles: experience, knowledge and critical reasoning.

**Research question three.** How does one become an expert in critical care? Three major themes were identified in the analysis of data. As those themes began to evolve and define themselves conceptual clarity and relational understanding began to take shape. The transformation of the expert nurse is demonstrated when: a) praxis (experience) is focused and
repetitive providing the intensity and duration to promote learning; b) there is sufficient evidence to indicate a comprehensive understanding of core concepts that further support independent critical reasoning; and, c) the individual has the personal vision, motivation, and desire to achieve professional excellence.

In addition self-actualization as a theme with two sub-themes; personal presence and lifelong learner were also identified in the data. The term “self-actualization” and the term “personal presence” were not coded data but conceptualized representations of the meanings and interpretations of codified data. The researcher made conceptual interpretations of the data to more clearly represent the meanings of the data. The data asserted that the expert nurse was a proactive motivated student of lifelong learning and continuing education in the pursuit of clinical excellence. Continuing education and learning is an on-going and evolving endeavor as healthcare is an on-going evolving science. Whether the experience is gained in the clinical arena or in the literature, expanding the individual’s knowledge base and breadth of understanding are invaluable assets for clinical excellence and professional growth.

The data asserts that the nurse who aspires to achieve expert status and recognition must first have the desire and motivation to commit to the process of lifelong learning, continually seeking to proactively expand their knowledge base through literature and clinical experience. That self-actualization process will provide the requisite skills for the nurse to ascend to expert status. The literature states that expert nurses demonstrate a self-directed, metacognitive, approach to learning from a variety of experiences, to include reflection on results or mistakes, which has enhanced their development (Lyneham et al., 2008; National Research Council, 2000; Morrison & Symes, 2011).
Research question four. In your experience what factors have supported or hindered your professional development? Analysis of data revealed two separate phenomenon related to historical influences pursuant to professional growth. The data findings suggested that clinical practice has both positive and negative influences relevant to professional growth and development. It is incumbent upon the nursing body to welcome new nurses fostering a positive open relationship to mentor, coach and develop the nurses for tomorrow. Senior nurses and nursing leadership need to take a proactive no tolerance stand for work place violence. It’s interesting to note that senior staff was discussed in the discursive interview as the primary motivating factor to success as well as the primary debilitating factor.

This data warrants further investigation. The purpose of this study was to define the expert nurse, expert performance and the contributing factors that supported that transition. This was an incidental finding that emerged from the data during analysis. While the data is worthy of further investigation it does not fit within the purpose of this study to pursue work place violence, lateral violence or bullying. According to Vassey, DeMarco, & DiFazio (2011) there is a preponderance of evidence indicating a pandemic problem within the intra-profession of nursing as it relates to work place violence resulting in hostile work environments and poor patient outcomes. In light of these evidence hospitals are taking a proactive stance to educate senior staff and creating mentor programs to counter lateral violence (Ceravolo, Schwartz, Foltz-Ramos & Castner, 2012).

Additional Findings

As noted in chapter four there were additional findings that emerged from the data beyond the boundaries of the research questions. However, these data findings were of such merit that the researcher felt obligated to include them as additional findings. The findings
indicated a difference in the manner in which the first question was answered by the participants.

The initial question of the recorded interview asked the study participants to describe their perceived skill level. As demonstrated by the body language and assertive reply the male study participants appeared to have no hesitance in acknowledging their expertise in clinical practice or their professional accomplishments when asked. However, the concept of “humbleness” began to emerge as the data began to reveal a consistent pattern among the female participants in the study. When asked, one hundred percent of the women interviewed had difficulty assertively acknowledging that they were experts in their own right. This self-effacing behavior, body language and tone implied a social inequality that the researcher did not anticipate nor expect from individuals at this level of skill and performance. Gilligan (1982) has actually asserted that a woman’s place, her social subordination in man’s life cycle has been that of nurturer, caretaker, and helpmate. Women have a problem with competitive achievement choosing to define themselves in a context of human relationships, judging themselves in terms of their ability to care, choosing instead to de-value their own self-worth.

The researcher has struggled with Benner’s use of the word “intuitive” as a descriptor of expertise and expert nursing practice. The major themes identified in this study strongly support experience and knowledge as the foundation of expertise and therefore expert performance rather than “intuitive grasp” as defined in the literature (Benner, 2001). The concept of “intuition” or “intuitive grasp is not strong enough or broad enough to define expert nursing practice. “Intuitive” is defined as a) having the ability to know or understand things without any proof or evidence; b) having or characterized by intuition; c) based on or agreeing with what is known or understood without any proof or evidence; d) known or understood by intuition; e) agreeing with what seems naturally right (http://www.merriam-webster.com/dictionary/intuitive). According
to the Thesaurus dictionary the synonyms for “intuitive” are: emotional, innate, and perceptive (http://www.thesaurus.com/browse/intuitive).

Nursing is a largely female dominated profession while the medical profession is largely a male dominated profession. Nursing has struggled for years to define and assert their clinical relevancy and professional importance in healthcare (Institute of Medicine IOM Report, 2008). According to Mason (2010) writing for the Robert Wood Johnson Foundation, A Series on Health Policy; despite current advances in profession of nursing, “nursing” continues to be a metaphor for notions such as motherhood, nurturing and caring. Topic’s inappropriate for business or professional discussions in mixed company. To describe experts in the nursing profession as “Intuitive” implies a weaker subordinate relationship in healthcare and further supports this subordinate posture.

This researcher proposes that the expert nurse demonstrates “tacit” knowledge rather that “intuitive” or perceptive behavior. Polanyi (1962) asserts that learning and understanding have an implicit and an explicit component. Not all learning and knowledge can be explicit. There is learning that is unspoken and according to Polanyi; tacit in nature. Tacit knowledge “deeply rooted in action, commitment, and involvement in a specific context” (Nonaka, 1996, p. 16). It is an unspoken, unconscious knowledge that is gained through experience and understanding of concepts (Nonaka, 1996; Polanyi, 1962). “Tacitness” is personal knowledge filtered through our own presuppositions. It is the ability to resolve a problem that is based in part on the individuals personal experiences and learning (Grant, 2007, p. 175). Synonyms for tacit are: implicit, implied, and indirect (http://www.thesaurus.com/browse/tacit). The word “tacit” being associated with unspoken knowledge gained through experience is a stronger more accurate reflection of the expert nurse’s contribution to patient care.
Strengths and Limitations

The current study findings are significant because they add strength to the current body of literature speaking to the qualities of the expert critical care nurse and expert performance. The study findings also discuss an additional finding in relation to the impact of the individual on the attainment of professional goals and skill acquisition; that of self-actualization. This is not a new literary concept, however, when considered in the context of professional nursing and the defining qualities of the critical care nurse this particular aspect or theme has not been adequately investigated. This perspective bears further investigation not only in the pursuit of professional goals and aspirations for the critical care nurse but also for the manager who is interviewing and hiring to promote positive patient outcomes and cohesive work environments.

However, several limitations should be considered when examining the findings. One person conducted all ten face to face interviews. This was a purposeful sampling and the study sample was limited to the Tuscaloosa and Birmingham areas. Thus, when transferring these findings to other groups of nurses their roles should be considered. However, the strength of the study was the diversity of the sample group with their diverse backgrounds and the support of the relevant literature.

Benner’s Novice to Expert Theory of Skill Acquisition and Ericsson’s Expert Performance Approach were mentioned during the introduction of the study as the theoretical framework. The researcher acknowledges that a detailed description of the Novice to Expert continuum has the potential to influence the responses of the study participants during the interview process. With this in mind the researcher did not provide a detailed description of the stages of skill acquisition as noted by Benner. Rather, it was noted that the researcher was seeking the personal perspective of the critical care nurse to define the expert nurse.
The researcher used a clinical scenario to bring context to the questions of the interview. These scenarios were not standardized across interviews. Rather, the scenarios were specific to, and clinically relevant to the study participant being interviewed. Trauma nurses were presented with a trauma scenario, ICU nurses were presented with an in-patient clinical scenario and the cardiac nurses were presented with a cardiac scenario. All scenarios were fictitious and developed with sufficient detail to provide context to the question.

Additional limitations involve the influence of the methods on the findings. Grounded theory is a process well suited to understanding human behavior, and identifying social processes and cultural norms (Hennink, Hutter, & Bailey, 2011). However, the volume of data and data analysis is oftentimes overwhelming; especially for a novice researcher. Strength of the study was the support of the University of Alabama Qualitative/Quantitative Research Lab for support with methodology.

Limitation involves the possibility of researcher bias, preconceived ideas or value, influencing the data collection or data analysis or the possible influence of the researcher on the participants. Strength of the study would be the location of the interview chosen by the participants with the participant dressed out in uniform and the researcher in casual street clothes. Strength of the study would be the researcher’s extensive background in critical care.

Reflectivity of Researcher

The clarity of potential subjectivity on the part of the researcher is gained through reflective thought and understanding; reflectivity. The researcher is currently a nurse manager with greater than twenty-nine years clinical and twenty-one years of managerial experience in critical care. She currently manages a thirty-two bed medical intensive care unit at a six hundred bed acute care teaching facility. She is an active member of AACN and has been CCRN.
certified for twenty-two years; her experience has exclusively focused on adolescent, adult and geriatric populations. She has acknowledged that her extensive experience as a critical care nurse and manager has the potential to influence sampling and data interpretation. Given the nature of the role that the researcher holds in her professional career no study participants were allowed to participate in the study that hold a direct subordinate relationship with her.

**Peer Debriefing**

Peer debriefing is the process of involving another person in the research process to ask questions and clarify concepts along the way and adds credibility to the findings. This research project is being conducted in partial fulfillment of the degree requirements of Doctor in Education at the University of Alabama. Oversight of the research study will be closely managed by the dissertation chair to ensure accuracy of findings and the integrity of the interpretation.

