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# Competent Assimilation: A Substantive Theory of First Clinical Preparation in Nurse Anesthesia Education

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# COMPETENT ASSIMILATION: A SUBSTANTIVE THEORY OF FIRST CLINICAL PREPARATION IN NURSE ANESTHESIA EDUCATION

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Preparation of the Student Registered Nurse Anesthetist (SRNA) to start clinical education varies greatly between nurse anesthesia programs. Variations include length of time from first day of class to the first clinical rotation, and in the content, amount, and type of instruction provided. There are no national association or accrediting body-driven curricular guidelines regarding clinical preparation, as well as little literature addressing transition to clinical education. As such, discerning what is most beneficial to prepare SRNAs for clinical education was deemed imperative. The purpose of this study was to explore and interpret the experience of entering a first clinical rotation through the memories of Certified Registered Nurse Anesthetists (CRNAs) to construct a substantive theory addressing SRNA transition to clinical education.

Charmaz's Constructivist Grounded Theory methodology was used to interview eight CRNAs with less than ten years of professional experience. By analysis of the rich data the Theory of Competent Assimilation was constructed. This theory describes the importance of a pre-clinical foundation comprised of a preparational triad composed of orientation, didactics, and simulation of skills. It is not enough for this triad to stand alone, but rather the foundational components must be synthesized through real-like simulation (RLS), which is the key for optimal performance and application of knowledge to clinical practice. RLS provides experiential context for SRNAs to apply to clinical performance. A new application of Benner's

Novice to Expert Theory to nurse anesthesia education was discovered, in that critical care nurses start their advanced practice education as advanced beginners rather than novices, and coupled with a strong preparational triad and RLS, can begin clinical education as competent practitioners with positive assimilation to clinical practice.

This theory stresses the importance of pre-clinical preparation and positive assimilation to clinical practice. The use of this theory can help drive curriculum development and set benchmarks for clinical entry. SRNA anxieties would decrease, and as they would become less distracted and more confident, patient safety would be greatly enhanced. Positive assimilation to clinical practice will enhance clinical learning to allow for more advanced assimilation at an earlier stage, promoting stronger graduates.

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# CHAPTER ONE

# INTRODUCTION

The purpose of this chapter is to describe the aim of the study, which will be done through a variety of ways. First, the phenomenon of interest will be described, as well as justification for studying this phenomenon. Assumptions such as biases, experiences, and perceptions will be explored. Following a brief explanation of the research method, relevance to the discipline of nurse anesthesia will be discussed.

## Phenomenon of Interest

> *Tomorrow is my first day of clinicals in anesthesia school! I have these mixed emotions of excitement and pure terror. Can anyone share some stories to make me laugh? I know the CRNAs [Certified Registered Nurse Anesthetist] and MDAs [Medical Doctor Anesthesiologist] will not expect a whole lot from me on my first day, but that does little to ease my anxiety. I've never really worked in the OR [operating room] before, but I hear it can be quite intimidating. Any words of Wisdom?* (Jaybird, 2003)

I initially became interested in exploring first anesthesia clinical experiences in relation to pre-clinical didactic and simulation education during my own experience as a Student Registered Nurse Anesthetist (SRNA). Although it's been 16 years since my first clinical rotation at a small community hospital, I can still remember it with alarming clarity. My initial sentiments mirrored that of Jaybird (2003), and my anxieties were many. Coming into my nurse anesthesia program (NAP) as an experienced critical care nurse, I had been looked upon by my intensive care unit colleagues as a mentor and was confident in my abilities. However, as a SRNA I was now a novice in a new realm of nursing, and faced with a new clinical role, two specific questions loomed as the root of my anxiety; Will I/how will I know what to do? Will I look like/perform

like an idiot? That first clinical rotation lasted for three months in duration, and at some point close to the end of it I had the realization that I had not introduced myself as completely incompetent. In fact, my performance was evaluated by the site's clinical coordinator as above average, which I directly attributed to the thorough preparation my NAP afforded prior to beginning my first clinical experience. I became aware that the intense didactic and simulation content I received in the three months leading up to the initiation of clinical education was carefully orchestrated to promote and accentuate clinical education and competence.

Although I had experienced intense pre-clinical preparation, the amount of didactic and simulation instruction provided before the start of clinical education varies significantly among programs. Two distinct curricula types exist in NAPs that differ greatly in how clinical education is approached. When clinical education is integrated within the didactic schedule, the program would be deemed "integrated"; "front-loaded" programs provide all coursework at the beginning of the program before clinical education begins, which is subsequently all completed at the end of the program (Chipas et al., 2012).

Within integrated programs, didactic instruction before introduction to clinical education also varies greatly, ranging from none to an extensive overview of all facets of anesthesia, including medicines, machines, skills, and techniques. Simulation—the practicing of techniques and situations on mannequins in a controlled, scripted, and proctored environment—can also be used to prepare students for the responsibilities for which they will be held accountable (Blum, Borglund, & Parcells, 2010). Again, the range in which simulation is used to prepare students for clinical education ranges from none to practice with skill training mannequins to extensive training on high fidelity simulators (Blum et al., 2010). Unfortunately, neither the American Association of Nurse Anesthetists (AANA) nor the Council on Accreditation of Nurse

Anesthesia Educational Programs (COA) keep a database to catalogue these curriculum differences, which can only be discerned by the review of individual program curriculum ("Course Catalog," 2014; "Anesthesia Fall Curriculum," 2014).

With such a wide variance in approach to instruction prior to starting clinical education, it seems important to discern what curricular content or pedagogy is most beneficial to promote and accentuate clinical education and competence in the SRNA first clinical experience. The purpose of this study was to explore and interpret the experience of entering a first clinical rotation through the memories of CRNAs in order to generate an explanatory theory about how pre-clinical instruction affects the SRNAs ability to learn in and assimilate to the clinical environment.

## Perceived Justification for Studying the Phenomenon

Nurse anesthesia education has changed dramatically since 1909 when the first formal educational program was established (*Nurse Anesthetist*, 2014). Early education was offered as a hospital-based certificate program where nurses would essentially obtain on-the-job training while earning a stipend. As modern anesthesia evolved, so did the degree requirements, which shifted from certificate to diploma, to bachelors, to masters, and soon to be doctorate (COA, 2014). This change necessitated school affiliation with colleges and universities, which also demanded an increase in didactic learning. Huge technological and scientific advances also demanded a shift to a larger didactic component. Programs shifted from offering stipends and student inclusion in hospital staffing numbers to following a traditional university educational model (COA, 2014). The only constant that remains is the large amount of clinical education deemed necessary by the COA to become a safe and effective CRNA (COA, 2014).

The Council on Accreditation of Nurse Anesthesia Educational Programs is the authoritative body which provides accreditation for nurse anesthesia programs. The COA has extensive guidelines regarding curriculum, acceptable attrition and board passage rates, and mandated numbers of specific cases and procedures a student needs to establish before graduation and eligibility to sit for the National Certification Exam for Nurse Anesthetists (NCE) (COA, 2014). All current anesthesia programs are a minimum of 24 months in length, from which graduates earn a master's or higher-level degree (COA, 2014). Every NAP graduate must be board certified to be able to practice as a CRNA. In order to sit for the NCE, the SRNA must provide anesthesia for a minimum of 550 cases and 2000 clinical hours, and perform a mandatory number of specified skills during clinical experiences as a way to demonstrate clinical ability before the testing of didactic knowledge (COA, 2014). Unfortunately, even with these stipulations and the strong emphasis placed on clinical education, the COA does not offer official guidelines specifying the anesthesia knowledge and skills required before beginning clinical experiences (2014).

In order to meet the rigorous clinical requirements, clinical education for anesthesia is arranged much differently than undergraduate nursing education. Traditional undergraduate clinical nursing education occurs concurrently with a corresponding theory course. For instance, a psychiatric nursing course would include a clinical experience with psychiatric patients, or an obstetric nursing course would have both a theory and clinical component for the course. In NAPs, clinical opportunities are not restricted to current didactic content and need to be experienced as they present themselves. Operating room (OR) scheduling is a dynamic process, with each day's case schedule being different than the day before. Since some cases are infrequently scheduled, the opportunity to administer anesthesia for these cases occurs when

available. However, NAPs may limit certain clinical case assignments until didactic content has been provided due to their particular complexity or specialization. For instance, some NAPs provide dedicated rotations in cardiac, neurosurgical, pediatric, office-based, and obstetric anesthesia (Horton & Jordan, 1994), which may not be offered until after the corresponding didactic components have been completed. These specialized clinical learning experiences may not occur for six months to a year after didactic education has taken place depending on clinical arrangements or rotational constrictions.

Clinical case assignments for integrated NAPs typically start with basic cases, such as simple orthopedic or general surgeries, and are performed on adults. As the SRNA progresses through the program, assignments become more intense to reflect an increased level of didactic knowledge and skill set acquisition. Integrated programs may start clinical experiences one or two days per week anytime during the first or second year of anesthesia coursework, while the other days are spent in didactic learning. During the course of the program the amount of days spent in the clinical setting gradually increases until the last semester, when a student spends four to five days a week in the clinical setting. Again, this information must be gleaned from inspection of individual curriculums, as databases containing this information are not available.

Just as variability exists between programs regarding when clinical education commences, the range of education a SRNA receives prior to starting the clinical education component is also program dependent. One curricular arrangement is to start clinical rotations before any substantive anesthesia education has really taken place. For comparison, one program essentially only teaches SRNAs how to perform an anesthesia gas machine (AGM) checkout before introduction to clinical education during the second week of didactic instruction ("Course Catalog," 2014). Conversely, another program currently takes three months to provide

intense didactic instruction on the AGM, the OR table, anesthetic medications and techniques, and a basic comprehensive overview of most anesthetic realms (ex. cardiac, trauma, pediatrics, neuraxial blocks). In addition, extensive use of simulation replicating induction (the act of putting a patient "to sleep" using anesthesia medicines and gases) and intubation is used to familiarize the SRNA with one of the most critical times of a general anesthetic ("Anesthesia Fall Curriculum," 2014). For this type of program structure, only after satisfactory didactic and simulation performance is the SRNA permitted to advance to the clinical environment.

Strong clinical skills and the ability to navigate the OR environment is imperative as CRNAs literally hold each patient's life in their hands. As a colleague once put it, "we bring patients to the brink of death, and then bring them back again" (Don Stanley, CRNA, personal conversation, February 2003). Even with the importance placed on clinical performance by the COA and the profession of nurse anesthesia in general, little is published in the current literature concerning SRNA clinical education as a whole, and only one study could be identified that particularly pertained to preparing SRNAs for transition into clinical education. Wunder et al. (2014) created an Objective Structured Clinical Examination (OSCE) to measure clinical skills at the end of the first semester to assess SRNA readiness to begin clinical education in their second semester. After the identification of five foundational areas for safe practice by expert faculty and clinicians, the Delphi method was used to develop rubrics for five OSCE simulation stations. Although validity and reliability of the rubrics were not evaluated, the authors believe mastery of the five identified skills (equipment check, preanesthetic evaluation, masking and airway adjuncts, transfer and positioning of the patient, and induction) would "enhance the students' chances of a smooth transition from an observational role in the first semester to a more active

role in the second semester, therefore providing a foundation for safe practice" (Wunder et al., 2014).

Research has examined SRNA perceptions of their clinical experience, but their focus has mainly been on bullying and instructional methods of clinical preceptors (Chipas et al., 2012; Elisha & Rutledge, 2011). Additional topics found in literature include SRNA coping mechanisms and faculty perception of successful SRNA characteristics (Chipas et al., 2012; Clayton et al., 2000). Literature which addresses pre-licensure nursing student clinical orientation, simulation, anxiety, and self-confidence towards clinical learning points to the significance and importance of preparing students before beginning clinical education (Blum et al., 2010; Dearmon, et al., 2013; Lundberg, 2008; Worrall, 2007). Additionally, the identification of roles, responsibilities, and expectations may increase the motivation to learn as SRNAs can better appreciate what is expected of them during the learning experience (Worrall, 2007).

Such a strong emphasis on clinical abilities presents a need for quality clinical education, and how a student is introduced into the clinical environment could potentially impact their educational and career success. Hypothetically, a strong base from which to build upon could facilitate faster clinical growth, whereas weak or little clinical preparation might stall learning while basics are being mastered. Unfortunately, neither the COA nor current literature offers any guidelines or insight on how best to prepare SRNAs for clinical education. The literature gap pertaining to SRNA clinicals and pre-clinical preparation speaks to the importance of producing research geared to enhance SRNA introduction to the clinical environment. Furthermore, the large variance that exists in how and when SRNAs begin their clinical education warrants an investigation to discover best practices. However, without base knowledge of SRNA first

clinical experiences in the context of pre-clinical preparation, evidenced based guidelines cannot begin to be developed. It was the intention of this research to investigate this phenomenon through CRNA sharing in order to generate an explanatory theory of how pre-clinical instruction affects the SRNAs ability to learn in and assimilate to the clinical environment.

## Specific Context

> *Many people have told us that we would struggle with the most simple tasks during our first rotations. I did not really believe them until today. I felt like a complete klutz and I felt like everything I did as an ICU Nurse was taking me twice as long as it usually does. I even had trouble attaching the EKG leads! (It's different when you're at the patients' head of the bed instead of at the side ok people?)* (Admin, 2012)

As the transition to clinical work associated with the CRNA role requires a paradigm shift from critical care nursing, the first visit to the OR can leave a SRNA feeling overwhelmed, as is reflected in the above blog entry. Everything from the amount of autonomy and responsibility imparted on the anesthetist to the fact that the pulse oximeter, blood pressure cuff, and electrocardiography leads are all placed on the patient from the head of the bed, or upside–down if you will, can create a huge amount of anxiety to the novice SRNA. Although admission to a nurse anesthesia program requires a minimum of one year recent critical care experience (COA, 2014), the foreignness of the anesthesia domain can cause new SRNAs to be easily overwhelmed. In order to better understand the context of a typical day a new SRNA will encounter, the following description is provided to share that experience.

"Even though I had to wake up at 4am to be in the hospital parking lot by 5:15am, I had a good day today" (Admin, 2012). Preparation for surgical cases necessitates an early arrival to the OR suite. Even though cases typically start until between 7 and 7:45am, case preparation can

take an hour or more for the novice SRNA. The amount of preparation needed for an anesthetic is case dependent, and can be quite extensive. A partial list of standard preparation activities includes an extensive check and calibration of the AGM, readying of intubation and adjunct airway equipment, and preparation of the drugs necessary for an anesthetic, which includes many specific only to anesthesia. Positioning equipment, monitoring supplies, invasive monitoring equipment, and central line kits all need to be gathered and prepped.

After the room has been appropriately prepared for the case, the SRNA then proceeds to the pre-anesthetic holding area to perform the pre-anesthetic evaluation. The patient needs to be assessed for co-morbidities, possible airway issues, and physical readiness to receive an anesthetic. In some cases, additional laboratory tests may need to be ordered, and for some cases, regional anesthetics need to be administered before the patient can be sedated and brought to the OR. Once in the OR, the patient is transferred to the specialized operating table and the arm boards attached. Standard monitors are applied from the head of the bed, and then an oxygen mask is applied to the patient to preoxygenate/denitrogenate before induction. Induction drugs are given, and once the patient is apneic, the SRNA initiates bag-mask ventilation. Intubation is performed by the SRNA once paralysis is confirmed. After the endotracheal tube position is verified, the tube is connected to the circuit on the AGM, the ventilation parameters are set, and the anesthetic gases administered (Butterworth, Mackey, & Wasnick, 2013). Although not described in same amount of detail, the remainder of the anesthetic needs to be delivered, the patient emerged (awakened) from the anesthetic and extubated, and finally delivered safely to the recovery room. The entire cycle is then repeated for subsequent cases.

SRNAs are typically paired with a CRNA during their initial clinical experiences and are not expected to function autonomously for at least a year in integrated NAPs. However, from the

beginning SRNAs are expected to prepare the room and have a well thought out management plan for either the first or "best" case of the day, as well as perform basic skills such as endotracheal intubation during their initial clinical experience ("Anesthesia Fall Curriculum," 2014; "Course Catalog", 2014). For someone who is not familiar with the medications, equipment, or routine, it would be easy to become intimidated by the anesthesia environment. Depending on the amount of preparation that would lend to familiarity with the CRNA role and the OR environment, varying levels of anticipation and anxiety could be experienced. However, since a formal examination of this experience in the context of clinical preparation had yet to be performed, the impact the variety of pre-clinical preparation modalities may have on the first clinical experience had not yet been described.

**Assumptions/Biases**

During my career I have been able to precept SRNAs from three different anesthesia programs, each with three distinctly different levels of pre-clinical preparation. Those from the program with an extensive preparation process approached clinicals with caution, but progressed swiftly after the initial awkwardness wore off. These students were well versed in standard anesthetic techniques, drugs, and case preparation. Those from the program which provided little preparation visibly struggled for at least a year. In contrast from the first program, besides instruction on using the AGM and practicing intubation, little more had been covered before starting clinicals. These students verbalized their frustrations, stated their embarrassment at their lack of preparation, and required extensive supervision for the purpose of maintaining patient safety. They described large amounts of anxiety as a result, which was also visibly evident (shaking, tears, lack of confidence). The SRNAs from the third program, which offered pre-clinical preparation at a level between the other two programs, performed at a level somewhere

between the students from the other programs. They did not have the extensive simulation experience as the first program; however, they did have didactic instruction on drugs, techniques, and case preparation. Based on my personal experience as a new grad and my observations of students from different programs, my first assumption was that pre-clinical preparation is integral for providing a foundation to promote and enhance clinical learning while concurrently decreasing anxiety.

Just how much anxiety occurs during clinical education has not been explored. Although some amount of stress and anxiety is beneficial as it serves as a motivator to enhance performance, large amounts of anxiety can also be detrimental and impact readiness to learn (Dearmon, et al., 2013; Moscaritolo, 2009). Anxiety can arise from many things: fear of the initial clinical experience, fear of the unknown, fear of underperforming or making mistakes, fear of being demeaned, and fear from inexperience or ineptitude (Melincavage, 2011; Melo, Willliams & Ross, 2010). Each of these fears can be lessened by clinical preparation, as the SRNA role, responsibilities, and expectations would be delineated, skills could be practiced, and mistakes could be thwarted. Therefore, my second assumption was that anxiety that is experienced during a first clinical experience is resultant from a lack of knowledge and skill set which could be alleviated through pre-clinical preparation.