**Implications as a Result of this Study**

Nursing educators need to understand the significance of situational experience and develop educational opportunities that simulate clinical experiences. This type of educational experience would benefit the advanced beginner as well as the experienced nurse. Implications of the findings support the development of educational opportunities that simulate clinical experiences (vignettes) to promote clinical competence. This type of continuing education would support on-going competencies for experienced nurses facilitating the process of skill acquisition. The Expert Performance Approach was developed by K.A. Ericsson in an effort to understand expert performance. The performance of the expert is systematically observed in context so as to capture performance in terms of the essential skills and competencies underpinning successful performance. The essential skills are then used to create scenarios and
vignettes representing real world situations designed to elicit consistent perceptual and cognitive responses to facilitate the professional development of critical care nurses. (Ericsson, 2008; Causer, Barach, & Williams, 2014). Reflection on these findings will provide educators with a more attuned approach to curriculum development. The development of educational plans can be designed to meet the personal needs of the student seeking to engage and motivate the adult learner in a relevant simulated learning experiences.

Additionally, advanced beginners would benefit from educational opportunities that simulate clinical experiences (vignettes) to promote clinical competence as well. This type of situational experience in a controlled environment would facilitate professional growth and self-confidence. The true essence of what it means to be an expert in a domain can be assessed by focusing attention on those aspects of performance where experts consistently outperform others (Williams, Ericsson, Ward, & Eccles, 2008).

The researcher asserts that expert nurses demonstrate “tacit” knowledge that is gained through experience and understanding of concepts rather than “intuitive” behavior in critical care nursing practice. Furthermore, the major themes identified in this study strongly support experience and knowledge as the foundation of expertise and expert performance. According to the data findings of this study, the term “intuition” was mentioned one time in describing expert nursing care. According to the literature there is learning that is unspoken; tacit in nature. Tacit knowledge is “deeply rooted in action, commitment, and involvement in a specific context” (Nonaka, 1996, p. 16). The researcher is posing that theory is changed based upon the data findings.
Figure 4-6. Benner’s novice to expert theory of skill acquisition (Benner, 2001).

Figure 5-0. Proposed theoretical changes to Benner’s theory based upon data findings.

Conceptually thinking about the expert and how all of these themes fit together; how they relate to one another, the researcher developed this Venn diagram to illustrate the interconnectedness of the themes and their importance to one another in defining the expert nurse.
The transformation to the expert nurse is demonstrated when: 1) praxis (experience) is focused and repetitive providing the intensity and duration to promote learning; 2) there is sufficient evidence to indicate a comprehensive understanding of core concepts that further support independent critical reasoning; and, 3) the individual has the personal vision, motivation, and desire to achieve professional excellence.

**Recommendations**

This grounded theory study was seeking an emic perspective of the expert critical care nurse to determine: a) a definition of expertise, b) the characteristics of expert performance in critical care nursing practice, and, c) what factors influenced that transition? The study focused on the expert critical care nurse to gather data in an effort to address the four research questions. Data analysis brought forth interesting caveats that warrant future exploration.

Moving forward the researcher would recommend that this study be broadened and expanded to include a larger more diverse sample of expert nurses extending beyond the Tuscaloosa and Birmingham areas.

The way in which the study participants answered the initial question regarding their perceived expertise was an unexpected and unanticipated reaction. They presented a self-effacing
almost humble affect when they were reflective of their own performance. When describing peers whom they considered to be equal in skill and experience their conversation was more assertive and forthright. This is a concept that warrants further research.

The importance of self-actualization and personal presence were aspects of the expert nurse’s repertoire that the researcher had not specifically considered previously. Data findings supported the interconnected relationship and importance of experience, knowledge and self-actualization. This is also a concept that warrants further research.

**Summary and Conclusion**

This study represents the first attempt to develop a working definition of expert performance in critical care nursing. The impetus for research on expert performance is the desire to learn how exceptional individuals consistently do what they do and equally important, how did they achieve and maintain these performance standards? Only when we are able to identify and understand the specific mitigating and enabling factors contributing to the development of expertise will we be able to successfully coach novices on how to start and continue on the road to the development of expertise and expert performance (Ericsson & Towne, 2010). This knowledge can be verbally described and shared with others to benefit decision making in clinical practice and in. The study findings speak to a definition of the expert nurse as well as expert performance. Additionally, the significance of the individual’s self-actualization and personal presence is discussed in relation to expertise and crisis management. Future implications for research would need to focus on understanding and adding to the body of knowledge as it relates to the influence of the individual, personal presence and further refinement of the understanding of the expert and expert thinking on the unconscious or automatic plan.
REFERENCES

Ackermann, E. (2001). Piaget’s constructivism, Papert’s constructionism: What’s the
difference? [Position Statement]. Retrieved from Learning Media:
http://learning.media.mit.edu/content/publications/EA.Piaget%20_%20Papert.pdf

of one’s own: Sharing representations and flow in collaborative learning environments
(pp. 15-37). Retrieved from Google Books

of hospitals nurses and surgical patient mortality. Journal of American Medical
Association, 290, 1617-1623.

(4), 265-272.

philosophy. Contemporary Nurse, 25 (1), 114-123.

Angeline, V.R. (2014). Motivation, professional development, and the experienced music

Nursing Philosophy, 7, 216-224.

Bally, M. G. (2012). Viewing the art and the science of pediatric nursing through the lens of
paradigms: The impact on hope for the future. Journal for Specialists in Pediatric
Nursing, 17, 215-225.

Chicago, IL: The University of Chicago Press.


Using the Dreyfus model of skill acquisition to describe and interpret skill acquisition
and clinical judgment in nursing practice and education. Bulletin of Science Technology &


http://dx.doi.org/10.1002/wcs.47.


Florida State University. (n.d.). http://www.psy.fsu.edu/faculty/ericsson.dp.html


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APPENDIX A

Signature Assurance Sheet

AAHRPP DOCUMENT # 109
THE UNIVERSITY OF ALABAMA
HUMAN RESEARCH PROTECTION PROGRAM

FORM: SIGNATURE ASSURANCE SHEET

Directions: The Principal Investigator (PI) and one other person (Dean, Associate Dean, Chair, Supervising
Professor, or departmental designee) must sign and submit before application can be reviewed by IRB.

Principal Investigator’s Assurance Statement (Student investigators may sign as PI):

I understand the University of Alabama’s policies concerning research involving human subjects and I agree:

1. To comply with all IRB policies, decisions, conditions, and requirements;
2. To accept responsibility for the scientific and ethical conduct of this research study;
3. To obtain prior approval from the Institutional Review Board before amending or altering the research
protocol or implementing changes in the approved consent/assent form;
4. To report to the IRB in accord with federal, sponsor, university, and IRB policies, any adverse event(s)
and/or unanticipated problem(s) involving risks to subjects;
5. To complete continuation, modification, and closure forms on time and to collaborate with IRB monitoring of
studies for quality improvement or cause;
6. To notify the Office of Sponsored Programs (OSP) and/or the IRB (when applicable) of the development of
any financial interest not already disclosed;
7. To ensure that individuals listed as study personnel have received the mandatory human research
protections education;
8. To ensure that individuals listed as study personnel possess the necessary experience for conducting
research activities in the role described for this research study.

My signature below also means that I have appropriate facilities and resources for conducting the study.

PI SIGNATURE: __________________________ DATE: 7/20/15

NAME TYPED: ____________________________

STUDY TITLE: Evolution of Expertise

**ALL STUDENT RESEARCH: Supervising Professor’s Assurance Statement:**

I certify that I have reviewed this research protocol. I attest to the scientific merit of this study; to the competency of
the investigator(s) to conduct the project; that facilities, equipment, and personnel are adequate to conduct the
research; that continued guidance will be provided as appropriate, and the study will be closed before student
graduation.

SIGNATURE __________________________ DATE: 7/20/15

NAME TYPED: __________________________

*Department Chairperson/Department Designee’s Assurance Statement:

I certify that I have reviewed this research protocol. I attest to the scientific validity and importance of this study; to the
competency of the investigator(s) to conduct the project and their time available for the project; that facilities,
equipment, and personnel are adequate to conduct the research; and that continued guidance will be provided as
appropriate. When the principal investigator assumes a sponsor function, the investigator is knowledgeable of the
additional regulatory requirements of the sponsor and can comply with them.

SIGNATURE __________________________ DATE: __________________

NAME TYPED __________________________ TITLE __________________

*If the PI is also the department chair, dean, associate dean for research, or equivalent, another research-
qualified person should sign the Signature Assurance Sheet.
APPENDIX B

The University of Alabama Institutional Review Board Approval Letter

August 25, 2015

Teresa D. Welch, RN, MSN
1596 Countryside Dr.
Northport, AL 35473

Re: IRB # 15-OR-256 “Evolution of Expertise”

Dear Ms. Welch,

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(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.

Your approval will expire on August 24, 2016. If the study continues beyond that date, you must complete the IRB Renewal Form within e-Protocol. If you modify the application, please complete the IRB Revision Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Final Report Form.

Please use reproductions of the IRB-stamped flyer and consent form.

Should you need to submit any further correspondence regarding this application, please include the assigned IRB approval number.

Good luck with your research.

Sincerely,

Carpantino T. Myles, MSM, CIM, CIIP
director & research compliance officer
Office for research compliance

cc: Dr. Melodie Carter
APPENDIX C

Interview Consent Form

AAHRPP DOCUMENT #193
UNIVERSITY OF ALABAMA
HUMAN RESEARCH PROTECTION PROGRAM
CONSENT FORM FOR NONMEDICAL INTERVIEW STUDY
UNIVERSITY OF ALABAMA

Individual’s Consent to be in a Research Study

You are being asked to be in a research study. This study is called “Evolution of Expertise”. This study is being done by Teresa Welch. She is currently a nurse manager in a thirty-two bed medical intensive care unit in a large teaching hospital and graduate student at the University of Alabama in Tuscaloosa, AL. Ms. Welch is being supervised by Dr. Melondie Carter, a professor in the Capstone College of Nursing at UA.