Both large amounts of anxiety and inadequate skill and didactic preparation can increase clinical mistakes, thereby jeopardizing patient safety. As previously stated, it was discovered that SRNAs from the program which offered little pre-clinical preparation required intense oversight from their precepting CRNAs to ensure patient safety due to lack of knowledge and abilities. In 1999 the Institute of Medicine (IOM) published a report entitled *To Err Is Human: Building a Safer Health System*, which addressed preventing the exorbitant amount of deaths

caused by medical errors, which at that time far exceeded those attributed to motor vehicle accidents, breast cancer, and AIDS (IOM, 1999). According to the IOM, one area where high error rates occur is in the operating room (IOM, 1999). The document goes on to advocate the incorporation of patient safety in training programs. Since some types of errors occur because of error in performance of procedures, delay or error in administering a treatment, and drug errors (IOM, 1999), students would be less apt to commit errors due to lack of knowledge or skill if offered pre-clinical preparation. As such, my third assumption was that pre-clinical preparation enhances patient safety.

To be eligible for enrollment in a NAP, a nurse is required to have a minimum of one to two years of critical care experience so that the student would have strong critical care foundation from which to draw from. These students leave their jobs as critical care experts and become novice anesthetists upon entry to their program. To be eligible for graduation the students must master both didactic and clinical content and demonstrate this knowledge when they sit for their board certification. However, upon entering the workforce, they once again become novices in their new profession, and only after the accumulation of experiences through practice do they once again become experts. Once hired, CRNAs are expected to hit the ground running and provide expert care from day one, as hospital orientations vary greatly. My hospital offers an evidence-based six week orientation program which is tailored to the new employee's experiences and expertise. However, this was not always the case, as 14 years ago my orientation as a new graduate consisted of only one shadow day before providing autonomous case assignment. That first day I was full of anxieties based on lack of knowledge of hospital resources, lack of confidence in my abilities and knowledge base, and in actuality, fear that my lack of experience would cause patient harm. These feelings echoed my previous experiences as

a new employee in a Cardiac Care Unit and a new SRNA. This realization lead to my fourth assumption: each new career role change produces a series of transitions that reverts the nurse back to incompetence or novice and progresses forward to competence as new role expertise is acquired.

I graduated from a program that provided intensive pre-clinical preparation, and remember my first few weeks of clinical vividly—even though 16 years have since passed. The first couple of days were very intimidating; however, by the second week I had pieced together the basics and was able to learn and focus without the great internal anxieties which plagued me during the first week. Because this initial, critical transition to clinical practice is such a traumatic experience, I believe others will also have a vivid recall embedded in their memories. I completed my first three month rotation with a strong foundation to build upon, which in my 28 month program included specialty rotations in cardiac, neuro, transplant and trauma anesthesia, obstetrics, and office based anesthesia. As a result, I felt I graduated well prepared to assimilate to my new found autonomy inherent to my new profession. This proved to be true, as I was prepared to join the heart team (a specialized group of CRNAs who perform anesthesia for cardiac surgery) at my first job within three months of my start date. In contrast, new graduates from other programs with mid-range pre-clinical preparation also employed at my hospital were required to have a year's experience before they were allowed to join the heart team. The stipulation for the additional experience was based on needing to better develop their case management and procedural skills to be able to perform on a high acuity, specialized team. In addition, I have been able to observe first hand student progression from first clinical experience to graduation from programs with varying degrees of clinical preparation, and it is quite evident that CRNAs who had more intensive pre-clinical preparation in school are better able to take on

major cases with high acuity immediately after graduation, whereas those who graduated from programs with little pre-clinical preparation needed approximately a year to be able to take on high acuity cases with ease. This supports my bias that pre-clinical preparation enhances clinical learning and clinical progression of competency, which consequently accelerates professional role acclimation post-graduation, and in turn, promotes patient safety.

Because of my experiences and observations of SRNAs through their educational continuum, my personal bias was that extensive pre-clinical preparation is key to creating a solid foundation for clinical learning and enhancing patient safety. While these experiences led to my interest in the topic, other CRNA's experiences needed to be explored without the imposition of my personal bias. Studying the experience of first clinical rotations illuminated the importance of preparation before entry to the clinical environment. Examining these experiences captured why anxiety is occurring and its effect on SRNA learning. Beginning clinical education with a strong anesthesia foundation will lead to quicker assimilation to the clinical environment, alleviate anxieties, and promote more effective learning at an early stage. Bringing a knowledge base and skill set to the clinical environment will also enhance patient safety as less medical errors would occur. Both benefits and barriers to a smooth assimilation to the OR environment would be identified which educators may incorporate into their teaching strategies and guide curriculum development. I was certainly open to the possibility that a new theme or variable regarding this transition that is not apparent during casual observation as a preceptor to new SRNAs. It was my hope by exploring CRNA's memories of their first clinical experience I would be able to construct a theory which would help guide NAP curricula to create a stronger, safer clinical learning experience and subsequent CRNA workforce.

## Research Method

Being aware of the variety of factors which affect SRNA's experiences as they acclimate to clinical learning is the first step in building a foundation for pre-clinical preparation. The subject of preparing SRNAs for entry to clinical learning is absent in current literature, and since there is very little information to draw from, a qualitative approach would allow preliminary data to be collected to be used as a starting point for further investigations. Constructivist Grounded Theory was chosen based on the ability to create a theory which could be used to guide clinical preparation. As I believed that a relationship exists between pre-clinical preparation and the SRNAs ability to learn in and assimilate to the clinical environment, theory construction is an appropriate part of the study.

Grounded theory is a method in which the descriptive domain, which identifies key concepts and relationships, is used to produce a middle-range theory as its primary goal. This theory is useful to nursing practice in that it explains human behavior within a specific social context (Munhall, 2012). For the purpose of this study, grounded theory was used to explain the SRNA learning experience within their first clinical rotation. First introduced by Glaser and Strauss in 1967, Strauss's approach became altered over time, and the evolution of grounded theory is demonstrated in the works of Glaser and various other second generation grounded theorists (Glaser & Strauss, 1967; Munhall, 2012).

Kathy Charmaz (2006) has written about Constructivist Grounded Theory and her perspective on data collection and theory development. Charmaz's method dictates that data is collected via interviews, written data, or field observation. Theoretical sampling occurs as data is analyzed, which happens concurrently with data collection. Data is examined word by word, line by line, and incident by incident to identify common themes. These themes become

hypotheses that are continually modified as data is collected and analyzed through theoretical coding. As the amount of data grows, relationships can be diagrammed, and eventually core categories are identified which describe the behavior in question. At that point a theory may be constructed (Charmaz, 2006; Munhall, 2012, Polit & Beck, 2012).

Symbolic interactionism is by far the most prevalent philosophical model associated with this research methodology and is a logical approach to this project. Charles Cooley and W.I. Thomas laid the foundation for symbolic interactionism (SI) in the 1920's with their idea of the *definition of the situation*. To paraphrase, humans respond to a situation depending on how they define it, and need to be seen as society sees them (Aldiabat & Le Navenec, 2011). In 1962 George Herbert Mead postulated that self is defined through the interaction of self within social roles and societal expectations and perspectives. Around the same time period, Herbert Blumer coined the SI concept itself along with a few premises. Human's actions towards things (people, places, situations) are dependent on the meanings these things have which are derived from social interactions. Interpretation of these interactions direct and modify these meanings as the human deals with each situation (Annells, 1996). SRNAs experience a multitude of social interactions with a variety of sources during their clinical experience: OR staff, CRNA preceptors, other SRNAs, anesthesiologists, anesthesia technicians, patients and patient's families, pre- and post-op staff, floor unit staff, surgeons, and residents, for example. These interactions occur in a new, sometimes foreign setting where the anesthetist role may or may not be well defined for the SRNA. This new identity as an SRNA represents a new role change from Registered Nurse (RN) to SRNA, or when viewed another way, from competence to incompetence.

Symbolic interactionism is concerned with the "situational meaning" component of skill and knowledge acquisition; Patricia Benner's Novice to Expert model addresses the "learning/knowing" component. Benner's model adapted the Dreyfus Model of Skill acquisition to trace the change in intellectual orientation, knowledge assimilation, and decision making to be "based on perceptual awareness rather than on process orientation" (Carlson, Crawford, & Contrades, 1989, p. 188). Benner made this adaptation by means of a descriptive study in which she documented the narratives of RNs retelling their transitional experience to professional nursing practice. According to Benner's model, the RN passes through five levels of proficiency in a sequential manner: novice, advanced beginner, competent, proficient, and expert (Benner, 1982). Knowledge and skill acquisition begins with didactic knowledge and rules, and novice nurses base their actions only on these rules as they do not possess an experiential context from which to draw from. As clinical experience grows, the nurse will begin to collect knowledge from critical incidents which offer a point of reference for common occurrences and effective treatments associated with those particular events (Carlson et al., 1989). The progression from novice to expert encompasses a move from being limited and rigid in action from rule based behaviors, to being flexible, creative, proficient, and intuitive in response (Benner, 1982). Attaining expert designation is the preferred and optimum level of practice and proficiency, and is expected of CRNAs upon joining the workforce.

Even though the Novice to Expert Model was based on undergraduate students, it is also applicable to the education of nurse anesthetists, and the following is an example to illustrate. A novice SRNA would focus on the steps for necessary for induction, but may not be aware if mask ventilation is being effective. An advanced beginner may notice that the chest was not rising during mask ventilation and therefore was not effective, however would not recognize

what may be the best way to remedy the situation. The competent practitioner would work through an algorithm for establishing mask ventilation, such as readjusting the head/mask, placing an oral airway, or obtaining a second pair of hands. The proficient practitioner would be able to incorporate interventions based on the patient condition, such as their airway assessment or body habitus. The expert would be able to identify intuitively what would be the best intervention, or if perhaps the best intervention would be to go straight to airway instrumentation. Based on this progression, the addition of simulation to a clinical preparation regime would begin to build an experiential reference, thereby elevating the novice SRNAs decision making capabilities before real clinical situations are encountered.

Although SI and Benner's Novice to Expert have been applied to RN transitions, they were able to help explain the transition from RN to SRNA, as the process is similar. As the SRNA first enters the clinical environment, s/he will most certainly be shaped by SI as s/he interacts with the new environment. The professional transition will further be explained by applying Benner to the SRNA progression through clinical education. The application of SI and Benner helped to explore this transition to build an evidence base for curricular decisions. Building an evidence base to help guide curricular design is even more relevant to the discipline of nurse anesthesia at this point in time, as of 2025 the mandatory entry level degree for nurse anesthesia practice will be a doctorate. An evidence base would aid to drive curricular development at this critical time, as NAP curricula will soon be restructured.

The aims of this study were to 1.) Describe and interpret the experience of CRNAs entering their first clinical rotation as SRNAs, and 2.) Use the aforementioned assumptions to generate an explanatory theory about the SRNA transition to clinical learning. To meet these goals, established CRNAs were interviewed about their first clinical experience to allow

reflection of this experience to be filtered through their professional expertise, thereby pinpointing significant moments not realized as a novice. By applying constructivist grounded theory, a theory was then constructed that relates the influence of pre-clinical preparation to the transition to the clinical arena.

## Relevance to the Discipline

As no guidelines exist for entrance criteria to anesthesia clinical education, and very little evidence can be found in the literature to drive curriculum, exploring the SRNA first clinical experience in the context of clinical preparation produced valuable insights. The data derived from this study explicated the degree of significance of clinical preparation in optimizing clinical learning. The data and theory derived from this study unearthed useful information regarding the areas of preparation necessary to facilitate initial clinical learning, which may impact how NAPs structure their curriculum for entry into the clinical environment. Educators may make revisions to their programs based on the results, such as the creation of objectives or benchmarks to be met before progression to clinical education. Information about barriers to learning and other considerations during the transition to the clinical environment may also impact curricular development. Future research could influence standardization of the minimal amount of preparation required before SRNAs start their clinical education.

In addition, patients may directly benefit. A smooth clinical transition potentiates a more competent and less distracted SRNA, and quality of care will be less likely to be compromised as their initial roles, responsibilities, and expectations would be more clearly defined. Stronger skills upon graduation would benefit patients, as CRNAs are expected to function immediately without much time to grow and acclimate to their new professional role.

Providing a sound foundation for SRNAs is essential to producing competent CRNAs, especially in the clinical environment. However, there are no guidelines for entrance criteria to anesthesia clinical education, and no information exists as to how preparation impacts clinical learning and assimilation to the clinical environment. The creation of a theory that explains clinical preparation in the context of clinical learning would be beneficial to nurse anesthesia programs as a guide to curricular development and could impact the quality of SRNA education as a whole. Since a practice doctorate will be the mandatory entry degree for CRNAs in 2025, strengthening clinical education will aid doctoral students in learning to explore and implement evidence based practice.

## Conclusion

In this chapter, I described the aim of the study by first discussing the phenomenon of interest and justification for studying this phenomenon. Specifically, my interest was to study the phenomenon of the transition of SRNAs to clinical education. Assumptions, biases, personal experiences, and perceptions were explored. The assumptions were followed by a brief explanation of Constructivist Grounded Theory, my chosen research method, and an introduction to Symbolic Interactionism and Novice to Expert theory as they applied to this project. Relevance to the discipline of nurse anesthesia was discussed. As there are no curricular guidelines and little literature regarding transition to clinical education, an explanatory theory could guide curricular development to produce stronger clinical learning and practice, thereby amplifying patient safety. Chapter Two will describe the evolution of the study through the discussion of the rationale, the historical context, and the experiential context.

# CHAPTER TWO

# EVOLUTION OF THE STUDY

The purpose of this chapter is three-fold. First, an explanation of the rationale for conducting this study will be provided. Second, the historical context will be explored through a brief examination of literature and evidence. Lastly, the experiential context will be examined of my own involvement with the subject matter.

## Rationale

"Certified Registered Nurse Anesthetists (CRNAs) are advanced practice registered nurses licensed as independent practitioners" who "practice both autonomously and in collaboration with a variety of health providers on the interprofessional team to deliver high-quality, holistic, evidence-based anesthesia and pain care services" (American Association of Nurse Anesthetists [AANA], 2013, p. 1). CRNAs provide more than 34 million anesthetics annually in the United States (US), and have been providing anesthesia services for 150 years (AANA, 2014). The American Association of Nurse Anesthetists (AANA) boasts a CRNA membership of 47,000 who provide every type of anesthesia available—from open heart and organ transplantation, to trauma, to obstetrics and pain management (AANA, 2014). CRNAs provide anesthesia in all settings, including, but not limited to the operating room (OR), physician and dental offices, radiology department, and the heart catheterization department. In some states CRNAs have prescriptive authority and are proprietors of their own pain management businesses (AANA, 2014). In addition, CRNAs are the primary providers of anesthesia services in the US Military, medically underserved populations, and represent two-thirds of anesthesia personnel in rural America (AANA, 2014; Dulisse & Cromwell, 2010).

Besides being clinicians, CRNAs also function in the roles of educators, mentors, researchers, advocates, and administrators (AANA, 2013).

In the US there are four professional models for providing anesthesia care (AANA, 2014; Hogan, Seifert, Moore, & Simonson, 2010). The first model consists of CRNAs practicing independently without the involvement of an anesthesiologist. The second is an anesthesiologist practicing alone. The third is a medical direction model, where an anesthesiologist directs between one to four CRNAs, and CRNA autonomy can be very restricted. The final model is supervisory, where an anesthesiologist supervises more than four CRNAs, sometimes from remote sites not in the building where the anesthetic is being performed, and CRNA autonomy is heightened. Given the large variety of anesthesia care models, one would wonder if any model provides safer care above the others. In response to this question, Dulisse and Cromwell (2010) examined Medicare Part A and Part B data set files from 1999-2005, and found a lack of statistical significance in mortality between all four care models ($N = 741,518$, $p=.05$, t statistic not reported). However, significantly fewer complications were found in all other models using odds-ratios when compared to the anesthesiologist only model ($p=.05$). This information infers that CRNA only care is overall safer than the anesthesiologist only model of anesthesia care.

In addition to being safe, CRNA-only practice is also the most cost-effective means of anesthesia delivery (Hogan et al., 2010). Anesthesiologists typically command a salary that is three times that of their CRNA counterparts, and harbor twice the cost per procedure. As billing and reimbursement are equal between the professions, CRNAs produce revenue at least two and a half times that of an anesthesiologist for the same care (Hogan et al., 2010).

The recognition of safe and cost-effective delivery of anesthesia services provided by CRNAs prompted the Center for Medicare and Medicaid Services to afford states the

opportunity to "opt out" of the federal Medicare billing requirement of physician supervision of CRNAs (AANA, 2014; Jordan, 2011). To date, 17 states have chosen to take this route (AANA, 2014). Additionally, over half of the 50 states do not require physician supervision as part of their state laws and regulations (AANA, 2014). An analysis of these changes has shown that the safety of anesthesia care has not been negatively impacted by the enactment of this option (Dulisse & Cromwell, 2010).

The scope of practice of CRNAs and anesthesiologists are essentially equal, in that the anesthesia care techniques are identical between the two professions. "When anesthesia is administered by a nurse anesthetist, it is recognized as the practice of nursing; when administered by an anesthesiologist, it is recognized as the practice of medicine" (AANA, 2014).

In 1980 the AANA first published a "Scope of Practice" statement as part of a document which addressed guidelines for CRNA practice. Subsequent revisions have been made, and in February 2013 the AANA created two separate documents entitled *Scope of Nurse Anesthesia Practice* and *Standards for Nurse Anesthesia Practice.* The most current revisions were approved by the AANA in June 2013, which put forth this explanation of anesthesia practice:

> The practice of anesthesia is a recognized nursing and medical specialty unified by the same standard of care. Nurse anesthesia practice may include, but is not limited to, these elements: performing a comprehensive history and physical; conducting a preanesthesia evaluation; obtaining informed consent for anesthesia; developing and initiating a patient-specific plan of care; selecting, ordering, prescribing and administering drugs and controlled substances; and selecting and inserting invasive and noninvasive monitoring modalities. CRNAs provide acute, chronic and interventional pain management services, as well as critical care and resuscitation services; order and evaluate diagnostic tests;

> request consultations; and perform point-of-care testing. CRNAs plan and initiate anesthetic techniques, including general, regional, local, and sedation. Anesthetic techniques may include the use of ultrasound, fluoroscopy and other technologies for diagnosis and care delivery, and to improve patient safety and comfort. Nurse anesthetists respond to emergency situations using airway management and other techniques; facilitate emergence and recovery from anesthesia; and provide post-anesthesia care, including medication management, conducting a post-anesthesia evaluation, and discharge from the post-anesthesia care area or facility (AANA, 2013, p.1).

The *Standards for Nurse Anesthesia Practice* (AANA, 2013) provides eleven standards as a common base for which to develop and evaluate quality practice. The standards also serve the public to understand the role of the CRNA and to sustain and preserve patient rights. The AANA concedes that exceptional circumstances may require deviation from the standards, and if so, proper documentation should be recorded (AANA, 2013). The 11 standards as written can be found in Appendix B. To summarize, the first five standards maintain that continuous clinical observation and vigilance are the basis of safe anesthesia care. Consistent with the CRNAs professional judgment, additional means of monitoring the patient's status may be used depending on the needs of the patient, the anesthesia being administered, or the surgical technique or procedure being performed. The main areas stipulated to be monitored include oxygenation, ventilation, cardiovascular, thermoregulation, neuromuscular, and positioning, and guidelines for how these should be monitored are provided. Standards six through 12 discuss patient safety, patient rights, and quality and infection control (AANA, 2013).

As evidenced by the CRNA scope of practice and practice standards, strong clinical skills and the ability to navigate the OR environment are imperative as CRNAs literally hold each patient's life in their hands. As a colleague once put it, "we bring patients to the brink of death, and then bring them back again" (Donald Stanley, CRNA, personal conversation). The ability to perform at such a high level is reflective in the quality and amount of clinical education SRNAs receive in their program. To graduate from a NAP the SRNA must attain the required the Council on Accreditation of Nurse Anesthesia Educational Programs (COA) specified competencies (COA, 2014), which includes a minimum of 550 anesthesia cases and various other specified and specialized clinical experiences, procedures, and techniques (see Appendix A). In order to take the National Certification Exam (NCE), one must graduate from a nurse anesthesia program (NAP) accredited by COA within the previous two years (National Board of Certification and Recertification for Nurse Anesthetists [NBCRNA], 2014). All of the 113 current NAPs hold COA accreditation, 16 of which award doctoral degrees for entry to practice (AANA, 2014).

The COA's *Standards for Accreditation of Nurse Anesthesia Educational Programs* (2014) is divided into five standards; Governance (Standard I), Resources (Standard II), Program of Study (Standard III), Program Effectiveness (Standard IV), and Accountability (Standard V). Standard III specifically addresses curriculum development, content, and program requirements.

The first 13 out of 21 criteria discuss curriculum development. According to these criteria, a NAP needs to be consistent with the institutional mission, be congruent with commonly accepted national standards, and be able to produce graduates who can obtain specialty certification, i.e. the title of CRNA by passing the NCE. Minimum program length and admission criteria are also offered. Criterion 3 states as written, "The program sets forth the

curriculum in a logical manner with sequential presentation of classroom and clinical experiences" (COA, 2014, p.5), which suggests didactic content should be covered before SRNAs are offered clinical experience in that area. However, the extent of that content, whether basic, advanced, or inclusive, is not specified. In other words, the detailed knowledge base a student should acquire before beginning clinical education is not addressed.

Two criteria address specific didactic content requirements:

> C14. The basic nurse anesthesia academic curriculum and prerequisite courses focus on coursework in anesthesia practice: pharmacology of anesthetic agents and adjuvant drugs including concepts in chemistry and biochemistry (105 hours); anatomy, physiology, and pathophysiology (135 hours); professional aspects of nurse anesthesia practice (45 hours); basic and advanced principles of anesthesia practice including physics, equipment, technology and pain management (105 hours); research (30 hours); and clinical correlation conferences (45 hours); radiology; and ultrasound.
>
> C15. The didactic curriculum includes three (3) separate comprehensive graduate level courses in advanced physiology/pathophysiology, advanced health assessment, and advanced pharmacology (COA, 2014, p. 6).

Generic subject headings are offered under the criteria, along with required instructional time spent on each subject matter. However, the specific content of each subject of study is left to faculty discretion and interpretation, again leaving out the requirement of an evidence-based rationale for instructional content.

There are three criteria which specifically address clinical education:

C17. The clinical curriculum provides students with opportunities for experiences in the perioperative process that are unrestricted, and promote their development as competent safe nurse anesthetists.

C18. The nurse anesthesia clinical curriculum prepares the student for the full scope of current practice in a variety of work settings and requires a minimum of 550 clinical cases including a variety of procedures, techniques, and specialty practice (Appendix A).

C19. The program provides opportunities for students to obtain clinical experiences outside the regular clinical schedule by a call experience or other mechanism (COA, 2014, p. 6).

A specific amount of clinical requirements are set forth, along with the requirement of the ability to obtain these objectives through amiable clinical sites and opportunities. Any suggestions for introducing clinical education (when, how), clinical curriculum structure, or evaluation processes are not offered, with the exception of the ambiguous suggestion from Criterion 3. Criterion 21 outlines the final goals of nurse anesthesia education, which is a culmination of not only didactic and clinical education, but also professional development.

As these are the criteria set forth to be able to effectively fulfill the professional responsibilities of a CRNA, it is apparent that SRNAs must possess a certain knowledge base and skill set to be able to effectively and safely perform clinically. However, a guiding framework as to how much of a knowledge base is needed prior to beginning clinical education has not been defined.

Such a strong emphasis on clinical abilities presents a need for quality education, and the means by which students are introduced into the clinical environment could potentially impact their educational and career success. Having personally witnessed SRNAs struggle clinically

due to not possessing the didactic knowledge or basic skill sets essential for clinical performance, and knowing that no standards of clinical preparation exists, I based my research on the exploration of the SRNA experience of the first clinical rotation in the context of clinical preparation. The knowledge obtained through interviews with CRNAs having less than 10 years' professional experience about their memories of their first clinical experience afforded a two-fold effect. This study provided useful information regarding the amount of preparation necessary to facilitate initial clinical learning, which in turn could impact how NAPs structure their curricula for entry into the clinical environment. The results may influence standardization of the minimal amount of preparation required before SRNAs would start their clinical education. The work force as a whole could benefit as CRNAs would start their careers as stronger practitioners. Additionally, patient safety may be heightened with more competent SRNAs and stronger novice CRNAs providing care.

## Historical Context

In 1846, dentist William T.G. Morton first demonstrated the use of ether as a surgical anesthetic, ushering in the age of modern anesthesia (Gunn, 1991). Prior to this, surgical patients were forced to endure agony to the point of shock and unconsciousness without the relief of pain we enjoy today. Once mortality caused by infection was decreased substantially through the work of Florence Nightingale during the Crimean War, it became clear in the 1880's that anesthesia itself was the cause of the high mortality rate. Surgical residents were commonly tasked with administration of surgical anesthesia; however their focus was on the surgery, and not the patients. Surgeons subsequently looked to nurses, acknowledging nursing as a vigilant profession. Soon after nurse anesthetists became pioneers in the evolution of the practice of anesthesia, administering anesthesia in the battlefields during the Civil War (AANA, 2010).

Early nurse anesthetists were trained by their surgeons through discussion, reading, and practicing on animals and finally patients (Gunn, 1991). The first documented nurse anesthetist was Sister Mary Bernard, who gave anesthesia at St. Vincent's Hospital in Erie, PA in 1887, having received training using these methods. Alice Magaw, deemed the "Mother of Anesthesia" by Dr. Charles Mayo of the Mayo Clinic, mastered the open-drop inhalation technique and reported more than 14,000 anesthetics without complication between 1899 and 1906. Nurses and physicians by the hundreds traveled to the Mayo Clinic to learn her techniques. In 1908 Agatha Hodgins started administering anesthesia at Lakeside Hospital in Cleveland, eventually traveling to France to both care for the wounded in World War I and teach anesthesia to nurses, physicians, and even lay people in Europe (AANA, 2010; Gunn, 1991). Upon her return she established the National Association of Nurse Anesthetists (NANA) in 1931, which became the AANA in 1939.

Between 1900 and 1910, anesthesia was taught using four methods: on-the-job training, visiting a hospital to observe and sometimes practice on a few patients under supervision, instruction by the makers and sellers of anesthesia gas machines (AGM) to purchasers, and anesthesia administration as part of a basic nursing program (Gunn, 1991). St. Vincent's hospital in Portland, Oregon opened the first formalized six month program in 1909 under the tutelage of Agnes McGee, with more programs soon to follow as the demand for nurse anesthetists increased with the onset of World War I. Accordingly, US Army and Navy nurses were sent to civilian programs for six weeks of training, and a few military-operated anesthesia programs were then established in military hospitals both state-side and overseas (Gunn, 1991). As many hospitals were founded by religious orders, Catholic nuns were trained as nurse

anesthetists and trained both nuns and lay people alike (AANA, 2010). Since a professional association did not exist at the turn of the century, the only program requirements were:

> …obtaining the consent of the hospital and the surgeons and a willingness on the part of the instructor to impart a knowledge of the technics to the student apprentice. Such texts as did exist and were used emphasized technics, and the student, with a few exceptions, was expected to acquire a smattering of the science of anesthesia from a few lectures or through osmosis. The courses presented all shades of adequacy, depending on the native intelligence and the teaching ability, the experience and the education of the instructor (Gunn, 1991, p.55).

It was not until 1935 that NANA created minimal standards for NAP curriculum:

1. Length of course: six months, but with one year recommended.
2. Classroom instruction: 95 hours.
3. Hours of operating room instruction (class); 18 hours
4. Number of anesthetics administered; 325, of which 250 had to be general, 25 obstetrical, 25 dental and 25 regional, divided among spinals, locals, etc (Gunn, 1991, p.55).

Based on these standards it is clear that the primary focus of education was clinical application in hospital based programs. However, post-graduate certificates were now being offered in the late 1930's instead of the previous integration or specialization during initial nursing education (Gunn, 1991). The first AANA certification exam was offered in 1945, shortly before the end of World War II (AANA, 2010; Gunn, 1991). Certification did not become mandatory until 1978 (NBCRNA, 2014).

The first accreditation process began in 1952 by the AANA. However, due to changes by the US Department of Education (DOE), the accreditation function was transferred to the Council on Accreditation of Nurse Anesthesia Programs (COA), which became a fully autonomous entity separate from the AANA. The COA is currently recognized by both the DOE and the Council on Post-secondary Accreditation (COA, 2014).

The Vietnam War again brought about a huge need for anesthesia personnel, which necessitated five military NAPs opening so that troops would no longer need to attend civilian programs. The evolution was further promulgated by the Army Nurse Corps, who opened the first NAP to be integrated within an institute of higher learning (University of Hawaii), which granted successful students a master's degree. Civilian programs were also moving towards university affiliation, with programs beginning to offer baccalaureate degrees (Gunn, 1991).

New educational models were also introduced during this time frame. From 1962 to 1972 programs were required to be 18-months in length, which increased to a two-year requirement in 1972 (Gunn, 1991). Minimal didactic requirements also became more robust:

> …equivalency of about two semester courses of advanced anatomy, physiology and pathophysiology; two semester courses of advanced pharmacology; two to three semester courses of principles of anesthesia practice; one semester course of chemistry and physics and one semester course of professional aspects of anesthesia practice. Clinical correlative conferences also were required (Gunn, 1991, p.57).

Even with the increased didactic requirements, clinical focus still superseded didactic education well into the 1980's-1990's. This occurred partly because SRNAs continued to be counted in hospital staffing numbers and were given hospital stipends during their educational process. SRNAs were frequently being pulled out of didactics to do cases in the event of staff

illnesses and absences, elevated case census, or the arrival of emergency cases (Arthur Richer, CRNA, former Program Director, personal conversation). The COA noted this practice, and its current standards prohibit the use of SRNAs as a means to meet hospital staffing obligations (COA, 2014).

Programs continued to shift towards affiliations with institutions of higher education, and in 1986 the mandatory entry-level degree became a bachelor's degree. The awarded degree was further elevated to at least a master's in 1998, and by 2025 a doctorate will be the required entry-level degree (AANA, 2010).

In light of the evolving emphasis on didactic education and the attainment of higher degrees, the history of nurse anesthesia education and the concurrent standards put forth by the COA point to the great significance of clinical preparation and instruction in SRNA education. However, no recommendations exist as to how and when clinical education should be introduced into NAP curricula. Unfortunately, a preliminary literature review demonstrated a paucity of works addressing SRNA clinical education. Furthermore, no literature could be identified that investigated SRNA preparation for transition into clinical education; specifically, what knowledge base or skill set is necessary for a smooth transition into clinical education.

## SRNA Characteristics for Clinical Success

One article was identified which investigated faculty perceptions of SRNA characteristics that contribute to clinical success in military NAPs. Clayton et al. (2000) created a tool that evaluated 35 characteristics which could influence clinical success, which they divided into four categories: academic knowledge, clinical skills, nursing knowledge, and personal characteristics. A content validity index was calculated for each question, although questions scoring below .80 were still included in an attempt to capture all possible characteristics. The Cronbach alpha

score for the tool was reported as .9074. The study participants (N=29) were military clinical faculty from the Air Force, Army, and Navy, for which 100% responded to the survey. It should be noted that data collected in this study is all based on faculty assumption, and does not reflect direct SRNA data. A four-point rating scale was used to categorize 35 characteristics as either Essential, Important, Low Importance, or Unimportant. Six of the 35 characteristics were rated as essential: integrity, hardiness, ability to learn from mistakes, judgment, commitment, and clinical awareness. The authors defined clinical awareness as "the student's awareness of patients' clinical conditions and ability to respond appropriately to their needs" (Clayton et al., 2000, p. 516). Since a student would need to be taught how to interpret conditions and apply appropriate methods of response, clinical awareness therefore has to stem from clinical knowledge obtained by didactic and hand-on instruction prior to participation in the clinical setting. A qualitative component to the survey included open-ended questions to explore other factors necessary for clinical success. The number one answer in this section was flexibility, which one respondent defined as "the ability to change a plan based on a fluid clinical situation" (Clayton et al. 2000, p. 520). Integral to having clinical flexibility is the knowledge base to facilitate a safe and expedient modification to a management plan. A knowledge base would be obtained through didactic instruction, which therefore is important to clinical success. The major limitation to this study is that it was performed solely on clinical faculty in military NAPs, so the generalizability to civilian programs would warrant further investigation.

The subject of clinical awareness was also described as a necessary characteristic for clinical success in another article exploring nurse anesthesia education. Ortega, Burns, Hussey, Schmidt, and Austin (2013) conducted a literature review to identify predictors of success in NAPs in the context of admissions criteria. Nineteen articles were identified, although 11 were

based on non-anesthesia graduate programs: nine without SRNAs, and two with SRNAs. The evidence presented from each article resulted from their review was classified using the Melnyk and Fineout-Overhold system, for which grades Level I (systematic reviews) through Level VII (expert opinion) were assigned. Specific to the topic of clinical education, the authors identified situational and clinical awareness as important characteristics for optimal performance. Again, since the acquisition of clinical awareness stems from the creation of a knowledge base through didactic education, it stands to reason that some level of instruction is necessary to prepare the SRNA for transition into clinical learning.

### Helpful Factors Associated With Clinical Learning

SRNA clinical education was specifically investigated by Elisha and Rutledge (2011) who studied the perception of how SRNAs are treated by CRNAs and anesthesiologists during clinical experiences, in addition to factors associated with clinical success. A survey was administered to a randomly selected, regionally stratified sample of SRNAs (N=696) acquired from the AANA member data bank. Although much of the survey focused on the perception of mistreatment during clinical education, the authors also investigated the helpfulness of 11 different factors commonly associated with clinical learning. Unfortunately, verbal abuse was reported by over 69% of the SRNA participants. Sexual harassment (13%), racial discrimination (12%), and physical abuse (14%) were also reported. Activities which were deemed helpful to clinical learning included reading (rank of 3/11), clinical lectures (rank of 4/11), and simulation (rank of 6/11). These activities point to the accumulation of a knowledge base, which proves vital to clinical awareness and flexibility, factors which have been identified as integral to clinical learning (Clayton et al., 2000; Ortega et al., 2013). A major study limitation was the intentional avoidance of validity and reliability testing on the survey, which the authors

rationalized using their expectation of heterogeneity of responses. One strength is the random stratification of the subjects; however with a response rate of only 26% generalizability to the SRNA population may not be possible.

## Orientation

Preparing for entry to the clinical environment also alludes to the concept of orientation, which serves as an introduction to the arena for which the student will be learning. The orientation process—an overview of the clinical site, staff, procedures, professional role, and expectations—permits the student to feel as if they "fit in", thereby decreasing anxiety and increasing the motivation to learn (Worrall, 2007). Although no literature was discovered that addressed SRNA orientation to clinical education, Worrall (2007) examined the orientation process on her pediatric ward for pre-licensure nursing students in the context of evidence presented in literature, and devised a set of recommendations. Included in the list were: the offering of a formalized and standardized orientation to the clinical site; the establishment of roles, expectations, and responsibilities in terms of standards and attitudes; and the provision of an introduction to learning opportunities and identification of learning outcomes. These practices serve to maximize the learning potential and decrease anxiety in students while performing in their clinical rotation (Worrall, 2007). The information presented by Worrall (2007) points to the importance of preparing a student to enter into a clinical rotation. Site orientation should therefore be offered to SRNAs before starting their clinical rotations; Roles, expectations, and responsibilities can be reinforced through didactic and simulation teaching.

Simulation as a teaching strategy has been studied as a means to provide clinical orientation. Dearmon et al. (2013) studied a simulation-based orientation program that provided the same didactic material used as orientation for a first clinical experience. During two-eight

hour day orientation sessions, the convenience sample (N = 50) of BSN students was divided into five groups of 10. Day one consisted of reviewing a medical chart, interacting with a standardized patient to complete a history and physical, faculty identification of teachable moments, and instructions for completion of required paperwork and assignments. The students wore their uniforms to day two which mimicked the clinical day. They started with a pre-conference, and then returned to their standardized patient to take vitals, pass medications, make beds, and provide help with activities of daily living, such as bathing and exercise. Day two culminated with a post-conference (Dearmon et al., 2013). Using a mixed method design, the participants completed the Knowledge Assessment (KA) to evaluate what was deemed as fundamentals for safe practice in a first clinical experience, and the Self-Confidence Assessment (SCA), which was developed by faculty, both pre- and post-orientation. Validity and reliability of the SCA was not established prior to use, but was designed to assess self-confidence in the skills learned during the orientation process (Dearmon et al., 2013). The State-Trait Anxiety Inventory for Adults (STAI) and the Perceived Stress Scale (PSS) were also administered pre-orientation. The state portion of the STAI was administered post-orientation, but the PSS was not (Dearmon et al., 2013). Established validity or reliability was not reported for the KA, the PSS, or the STAI, however this data is available for the STAI.

The results of this study reveal a significant negative correlation between the PSS and the pre-orientation SCA ($r = -0.41$, $p = 0.034$) meaning more confidence reflects less stress; however improvement in confidence post-test (SCA) was not associated with stress (PSS) ($r = 0.10$). A significant increase of post-orientation scores on the KA ($p = 0.00007$) indicates an increase in knowledge. The PSS scores were significantly higher than the norms published with the instrument (male $p = 0.0054$ and female $p < 0.0001$), although the context for which these

standard scores were established was not revealed, so relevance is hard to discern. The trait score for the STAI was significantly lower for those who had previously worked in health care ($M = 36.64$) than for those who had not ($M = 40.19$, difference = 3.55, $p = 0.0905$ [two-sided t test]). The state portion of the STAI reflected a significant decrease in anxiety from pre- to post-orientation ($M = -9.53$, $p < 0.001$). Self-confidence as measured by the SCA increased significantly ($M = 4.55$, $p < 0.001$) as a result of the program. A summation of the results reflects that there was a significant increase in knowledge and self-confidence and a decrease in anxiety as a result of the simulation orientation program. An interesting finding was that self-confidence is not correlated with stress (Dearmon et al., 2013). One major limitation of this study is that the efficacy of the simulation as an orientation process itself was not evaluated, and a post-clinical experience evaluation would have been valuable—especially if compared to students who were oriented solely through didactic teaching. Although this study was performed on BSN students, similar anxieties may be found in SRNAs.