Ms. Welch is not receiving any financial support to conduct this study nor is she receiving any additional salary or compensation. Any costs associated with the study will be the responsibility of Ms. Welch.

What is this study about?
Through the sharing of experiences and personal perceptions of critical care nurses Ms. Welch plans to build upon current research to explore the development of skill and expert performance. She is specifically interested in the perceptions of experienced critical care nurses and their personal perspectives on the development of expertise and skill in clinical practice.

Why is this study important—What good will the results do?
The research findings will help educators and nursing leadership better understand what it is to be an expert in critical care nursing. They will also help them better understand the transition from new nurse to expert in clinical practice.

Why have I been asked to take part in this study?
You have contacted the researcher expressing interest in the study and meet eligibility criteria. Or, you were referred by a professional colleague and meet eligibility criteria.

How many other people will be in this study?
The investigator plans to interview 10-15 registered nurses within the next two months.

What will I be asked to do in this study?
If you agree to be in this study, Ms. Welch will schedule an interview for the two of you at your convenience. She would like to ask you about your clinical experiences and perceptions as they relate to the development of skill and professional growth. With your permission she would also like to record the conversation to be sure that all of your words are captured accurately. However, if you do not want to be recorded, simply tell Ms. Welch and she will take handwritten notes instead.

(Stamp)
UNIVERSITY OF ALABAMA
CONSENT FORM APPROVED 8/25/2015
EXPIRATION DATE 8/24/2016

155
How much time will I spend being in this study?
The interview should last about 45-60 minutes, depending on how much information you choose to share.

Will being in this study cost me anything?
The only cost to you is your time.

Will I be compensated for being in this study?
In appreciation for your time, you will receive a $20 gift card at the end of the interview.

What are the risks (problems or dangers) from being in this study?
The only risk to you is that you may find the discussion uncomfortable, embarrassing or stressful. You can control this possibility by not being in the study, by refusing to answer a particular question, or by not telling Ms. Welch things you find to be embarrassing or uncomfortable. You may withdraw from the interview/study at any time.

What are the benefits of being in this study?
There are no direct benefits to you. However, you may find it personally rewarding to share and describe your clinical experiences.

Equipped with a better understanding of what it is to be an expert as well as how nurses develop expert skill, nursing leadership and nursing educators will be better prepared to support new nurses coming into the hospital.

How will my privacy be protected?
You are free to decide when and where the interview will take place so that you and Ms. Welch may talk without being interrupted or overheard. No personal information will be collected or shared. Any information collected about clinical experience, certifications, gender, and/or education will only be seen by Ms. Welch. All information will be securely locked in a file cabinet in a secure locked office. No identifying personal information will be associated to you in any way. At the end of the study all interviews, notes and recordings will be destroyed.

How will my confidentiality be protected?
The only place where your name appears in connection with this study is on this informed consent. The consent forms will be kept in a locked file cabinet in a locked office in a secure building. Ms. Welch will not use a name-number list so there is no way to link a consent form to an interview. When we record the interview, we will not include your name or any other personal information that could identify you in the interview. When the interview is over the anonymous recording will be transcribed and the recording destroyed.

Research articles will be written on this study but participants will be identified only as “study participants”. No one will be able to recognize you or know that you participated.

What are the alternatives to being in this study?
You may choose not to participate.
What are my rights as a participant?
Participation is totally voluntary. If you start the study, you may stop at any time. However, if you do not complete the interview, you will not be eligible for the $20 gift card. If you choose not to participate in the study or choose to stop the interview after you’ve begun, it will have no effect on your relationships with the University of Alabama, AACN, your licensing agency or your employer.

The University of Alabama’s Institutional Review Board is a committee that looks out for the ethical and fair treatment of people in research studies. They may choose to review the study to ensure that study participants are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?
If you have questions about this study, please feel free to ask them now. If you have questions that come up later on, please call Ms. Welch at 205-792-1636 or Dr. Melondie Carter at 205-349-9154. If you have questions or complaints about your rights as a research participant, call Ms. Tanta Myles, the Research Compliance Officer of the University at 205-348-8461 or toll-free at 1-877-820-3066.

You may also ask questions, make a suggestion, or file complaints and concerns through the IRB Outreach Website at http://osp.ua.edu/site/PRCO_Welcome.html. After you participate, you are encouraged to complete the survey for research participants that may be found online at the previously noted web address. You may also e-mail us at participantoutreach@bama.ua.edu.

I have read this consent form. I have had a chance to ask questions.

Your individual privacy will be maintained in all published and written data resulting from the study.

______ You may audio record my interview. ______ I do not wish to be audio recorded.

_____________________________ __________________________
Signature of Research Participant Date

_____________________________ __________________________
Signature of Investigator Date
APPENDIX D

Interview Protocol/Guide

<p>| Introduction | I want to thank you for taking the time to meet with me today. My name is Teresa Welch and I’m a graduate student at the University of Alabama pursuing my Doctorate in Education. I am interested in your unique experiences as a critical care nurse and would like to talk with you about them if that’s okay? |
| Key Components | Depending on the discussion and sharing of experiences the interview should take no longer than 60 minutes. I will be audio recording the interview because I don’t want to miss any of your comments. Although I will be taking some notes as we move through the interview, I can’t possibly write fast enough to catch everything. |
| • Thank you | This is also a confidential conversation and all comments are kept confidential. There is nothing in the interview itself, the tape or the notes that could be used to identify the individuals involved in the interview. This means that your interview comments will not be tied to you personally and only the notes and audio recording will be shared with the research team for transcription and analysis. We will guarantee that any future publications will not identify you or any of the other study participants. |
| • Your name | You don’t have to talk about anything that you don’t want to and you can end this interview any time you want to. |
| • Purpose | Do you have any questions regarding the things that I have just explained? |
| • Confidentiality | Are you willing to participate in this interview? ____ Yes, ____ No |
| • Duration | I have demographic data that I need to document before we get started. This information will only be used to clarify and validate the information gathered in the interview and will not be tied to the interviewee or used to identify the interviewee in any way. |
| • How interview will be conducted | |
| • Opportunity for questions | |
| • Signature of consent | |
| • Demographic data collection | |</p>
<table>
<thead>
<tr>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Turn on recorder</td>
</tr>
<tr>
<td>• Ask open ended questions</td>
</tr>
<tr>
<td>• Use probes as needed</td>
</tr>
</tbody>
</table>

**Research Questions**

How would you define the expert nurse in clinical practice in critical care?

What criteria or characteristics would you use to define expert performance in clinical practice in the critical care unit?

How does one become an expert in critical care?

Describe any factors that in your experience may have supported or hindered that development.

Your professional accomplishments speak to your commitment to quality patient care and the pride that you take in what you do.

• How would you describe your personal skill level?
  o Where would you fit on the novice to expert continuum?
  o What behaviors or characteristics did you use to decide that?

• Help me understand what it is that defines you or any nurse as an expert.

When you’re at work and you have dog sick patient’s; one about crash and you’re chasing an unstable Bp with pressors and the other one has ARDS secondary to sepsis, unstable sat’s with multiple vent changes. Who do you call for help? The name isn’t important. I don’t need to know that. But thinking about that person, why is that your go to for help? What is it about them that sets them apart?

  • What qualities or characteristics define them; set them apart, say from the new grad?
  • What is it about their interaction with patients, families and physicians that makes them stand out to others?

If a new grad told you that they wanted to be an expert in the ________ how would you advise them? Or What would you say to them?

  • What does it take to become an expert?
  • How could they get there?

Considering your own experiences, what motivated or motivates you to be recognized as an expert in your profession?

  • What opportunities or experiences have helped you or supported you along the way.
  • On the flip side of that; please share any obstacles or opportunities for improvement that you might have witnessed along the way.

<table>
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<tr>
<th>Closing Key Components</th>
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</thead>
<tbody>
<tr>
<td>• Turn off recorder</td>
</tr>
<tr>
<td>• Additional Comments</td>
</tr>
<tr>
<td>• Next Steps</td>
</tr>
</tbody>
</table>

Is there anything that you’d like to add before we finish?

We will be transcribing the audio component of our conversation within the next few days and then begin analyzing as soon as that is complete. I hope to complete the interview process within the next few months. If that is the case the completed study should be ready by December 2015. If you would like a completed copy of the study I would be glad to forward it to you.
In the meantime, would you be interested in reading my analysis and interpretations of the data for accuracy as I move forward? I would appreciate the feedback to make sure that I’m hearing the message exactly as it was intended. But if you’re not interested, I’ll understand that as well.

I truly appreciate your time and the sharing of your personal experiences. I have a small token of my appreciation.
APPENDIX E
Sample Demographics

Figure 4-0. Sample demographics: trend line 10 years or 10,000 hours.