Currently, there are no COA guidelines stipulating the extent of education SRNAs should receive prior to starting the clinical education component of their programs. Historically, early programs offered very little didactic instruction and depended on the majority of learning to occur in the clinical environment. Didactic sessions would be interrupted or terminated when staffing needs would pull students away from the classroom. As the requirement of higher degrees transitioned for anesthesia education (from certificate to bachelors to masters, and soon to be doctorate) coupled with technological advances in the science of anesthesia, the amount and depth of didactic education increased to match a growing knowledge base. However, how and when to introduce SRNAs to the clinical arena has not been identified or investigated, even

though the amount of knowledge necessary to safely perform clinically has substantially increased, as evidenced by the COA standards (COA, 2014).

## Experiential Context

I was fortunate to attend a nurse anesthesia master's program which has consistently been ranked as one of the top five NAPs in the US (US News and World Report, 2014). My pre-clinical education was quite extensive. The first two months of the program consisted of intense, five days a week didactic instruction in which students learned about the AGM, anesthesia specific medicines, chemistry and physics, and basic techniques for both adult and pediatric clients. The third month expanded the preparation to include hands on experience with positioning and airway workshops and simulation sessions mimicking induction (the act of administering an anesthetic to render a patient unconscious). An anesthetic interview and patient history and physical were reviewed, and an OR was toured to become familiarized with the environment. By the time I started my first clinical rotation, I was quite anxious, but felt familiar with what would be expected of me in my new role as an SRNA. By the end of the first month of clinical education I remember understanding why those first three months were so intense and why the curriculum was designed in such a fashion.

Conversely, some schools do not offer this thorough instruction prior to the commencement of clinical education, and I have had the opportunity to work with/observe students from many different programs. One such NAP I have encountered initiated clinical education a mere two weeks into the program, with a walk-through of the OR being their only introduction to the environment. After witnessing that NAPs SRNA's first month in the clinical setting, observing their performances, and listening to their comments, it was clear the students were at a significant disadvantage, harboring incredible amounts of anxiety, and were having

difficulty acclimating to their new role. I also witnessed much stress and frustration from the CRNA staff who served as preceptors, as the students needed an exorbitant amount of guidance and instruction while the precepting CRNA oversaw patient care. These students had a slow progression to higher acuity cases, and even when they were assigned to such cases, there was a clear struggle and they required extra vigilance from their preceptors. Preceptors were not allowed to begin to give them autonomy by periodically leaving the room until six months before graduation. In contrast, I began administering anesthesia via case assignment (no preceptor assigned to my room, only a supervising anesthesiologist with other rooms mirroring CRNA practice) a full year before graduation. Unfortunately, I also witnessed these SRNAs struggle with their transition to CRNA practice post-graduation, some for over a year.

## Conclusion

The 150-year history of nurse anesthesia education points to the importance of its clinical component, which for the majority of that time period served as the main educational method. There is clearly a large variance between NAPs in the amount of pre-clinical instruction that is offered. The COA 2014 standards offer no guiding framework as to what might be effective or necessary for students to make a smooth transition into the clinical environment. Very little is discussed in the literature concerning this phenomenon; however some factors which are integral to clinical learning have been identified in the few studies that address SRNA clinical education. The purpose of this study was to generate an explanatory theory about how pre-clinical instruction affects the SRNAs ability to learn in and assimilate to the clinical environment. Constructivist Grounded Theory methods were used collect and analyze qualitative data surrounding the experience of entering a first clinical rotation through the memories of CRNAs,

therefore ensuring that the derived theory was therefore grounded in the collected data. Grounded Theory and its application to this study will be explored in Chapter Three.

# CHAPTER THREE

# METHOD OF INQUIRY

The purpose of this chapter is to examine the methodology of the study. This will be accomplished first through reviewing the background of Grounded Theory and the rationale for its use. After reviewing concepts and terms, the application of Grounded Theory to this study will be explained, including the sample, setting, specific procedures, rigor, and human subject considerations.

## Background of the Method and Rationale

The subject of preparing SRNAs for entry to clinical learning does not exist in current literature, and since there is very little information to draw from, a qualitative approach would allow exploration of this unexplored phenomenon. Going further, the creation of an explanatory theory illuminating this process of transition to practice could guide NAPs in creating a foundation for clinical education, in addition to being used as a starting point for further investigations. The meaning of the process by which SRNAs are introduced and integrated into the clinical environment, coupled with how pre-clinical preparation impacts this process was the focus of this study. The discovery of these meanings and relationships are integral to the formation of an explanatory theory, and to achieve this end, appropriate research methodology and theoretical context selection is imperative.

Grounded Theory is a qualitative method in which the descriptive domain, which identifies key concepts and relationships, is used to produce a middle-range theory as its primary goal. This theory is useful to nursing practice in that it explains human behavior within a specific social context (Munhall, 2012). For this study, the human behavior in question was the initiation of anesthesia clinical education, specifically exploring the transition to practice

process. First introduced by Glaser and Strauss in 1967, Strauss's approach became altered over time, and the evolution of grounded theory is demonstrated in the works of Barney Glaser, Kathy Charmaz, and various other second generation grounded theorists (Glaser & Strauss, 1967; Munhall, 2012; Polit and Beck, 2012).

Barney Glaser and Anselm Strauss introduced grounded theory as a new approach to research in their 1967 text *The Discovery of Grounded Theory* and later to their graduate students at the University of California, San Francisco in the early 1970's (Glaser & Strauss, 1967; Munhall, 2012; Polit & Beck, 2012). Their explanatory theories of human behaviors are based in sociological renderings and have continued to evolve since its inception. Glaser and Strauss eventually took different directions, with Strauss teaming with Juliet Corbin to describe a prescriptive approach to analysis (Munhall, 2012). This approach is more regimented than classical grounded theory, in that a three stage coding method with eleven basic procedures is employed (Evans, 2013). No matter which direction is followed, the goal is to create a theory which describes a patterned behavior within a social context.

Kathy Charmaz (2014) developed a constructivist approach to grounded theory which incorporates both the researcher's and participants' relationships and shared experiences. In her opinion, a theory is dependent on the researcher's view, which is appropriate for this study since I have had personal experience both as a student and as a preceptor within the subject matter. Whereas basic grounded theory maintains that the researcher takes a neutral stance during data interpretation, constructivist grounded theory recognizes that the researcher's own experiences and views on a subject will guide the analysis. In fact, preconceptions may influence fact finding and relevant data identification itself (Charmaz, 2014). Therefore, a theory is not constructed from just one participant's reality, but rather is a blending or an interpretation of the sum of

multiple participants' realities (Charmaz, 2014). In these realities, the results of constructivist grounded theory research is constructed, rather than revealed or discovered.

For the constructivist approach to grounded theory, data is collected via interviews, written data, or field observation. According to Charmaz (2014) data is examined and initial coding is performed by examining word by word, line by line, and incident to incident to identify common themes. After each interview, data is transcribed and analyzed before moving to the next interview to begin theme building (Figure 1). Common themes discovered among participant interviews become hypotheses that are continually modified as significant data is collected and analyzed through focused coding. Focused coding differs from initial coding in that it synthesizes and sorts the initial codes into more focused codes (Charmaz, 2014). In other words, focus coding begins to organize and recognize the most significant and recurrent codes. Theoretical sampling, the act of sampling in a manner to enlighten constructed themes and theories, is inherent to grounded theory, as it is a strategy for "obtaining further selective data to refine and fill out your major categories" (Charmaz, 2014). As the amount of data grows, relationships can be diagrammed, and eventually core categories are identified for theoretical coding to describe the behavior in question (Charmaz, 2014; Munhall, 2012). It is at this point that a theory is constructed.

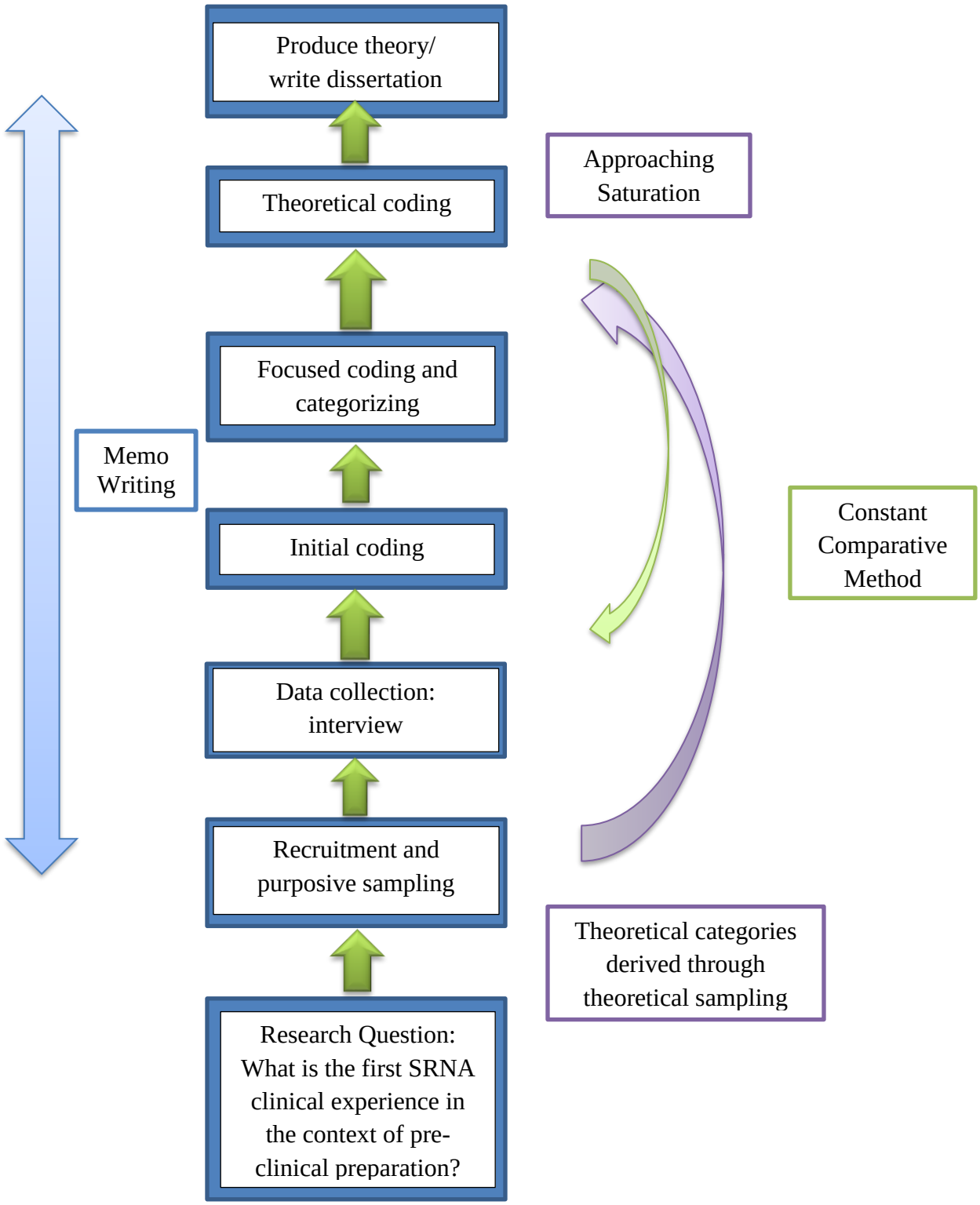


*Figure 1*. A schematic of Grounded Theory Method as applied to this study. Adapted from Charmaz (2014).

Symbolic interactionism (SI) is by far the most prevalent philosophical model associated with Grounded Theory. According to SI, humans respond to a situation depending on how they define it through past interactions, spoken and unspoken language, and concept of self. (Aldiabat & Le Navenec, 2011; Charmaz, 2014). SI is a fluid concept which is preceded by language, culture, society, and meaningful, material objects. Furthermore, it is an assumed give-and-take process "occurring between the individual, collectivity, and [the] environment" (Charmaz, 2014, p. 269).

Three men are credited with the formation of SI through their work on the concepts of self, mind, and social interaction. George Herbert Mead postulated that self is defined through interaction with social roles and societal expectations and perspectives with emphasis on language though a fluid continuum (Charmaz, 2014). According to Mead, the development of self is dependent on language and culture, which develops simultaneously with the mind (Charmaz, 2014). Following this notion is the concept of the looking-glass self by Charles Horton Cooley. Self is formed by the interpretation of how others view us, if we believe those views, and how we react (Charmaz, 2014). Herbert Blumer coined the term "symbolic interactionism" and put forth a few premises: human's actions towards things (people, places, situations) are dependent on the meanings these things have which are derived from social interactions. In addition, interpretation directs and modifies these meanings as the human deals with each situation (Annells, 1996; Charmaz, 2014). In support of Blummer, Charmaz (1980) added three additional premises:

1. Meanings are interpreted through shared language and communication.
2. The mediation of meaning in social interaction is distinguished by a continually emerging processual nature.

3. The interpretive process becomes explicit when people's meanings and/or actions become problematic or their situations change (p.25).

In as much as Symbolic Interactionism is an appropriate fit to both the grounded theory method and to this research, Patricia Benner's Novice to Expert Theory directly speaks to learning through experiential context. In 1982, Benner described her effort to discern of the Dreyfus Model of Skill Acquisition could be generalized to nursing. Through interviews with both established and new nurses and senior nursing students and observations, Benner concluded that the Dreyfus Model could be generalized to nursing as a basis for clinical knowledge development through five incremental levels of proficiency which heavily relies upon experience (Benner, 1982). Each level must be passed through in order, as past experiences create a movement from abstract principles to paradigms. In addition, situational understanding changes from focusing on "a compilation of equally relevant bits and more as a complete whole in which only certain parts are relevant" (Benner, 1982). The five levels of proficiency are as follows: novice, advanced beginner, competent, proficient, and expert. In the novice stage, the practitioner knows only the context free "rules" which are learned through didactic education, which means discretionary judgement is not possible as prioritization or rule exceptions cannot be applied based on past experiences. Therefore, rules are the only basis used to guide actions, and exception to rules cannot be recognized (Benner, 1982). For instance, a novice student nurse (SN) would be practicing the correct technique for listening to breath sounds, but would not recognize if the sounds were indicative of a disease process. At the next level, advanced beginners are able to apply aspects (global characteristics) obtained through the knowledge of past experiences. At this stage when events happen, every bit of the event is still considered, and prioritization of task management and discernment of important patient needs is still unable to be

achieved (Benner, 1982). However, parts of an event are recognized as being constants of that particular event. In continuation of the above example, the advanced beginner might listen to breath sounds and recognize those indicative of pulmonary edema, but may continue assessing all of her patients before responding to this new finding.

In the next level of the progression, the competent nurse has accumulated a level of past experiences which enables organization and prioritization to enter into their practice of managing eventualities. Speed and flexibility may not yet be optimized, but they benefit from "practice in planning and coordinating multiple, complex, patient care demands" (Benner, 1982). As we continue through the stages, the proficient nurse is able to achieve instant prioritization with situation examination because of the knowledge past experiences bring (Benner, 1982). Their knowledge allows them to start approaching events holistically, identifying which aspects are most important and typical to the situation. Because of this, the proficient nurse is able to "consider fewer options" and "hone in on an accurate region of the problem" (Benner, 1982). Proficient performers use maxims to guide their performance, which are subtle nuances of a situation which point to prioritization. After a vast amount of past experience, the expert nurse manages events with intuitive decision making. The expert is able to obtain an immediate grasp of an event to zone in on the salient issue without the distraction of other non-essential considerations (Benner, 1982). As their actions and rationales are intuitive, it is usually difficult to legitimize these actions as they come from their deep understanding of the situation. They have a holistic approach rather than one which is incremental with procedures and fractionated rules.

As progression of each stage of Novice to Expert is based on experience, situational influences, as explained with SI, could greatly impact the progression of professional expertise.

For example, if a new SRNA is viewed as being a brand-new learner and not as an experienced RN assuming an advanced practice role, the SRNA may not be offered or trusted with educational experiences, such as starting large bore IVs, for which they are already accustomed to performing as RNs. The SRNA could perceive the branding as their fate and chose to stand idly by, or could chose to stand firm and seek educational opportunities within their new role. As another example, if the SRNA approaches new situations without an armament of knowledge from which to draw from, that situation may be met with extreme anxiety that is not conducive to learning. A negative association with this situation may always be attributed, which again may hinder professional progression to expertise.

Grounded Theory and Symbolic Interactionism have traditionally been offered as a theory-methods package (Charmaz, 2014), and their model and premises served to complement the purpose of this study. Benner's Novice to Expert Theory offered a guide for interpretation of collected data of the transition from didactic to clinical education. The purpose of this grounded theory study was to explore and interpret the experience of entering a first clinical rotation through the memories of CRNAs in order to construct a theory addressing the transition to the clinical environment.

## Concepts and Terms

1.) Anesthetist—one who receives specialized training to provide anesthesia services (Hogan et al., 2010)

2.) Anesthesiologist—a physician who completed a residency in the administration of anesthesia and may or may not be board certified (Butterworth, et al., 2013)

3.) Certified Registered Nurse Anesthetist (CRNA)—a board certified advanced practice nurse who is specially trained in the delivery of anesthesia (AANA, 2014)

4.) First clinical rotation/experience—the first scheduled clinical rotation in which SRNAs provide anesthesia to patients

5.) Front-loaded nurse anesthesia program—a graduate nurse anesthesia program design in which all didactic education is presented before clinical education begins; didactic and clinical education occur separately (Chipas et al., 2012)

6.) Integrated nurse anesthesia program—a graduate nurse anesthesia program design in which didactic and clinical education occur concurrently; clinical education is integrated within didactic education (Chipas et al., 2012)

7.) Pre-clinical preparation—any didactic or simulation education a SRNA may receive prior to beginning clinical rotations

8.) Student Registered Nurse Anesthetist (SRNA)—a registered nurse enrolled in a nurse anesthesia program, seeking an advanced practice graduate degree in the delivery of anesthesia (COA, 2014)

## Sample

The aims of this study were to 1.) Describe and interpret the experience of CRNAs entering their first clinical rotation as SRNAs, and 2.) Construct an explanatory theory about how SRNAs learn in and assimilate to the clinical environment. To meet these goals, a purposive sample consisted of CRNAs who have been certified ten years or less and who graduated from an assortment of NAPs in an effort to recruit participants who experienced a variety of pre-clinical preparation philosophies and methods. The variety of NAPs differed based on front-loaded versus integrated program structure, geographic area of origin, length of programs, clinical preparation regime, and degrees conferred. The rationale behind selecting CRNAs who have been certified ten years or less was so that the subject might still remember their first

clinical experience as an SRNA. I personally have been certified for 14 years and still remember my first clinical rotation with clarity. In addition, interviewing established CRNAs about their first clinical experience allowed the reflection of their experience to be filtered through their professional expertise, pinpointing significant moments not realized as a novice. Since established CRNAs are fully integrated into the roles and responsibilities of the profession, and also have an armament of experiences from which to draw, they were able to look back at their initial clinical experience and identify how their pre-clinical preparation served them as a novice, what was effective, and what was not. Additional inclusion criteria stipulated participants were English speaking and of any ethnicity or age. Exclusion criteria included certification of more than ten years, non-English speaking, and dissention from participation. Charmaz (2014) advocates for the establishment of relationships with the participants to enable freer sharing, and purports those relationships to continue rather than being a single encounter.