Figure 4-1. Sample demographics: comparing years of clinical experience, diversity of experiences, number of certifications, and academic degree.
<table>
<thead>
<tr>
<th>Participants</th>
<th>Date of Interview</th>
<th>Gender</th>
<th>Age</th>
<th>Clinical Seniority</th>
<th>Clinical area of Expertise</th>
<th>Type(s) of Experience</th>
<th>Academic Degree</th>
<th>Certifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altima</td>
<td>9/12/2015</td>
<td>Male</td>
<td>40</td>
<td>*16 years</td>
<td>Critical Care Flight Nurse (Helicopter &amp; jet), Trauma, Emergency Department</td>
<td>EMS Fire Rescue, Paramedic, NICU, (ECMO) Extracorporeal Membrane Oxygenation Level 1 Trauma Emergency Department, Level 1 Trauma Adult Trauma/ Surgical ICU, Small hospital ED</td>
<td>Paramedic, BSN</td>
<td>CCRN, TNCC, ACLS Instructor, BLS Instructor, PALS Instructor, NRP, FCCS</td>
</tr>
<tr>
<td>Cadillac</td>
<td>9/11/2015</td>
<td>Female</td>
<td>45</td>
<td>24 years</td>
<td>Cardiac ICU</td>
<td>Acute Coronary Care Cardiac Interventional Medical ICU</td>
<td>MSN</td>
<td>CCRN, ACLS, BLS</td>
</tr>
<tr>
<td>Camaro</td>
<td>9/8/2015</td>
<td>Female</td>
<td>58</td>
<td>*24 years</td>
<td>Trauma/ Surgical ICU</td>
<td>Trauma Surgical ICU Acute Care (LPN)</td>
<td>ADN</td>
<td>TNCC Instructor, ACLS Instructor, BLS Instructor</td>
</tr>
<tr>
<td>Camry</td>
<td>9/11/2015</td>
<td>Female</td>
<td>46</td>
<td>*25 years</td>
<td>Clinical Nurse Specialist CC/ED, Educator</td>
<td>EMS Paramedic Trauma Emergency Department Med/ Surgical unit Education</td>
<td>Paramedic BSN Currently enrolled in school MSN</td>
<td>TNCC, ACLS Instructor, BLS Instructor, PALS Instructor</td>
</tr>
<tr>
<td>Corvette</td>
<td>9/11/2015</td>
<td>Male</td>
<td>45</td>
<td>*12 years</td>
<td>Critical Care Flight Nurse Trauma, Adult Medical ICU</td>
<td>EMS, Paramedic Adult Medical ICU, Emergency Department, Pediatric ICU</td>
<td>BSN</td>
<td>Flight Nurse Certified ITLS, NRP, ACLS, PALS</td>
</tr>
<tr>
<td>Participants</td>
<td>Date of Interview</td>
<td>Gender</td>
<td>Age</td>
<td>Clinical Seniority</td>
<td>Clinical area of Expertise</td>
<td>Type(s) of Experience</td>
<td>Academic Degree</td>
<td>Certifications</td>
</tr>
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<tr>
<td>Passat</td>
<td>9/15/2015</td>
<td>Female</td>
<td>52</td>
<td>*30 years</td>
<td>Critical Care Flight Nurse, EMS, Trauma</td>
<td>EMS, NICU, Obstetrics, Labor &amp; Delivery, Level 1 Trauma/ Surgical ICU, Medical ICU, PICU</td>
<td>Paramedic ADN Currently enrolled in school BSN</td>
<td>CCRN, Flight Nurse Certified ACLS, NPR, BLS</td>
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<td>Porsche’</td>
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<td>Female</td>
<td>61</td>
<td>39 years</td>
<td>Trauma/ Surgical ICU</td>
<td>Medical/ Surgical Acute Care, NICU, Trauma ICU, Medical ICU, Critical Care Educator</td>
<td>ADN</td>
<td>CCRN, ACLS Instructor, BLS Instructor, TNCC Instructor</td>
</tr>
<tr>
<td>Taurus</td>
<td>9/17/2015</td>
<td>Female</td>
<td>54</td>
<td>32 years</td>
<td>Medical ICU</td>
<td>Trauma/ Surgical ICU, Medical ICU</td>
<td>BSN</td>
<td>CCRN, ACLS Instructor, BLS Instructor</td>
</tr>
<tr>
<td>Volvo</td>
<td>9/10/2015</td>
<td>Female</td>
<td>38</td>
<td>19 years</td>
<td>Critical Care Clinical Nurse Specialist</td>
<td>Long Term Care, Medical/Surgical Acute Care, Medical ICU, Trauma/ Surgical ICU, Education, DON 125 bed hospital</td>
<td>MSN</td>
<td>TNCC Instructor, CCRN, ACLS Instructor, PALS Instructor, BLS Instructor</td>
</tr>
<tr>
<td>Yukon</td>
<td>9/8/2015</td>
<td>Female</td>
<td>53</td>
<td>24 years</td>
<td>Trauma/ Surgical ICU</td>
<td>Trauma Surgical ICU</td>
<td>ADN</td>
<td>TNCC, ACLS, BLS</td>
</tr>
</tbody>
</table>
Group Demographics

a) The study consisted of ten participants who met inclusion criteria for participation in the study.
b) Eighty percent of the study participants were women.
c) The youngest study participant was thirty-eight years of age, the oldest participant at sixty-one years of age. The average age was forty-nine years.
d) Years of clinical experience spanned twelve to thirty-nine years with the average years of experience at 24.5 years.
e) All study participants held multiple critical care and trauma certifications, with a minimum of three certifications each. Fifty percent of the participants were certified instructors for advanced critical care and trauma certifications.
f) Forty percent of the participants were bachelors prepared nurses, forty percent were associates prepared and twenty were masters prepared. Twenty percent were currently pursuing bachelors or masters degrees at the time of the interviews.
g) *Note: Dual license with duel. Fifty percent of the study participants have duel licensure in related fields.
APPENDIX F

Study Advertisement

EVOLUTION OF EXPERTISE
IN
CRITICAL CARE NURSING

A STUDY OF NURSES AND HOW WE
GAIN AND RECOGNIZE
EXPERTISE IN
CRITICAL CARE

If you're an expert, who said you were an expert?
What did you base that assertion on?
How do you become an expert?
A study into skill acquisition and competency will help us
explore and answer these questions.

If you are interested in sharing your personal experiences
and challenges in critical care