Two types of sampling exist in the Grounded Theory Method. Initial sampling is an emergent process during which data is collected via an interview, immediately analyzed, and then collected again from a new participant. The initial data gathered lends direction to where data is leading the researcher. This is where initial categories are formed and creates a starting point for further category development. Later in the study participants may be chosen purposively to bolster, define, and explicate emergent themes and categories through specific questioning. This process, known as theoretical sampling, occurs after initial themes and categories emerge and continues until no new properties of theoretical categories are identified during data collection and analysis (Charmaz, 2014). Theoretical sampling therefore aids to distinguish and build robust categories essential to theory development, and can be performed

with either new participants or by re-interviewing current participants with new, emergent questions for data confirmation.

## Recruitment

After obtaining Institutional Review Board approval from Indiana University of Pennsylvania (IUP), the sample was recruited from personal and professional CRNA colleagues located in eastern Pennsylvania. This region contains a number of large hospital systems that recruit CRNAs from across the nation, which added to the diversity of the educational background of those sampled. Pennsylvania also ranks fifth in the nation for the number of CRNAs practicing in the United States at 2,050 (Bureau of Labor Statistics, 2015). Snowball recruitment as initially proposed was not necessary to obtain a sufficient sample of CRNAs who have graduated from diverse NAPs. An adequate sample was able to be recruited as described, so email lists from the Pennsylvania Association of Nurse Anesthetists or the AANA did not need to be used. The email invitation, informational letter, and consent can be found as Appendices D, E, and F, respectively. Emails were obtained through personal solicitation, and a stratification database was kept to tally the diversity of NAPs participants attended to aid with theoretical sampling.

Sampling for grounded theory does not project a set number of participants. The number of participants required is dependent on the claims a study intends to make and hinges on theoretical sampling requirements. Thus, the final number of participants was not arbitrarily assigned. Studies purporting grandiose claims would take a much larger sample than a study with modest claims (Charmaz, 2014). For this reason, the number of participants needed for this study was determined to be eight based on saturation of theoretical data and the use of theoretical sampling for two additional confirmatory interviews.

## Setting

Interviews will be conducted at the participant's choice of location in eastern Pennsylvania or by Skype. The only stipulation given to the subjects for choosing an interview location will be that the noise level must be favorable to audio recording of the interview. This may exclude some restaurants with a loud undercurrent; however there are numerous other locations that can be chosen. Places of employment will also be excluded as Institutional Review Board approval will only be sought and obtained from IUP. Any other location will be feasible, as the only equipment needed will be a laptop or tablet from which to visually present the questions and an audio recording device.

## Procedures

Constructivist Grounded Theory as suggested by Charmaz (2014) has a specific procedural outline, but maintains flexibility in the interest of gathering rich, robust data through theoretical sampling, and integrates awareness and analytical connections through a continuous data evaluation process. As Figure 1 illustrates, the processes is not linear, but utilizes constant comparison and memo-writing concurrently with data gathering and coding to achieve theory construction.

The first step was formulation of the research question, which for this study was: What is the experience of the first SRNA clinical rotation? The purpose of this study was to construct an explanatory theory about how pre-clinical instruction affects the SRNAs ability to learn in and assimilate to the clinical environment. The second step is recruitment and purposive sampling. As stated above, subjects were CRNAs who have been certified for ten years or less, and were recruited through my personal and professional relationships. An invitational email was sent that contained as attachments an explanatory letter and the consent for the subject to review

(Appendices D, E, & F). Emails were obtained through personal solicitation, and a stratification database was kept to tally the diversity of NAPs participants. A positive reply to this email signaled the intention to schedule an interview. At this point I contacted the responding subject to set up a mutually convenient time and place for the interview. During this conversation I also recorded what school the CRNA attended and if the program was integrated or front-loaded as a screening tool for future theoretical sampling. No interviews were conducted via Skype. The interviews were all conducted in person, and the consents obtained at the beginning of the interview session.

The next step was data collection by means of focused interviews. At the initial scheduled interview a hard copy of the consent was presented for the participant to sign before data collection begins. The participant could have decided not to participate at any time during the study, and could have done so without repercussion. Each interview lasted approximately 30-40 minutes. Open ended questions were asked to explore an experiential continuum from NAP entrant through the first clinical rotation. Each question was displayed on a tablet screen to preserve the subject's thought processes and keep the conversation en pointe. Initial questions be posed are included in Appendix G, which includes the demographic questions asked at the beginning of each interview. The interviews were audiotaped then transcribed into Word documents. Subjects received a $25 Amazon gift card funded by a 2016 AANA Doctoral Fellowship after all interviews were completed. The participants were alerted of the possibility of being called to participate in a second interview which was covered in the consent (Appendix F). The participant could choose not to participate when called for a second interview, however no second interviews were deemed necessary.

Demographic data were used in two ways. First, a data base was kept to assess diversity of the sample and program type. Second, individual participant demographics were kept with their interview data to ascertain if the stories and data were consistent with a particular demographic. These connections aided in building robust categories and theory building.

All data underwent initial coding after each individual interview to identify themes. The process of analyzing data after each data collection before moving on to the next interview is unique to grounded theory and is termed the "constant comparative method" (Charmaz, 2014). Coding, the process of assigning categories to small sections of data, is performed in two phases (Charmaz, 2014). First, each line and segment is named. This was done by organizing the transcripts in a columnar form using the qualitative data collection program NVivo®, with the left column specified for coding of the transcript residing in the right column. Second, "a focused, selective phase…uses the most significant or frequent initial codes to sort, synthesize, integrate, and organize large amounts of data" (Charmaz, 2014, p. 113). The initial coding that appears most frequently or shows the most significance is used to analyze and theme the data. These themes were denoted and differentiated with a specified color scheme and category. The focused coding themes were then scrutinized and categorized into what made most analytical sense to guide the theoretical direction (Charmaz, 2014). Essentially, focused coding serves to focus the data in order to drive theoretical coding, which arranges the focused themes to tell an analytical story. Theoretical coding is an emergent process which establishes possible relationships between the categories made during focus coding (Charmaz, 2014). Theoretical coding was performed by grouping the related focused themes via the NVivo® analytical program in order to collate and differentiate the theoretical codes. NVivo® also afforded the

ability to automatically map the coding to distinguish relationships, which served to further evaluate and describe themes.

At this point another interview was conducted with a new subject to gather more data, however the interview questions were slightly altered based on prior data analysis. The same process of data analysis/data collection/data analysis was performed until theoretical saturation was achieved (no new data is gathered or identified), at which point two more confirmatory interviews were conducted to validate theoretical saturation (Charmaz, 2014). Confirmatory interviews are conducted in the same manner as the other investigative interviews for the purpose of discovering if any new data can be elicited.

Memo writing occurs simultaneously during the grounded theory method, and is integral to the process. The memo serves to capture the thoughts, epiphanies, spontaneous realizations, and questions concerning data analysis. It is the creative outlet that serves to provide focus and clarity in finding relationships and establishing significance (Charmaz, 2014). Memo writing for this study was achieved by journal entry. Notations were made to ensure each entry was addressed, and when appropriate, transcribed and placed with corresponding coding collections. The memos are not coded themselves, but serve to help guide organization of the coding process (Charmaz, 2014).

After theoretical saturation was achieved, theory construction began. The work produced through theoretical coding was sorted, organized, and refined to define relationships. Memos were sorted and integrated to further define relationships. Charmaz (2014) recommends turning off the computer and using a large work area to physically sort, arrange, and rearrange the memos and codes to find connections. Furthermore, diagrams or conceptual maps should be made to explain these relationships. Both recommendations were utilized in the construction of

a substantive theory. In Constructivist Grounded Theory, it is realized that the derived theory is an interpretation dependent on the researcher's perspectives and historical context (Charmaz, 2014). The resultant pictorial descriptions and diagramming of foundational relationships thus form the theoretical framework, which will be discussed in Chapter Four.

## Rigor and Feasibility

The quantitative terms of rigor and validity do not directly apply to qualitative research. Instead, measures are taken to ensure a "level of credibility, plausibility, and trustworthiness, not only of the research process itself, but also of the theory generated from the data" (Jeun, 2004, p. 254). To add credibility and dependability, my dissertation chairperson, an expert on grounded theory, was consulted throughout the study for advice on data collection, the interview process, and coding. Memo writing, theoretical saturation and coding, and verbatim transcription promoted accuracy, credibility, criticality, and plausibility during data generation and analysis. The disclosure of researcher bias, credentials, and personal experience promoted trustworthiness and credibility. The quality of the final written product will encourage credibility, thoroughness, and explicitness. Code book development aided transferability, authenticity, and integrity. Theoretical sampling also added to trustworthiness, credibility, and thoroughness. In addition, the constant comparative method during data compilation and analysis strengthened accuracy, dependability, transferability, and confirmability (Polit and Beck, 2012).

This research study was feasible for a variety of reasons. The relatively small diverse sample size was easily recruited from a location with a large number of CRNAs who are alumna from a variety of NAP's. The cost of conducting the study was low, as the main costs were the participation gifts and purchase of a recording device. In addition, I was confident that I would

be able to conduct the study as I had successfully completed all required doctoral courses and had a strong dissertation committee to lend guidance and expertise through the research process.

## Human Subject Considerations

Institutional Review Board permission was sought and obtained from IUP. Before each initial interview informed consent was explained and gathered from the subject. All participants were assigned a pseudonym to ensure anonymity during data reporting. All data was kept in my home office and will be secured in a locked cabinet or password protected computer for three years following the completion of the study. The NAPs the subjects attended will be kept anonymous; however certain features will be reported in Chapter Four by participant consent. As this was not an interventional study, physical harm was not a risk. Breach of anonymity of NAPs or the participants, along with the potential recall of memories of negative experiences were the only identifiable risks. NAPs the participants attended will not be shared in the explanation of data in Chapter Four. Pseudonyms were assigned to each participant for reporting of results and data banking, and only I will know the correct identities of the participants. Only pseudonyms were used when data was reviewed by my chairperson. A direct benefit was the knowledge that their involvement aided in the understanding of the relationship between the first SRNA clinical rotation and pre-clinical preparation, thereby increasing a knowledge base that could directly benefit SRNA education.

## Conclusion

Given the lack of literature written on the transition of SRNAs from didactic to clinical learning, a qualitative design best served to begin investigating this phenomenon. Being that the derived data would be beneficial for curricular guidance, Constructivist Grounded Theory was chosen as the methodology for this study. Concepts and terms were defined, and Grounded

Theory application specific to this study was discussed. Study particulars, such as sample, setting, rigor, feasibility, and human subject considerations were also explained. Chapter Four serves to report the study's findings after implementation as described in Chapter Three.

# CHAPTER FOUR

# FINDINGS OF THE STUDY

This chapter is dedicated to the review of data collected via the methodology presented in Chapter Three. The review will consist of an overview and examination of the constructed Theory of Competent Assimilation to Graduate Clinical Education, a description of the participants, and an in-depth evaluation of the components of the Theory of Competent Assimilation (TCA), which will serve to explain the process for which competent assimilation to graduate clinical education may occur. In addition, the associated theoretical models—Symbolic Interactionism and Benner's Novice to Expert Model—will be described in context of the study.

## Overview of the Theory of Competent Assimilation

The purpose behind this study was to use a Constructivist approach to explore the experiences of entering a first clinical rotation and uncover a process of transition to clinical education. The data collected—which will be presented in-depth in a latter part of this chapter—revealed the importance of a concrete foundation for successful assimilation to clinical education. This foundation consists of three preparational components: didactic instruction, simulation, and orientation to the profession and to the clinical environment. The content provided in each part directly contributes to either a negative or positive clinical assimilation. Most importantly, the degree of synthesis of these three foundational components is crucial to a strong foundation, and this synthesis is achieved through real-like simulation (RLS) experiences. Real like simulation, for this study, is defined as the use of models or mannequins during medical simulation scenarios to simulate real life experiences which provide experiential context for the purpose of preparation for clinical application. Models range from inert body parts to computerized interactive mannequins to living standardized models. Medical simulation is an

"educational strategy that mimics actual environmental and patient situations and compels learners to demonstrate clinical competency" (Merchant, 2012).

The degree of clinical competence is dependent on the amount and quality of RLS experiences. Substantive quantity and quality of RLS, which facilitates the syntheses of the three components of a quality foundation, leads to positive assimilation to the clinical environment. Conversely, poor quality or lack of RLS, which does not facilitate synthesis of foundational components, lead to negative assimilation to the clinical environment. Variations in the quality of the three foundational components and RLS lead to variable assimilation points along a continuum between negative and positive assimilation.

A model of the theoretical framework is found in Figure 2 below. Also evident in the model is the application of Benner's Novice to Expert Theory. The actual use of this model in this substantive area will be discussed later, but collected data supported SRNA entry to clinical education at an advanced beginner stage rather than novice given the SRNA's previous critical care nursing experience.

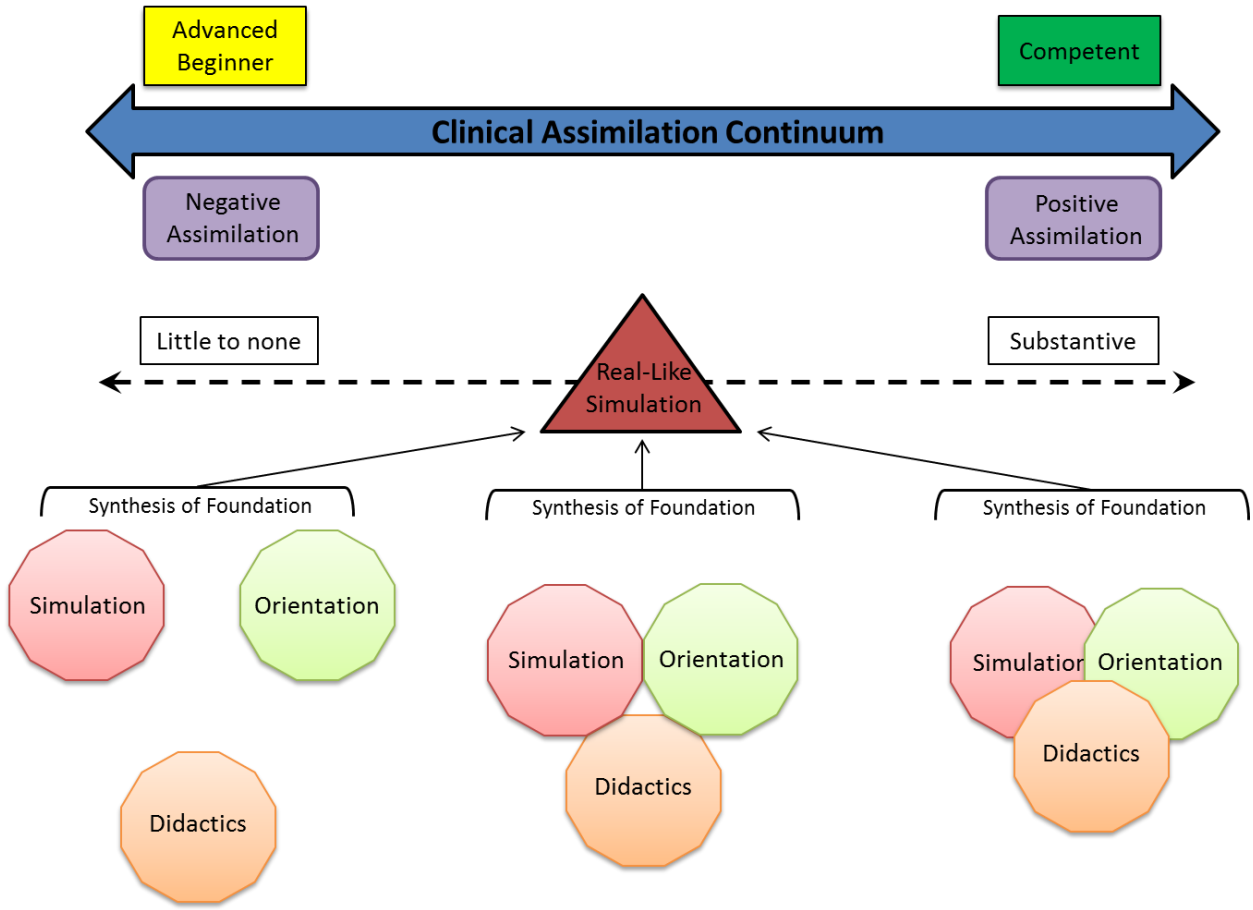


*Figure 2.* Theoretical framework of competent assimilation to graduate clinical education.

**The Assimilation Continuum**

As the theoretical model illustrates, clinical assimilation is not an all or nothing phenomenon, but rather one that falls along a continuum. The continuum is dependent upon both the strength of the foundation and the synthesis of these foundational components. In other words, clinical assimilation is dependent on the amount, content, and quality of RLS, which is the essential mechanism for foundational synthesis. Little to no RLS does not afford the SRNA synthesis of information to apply to clinical experience. The didactic knowledge, low-fidelity simulation, and orientation information exist independently, which does not allow for experiential context to be formed to be used for clinical performance. If this is coupled with minimal instruction of any of the foundational components, the SRNA is armed with little to

bring to the clinical arena, and therefore will experience a negative assimilation (Figure 2). The other end of the continuum represents positive assimilation through a strong foundation rich in quality and depth of material, and synthesis of this rich knowledge base through substantive RLS experiences. SRNAs with this preparation will approach clinical education knowing what is expected of them, what they need to do, and why they need to do it. Based on the data collected in this study, the positive assimilation end of the continuum should be the goal of pre-clinical preparation, as evidenced by the study participant's recollection of their experiences.

## Description of Participants

The participants of this study consist of eight CRNAs recruited through personal and professional acquaintances. As described in Chapter Three, initial sampling was first employed, followed by theoretical sampling as data collection approached saturation. All participants were assigned pseudonyms to protect confidentiality.

**Demographics.** The participants represent a wide diversity in terms of the demographic information collected. Gender was distributed between three women (37.5%) and five men (62.5%). Of the eight CRNAs, each graduated from a different NAP, with five being from Pennsylvania, one from the northeast region of the United States, one from the south, and one from the west. Only one of the eight programs attended was front-loaded (12.5%), with the remaining seven being integrated NAPs (87.5%). Interestingly, there were two participants who were under the impression their programs were front-loaded until the full definition was presented. Class sizes ranged from nine to 47, with the mean being 21 students per graduating class. Years of being an RN prior to starting their NAPs ranged from 1.8 to 14 years, with an average of 5.7 years of RN experience. The CRNAs all graduated from their programs between one and six years prior to participation in this study, with an average of three years of CRNA

experience prior to their interview. There was a wide range of time from starting their NAP to when clinical education began. One woman—Carol—began clinical education only 2.5 weeks after starting her didactic education. The remainder of the integrated participants began clinical education within six weeks to one year, with a mean of 15 weeks, or essentially one semester. Table 1 offers this data in full detail.

Table 1

*Individual Demographic Information*

| **Demographic** | **Percentage (n)** | **Demographic** | **Percentage (n)** |
|---|---|---|---|
| ***Gender*** | | ***State/Region of NAP*** | |
| Female | 37.5 (3) | Pennsylvania | 62.5 (5) |
| Male | 62.5 (5) | Northeast | 12.5 (1) |
| ***Type of NAP*** | | South | 12.5 (1) |
| Integrated | 87.5 (7) | West | 12.5 (1) |
| Front-loaded | 12.5 (1) | ***Class Size*** | |
| ***Years RN before NAP*** | | 9 | 12.5 (1) |
| 1.8 | 12.5 (1) | 12 | 12.5 (1) |
| 2.5 | 12.5 (1) | 13 | 12.5 (1) |
| 3.0 | 25 (2) | 21 | 25 (2) |
| 3.5 | 12.5 (1) | 22 | 12.5 (1) |
| 4.5 | 12.5 (1) | 23 | 12.5 (1) |
| 13 | 12.5 (1) | 47 | 12.5 (1) |
| 14 | 12.5 (1) | ***Years as a CRNA*** | |
| ***Time to Clinical Education*** | | 1 | 25 (2) |
| 2.5 weeks | 12.5 (1) | 2 | 25 (2) |
| 6 weeks | 12.5 (1) | 4 | 37.5 (3) |
| 8 weeks | 12.5 (1) | 6 | 12.5 (1) |
| 3 months | 25 (2) | | |
| 4 months | 12.5 (1) | | |
| 12 months | 25 (2) | | |

Unfortunately, after an extensive search, CRNA demographic information for each of the categories collected for comparison of study subject representation could not be located. A study by Elisha and Rutledge (2011) had a sample size of 698, for which there were 36.4% males and

63.2% females. This is essentially the opposite of this study's gender demographic; however this study has a much smaller sample size. Elisha and Rutledge (2011) also collected data for years in nursing before their NAP, which was reported as 41.8% for 1-3 years, 28% for 4-6 years, and 14.1% for greater than 11 years. This study, 62.5% practiced as an RN 1-3 years before NAP, 12.5% 4-6 years, and 25% greater than 11 years. Again, this study had a small sample size comparatively. It stands to reason that the majority of the participants went to school in Pennsylvania, as that is where the study was conducted, and convenience sampling was employed. Comparative data for the remaining demographic data collected—type of NAP, class size, and time to first clinical rotation—could not be extracted from literature or COA and AANA communications.

## Examination of the Theory of Competent Assimilation

As illustrated in Figure 2, TCA is a multifaceted and interwoven continuum, signifying the relationship between assimilation, the degree of RLS experienced and the strength of foundation. The foundation is achieved through three significant educational modalities which serve as the means for pre-clinical preparation: didactics, simulation, and orientation. Figure 3 below illustrates the facets of the foundation.

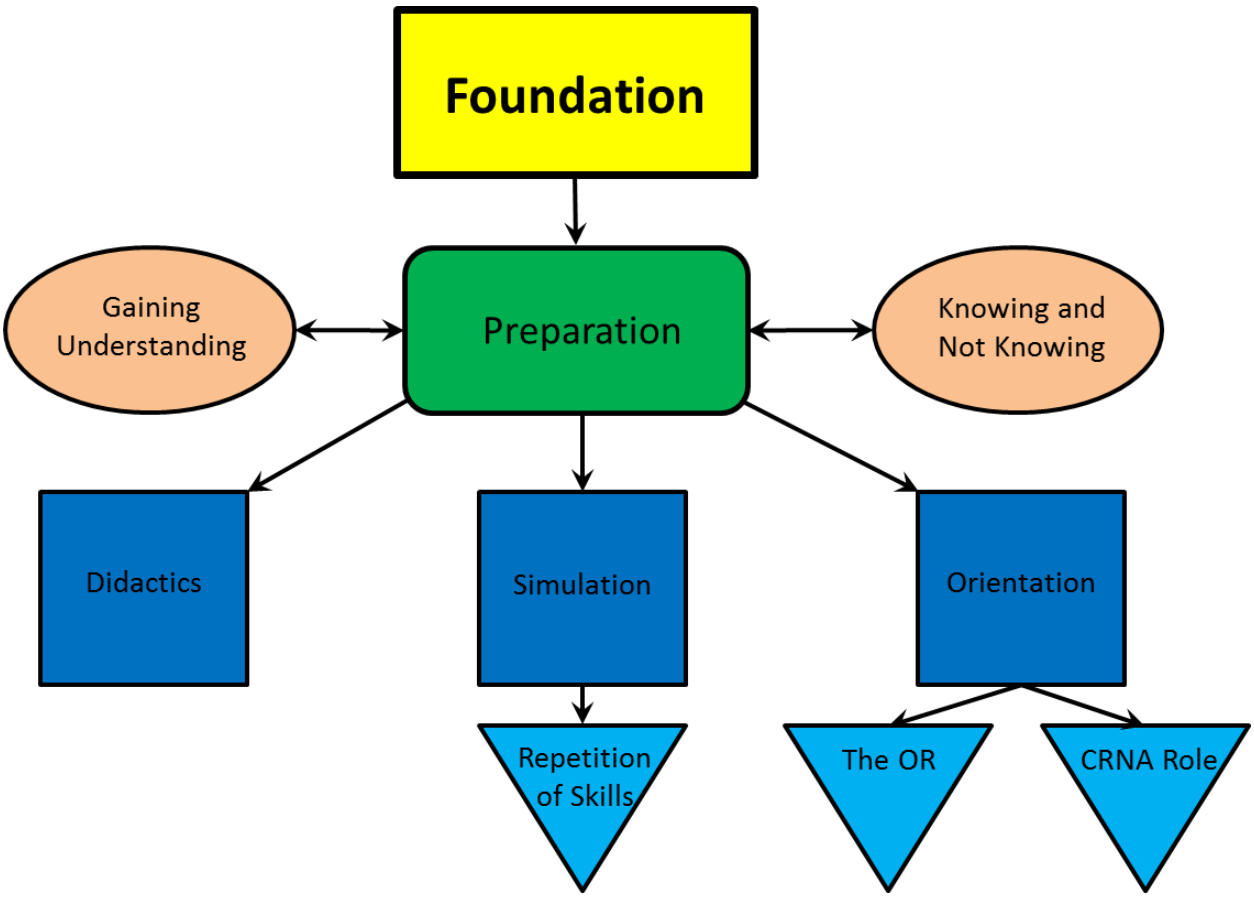


*Figure 3.* Illustration of the foundation of TCA.

**Foundation**

At the bottom of the framework lie the three components to the foundation of preparation: didactics, orientation, and simulation. The strength of the foundation is dependent on the content provided in each of the preparational components before clinical education is introduced.

**Preparation**

The process of making SRNAs ready to administer anesthesia safely and efficiently is the focus of not only this research, but of nurse anesthesia schools themselves. Inadequate preparation lends to insecurities of self, incomplete understanding of the role, and unsafe care due to a lack of understanding of resources, treatments, and situations (Worrall, 2007). Carol's

program started her class with clinical education within 2.5 weeks of starting classwork, and received very little preparation:

> *We were the first class [in the new program], so they didn't have a whole lot of information prepared for us. Yeah, they did nothing (sarcastic laughing). It was basically, show up here and [the CRNAs in the OR] would teach us. That's what we were told.*

Greg, while discussing a friend of his who had minimal preparation before starting clinical education and struggled, stated, "*That goes back to his preparation. You know, like he wasn't prepared mentally or physically. Like he was just a mess*."

Conversely, adequate preparation provides a sense of security. Aaron, who started clinical education after one semester (three months) and extensive preparation, felt comfortable when he started. He offered:

> *Um, but then, in the back of my mind, I thought, you know that I've, we've gone over these things, any questions that people would ask me, it wasn't things that I hadn't heard or seen in class or in, in simulation*.

Fawn came from another program with extensive preparation and started clinical education eight weeks into her program. When asked if she could say she felt prepared to start her first clinical rotation, she expressed:

> *Yes, I do. And, I do, because of simulation, mock induction, being able to get hands on with the machine before it became a case. And, um, and meeting people with the walk throughs. Um, I absolutely felt, 100% comfortable. 100%.*

Part of preparation is gaining an understanding not only of the science, technical skills, and role expectations that encompass anesthesia practice, but why the instruction is important

and applicable. Aaron acknowledges this in his statement, "*then you kind of start understanding this is why those things were so important, this is why they hammered this into our head about, about XY and Z.*" Gaining this understanding motivates learning and offers a rationale for the steps needed in one's education.

Another aspect of understanding is self-awareness of learning style. This self-awareness allows SRNAs to tailor their education per their individual learning style. Greg recognized his need to observe first before doing:

> *Um, when you're actually doing it, you know, and that's an experience that's here, where it's like you're so obvious green that it's like, ok, you know, why don't you just take a minute and watch. Because you can see, you know you see the mechanism of intubating and how people do it. Because, people do it differently, contrary to what the textbooks say.*

Darrin also shed light on his self-awareness by stating:

> *Even though I had training and classes and education, uh, I think that I am much more of a tactile or I think that I'd do better by putting my hands-on patients and things like that, and I needed to see it done as opposed to read about it for me to really grasp what I was doing and how to do it.*

The concept of self-awareness of learning style was explored by Halbert, Kriebel, Cuzzolino, Coughlin, and Fresa-Dillon (2011). In their study, medical students completed a self-assessment of preferred learning styles after completing an online course management system after completion of a pre-clinical course. The results indicated that certain learning styles were more conducive to an on-line learning environment, and that the self-awareness of learning styles

can help both students and educators seek out resources that are best suited to their individual needs.

The concept of knowing and not knowing is often referenced through an Arabic Proverb:

*He that knows not, and knows not that he knows not is a fool. Shun him.*

*He that knows not, and knows that he knows not is a pupil. Teach him.*

*He that knows, and knows not that he knows is asleep. Wake him.*

*He that knows, and knows that he knows is a teacher. Follow him.*

Atherton (2016) described four different positions of being within a knowing and not knowing grid.

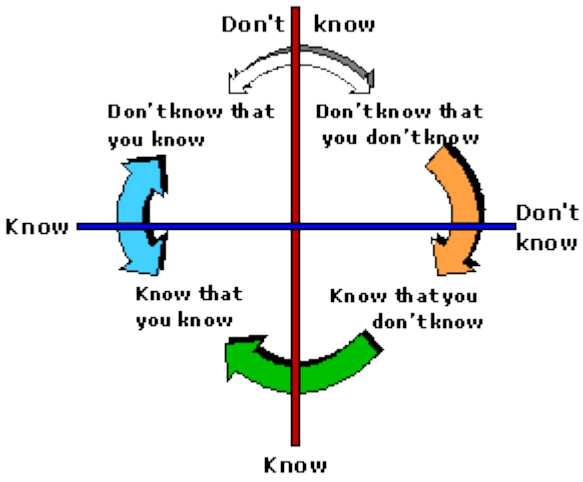


*Figure 4.* Knowing and not knowing grid. (Atherton, 2016)

Two of these positions, when applied to SRNA clinical learning, would be considered safe. Knowing that you know allows the SRNA to effectively perform. Knowing that you don't know would give the SRNA incite to seek guidance, research the unknown, and not partake in dangerous situations. A SRNA who doesn't know that s/he knows would perform without confidence, and either situations or instructors would need to expose the SRNA to their internal knowledge. However, if a preceptor gives autonomy to a SRNA who believes s/he has the

knowledge and skills to perform but does not, harm can come to the patient. A SRNA who doesn't know s/he doesn't know could be dangerous, as their actions could be cavalier, inadequate, or incorrect. I recall during my first clinical rotation being asked if I had any questions at the end of a day. Even though I was brand new, I didn't have any questions. I felt inept because I knew there was so much I needed to learn, and it was then I came upon a realization: I didn't know what I didn't know. Ed reflected on knowing and not knowing with an explanation of his initial experience with an AGM:

> *I specifically remember the machine being the most stressful part for me. I'm not sure why. It was the most difficult thing for me to ah, to get, because I never worked with it before, and obviously you don't want the machine to fail or anything like that. I mean I was, it's almost, you know it's going to work and you check it and you know what to expect or look for. But, the fact that I didn't know what to look for, I mean, we went over everything in class, but, having not done that process before was probably the hardest thing for me.*

Being aware you don't know what you actually need to know can be very anxiety producing, and not being aware of what you don't know can be dangerous (Atherton, 2016). Without the knowledge of role expectations, treatment modalities, or the anesthetic process itself can place patients in harm's way. Aaron illustrates this when asked if he had received adequate preparation before starting his first clinical rotation:

> *Um, it's scary to say that cause as nervous as I was and as much as I realize now that I didn't know. But I think that the basics were there and, and you know you have a mentor right there next to you as a resource and to stop you if you were going to do something dangerous.*

Hugo also alluded to the concept of not knowing when describing his very first clinical day:

> *Um, just like the unknowns and the appreciation of how dangerous what we do is and just kind of like, trying to juggle. I remember my first, my very first day, you know, we were doing outpatient surgeries and my first case was a prone MAC on a young man. Um, he was having like a cyst removed and you know, I remember looking at him and thinking wow, I could convert this MAC into like, you know, a general like, really fast depending on how much I give him and trying to balance all that. And, my CRNA was having me do everything, like, literally everything and it was my first case, ever. And, that continued throughout the day, and I remember when I was done and I just sat in my car and I like held my steering wheel. I was kinda like shaking and I was like, I did it, I did it, oh my God. But, it was like very extremely stressful and um, our learning curve was very, very steep there.*

Providing a strong preparation before initiating clinical education would provide SRNAs a foundation to perform, knowing they still have much more to learn as they advance in their programs. As this preparation consists of the triad of orientation, didactics, and simulation, each component will now be discussed.

**Orientation.** Orientation consists of two components: familiarization with the clinical environment and delineation of CRNA role expectations. The OR environment and workflow is substantially different from that of an intensive care unit. Possessing an understanding of the OR workflow, resources, and team components is integral to success. The role of the critical care nurse significantly differs from that of a nurse anesthetist, and knowing the job expectations to facilitate a paradigm shift is essential to a successful transition. Orientation can be achieved

through many modalities, including hospital/OR walk-throughs, shadow experiences, didactic role expectations instruction, and mentorship.

***Clinical environment.*** While all eight participants stated they received an orientation to the clinical environment, the manner in which they received their orientation differed. For instance, Aaron had a formal orientation with his site's clinical coordinator:

> *But, we, uh, had an orientation at our primary site where I don't know that we got a full walk through the OR, but we went and met with the clinical coordinator at that site in like a conference room. She gave us a, a book that referenced everything that we needed to know. You know, chain of command, how to get help, and, and where to find things and basics like that.*

Fawn relayed an extensive walk-through and overview by the clinical coordinator. Other participants cited walk-throughs in groups with other CRNAs or senior SRNAs prior to starting. Bree's OR orientation was done with the entire class as an observation:

> *We, because our school was at the hospital that we, our main hospital, we all went into that hospital on different days for a few hours in the morning prior to class. So we would go from like 6:00-9:00 in the morning, for maybe a week. Just to kind of see the general flow in setting up in the morning, so we kinda did ease into it, somewhat.*

Ed's experience included lectures on what to expect in the clinical environment, as well as having a senior SRNA mentor:

> *So, whatever clinical site you were going to, that senior student would have been there and known the site prior to you getting there. So, the first thing I went, um I remember, I met my senior there and she took me to the room basically kind of showed me around a*

*little bit, ah, and ah, walked through the OR with me. It was early in the morning when there was nobody there.*

The value mentorship is recognized in literature. According to Faut-Callahan (2001) mentoring is "a humanistic, confidential, social relationship between people in which one individual (the mentor) functions as a sponsor, guide, and role model" (p. 249). Her article set forth a call for mentorship to be integral for CRNA leadership, and serves to facilitate learning, orientation, and clinical empowerment. Mentorship of SRNAs in the operating room was explored by Meno, Keaveny, and O'Donnell (2003), which serves to motivate, encourage, and orient through experiential context. Through querying current SRNAs, their findings showed that CRNAs, rather than senior SRNAs, are preferred mentors, who provide highly valued role modeling and significant professional socialization.

While having a familiarity of the new environment where the SRNA will be working is important, possessing an understanding of the role of the SRNA while in that environment is of paramount importance to the orientation process.

***Role expectations.*** Knowing what is expected of the CRNA role is part of the transition to a new practice. Although Bree did have an orientation to the clinical arena, she did not feel well oriented to the role she would soon acquire.