CONTACT
TERESA WELCH
TDWELCH@CRIMSON.UA.EDU
205-792-1636
Appendix G

Studies Informing Major Themes: Literature Review

<table>
<thead>
<tr>
<th>Study/Author/Year/Title</th>
<th>Aim/Purpose/Question</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aiken, L.H., Clarke, S.P., Cheung, R.B., Sloane, D.M., &amp; Silber, J.H. (2003) Educational levels of hospitals nurses and surgical patient mortality.</td>
<td>Aim of the study was explore the proportion of hospital RN’s educated at the BSN level or higher is associated with decreased mortality and failure to rescue rates.</td>
<td>Descriptive statistical analysis Logistical regression Cross-sectional analysis of outcomes (n= 232,342)</td>
</tr>
<tr>
<td>Benner, P. (1982). From novice to expert</td>
<td>The aim of this research was to describe and delineate characteristics of nurse performance at different levels of education and experience.</td>
<td>Descriptive phenomenology 21 paired interviews with new graduates and preceptors with 66 additional nurses (n = 160)</td>
</tr>
<tr>
<td>Benner, P., Hooper-Kyriakidis, P., &amp; Stannard, D. (2011). Clinical Wisdom and Interventions in Acute and Critical Care: Thinking In Action Approach. 2nd Ed.</td>
<td>Aim of this research was to gain a better understanding of clinical judgment, interventions and the link between the two phenomenon. This study built upon the previous work of Benner, From novice to expert.</td>
<td>Descriptive ethnography. Observation and interview. (n = 205)</td>
</tr>
<tr>
<td>Benner, P. E., Tanner, C. A., &amp; Chelsa, C. (2009). Expertise in Nursing Practice: Caring, Clinical Judgment &amp; Ethics</td>
<td>The aim of the study was twofold: a) describe the nature of skill acquisition in critical care nursing practice. b) delineate the practical knowledge embedded within expert practice.</td>
<td>phenomenological study (n=130)</td>
</tr>
<tr>
<td>Author</td>
<td>Title</td>
<td>Abstract</td>
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<tr>
<td>Bloom, B.S. (1985).</td>
<td>Generalizations about talent development. In B.S. Bloom (Ed.).</td>
<td>The purpose of this study was to identify individuals who had attained world-class levels of competence within a field (6 domains were chosen), then attempt to understand the developmental and educational processes that were important in enabling those individuals to reach these high levels of competence within their field.</td>
</tr>
<tr>
<td>Bobay, K.L. (2004).</td>
<td>Does experience really matter?</td>
<td>The purpose of the study was to determine if the hypothesized model of complex reflective thinking was accurately represented by the proposed variables.</td>
</tr>
<tr>
<td>Bobay, K., Gentile, D.L., &amp; Hagle, M.E. (2009).</td>
<td>The relationship of nurses’ professional characteristics to levels of clinical nursing expertise.</td>
<td>The purpose of the study was to determine the relationships of nurses’ professional characteristics, including years of experience, certification, basic nursing preparation, specialty certification, previous health care experience and motivational factors.</td>
</tr>
<tr>
<td>Bonner, A. (2003).</td>
<td>Recognition of expertise: An important concept in the acquisition of nephrology nursing expertise.</td>
<td>The aim of this research was to explore the concept of expertise. This study was abstracted from a larger study focused on the acquisition and exercise of nephrology nursing expertise.</td>
</tr>
<tr>
<td>Brykczynski, K.A. (1998).</td>
<td>Clinical exemplars describing expert staff nursing practices</td>
<td>The aim of this research was to identify and describe expert nursing practices.</td>
</tr>
<tr>
<td>Burger, J.L., Parker, L.C., Hauck, D.K., O’Nan, C., &amp; White, A. (2010).</td>
<td>Responses to work complexity: The novice to expert effect.</td>
<td>The aim of this research was to explore the differences in how advanced beginners, competent, and expert nurses prioritize and reprioritize patient care.</td>
</tr>
<tr>
<td>Chase, W.G. &amp; Ericsson, K.A.</td>
<td>(1982). Skill and working memory</td>
<td>The purpose of the study was to discover the cognitive mechanisms underpinning skilled memory performance.</td>
</tr>
<tr>
<td>Chase, W., &amp; Simon H.A. (1973).</td>
<td>Perception in chess.</td>
<td>The aim of this research was to discover and characterize the structures or chunks that are seen on the chess board and stored in short-term memory.</td>
</tr>
<tr>
<td>Chi, M., Glaser, R., &amp; Rees, E.</td>
<td>(1981). Expertise in problem solving</td>
<td>Hypothesis: the problem-solving difficulties of novices can be attributed mainly to inadequacies of their knowledge base and not to</td>
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<tr>
<td>Author(s)</td>
<td>Title</td>
<td>Description</td>
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<tr>
<td>Currie, K. (2008).</td>
<td>Linking learning and confidence in developing expert performance</td>
<td>The aim of this research was to illustrate the centrality of learning and confidence in the development of expert specialist’s practices. Grounded Theory All graduates from host University (total 227 graduates) received a postal questionnaire. There was a 45% response rate. From the 102 respondents researchers conducted theoretical sampling. (n = 20)</td>
</tr>
<tr>
<td>deGroot, A. (1978).</td>
<td>Thought and choice in chess (Dissertation 1946)</td>
<td>The aim of this research was to apply a “think aloud protocol” to conduct an experimentally based psychological analysis of chess thinking denkpsychologie (scientific study of thinking) Inductive reasoning. Introspection. Thinking aloud protocols. (n = 20)</td>
</tr>
<tr>
<td>Dixon, R.A., &amp; Johnson, S.D. (2011).</td>
<td>Experts’ vs novices: Differences in how mental representations are used in engineering design.</td>
<td>The aim of the study was to gain a deeper understanding into the differences that exist in the cognitive processes of engineering students and professional engineers as they use mental representation to solve the engineering design problem. Data analysis “think aloud protocols” verbal protocol analysis (n=6 novice and 4 expert engineers)</td>
</tr>
<tr>
<td>Dreyfus, S.E., &amp; Dreyfus, H.L. (1980).</td>
<td>A five-stage model of the mental activities involved in directed skill acquisition.</td>
<td>The purpose of this study was to develop a training program for the USAF. Written for the Air Force Office of Scientific Research Descriptive ethnography Air Force Pilot, tank drivers and commanders</td>
</tr>
<tr>
<td>Durning, S., Artino Jr, A.R., Pangaro, L., van der Vleuten, C., Schuwirth, L. (2011).</td>
<td>Context and clinical reasoning: Understanding the perspective of the expert’s voice.</td>
<td>The aim of this research was to explore the influence of context on a physician’s diagnostic and therapeutic clinical reasoning. Grounded Theory Constant comparative approach. Think aloud Protocols and videotaped encounters analyzed by board certified internist. (n = 154)</td>
</tr>
<tr>
<td>Ericsson, K.A., Krampe, R., &amp; Tesch-Romer, C. (1993).</td>
<td>The role of deliberate practice in the acquisition of expert performance</td>
<td>The aim of this research was to explain expert performance in terms of acquired characteristics resulting from extended deliberate practice. Does practice and experience inevitably lead to maximal performance? Conducted to studies: Study 1- Orthogonal comparative of three groups of violinists. An analysis of variance (ANOVA) comparing allocation of time, preparation, and performance (n = 30) Study 2- Orthogonal comparative of two groups of pianists using Pearson’s Correlation coefficients followed by a repeated measures ANOVA</td>
</tr>
<tr>
<td>Study</td>
<td>Methodology</td>
<td>Results</td>
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<tr>
<td>Ericsson, K.A. &amp; Smith, J. (1991). Prospects and Limits of the Empirical Study of Expertise: An Introduction</td>
<td>Purpose of this work is to characterize the study of expertise to compare the expertise approach with alternative approaches with similar objectives. Secondly, to specify the nature of the original expertise approach and methodology.</td>
<td>Meta-analysis of past and current research</td>
</tr>
<tr>
<td>Gibson, D., Velde, B., Hoff, T., Kvashay, D., Manross, P.L. &amp; Moreau, V. (2000). Clinical reasoning of a novice versus an experienced occupational therapist: A qualitative study.</td>
<td>The purpose of this study was to describe the clinical reasoning process used in the creation of goals by one novice and one experienced occupational therapist.</td>
<td>Ethnography (n = 2)</td>
</tr>
<tr>
<td>Gobet, F. &amp; Simon, H.A. (1998). Expert chess memory: Revisiting the chunking hypothesis</td>
<td>Hypothesis: size and not number of chunks accounts for the superiority of players of higher skill in recalling game positions.</td>
<td>ANOVA analysis of variance and correlational studies of latencies (n = 26)</td>
</tr>
<tr>
<td>Koh, R.Y.I., Park, T. &amp; Wickens, C.D. (2014). An investigation of differing levels of experience and indices of task management in relation to scrub nurses’ performance in the operating theatre: Analysis of video-taped caesarean</td>
<td>Research questions: a) will experienced nurse be better than novices at reactive task management, allowing less interruptions during their work; b) will experienced nurses prioritize their tasks and allow only interruptions by tasks of higher importance; c) is there significantly more adept pro-active task management skills in the experienced nurse; d) will experienced nurses perform better in the area of cognitive non-technical skills; e) will the performance skills correlate with indices of task management</td>
<td>One-way ANOVA analysis of variance with Chi square (n = 20)</td>
</tr>
<tr>
<td>Lyneham, J., Parkinson, C., &amp; Denholm, C. (2008). Explicating Benner’s concept of expert practice: Intuition in emergency nursing.</td>
<td>The purpose of this study was to explore the experience of intuition in emergency nursing in relation to Benner’s fifth stage of practice development</td>
<td>Hermeneutical phenomenological study (n = 15)</td>
</tr>
<tr>
<td>Maynard, C.A. (1996). Relationship of critical thinking ability to professional nursing competence</td>
<td>The purpose of this research is to examine the development of critical thinking ability longitudinally from beginning nursing student to practicing professional and its relationship to measures of professional competence.</td>
<td>Multiple regression and correlation techniques were used to determine effect/relationship with measures of competence as determined by Benner’s stages and performance on the 6-D scale.</td>
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</table>

Factor analysis. Cronbach’s alpha was used to measure reliability.

Repeated measures analysis of variance (n = 170)
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Title</th>
<th>Research Aim</th>
<th>Methodology</th>
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<tbody>
<tr>
<td>McHugh, M.D., &amp; Lake, E.T. (2010)</td>
<td>Understanding clinical expertise: Nurse education, experience, and the hospital context.</td>
<td>The aim of this research was to examine the effects of hospital contextual factors and individual nurse education and experience on clinical nursing expertise.</td>
<td>Cross-sectional logistical regression analysis using a descriptive and bivariate analysis of data. (n = 8,611)</td>
</tr>
<tr>
<td>Rassafian, M. (2009)</td>
<td>Is length of experience an appropriate criterion to identify level of expertise?</td>
<td>The aim of this study was to investigate the association between length of experience and therapist level of expertise.</td>
<td>Re-analysis of two previous studies. Spearman’s rho was calculated to identify correlations between duration of experience and level of expertise. Study 1 (n=18), Study 2 (n=29)</td>
</tr>
<tr>
<td>Schoessler, M.T. &amp; Farish, J. (2007)</td>
<td>Development at the bedside: Evolutionary development of the experienced registered nurse.</td>
<td>The purpose of this study was to describe the evolution of skills acquisition required for nurses to develop expertise.</td>
<td>Descriptive. Grounded Theory approach (n=25)</td>
</tr>
<tr>
<td>Simon, H.A. &amp; Chase, W.G. (1973)</td>
<td>Skill in chess</td>
<td>The purpose of this research was to examine human perceptual and memory processes during chess play. What is the perceptual basis of chess mastery?</td>
<td>Comparative correlational studies between latency and Frequency intervals. Pearson correlation coefficient</td>
</tr>
<tr>
<td>Simon, D.P., &amp; Simon, H.A. (1978)</td>
<td>Individual differences in solving physics problems.</td>
<td>Describe the explicit knowledge of physical laws students must acquire. Describe the way in which those laws must be indexed in memory to provide a basis for problem-solving.</td>
<td>Analysis of variance ANOVA (n=2)</td>
</tr>
<tr>
<td>Tuffiash, M., Roring, R.W., &amp; Ericsson, K.A. (2007).</td>
<td>Expert performance in SCRABBLE: Implications for the study of the structure and acquisition of complex skills</td>
<td>Hypothesis: SCRABBLE skill will predict performance among skilled players only on tasks that are related to SCRABBLE tasks demands.</td>
<td>Quantitative ANCOVA (n= 40)</td>
</tr>
<tr>
<td>Ward, P., Hodges, N.J., Starkes, J. L. &amp; Williams, A.M. (2007).</td>
<td>The road to excellence: Deliberate practice and the development of expertise.</td>
<td>The aim of this research was to examine the relative contribution of domain-specific team and individual practice activates to the development of elite levels of soccer performance.</td>
<td>Quantitative. Two-way ANOVA (n= 203)</td>
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<tr>
<td>Concepts</td>
<td>Associated Codes, Categories and Themes</td>
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</table>
| Experience and Time   | Graduated experience-intensity and type of diversity<br>dual license, broad experience, Level 1 Trauma<br>dedicated experience,<br>variety of experiences elevates everybody to an expert level<br>repetition, just over and over again<br>Work here for 20 years and you can have it…<br>because you have to see it, experience it first-hand<br>good boot camp on sub-medical, saw everything, forced into difficult situations,<br>senior nurse, time, put yourself out there,<br>don’t shy away from things that scare you, jump at opportunities to practice<br>actually have hands on experience is what makes the expert<br>working many years, 20 plus years, work in ICU, you’ve got to see it and do it,<br>seen it all done it all, knowledge level gathered through years of practical experience<br>life experiences, work experiences<br>There’s no way they’re going to wake up one day and know it. It’s going to come with time.<br>Interpretation of experience is based upon prior experience.<br>They been there awhile, experience is not “years as a nurse” actually have hands on.<br>education and not degree education, in the hospital<br>Confident in your assessment skills
| Learning/ Knowledge base | Cognitively mitigate in his own mind, trust, demonstration and validation of competency stay ahead of the patient and know what to expect, take initiative take advantage of opportunities, ask questions I know what the numbers mean; the numbers mean something, look at your patient forced into difficult situations- learned a lot from them initiative to learn, you can never learn enough watch, listen, ask questions of the doctors, ask questions of the senior nurses ask questions of someone you trust seek opportunities, look things up, google, research, understand concepts know the why and how of something, continuing education, dedicated practice, learn something new every day if I don’t know it I have automatically look it up I am where I am today because of my mistakes take the initiative on your own time to learn look at the knowledge base-if you don’t know something go home and look it up, driven to understand, why, how, reflection, metacognition, self-actualization I’ve seen them handle tough patients I wouldn’t have to tell them what to do, they already know, that the initiative to learn why you’re doing something, understand the concepts, Continual learning process, ICU critical thinking and staying ahead of my patient ED is task oriented, in the field it’s reactionary. Fix the problem then and there. In the ICU it’s how do I get ahead, firm grasp of concepts, whole body, anatomy and physiology, How and why things work the way they do, learning never stops, quickly assess and make accurate decisions, Little to no talking, know what to do, working together our actions complement one another. We know what to do and in what order, know what that means and what to watch for, know the why of what you do, they know what you need before you need it the first two years I was a nurse I went home and looked up the disease processes every night |
| Thinking | Cognitively mitigate in his own mind, think outside the box, draw assumptions on professional experiences mentally we draw from generational expectations and interpret information differently, millennial- digital-hands off, gen-x’er, boomers- hands on |
critical thinking, think outside the box as opposed to structured, linear thought, ability to mitigate problems with limited resources, reactive, stay ahead of the patient and know what to expect, dynamic, progressive, inventive, responsive to given situation, walk into a room and know what to do, **intuition**, automatic, I know where to look, I know what the numbers mean, you don’t have to tell them what to do, process, proactive, understand where to go and why based on experiences, goal dependent automaticity goal oriented, unconscious thought independent thinker, take over an do what needs to be done, I’m not going to have to guide them, they’re going to know what to do people see and know how to help, you don’t have to know worry or ask, you just know what to do and do it, ability to see the entire picture, His mind is always thinking, like a MacGyver of medicine, If the straight path isn’t available he’s thinking of another way to get there”, Take in the whole picture, and not just specifics, Little to no talking, know what to do working together our actions complement one another. You know what to do, and just go about doing it, they know what to do next, they don’t need direction, anticipatory, proactive, they know what you need before you need it, learn to read the entire situation

| Demeanor/Attitude | I think of myself as an expert; I guess. calm, cool, comfortable with oneself, maturity level, Towards the top I hope. A calmness that comes from doing it over and over again, situation is handled coolly and calmly put you best foot forward, every time something went wrong you went and did it again, “every time you fall the horse get right back up there on it”, confident, perseverance, At this level of experience people know how to keep their cool not complacent, proactive, caring, compassionate, overachiever, confidence willing to share and teach, Oh! They’re not freaking out for one thing! “You ask them to take care of a difficult patient and like oh okay”, calm cool collective I think excellent, but there’s always room for improvement” calm and collected, no yelling, cool and calm, maturity level, confidence, humble, I just knew that they were going to find out any day that I didn’t know what I was doing they make difficult situations look easy |
| Teamwork, Collaboration | Little to no talking, know what to do working together our actions complement one another. We know what to do and in what order articulate, “paint him a clear picture assertive, educating families, feel comfortable communicating, know who to talk to and how to pant a good picture At that level you know that you’re not the expert in some things and you’re humble enough to step aside I don’t have to guide care, they’ll take care of it, you see somebody in trouble and you don’t have to worry, people see and know how to help, you don’t have to know worry or ask, you just know what to do and do it. collaborative, receptive to questions, you have to work as a team, they know what you need before you know you need it teamwork, they’ve always got your back, we’ve been there for each other through thick and thin, |
| Professional Influences | Leave doors closed and stay in our little box; per se poor self-motivation, vulnerable, we all get to a point in life that we try not to become vulnerable Don’t want to leave your comfort zone, move to the bottom of the food chain, you don’t want to be that that young being eaten again some people are not motivated to do different, they like where they are, it’s a paycheck, fear, overwhelmed with responsibility, encouragement from senior staff, professional mentor no incentive, complacent, no room for advancement, being around others with same goals, encouraged by physician, senior nurses, fear, fear of change, not patient focused- eye on the time- moving on-graduate degree, confident, national recognition, passion for patient care, career ladder, personal motivation, |
| senior nurse eat their young  
We were not welcome in ICU,  
a desire to be the best, I want to know as much as I can,  
supportive manger,  
compassion, empathy, |
### APPENDIX I

**Codes by Definition**

Table 4-1.  

<table>
<thead>
<tr>
<th>Codes</th>
<th>Definitions</th>
<th>Commonly Confused with</th>
<th>Typical Quotes</th>
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<tbody>
<tr>
<td><strong>Teamwork</strong></td>
<td>Relevant clinical experience as defined by the participants. Experience is defined as clinical experience that demonstrates a diversity of scope and an intensity of service for a minimum of 5 years. The higher the intensity and diversity of the actual experience the more relevant. (Note: years of experience are not relevant to experience)</td>
<td>Knowledge/Learning</td>
<td>Participant (Altima): “(um). Having been in certain situations. I have a I got a fire, EMS background before nursing a little bit. And (ah) that has helped to develop me. The majority of my clinical experience has been (um) in the emergency department. (um). Been at Shands Jackson for a year down there. That’s a level one. I’ve been at UAB for a while. That’s level one.”</td>
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<td>Participant (Cadillac): “…That was the best training that you could have had. Because if they were sick they were there. (um) I think that people who work in a more (pause) specialty unit or a unit where you get sicker patients it tends to progress a lot faster than when you’re just on a regular floor…”</td>
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<td>Participant (Corvette): “…and by experience I’m not talking about years as a nurse I’m talking about years as a nurse that you actually have hands on experience is what makes that expert.”</td>
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<tr>
<td><strong>Thinking</strong></td>
<td>Relevant cognitive processes as defined by the participants by which independent assessments, judgements and actions are formulated in a situationally comprehensive manner to effectively address the immediate needs of the patient.</td>
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<tr>
<td><strong>Teamwork</strong></td>
<td>Participant (Altima): “think, thinking outside the box and the ability to (ah) (um) mitigate the problem…”</td>
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<td>Participant (Cadillac): “They just know what needs to be done. You don’t have to tell them what to do…”</td>
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<td>Participant (Camaro): “…they’re all independent thinkers…I know that I wouldn’t have to worry. They’re going to take over and do what needs to be done. And I’m not going, I’m not going to have to guide them.”</td>
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<td>Participant (Camry): “…his mind has turned to something else in the place of it and he can always think of something else. If that straight path isn’t available he’s thinking of another or different way to accomplish what we need to accomplish. Like a MacGyver of medicine…”</td>
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<td>Participant: (Passat): “…somebody that can take in general the whole picture and not just the specifics…”</td>
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</table>
| **Demeanor** | Relevant behavior and attitudes as described by the participants demonstrated in highly intense, stressful situations. | Participant (Porsche’): “And so it’s, it’s important that you see the whole picture in that room and what you ought to be doing for that patient. And when you do it what should happen. And if it didn’t happen what’s my next step.”  
Participant (Porsche’): “(um) The one thing they have in common is that they know what to do next. They don’t have to have direction. (pause)They can pick up and look in that room and know what is the next move. I don’t have to, I don’t have to direct the care of that patient. They know exactly what move to make next.”  
Participant (Altima): “…expert level. To be comfortable with oneself at that level… “there’s a maturity level of the person that’s the expert. They offer a certain maturity level, it makes a difference.”  
Participant (Cadillac): “A calmness. The new ones get real excited because they can bring anxiety in there with them.”  
Participant (Corvette): “Oh for one they’re not freaking out! You ask them to take care of a difficult patient and their like; oh okay. They’re calm, cool, collective, and they do it.”  
Participant (Passat): “(thinking, long pause looking up) They’re calm, their calm collected.”  
Participant (Porsche’): “A (um) confidence in managing my patient.”  
Participant (Taurus): “They make difficult situations look easy. They can have a patient that’s dog sick and they’re managing multiple things at one time. And they make it look easy. I mean
you don’t even realize unless you get to talking to them that this patient is in the ditch. Because they’re just managing. They’re managing multiple things at one time.”

Participant (Yukon): “They are the calm in the storm. There’s people that we work with that there’s no calm about them and everything is you know the younger nurses we work with are jumpy and their scared. These nurses are confident, competent and actually are able to remain calm in a difficult situation and they’re not freaking out constantly.”

**Motivation +/-**

| Relevant motivating factors as described by the participants that have impacted their professional growth and development throughout their careers. (Note: Influences as described either exert a positive or a negative influence and is unique to the individual participant). |
| Participant (Altima): “…We also eat our young too. (um)To a degree. You don’t want to be that that young being eaten again…. We all get to a point in our life that you try not to become vulnerable. Or step out of that box to be back where you were years ago.” |
| Participant (Passat): “Being around others that had the same goals as I did. (um) Seeing that mother of four you know she can go on… Just the example of others. And I’ve had physicians who who encouraged me…” |
| Participant (Porsche’): “… (CCRN)So that puts me nationally with other people. (um)That I am a certified critical care nurse. That speaks volumes for me.” |
| Participant (Taurus): “… I do believe this, that environment versus (pause)… what’s the environment versus your what you’re born with… what’s it called… (um) nature, nurture. I do finally believe for myself that (pause) to be a nurse is a calling. There is no doubt in my mind that spiritually this is what God wanted me to do…” |
Participant (Taurus): “…when they come here it don’t take long working with them to know that they’re here for a paycheck. It’s just not here (tapping chest). It’s strictly a job for them. There is no buy in there’s no personal motivation to want to know more to want do better. They just want to do what they have to to get by.”