*Yeah, just I really prior to anesthesia school, as I said before, I didn't have a whole lot of experience in the operating room environment and um, I think it might have been helpful to cover the process, um, the induction, you know hooking the patient up, um I mean they did go over that eventually, you know that you have to have like ah, uniform system so you don't miss any of the things on a checklist and I do recall having like a machine*

*checkout checklist and that kind of thing. But, still just the very induction process would have been helpful to know that prior to going in and seeing it.*

Many of the students appreciated having a mentor to lean on for support and advice throughout their clinical experiences. For instance, Greg stated:

*Preparation was, we had a mentor, so they linked us up with a senior student and we talked to them before we ever showed up. We were able to ask them direct questions and then they gave us their feedback on their first clinical experience.*

Darrin's program gave him the opportunity to job shadow before he started in clinicals. As you will notice, Darrin's job shadow experience falls into the realm of knowing and not knowing, suggesting that his experience was not sufficient to role orientation:

*I wish that in the job shadows I was more concerned about what I did the particulars of the job. You know, could I stand the sight of blood? Can I, you know, handle, you know, a case, surgery and things like that? And maybe, ah I felt like in retrospect I should have been more, you know, what does this do right here? I remember asking the CRNAs I was job shadowing, what do you use that for? What does that do? And they would tell me, I would like what the heck does that mean? You know?*

Darrin used his mentors as a means to cope with the bullying he encountered as he attempted to learn about his new role, for which he was unsure:

*Man I wish that people would listen to their elders more. Take people that are experienced and they tell you how somebody not going to take your crap, or they're not gonna expect this from you, and this sort of behavior. I listened to that and I felt like I learned, you know, a great way to sort of make myself titanium, so that if people had something negative or, or… ah…something to say that could affect you adversely, um, I*

*wasn't gonna let them know that they did. I was not gonna let it, you know, show and I think that that gave me sort of an armor in a sense, like a mental armor to take on, you know, the name calling, and uh, and whatever else we were exposed to and I think that helped me by listening to other people. Ah, talking to the seniors and those that were just graduating, had graduated.*

Fawn experienced a positive assimilation and was provided orientation to her new role. She described her transition thus, "*You know one set of responsibilities as a nurse, so having those was, you know, I expect, I understood what was expected of me as a nurse and could do that. So, I felt, ok, I can transition over and do this, also*." When asked if she understood her new role expectations, she offered:

*Yes, from school and walking in when we in basics we learned things like um, the sequence of what would happen, what you're responsible for, what you're, you know, scope of practice now is differing from. Actually, we had a lot of open discussions about those things, um, you know, coming from an ICU nurse where everything was orders, you had to follow orders and then moving towards this role where you make the decisions now. You know, you, you're the one. There's no preset orders. There's no, um, you're not, it's not that you call and say, hey 50 of fentanyl. You give it, but you know, that was a big transition, but I understood. I knew that was what I was getting into, Yeah, I would say, I knew what was expected of me.*

Role expectations were clearly defined and integrated into Fawn's pre-clinical preparation, and attributed to her successful transition to clinical learning. However, orientation is only one component of the preparation triad. Once the CRNA role is defined, a robust knowledge base and skill set is necessary to complete a strong foundation.

**Didactics.** Didactic preparation provides a scientific foundation to facilitate autonomous, evidence based decision making and trouble shooting in clinical practice. Didactic instruction encompasses essential anesthetic machinery and tool construction and usage, anesthetic techniques spanning case management and age specific considerations, basic sciences, pharmacology and pathophysiology, and basic and advanced anesthetic principles, as well as case study and critical thinking training. This description of didactic instruction matches that of Imus, Burns, Fisher, & Ranalli, (2015). The participants in my study all had varying degrees of didactic courses ranging from minimal instruction to being completely front-loaded. As one would surmise, their anxiety levels and perceptions of clinical integration also varied greatly.

Carol's didactic load before starting clinicals 2.5 weeks into her program was very minimal. Later in this chapter we will learn how traumatic initial clinical education was for Carol, as a result of poor pre-clinical preparation. When asked what her program did to prepare her for clinicals, she explained, "*Yeah, actually having didactic. Yeah, I think that they could've done a lot more preparation for us and they didn't.*" She then further elaborated:

> *They had some CRNAs come over and explain the process. Ah, [a CRNA] came over and did a machine check for us and went over the machine with us and then the rest of it was just basically showing up…and learning from the CRNAs. Yeah, it was just the basics, um you know, about the machines and monitors and very briefly the drugs that we would administer. They also, we didn't really even talk about induction drugs. We were told that we would learn that through Nagelhout's course. And that started in August. So, we had to wait [about three months until] we actually got a real pharmacology course related to anesthesia.*

Similar to Carol's experience, Bree started clinical education six weeks into her NAP, and her didactic instruction consisted only of airway, the AGM and checkout, and emergency drug layout. When further queried about her pre-clinical didactic instruction, the following exchange ensued.

*Author: You didn't mention any instruction on, actually on anesthetic techniques, such as generals, regionals, pediatrics, ENT, anything about, did you get any of that before you started clinical?*

*Bree: Nope*

*Author: Would that have been helpful, do you find? Less horrifying?*

*Bree: Probably, I think anything would have been less horrifying. (sarcastic laugh)*

What can be extrapolated from this exchange is that the lack of didactic knowledge did not provide Bree with a foundation to provide confidence with clinical assimilation.

Hugo attended a front-loaded course, in which he completed all his didactic education in the 12 months prior to starting clinical education, with a few interspersed lectures on advanced subjects during his clinical component. He felt he had a nice foundation of everything he needed to know. Hugo stated, "*I mean that the didactic was excellent, so like our knowledge level of the whys and the whats and the hows was fantastic*." Although he felt he had a strong didactic foundation, based on his recollection of his first clinical day which was reflected earlier, he was still lacking a component to preparation and clinical assimilation.

Based on the data described thus far it would appear that having all of the didactic upfront would be the ideal as far as didactic preparation. However, consider the experience of Aaron, who started clinical education within one semester, or three months into his NAP.

*So, we had a full semester of didactic, um they covered the basics of pharmacology and the anesthetic agents that we use, um, we got basic, um, physiology and pathophysiology, um, surrounding anesthesia implications and things. And we got, um, an in depth lecture on the anesthesia gas machines so that we'd know how it works and how to trouble shoot it. They had to test our knowledge before we were ok to go ahead and move on to that stage of taking care of patients. Yeah, you had to pay a pass. They called it anesthesia basics. It was a basics exam where they'd cover all the fundamentals of anesthesia and then they test you on it. You had to essentially pass that test or otherwise I don't know what they would've done.*

Aaron's NAP obviously felt an obligation to adequately prepare their SRNAs before clinical education, and Aaron stated in his interview that he felt he was adequately prepared, even though he had only a portion of didactic education before clinical learning began. He did not have the same jarring anxiety that Hugo had on his first day, even though Hugo had completed his didactic education in its entirety. It is clear that didactic instruction alone is not adequate for substantive clinical preparation. Another factor—simulation--was available and integral to Aaron's preparation, which will be discussed in the next section.

**Foundational simulation.** Simulation is the third leg of the preparational triad which serves to provide the SRNA the opportunity to practice "what to do." Wunder (2016), in a study which explored non-technical skill intervention in crisis simulation of first-year SRNAs, described simulation as "a technology that supplies the repetition needed to acquire the skills necessary to increase patient safety by decreasing human error." There are two distinct modalities, the first of which is low fidelity simulation. This type allows a student to practice skills on a stationary, non-interactive device which may or may not resemble an anatomic part.

For example, a common technique to practice via low fidelity simulation is radial arterial line placement. This can be accomplished with either a replica of an arm or a homemade mold made from a mixture of Metamucil® and gelatin inlaid with tubes containing red-dyed fluid. Other examples of repetition simulations include room set up, patient positioning, and AGM checkout. Skill mastery through rote movements and muscle recall is a common end point to low fidelity simulation. As an example, Fawn related:

> *So, we used intubating dummies for the, I remember the first, one of our very first days doing a simulation, ah, we rotated through stations, um, inserting oral airways and starting LMAs and those were used with the sim, ah the head dummies. I mean we used almost every, we had actual, you know LMAs, tubes, blades, different airway adjuncts, everything and like both sim man, the airway head dummies, um, and they also had in depth, almost like, (thinking pause) the anatomy model of the airway.*

Aaron's intubation experience also illustrates skill repetition, "*I mean I think that I intubated the mannequin at least 40 or 50 times before I ever went into the operating room*." Aaron's NAP also afforded their students the opportunity to use their simulation equipment as a means of fostering self-motivated learning. He describes, "*They just always had, they said if you want to come in here and practice, we'll get you in. They made good on their promise, we were able to get in to practice however much we wanted to*."

Learning skills through repetition using simulation is perhaps the catalyst for moving up the pyramid of learning in the psychomotor domain of Bloom's Taxonomy. Although the psychomotor domain was not originally described by Bloom, Simpson (1972) adapted the taxonomy to describe skill acquisition, which was not common in university instruction when the original taxonomy was formulated. Simpson's pyramid includes six levels, starting with

perception, and moving through to set, guided response, mechanism, complex overt response, adaptation, and finally, origination. Skill development requires practice, and is measured in terms of speed, precision, and techniques of execution (Simpson, 1972). Proficiency to the point of adaptation and creativity is the end goal, which continued simulation can afford.

Being able to perform low-fidelity simulation is beneficial to decreasing anxiety, as evidenced by an anecdote provided by Greg:

> *Um, we went up there, met them, went to the OR, opened up like a basic back table and like we had to set it up and then they approved it. And that was like on our own time. Um, which was very beneficial, because, you know, it gets that initial first day jitters out, 'cause you at least have something that you can do. I think the more repetition you do with the, I'm going to call it stupid stuff, but, you know, that's the stuff that's not actually the clinical portion, the set up. If you do that 15, 20 times, then you don't look like a fumbling idiot, for lack of better word.*

Ed also agreed that repetition helped to lessen anxiety when addressing the knowledge of emergency medications:

> *But ah, it just, I think it just was more of just a repetitive thing. Um, and taking away the anxiety. I'm not sure if they actually got, we, if it took away the actual anxiety of being in an actual OR with actual patients and actual um, (slight pause) um, how do I want to say….emergencies. The anxiety was still there.*

Unlike low-fidelity simulations which offer minimum interaction or anatomical representation, high-fidelity simulations are "highly sophisticated, interactive…programs that incorporate life like model interfaces for varying clinical situations along with practitioner reactions and interventions" (Merchant, 2012). This allows for a more real life interface while

practicing skills. Body parts may bleed or have a blood pressure or pulse, mannequins may have breath sounds, blink, or talk back. Standardized patients may be used to practice preoperative assessments and evaluations (O'Donnell & Phrampus, 2017).

Ed used high-fidelity simulation for practicing not only intubations, but for experiencing the associated sympathetic response. As he described, "*Um, so you've intubated and this is how it happens, how it goes up, or blood pressure drops, or whatever the case may be and then you have to respond to those*." Fawn also described much of the same experience:

> *So, for clinical preparation, the big things that we did, was simulation, meaning with simulated intubation, arterial line placement, IV placement and basic skills, um before like the first general rotation. And, we also did a whole day of mock induction. So, going through um, an induction sequence including masking, intubating and dealing with a problem that frequently occurs after induction, such as high heart rate, low blood pressure, things like that.*

Besides using simulation for repetition to learn skills and experiencing normal responses, simulation can also be used to test for skill competency before starting clinical education. Aaron described his experience with this use of simulation in his own NAP:

> *Um, and then we had simulation lab, um where we were able to go in and check off certain basic skills before we ever set foot in the OR to take care of a patient. We had just the dummies for intubating, you know the mechanics of performing a DL, um but then we had high fidelity, um, simulation as well, where the patient would actually blink at you and talk to you and the vital signs were up on the monitor, um, the anesthesia gas machine right there and we were expected to run through a basic induction of general anesthesia, basically, um, that they checked us off on. And, I'm trying to remember if the*

*spinal and epidural simulation was, it was, it was before, before our first clinical rotation, so we also got checked off on placement of a spinal and placement of an epidural on a, not on a high fidelity mannequin. I'm not even sure if that exists for anesthesia, but just on a, on a dummy, basically. But, we got checked off on all those basic skills. They refreshed us on starting IV's even though we had all done it before, they knew that none of us touched a patient since we started anesthesia school so, we just made sure that we were fresh on everything basic, I guess.*

As discussed, simulators may be classified according to their use, such as low and high fidelity (O'Donnell & Phrampus, 2017). Accordingly, simulations themselves can be classified according to their purpose, such as the development of muscle memory through repetition of skills and experiencing real life systemic responses such as bleeding or hypertension. Simulations may also be used as a method to assess preparedness and skill attainment for entry to clinical education. As will be discussed in the next section, RLS as a third classification synthesizes orientation, didactically attained knowledge base, and skill acquisition to prepare for entry to clinical education, and thus move toward competent clinical assimilation.

**Synthesis of Foundation via Real-Like Simulation**

The concept of synthesis was first introduced as the second tier of the Bloom's Cognitive Taxonomy pyramid, which was later redefined and relocated to the top of the pyramid with the new label of "Creating" in Bloom's Revised Taxonomy (Krathwohl, 2002). The objective of synthesis is the ability to combine diverse elements to create and apply as a unit. The lack of understanding how individual parts become synthesized is illustrated in Greg's comment below:

*Which, maybe I missed something, but I definitely felt like it was all this preparation of you need to know this, you need to know this, you need to know this and then when you get there, but like, putting that in and when you need to know it. I was like, Oh!*

Real-like simulation is an interactive experience to facilitate critical thinking and role acclimation through application of a knowledge base and skill set. The RLS scenarios are designed with learner specific objectives, with the content being determined by the placement or positioning within a curriculum and required fidelity availability (O'Donnell & Phrampus, 2017). This usually involves the use of a "patient," ranging from a non-interactive plastic model, to an expensive interactive model such as SimMan®, to a real, standardized patient. The fidelity of equipment does not determine the effectiveness of the simulation. Rather, the goal and design of the scenario is more important than the fidelity of the simulators. O'Donnell & Phrampus (2017) emphasize "relevance over realism" with a "focus on learner engagement, [and] alignment of the activity with learner-specific objectives." The fidelity of equipment is therefore integrated into training designs, not vice-versa.

Examples of scenarios a student might be presented with include performing an induction or emergence, experiencing a difficult airway, or dealing with massive blood loss. To successfully complete these scenarios, the SRNA must synthesize didactic knowledge and skill mastery (simulation) within their new role and environment (orientation). The benefit of RLS is that it provides understanding, repetition, and strategizing of real world situations before they are experienced in the real world. RLS provides an experiential context which not only prepares students for their new role but for application of a knowledge base and skill set to allow for safe and efficient anesthetic administration.

For RLS to be most effective, it needs to be offered before clinical experiences to allow for synthesis of the preparational triad and to provide experiential context. Effective RLS as a pre-clinical preparation method is also dependent on the content of material presented in each leg of the preparational triad before clinical education is introduced. As important as RLS is to pre-clinical preparation, a robust knowledge base must be present to be synthesized. For example, Fawn started clinical education eight weeks into her NAP. The curriculum for those three months was specifically geared towards laying a foundation of basic knowledge needed to prepare for clinical entry through the triad of didactics, simulation, and orientation. When asked if she felt adequately prepared to start clinicals, she said:

> *Yes, I do. And, I do, because of simulation, mock induction, being able to get hands on with the machine before it became a case. The preparation for clinical was huge there and it was and even with skills, that was the most nervous, but I had intubated the dummy. I just needed to, you know, take that next step and simulate that. It was just, it became real life.*

For Fawn, RLS was the key to synthesizing the information she was given prior to starting clinical education. During our conversation, Fawn said she was "100% comfortable" starting clinical education but thinks even more RLS would have been beneficial:

> *Like, doing induction, maintenance, emergence and having people simulate those roles. And getting more in depth with that, then I think I would've felt even more comfortable. Um, but and even throwing in I remember with mock induction, I remember they would throw in a complication, afterwards, like I said: high heart rate, low blood pressure, that they're light, or that they're too deep. Even going through and simulating, you know,*

*simulating early on, um, complications with emergence in that same day through a sequence would have really, I think brought it, my comfort level higher.*

Hugo graduated from an entirely front-loaded program. All of his didactics were completed before clinical education, with the only simulation being basic skill practice, such as intubations. His program did offer RLS, but it was not positioned in the curriculum until well into clinical education. Hugo explained his experience thus:

*It was just putting it into practice and learning the art of giving anesthesia, like we knew the science behind it and the reasoning, like we were very well versed in that, but to actually put it into play and physically, you know deliver the entire perioperative experience to a patient from an anesthesia point of view, that was the hard thing to master. Um, (long pause, thinking) I guess "adequately prepared", yes, because I was able to function and to do it and we all were. Um, but I don't think that we were prepared to the best we could've been if we had had, you know, our simulation front loaded and you know practice all of the induction sequences and done a lot of that stuff prior to walking into the operating room. I feel like we would've been much, our, our, our learning curve would've been much more shallow.*

In contrast to Hugo who had strong didactics, basic simulation, and no RLS, Bree and Carol had very little content within any facet of the preparation triad prior to starting clinical education and felt grossly unprepared to care for patients. Neither experienced RLS, or much of any simulation for that matter. On the other end of the spectrum, one can only imagine using RLS as an independent preparation strategy without a knowledge base to draw from. SRNAs would be faced with real-life scenarios to manage without the knowledge to recognize an issue or appropriately respond and treat, let alone know what their anesthetic role entails. Their

"patients" would not fare well. If you take a step back, this was exactly the experience Bree and Carol were faced with during their first clinical experience, except their patients were real people, not simulators. Accordingly, both Bree and Carol labeled their first clinical experiences as traumatic, which is not hard to imagine given the paucity of resources with which they were provided.

The importance of RLS in preparation for entry to clinical education is paramount, in that it synthesizes the preparation triad to promote efficacy, safety, and familiarization of the role and clinical expectations inherent to the profession of nurse anesthesia. Inadequate content or lack of instruction of any facet of the triad does not lend to the ability to provide effective RLS, if at all. Therefore, a less than competent, or negative, assimilation to the clinical environment is experienced.

**Negative Assimilation**

Poor depth or quality of any of the components of the preparational triad, coupled with little to no RLS, results in a negative assimilation to clinical education. This is represented on the upper left hand portion of Figure 2, the TCA model. Negative assimilation manifests as a multi-faceted phenomenon with three components, each of which are comprised of three additional subcomponents. The first step is unknown expectations, which produces nervousness and anxieties, being overwhelmed, and of having a traumatic experience. The second is a lack of safety, yielding fear, identified lack of support, and feeling thrown to the wolves. Lastly, distress creates feelings of inadequacy, disdain and disappointment, and finally despair. The manifestations of a negative assimilation are diagrammed in Figure 5.