Participant (Volvo): “A desire to be the best (laughing)…I want to do the best that I can regardless of what I commit to.”

Participant (Yukon): “…a total overall compassion for people. I think makes people be a better nurse.”

<table>
<thead>
<tr>
<th>Teamwork</th>
<th>As noted by the participants there are inherent behaviors that demonstrate relevant principles of teamwork within the patient experience.</th>
<th>Communication Collaboration</th>
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<tr>
<td></td>
<td>Participant (Camaro): “We see somebody in trouble you don’t have to worry that it’ll be taken care of. People see and know how to help.”</td>
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<td></td>
<td>Participant (Passat): “Respecting other people and not taking thinks for granted, (um)…. It’s still a team effort. Even the expert nurse needs another pair of hands in there to help you out. (um) so It’s not a singular. It is a team. And nursing is a team. You always need someone else there with you”.</td>
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<td>Participant (Passat): “And (um) when we left the hospital it was a very sick patient multiple drips ventilator pressure controlled ventilating, it was very sick (um) and we got in the aircraft and Mike (pilot) said you and EJ…you just yall both new what to do. You were watching each other but you both knew what needed to be done even though there were multiple task that needed to be done You saw you evaluated the situation saw what needed to be done priority down and just went about doing it…”</td>
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<tr>
<td></td>
<td>Participant (Porsche’): “A (um) involvement of others, (um) collaborating about the care. (um) Asking others input along with</td>
<td></td>
</tr>
</tbody>
</table>
**Communication**

As described by the participants there are relevant behaviors that promote, facilitate and define clear effective communication between clinicians promoting positive patient outcomes.

<table>
<thead>
<tr>
<th>Participant (Camry): “… he is receptive to suggestions. I can go up and ask him about a patient and he listens to what I say. He’s open…”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant (Passat): “…With excellent nurses. There’s very little talking. You do not have to verbally communicate. (um)…”</td>
</tr>
<tr>
<td>Participant (Porsche’): “(um) I think it’s the comfort level. Me knowing my patient being able to articulate to (ah) that physician a clear picture. Being able to paint that picture (um) that he can close his eyes and actually visualize that patient laying there. (um) A newer person struggles with that.”</td>
</tr>
<tr>
<td>Participant (Volvo): “but I also I don’t think that as a younger nurse you learn how to listen; as well. Listen to the patient listen to what is going on. Listen to the situation. Listen to the report, you know. I think I listen much better now than what I did.”</td>
</tr>
<tr>
<td>Participant (Volvo): “look at (um) other nurses and we look to see to okay how does this person you know… how assertive is this...”</td>
</tr>
<tr>
<td>Knowledge/Learning</td>
</tr>
<tr>
<td>--------------------</td>
</tr>
</tbody>
</table>
| Learning is defined by the participants as a continuously evolving process. Such that clinicians must develop a comprehensive understanding of disease processes, the underlying pathophysiology, and any associated relevant medical interventions that may be needed with a degree of competence that they are able to independently synthesize and apply said knowledge appropriately. | Experience Thinking | Participant (Cadillac): “Now I know where to look. The numbers mean something. (smiling) (um) Look at your patient…if you can walk into a room and assess what’s going on and know exactly what to do or at least know where to start. As opposed to when I first started and I have not a clue.”  
Participant (Camry):”Part of I think that I am where I am today not because of what I know but mistakes that I have made and learned from those mistakes. I mean I can go back to several experiences…”  
Participant (Corvette): “And I think you have to just take that initiative to continue to learn.”  
Participant (Corvette): “In the ICU it’s fixing that problem and getting ahead. Everything critical care wise I learned from the ICU and by taking care of my patient and learning knew patients and from people that knew more than me.” |
|   |   |   |
Participant (Corvette): “…somebody new you’d get back, oh, what do you want me to do?, what do I do? Edgar. I wouldn’t have to tell him what to do. He already knows.”

Participant (Passat): “I think having a good working knowledge of anatomy and physiology. And not just one system of the body but the entire (um) all the systems that make up our body (um) and having an understanding the the pharmacology that goes along with our anatomy and physiology with the disease processes. (um) Especially with the (um) the continuing education involving pharmacology. (um) Because being a nurse for 30 years it’s evolved considerably. (um) The continuing education is probably the most vital part I think of being an excellent nurse. (um) It never stops. Ever. (um)”

Participant (Porsche’): “…You need to know the why of what you do. If you understand the why of what you do then you’ll know what the outcome should be. And the whole goal is to get a patient to a specific outcome… You will never know how the patient should respond and if it’s not responding appropriately what you need to do next. You can’t know that until you know the why. …”

Participant (Taurus): “I took my patient care personal. The first two years I was a nurse I went home and I looked up the disease processes that the patients had. I read everything that I could get me hands on these disease processes.”
Theming is an outcome of coding, categorization, or analytical reflection; it is not something in and of itself coded. (Saldana, p.14)

<table>
<thead>
<tr>
<th>Codes</th>
<th>Categories</th>
<th>&quot;is&quot;/or “means”</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience</td>
<td>Experience</td>
<td>Means praxis</td>
<td>Practical hands on clinical experience across multiple domains with an intensity of service and severity of illness to provide/promote learning.</td>
</tr>
<tr>
<td>Graduated (types) experience</td>
<td>Demeanor</td>
<td>Means presence</td>
<td>Behavior and attitudes demonstrated in highly intense, stressful situations.</td>
</tr>
<tr>
<td>Diversity of experience</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Years of experience</td>
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<td></td>
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<tr>
<td>Attitude/ emotions</td>
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<td></td>
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</tr>
<tr>
<td>Trust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humble/ self-depreciating</td>
<td></td>
<td></td>
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<tr>
<td>Calm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior/ action</td>
<td>Thinking</td>
<td>Assessments/ judgements are made in a situationally comprehensive manner to effectively address the immediate needs of the patient.</td>
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<tr>
<td>--------------------------</td>
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<tr>
<td>Critical Thinking</td>
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<tr>
<td>Just know what to do</td>
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<td></td>
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</tr>
<tr>
<td>Generational Influences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>They don’t need guidance</td>
<td></td>
<td></td>
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<tr>
<td>Think outside the box</td>
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<td></td>
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<tr>
<td>Whole picture</td>
<td></td>
<td></td>
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<tr>
<td>Independent thinker</td>
<td>Knowledge</td>
<td>A continuously evolving process. Clinicians must develop a comprehensive understanding of disease processes, the underlying pathophysiology, and any associated relevant medical interventions that may be needed with a degree of competence that they are able to independently synthesize and apply said knowledge appropriately</td>
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</tr>
<tr>
<td></td>
<td>Means phronesis</td>
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<td></td>
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<td>Research</td>
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<td></td>
</tr>
<tr>
<td>Continuing Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understand how &amp; why</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm grasp of concepts</td>
<td>Teamwork</td>
<td>Working together in a positive supportive and collaborative manner to achieve optimum patient outcomes and team performance.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collaboration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Is effective communication</td>
<td>Clear effective communication between clinicians promoting positive patient outcomes.</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td></td>
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<tr>
<td>Clear articulate</td>
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<td></td>
<td></td>
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<tr>
<td>Open</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Paint a picture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understand/ grasp concepts</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Professional Development</td>
<td>Factors that impacted that developmental process</td>
<td>Influential factors are social, environmental and personal in nature. They are either internally or externally driven.</td>
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<tr>
<td>Positive Influences</td>
<td>Motivation/ Inspired</td>
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<tr>
<td>High Expectations (peer pressure)</td>
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<td></td>
<td></td>
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<tr>
<td>Professional mentors</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Managers</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mentors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-workers/ High expectations</td>
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<td></td>
<td></td>
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<tr>
<td>Driven to be the best</td>
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</tr>
<tr>
<td>Opportunities to advance</td>
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<td></td>
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</tr>
<tr>
<td>Career Ladder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognition</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Negative Influences</td>
<td>Obstacles</td>
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<tr>
<td>Self- Fear/ Anxiety</td>
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</tr>
<tr>
<td>Senior staff “eat young”</td>
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<td></td>
</tr>
<tr>
<td>Laziness/ content</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>No opportunities to advance</td>
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</tr>
<tr>
<td>No Career Ladder</td>
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</table>
### APPENDIX K

**Code Frequency Table**

#### Table 4-4

**Code Frequency Table**

<table>
<thead>
<tr>
<th>Structural Codes</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Question 1: How would you define the expert nurse in clinical practice in critical care?</td>
<td></td>
</tr>
<tr>
<td>Experiences are important (did not specify)</td>
<td>4</td>
</tr>
<tr>
<td>Diversity/ Intensity of experience</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td>(10 of 10 responses to experience)</td>
<td></td>
</tr>
<tr>
<td>Knowledgeable with a solid grasp on concepts</td>
<td>7</td>
</tr>
<tr>
<td>Confidence</td>
<td>1</td>
</tr>
<tr>
<td>Collaboration</td>
<td>1</td>
</tr>
<tr>
<td>Continuing education</td>
<td>1</td>
</tr>
<tr>
<td>Research Question 2: What criteria or characteristics would you use to define expert performance in clinical practice in the critical care unit?</td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>10</td>
</tr>
<tr>
<td>Knowledgeable</td>
<td>6</td>
</tr>
<tr>
<td>Independent thinkers who know what to do</td>
<td>8</td>
</tr>
<tr>
<td>Calm cool demeanor</td>
<td>6</td>
</tr>
<tr>
<td>Comfortable</td>
<td>2</td>
</tr>
<tr>
<td>Communication</td>
<td>1</td>
</tr>
<tr>
<td>Teamwork</td>
<td>3</td>
</tr>
<tr>
<td>Research Question 3: How does one become an expert in critical care?</td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td>7</td>
</tr>
<tr>
<td>Proactive pursuit of lifelong learning</td>
<td>7</td>
</tr>
<tr>
<td>Time</td>
<td>4</td>
</tr>
<tr>
<td>Spiritual Calling</td>
<td>1</td>
</tr>
<tr>
<td>Research Question 4: Describe any factors that in your experience may have supported or hindered that development.</td>
<td></td>
</tr>
<tr>
<td>Positive Factors</td>
<td></td>
</tr>
<tr>
<td>Diversity of experiences</td>
<td>3</td>
</tr>
<tr>
<td>Specialty Education</td>
<td>2</td>
</tr>
<tr>
<td>Opportunities</td>
<td>2</td>
</tr>
<tr>
<td>Professional mentors/ role models</td>
<td>2</td>
</tr>
<tr>
<td>Professional recognition</td>
<td>1</td>
</tr>
<tr>
<td>Personal drive to be best</td>
<td>4</td>
</tr>
<tr>
<td>Negative Factors</td>
<td></td>
</tr>
<tr>
<td>Issue</td>
<td>Frequency</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Nurses eat their young</td>
<td>4</td>
</tr>
<tr>
<td>Vulnerability</td>
<td>1</td>
</tr>
<tr>
<td>Fear</td>
<td>4</td>
</tr>
<tr>
<td>Laziness</td>
<td>1</td>
</tr>
<tr>
<td>Complacent</td>
<td>4</td>
</tr>
<tr>
<td>Lack of opportunities</td>
<td>1</td>
</tr>
</tbody>
</table>
APPENDIX L

Concept Map

![Concept Map Diagram]

Figure 4-3. Concept map.
APPENDIX M

Venn diagram. Expert defined

Figure 5-1. *Venn diagram: expert defined.* The transformation to the expert nurse is demonstrated when: 1) praxis (experience) is focused and repetitive providing the intensity and duration to promote learning; 2) there is sufficient evidence to indicate a comprehensive understanding of core concepts that further support independent critical reasoning; and, 3) the individual has the personal vision, motivation, and desire to achieve professional excellence.
APPENDIX N

Transcription Template

Altima

1. First of all I thank you for allowing me to come and talk to you today. *Thank you for asking.*
2. The first thing if you think about these new kids coming out of school and where you were when you first graduated and where you are today, where would you consider yourself? Would you be more of a proficient or competent, or expert nurse? *I think it's the graduated experience* (um) *And the advancement of medicine.* (um) *Knowing where we are at in nursing to where are now.*
3. With experience? The type of experiences helps? *Absolutely* I think that (um) people that work at (ah) let's say in retail, work at a small box store mom and pop cell phone to a person who works in a high traffic high area (ah) store such as Walmart (ah) would have different (ah) retail experiences. They would in nursing.
4. That’s a good point. I don’t need to forget that. That’s an excellent point. You’re exactly right. Say somebody works in a small rural hospital, like a Fayette or a, I don’t know Foley. They ship everything. They keep nothing acute. Their nurses their nursing experiences are very different than somebody say such as yourself who works at say UAB Trauma Burn unit.
6. Let's think about a scenario that’s relevant to you. You arrive on a scene. The scene is secure. You realize that you have multiple victims. I know there’s a medic and an RN that flies, right? With the pilot? *Nodding affirmatively.* Right. In this particular situation you have the ability or the opportunity to have another helicopter or another nurse to help you out with these multiple victims. You’ve arrived on scene and you’ve got multiple accident victims. You’ve quickly triaged them and you realize that you’ve got multiple patients who have the opportunity, that are salvageable if you act quickly. But they’re I don’t know the exact words that y'all use but on the inpatient side for me they’re highly acute, very unstable. You have the potential to pull them through but they all need immediate attention at the same time. And they all need attention now.
7. Right.
8. Who would you like to see driving up in another truck or coming in another helicopter? *From a professional standpoint?*
9. Yes. From a professional standpoint. *From an experienced proficient medic or nurse.*
11. Alright. So... Somebody with (ah) Jek’s experience.
12. Okay. Thinking about Jek. What qualities does he put on the table that makes his name come to the top? *He has both a nurse and a medic’s experience. And he’s a experienced in both. He*

Figure 4-2. Transcription template.
Altima

could be, I think he's an expert in both fields. So I mean he has dual license.

There is something about his practice, his presentation, that sets him apart from you
know, someone else, you know, someone who it might be there first week as a flight
nurse?

(al) His, (um) He's got a calm cool demeanor and (um) is able to (ah) of course
to cognitively mitigate (um) what's necessary and triage in his own mind (ah) and there
is a trust factor. And that's (ah) important. You have to have trust.

That's interesting. I like that.

Well... It's very important.

It is. It is. I agree. Where do you think that trust comes from?

It's working with him and knowing him and knowing what he's capable of.

(um). Let's see what I'm trying to get at. How to convey it. Can you think of an
experience that would demonstrate that trust?

(ah). We've landed on the scene several times and he's been there and has already
given us a run down of what (um) what the situation was and once accepting the
patient and getting that patient (ah) it was exactly definitely exactly what he said it
was. He's (ah) having experience a depending on his knowledge and his experience
with that patient. Helps to build trust. If I can let my, if I can trust my kids to go, you
know, out with their friends and and do things with their friends over time that builds...

I know that they're gonna be where they said they were going to be. So it works in the
professional world the same. If you have an expectation that means that expectation is
just exceeded and now they're there. That builds that trust.

Let's talk about the cognitive part that you spoke about. Thinking about, do you have
the opportunity to work with new folks very much?

Sure.

Okay. Thinking about a new person in a situation and somebody like Jek or somebody
like yourself in a situation. How is your thinking different than theirs? Than a new
person?

We really shouldn't assume. But I think you draw certain assumptions and you don't
just draw them on (um) your professional experiences; I don't think. I think (ah)

Unfortunately I think mentally mentally we (ah) draw from (um) generational
expectations as well, millennial versus (ah) you know (um) I'm a x generation. (ah)

baby boomers. You draw I think you draw from expectations and people learn
differently. And so you know, taking a patient from a millennial you know they're more
hands off away from the physical they interpret information differently than xers or

boomers: they're digital. You see the baby boomers more hands on, I think in flight.

We've gone from in classroom didactic stuff to at home self-education stuff. So.

You are so right. Let's think about this. You've got somebody new to the team.

They've never flown before. Let's take me for example. I've got 30 years of acute care
experience in the ED and intensive care, primarily intensive care. CCRN certified, and
past TNCC. I would consider myself an expert within my own environment but I've
decided to retire from DCH and I've landed a job here with you. I am a brand new
green grass in-experienced nurse in your world and I want to be as good as you are.

What advice would you give me?

Think outside the box (um) You are no longer inside the hospital. (um) Your job,
(um) You're taking critical patients from a controlled environment and moving critical patients to an uncontrolled environment. Critical thinking is very important. In the ICU you may have several patients and you're splitting your time between different patients and yet aside from being on scene with multiple patients on scene the majority of your focus is on the sickest of the sick. So and you don't have the same provisions. So I think thinking outside the box and the ability to (ah) (um) mitigate the problem with (um) minimal resources is important.

Radio goes off.

Independent thinker (pause) I don't I don't have a pharmacist to call or a dietician to call for help.

Thinking about you own career. How you've progressed from point A as a new nurse to point B the nurse you are today. What do you think has helped you the most professionally to get where you are?

(um). Having been in certain situations. I have a I got a fire, EMS background before nursing a little bit. And (ah) that has helped develop me. The majority of my clinical experience has been (um) in the emergency department. (um). Been at Shands Jackson for a year down there. That's a level one. I've been at UAB for a while. That's level one. I've also supported smaller hospitals and stuff and (um) I think seeing how the progression of patient care being that facility that sends out has (ah) developed me to know okay like this is something that we shouldn't probably keep. This is something that should probably be (um) expedited. The variety of experiences has helped (um) with professional development (um) for me.

If you could think about something that maybe got in the way hindered your professional development along the way, what would it be?

I think (um) for me professionally to develop and do what I'm doing (um) or get to where I'm at now I think (ah) there's always doors in life we have doors. And a lot of times the doors are there and you keep them closed and we allow them to stay closed and sometimes we open them. And I think especially for nurses we tend to leave doors closed and stay in our little boxes per se. Once we're done ER we tend to stay in the ER. And (ah) we're specialty driven or sub-specialty driven. I forced myself out in nursing school. My preceptorship was done in a neonatal ICU. Before I opened that door I had to force myself to do that. About a year and a half ago I started doing a ECMO working with the perfusionists. I think a lot of what has inhibited me from doing things is just my own poor self-motivation. I'll address that later. We also eat our young too. To a degree. You don't want to be that young being eaten again. When I went into ECMO I was now around a bunch of perfusionists. I'm doing it just part time so I'm not 100% committed but (ah) around a bunch of perfusionists who know a lot about cardiac perfusion. I have my little box in the ER. I've taken care of the heart attacks; sent them up to have cardiac surgery. I was now (ah) (long pause) (ah) (um) vulnerable. So.

Because you went from being top of the food chain so to speak as an experienced nurse.

Right.

Being at the bottom of the food chain because you're new with this experience.

You're vulnerable.