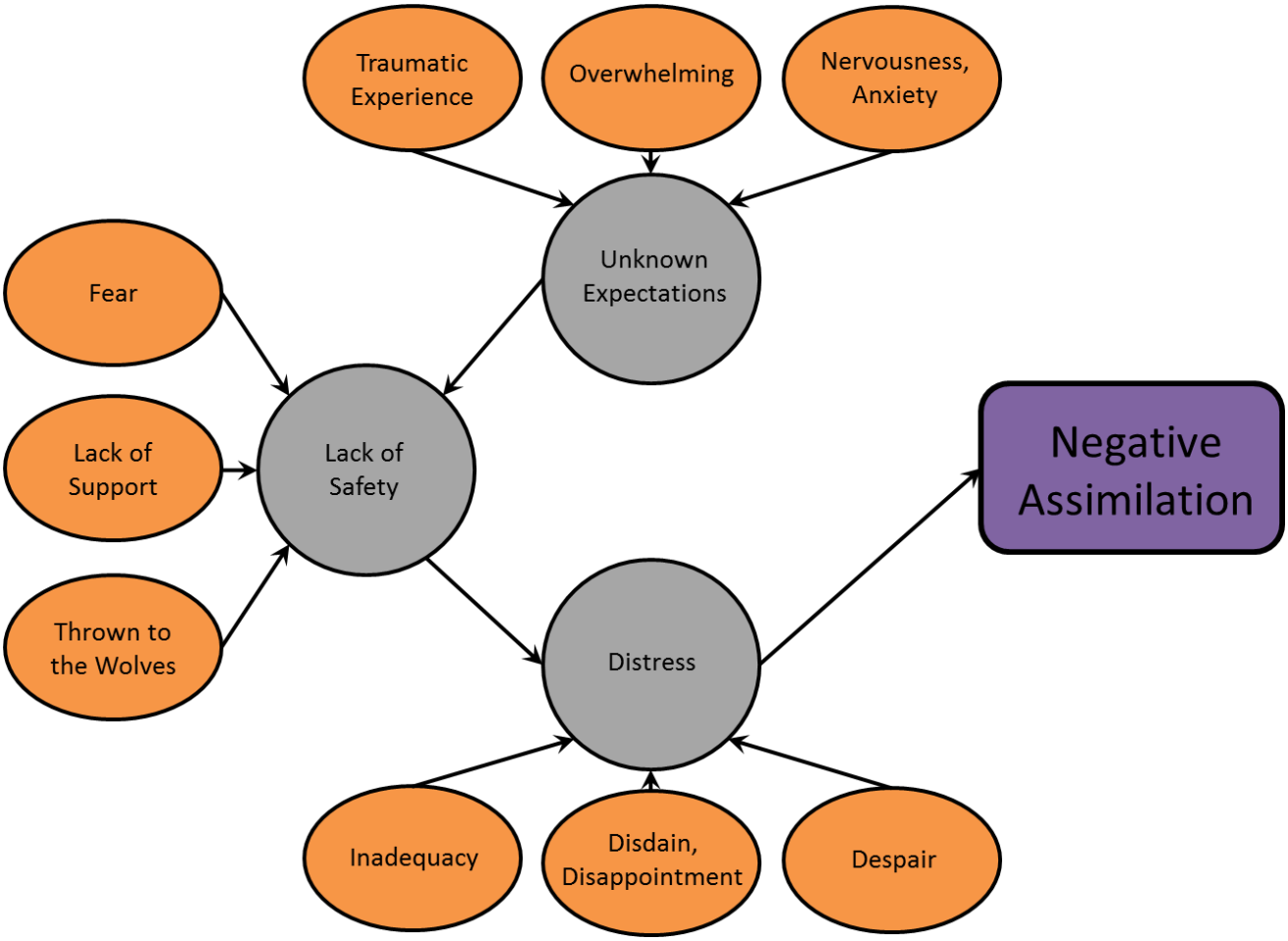


*Figure 5.* Negative assimilation.

**Unknown expectations.** Unknown expectations stems from inadequate preparation. Therefore, the SRNA does not have a foundation to draw from to know what to expect in clinical practice. All eight of the participants felt some level of anxiety or nervousness related to starting clinical education, but it was clear that those with the least amount of preparation harbored the most anxiety. For instance, Darrin did not have much simulation prior to starting clinicals, and he described his experience as "*nerve wracking*." Bree had very little preparation overall, and described her experience as "*horrifying*." Aaron professed a positive assimilation, but even he expressed "*I guess the comfort level didn't exist probably, it was more of an uncomfortable level.*"

Accordingly, those with the least amount of preparation considered their first clinical experience as overwhelming. Carol, who had virtually no preparation during the 2.5 weeks prior to starting clinicals, illustrated her feelings in the following excerpt from our interview:

> *Carol: Yeah, that was probably the worst of it and I think as well, I remember that particular summer I ended up doing a lot of really advanced cases that I probably shouldn't have been doing like peds cranies and a lot of backs. (sarcastic chuckle) Things I probably shouldn't have been doing, so that made it even worse.*
>
> *Author: Why did you feel that you shouldn't be doing them?*
>
> *Carol: I'm just trying, I thought I'd just try to do basic airway technique and you know just try to actually keep a patient asleep and learning anesthesia techniques. And, it was just very overwhelming.*

Bree had a similar experience due to lack of preparation:

> *I just felt really overwhelmed to because we had to look up cases and um, and you know juggling the in class work, plus looking up cases and learning surgical procedures in addition to our responsibilities as an anesthesia provider. It was incredibly overwhelming.*

Both Carol and Bree felt as though they were placed in cases way beyond what their preparation afforded them to be capable of performing, which led to being overwhelmed with their situations. While a certain amount of anxiety can be healthy, stimulating, and motivating (O'Donnell & Phrampus, 2017), too much anxiety leads to the feeling of being overwhelmed, which can be counterproductive to learning.

The best illustration of a traumatic event resulting from lack of preparedness is illustrated in this prolonged excerpt of the interview with Carol:

*Author: What was your expectation the first few weeks, what was expected of you those first few weeks?*

*Carol: Um, just basically you know how to, doing your preop exam, um, and ah coming back to the room and then getting the patient over, positioning. Obviously, getting ready for the induction and ah, getting the patient off to sleep.*

*Author: From day one?*

*Carol: Yeah, yeah. (whispered, painfully) That was a long time ago.*

*Author: Yeah, ok. So, did you have any idea what your role was supposed to be, since you hadn't had any…*

*Carol: Not really. (forcefully, slightly with anger)*

*Author: No?*

*Carol: No*

*Author: Ok, ok, um. So do you think that you were adequately prepared to start? And, why or why not?*

*Carol: No, (sarcastic laugh) no (saddened laugh) No, just because of the lack of preparation, you know for clinical.*

*Author: Yeah, ok. Um, what was your comfort level during your first clinical rotation?*

*Carol: "Long sigh" Um, yeah I didn't feel comfortable at all. (pause) Very stressful. (Deep sigh) Well, um, it's hard to say because, we really didn't learn about the anesthetic gases until August when we started with Dr. Nagelhout. So,*

*Author: But, you were expected to administer them beforehand.*

*Carol: Yes, (long, painful pause)*

*(At this point Carol reached over to the recorder, crying, and turned it off, stating it was too painful to discuss and continue. She apologized because she was trying to be professional about it but she couldn't keep her emotions out of the conversation. I explained to her that if she could, it's this type of emotion that I would like to explore to be able to research how preparation influenced first clinical experiences, and hers was definitely not pleasant. The recollection of her experience could help others through my research. Knowing this, she said she would continue…)*

*Carol: You know I sort of pushed it in the back of my mind, (nervous chuckling throughout, very passionately) but any, you know talking about it, I'm like no really, I wasn't over exaggerating.*

Speaking to Carol was painful for me, too, as I could fully imagine what she had experienced. This further solidified my resolve to complete my research so that other SRNAs would not go through what Carol, four years past graduation, was obviously still carrying with her.

**Lack of safety.** Lack of safety due to a lack of adequate preparation manifests in three different ways: fear, lack of support, and the feeling of being thrown to the wolves. Fear is reflective of a few causes, the obvious cause being fear of the unknown due to lack of preparation. Fear can also be instilled by the school as a preparation tactic, to the effect of "you better know/learn it or else." This type of purposely instilled fear breeds unnecessarily high levels of anxiety. Bree paints this picture of her experience:

*They were ah, they instilled a healthy amount of fear in us, that you know we expected, we were expected to perform at a certain level, um, at any moment, we had that fear of being thrown out of the program, because we had heard of situations prior to us being there. We had also heard about being thrown out of rooms. So, to think that we would*

*do our, all that work and all that preparation, to come in and for whatever reason, could be arbitrary reason, they would say, nope, get out. So, it was very fear based in our program.*

Greg described his very first day in clinical, for which he was assigned an open heart case. His fear, which was based on inadequate preparation to be able to care for a high acuity specialty case, drove him to a state of inaction, which could have put the patient in peril.

*So, first day I'm in a heart and the anesthesiologist actually left the room. Um, which in his defense, super nice guy, he knew me when I worked in the OR, so in his mind, I don't know if he put together that it was my first day in anesthesia school, because he knew me. So, he was in there for like 10 minutes, then pffff, he was gone. I remember the blood pressure shot up and I'm freaking out in my head and the surgeon looked over and he's like, "are you gonna do something about that?" Um yes? It was like, "where's [blank]?" I won't say his name. Ah, so he called over and got him back in there and like the propofol was sitting there and I'm like everything in me told me push it, but like what if, like I don't know if that's a great idea. What if his pressure went down to 60 because I pushed too much?*

This particular story not only illustrates fear, as Greg was aware he did not know what he needed to know, but lack of support from his school and preceptors. The anesthesiologist he was assigned with left him alone on his first day, and his school gave him an assignment typically reserved for more senior students advanced in their programs and training.

Purposefully instilling fear, demanding self-instruction without support, and utilizing on the job training as the primary pedagogy are older, archaic methods of instruction. Anesthesia practice has grown substantially to demand extensive knowledge of the science and technology

behind the art. Practicing without this knowledge base puts the patient in harm's way. This stance is reinforced in a study by Killam et al. (2012). Their study evaluated senior baccalaureate nursing student perceptions of unsafe clinical practices. Two out of the top three indicators for unsafe practice included repeated deficits in knowledge and performance of fundamental clinical procedures and premature and inappropriate clinical progression. NAPs need to recognize that expecting clinical practice without a proper foundation and synthesis is doing a disservice to both their students and their patients.

**Distress.** The final part of the negative assimilation phenomenon is distress, which manifests in feelings of inadequacy, disdain and disappointment, and despair. At this point SRNAs begin to question whether they will be able to complete the NAP, or if the nurse anesthesia profession is for them. Greg mentioned while describing his first experience," *And I thought that I was, ah, made a big mistake, because I am so lost.*"

Major feelings of inadequacy ensue. Darrin described his first day, "*Like, I was scared to death to do anything, and really my first day I just wanted to watch.*" He goes on to explain, "*And now, I have to figure out a way to prepare for cases and you go into the OR and just immediately throw your care plan out the window and, and they make you do it their way, and so, none of it really mattered. (frustrated chuckle).*"

It was clear during the interview process that the disappointment did not only lie with their personal performances, but with their individual NAP in the context of support and curriculum design. Carol expressed much frustration with how her NAP was designed to the point of embarrassment. After I thanked her for her participation at the end of the interview, Carol said, *"(relieved laughing) You're welcome. You know, people are going to be like, 'where did that person go to school?' (more laughing).*"

Finally, despair creeps in, or rather, it could hit like a ton of bricks. Greg explains, "*I remember being, being very tired and overwhelmed and I remember feeling that, I went home and told my wife, I thought I had made a mistake.*" Carol's account was heart wrenching:

*Author: But, you made it.*

*Carol: (despaired laugh) I don't know how. I just climbed my way out. Yeah I don't know how we did it, but then again, I hadn't what, well, two people never passed boards in our class and someone took, I think three tries. This is funny. (sad chuckle) Yeah, anyways. (more chuckling, then softer) I tried.*

Although none of the participants felt despair enough to quit their NAPs, it's clear that the amount of distress caused by inadequate preparation and therefore a negative assimilation to clinical education could bring a SRNA to the point of giving up. Thankfully none of the participants reported any harm to their patients, but given the amount of distress and self-doubt reported, it's not beyond the realm of possibility it could have driven them to abandon their quest to become a nurse anesthetist.

A review of literature exposed an attrition rate for NAPs to be 7.7% $\pm$ 9.1% (mean $\pm$ SD) in a study designed to determine NAP attrition rates and causes (Dosch, Jarvis, & Schlosser, 2008). Key reasons for attrition by resignation were found to be "personal or health reasons; poor academic performance; unawareness of time commitments, job role, or responsibility of a CRNA; poor clinical performance; or impairment" (Dosch et al., 2008). Another study conducted by Waugaman and Aron (2003) to determine vulnerable time periods for attrition during SRNA education found improper socialization to the professional role to be the main cause of attrition. Most of the above reasons could result from a lack of proper clinical preparation in the form of orientation, didactics, or simulation, which would cause not only

negative assimilation, but abundant distress leading to attrition. Hopefully, recognizing the impact of negative assimilation within the context of TCA will stimulate NAPs to look at their curriculum to prevent the negative phenomenon.

**Positive Assimilation**

The right side of the TCA continuum symbolizes positive assimilation to clinical education through a substantive foundation of the preparational triad, synthesized through use of RLS, and is depicted on the right side of the TCA continuum found in Figure 2. Positive assimilation is also a multi-faceted phenomenon, comprised of three components, each with two modules. Known expectations are derived from an unwritten contract with their NAP and the SRNA's personal ambitions for self-motivated learning. Safety is divided into the safety and security provided to the SRNA, and safety provided to the patient. Gaining confidence includes excitement towards learning a new profession, and coping and self-assurance throughout a program. A schematic of positive assimilation is provided as Figure 6.

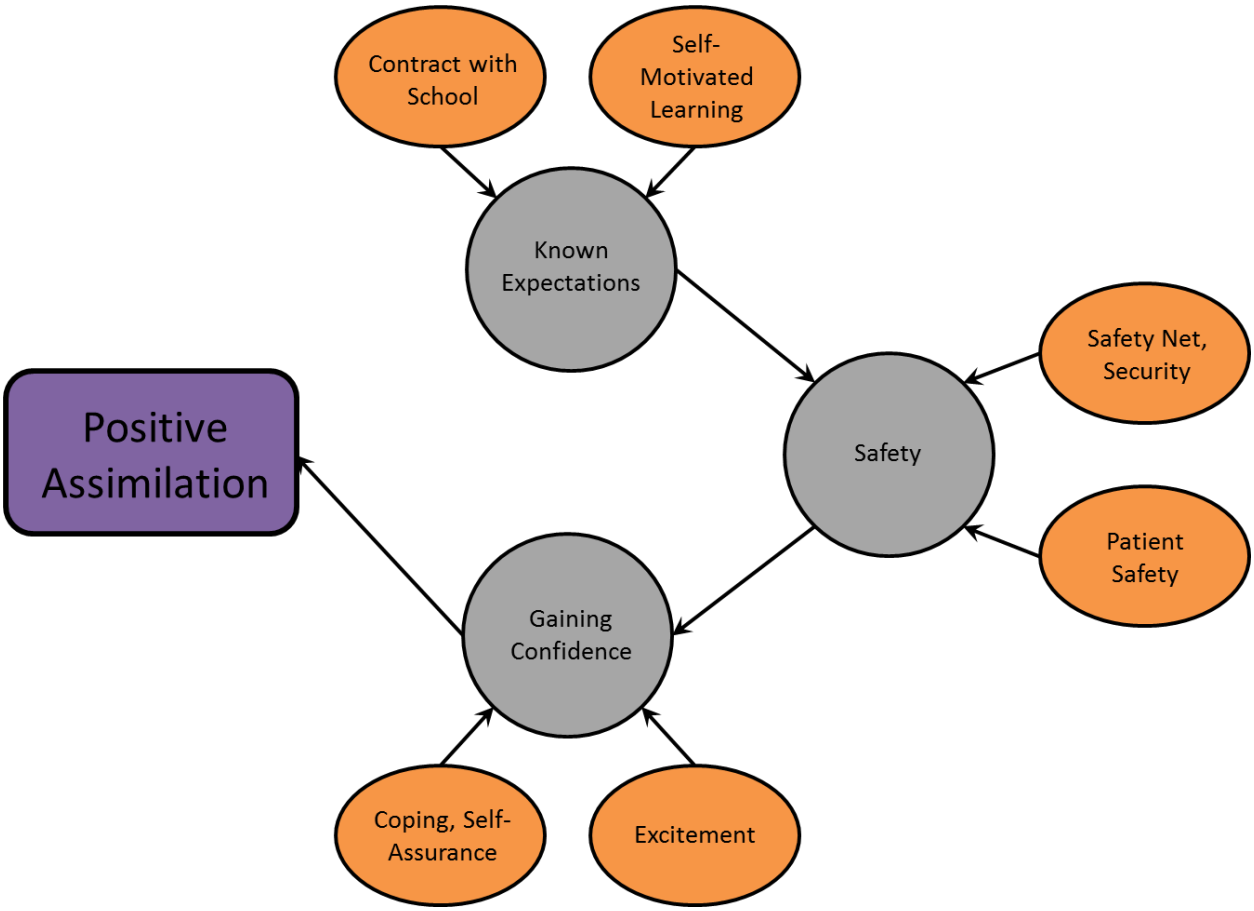


*Figure 6.* Positive assimilation.

**Known expectations.** Positive assimilation starts with known expectations from the school and of self. The recognition of expectations is important, but the accountability and follow-through of these expectations is paramount. Participants reported an unofficial contract with the school, which reflected an expectation and trust that their NAP would commit to provide the educational content and opportunities necessary to successfully learn their new profession. NAPs fulfill this commitment in various ways, such as providing essential pedagogical education. An example is the expectation the school will ensure the SRNAs are ready for clinicals. Ed explained, "*So we did have to actually pass an exam on that before going to the OR, actually before you even do anything, we had, the first week, we had to pass the test.*"

Providing extra help when needed is yet another example of fulfilling this contract. Greg remembered, "*And one of my classmates, I remember she really struggled with intubation her first like two months. And ah, they did a lot for her. She did a lot of like, you know, extra outside clinical practice and stuff*." Keeping sim labs open after hours for students to use is yet another way NAPs fulfill this contract. As Aaron explained, "*They just always had, they said if you want to come in here and practice, we'll get you in. They made good on their promise, we were able to get in to practice however much we wanted to.*"

Aaron's memory segues to the next facet of known expectations. Students can not singularly rely on their NAPs to impart all learning without any individual effort. SRNAs must commit to self-directed learning, being cognizant of their own needs and limitations, and be willing to put forth the effort to learn within their pedagogical strengths. Aaron recognized he needed extra simulation to perfect his skills and took advantage of his NAP's sim lab after hours, as did Fawn and Greg. Hugo created his own self-directed simulation opportunities:

> *So I would continue to have simulation experience that I provided myself, where I would go take a fiber optic cart and an airway dummy and I would just go into a closed operating room later in the day and I would practice my fiber optic throughout like the clinicals, so I provided myself I guess with additional simulation experience through that.*

Darrin illustrated his self-direction towards clinical preparedness, which is not unlike other participant's recollections:

> *I still have this beautiful, really nice fanny pack. And I carried like 5 books in it. All just like, you know, short terms, there was just so much stuff that I would try to spend all night long trying to get ready. Then you'd go into the OR, 5:00, 5:30 in the morning to prepare for things. You know you're tired, you have to start looking stuff up. So, I*

*wanted to have as much resources as I could on me. So, I was the guy that carried the fanny pack everywhere.*

Darrin's wife had major surgery during the beginning of his program, and he felt that he was always behind as he spent a large amount of time caring for her. When asked what his NAP could have done better, he recognized that because of his family circumstances he would need to be self-motivated with self-directed learning to make sure he was able to keep up with the curriculum. He explained:

*So, ah, I guess it probably would've been more on me, preparation wise. It's hard for me to a really stick a finger at something else and say this should have been done better, that should've been done better. Or they didn't. I always come back to myself, what could I have done better?*

The data demonstrates that the fulfillment of the NAP's contract to provide pedagogical instruction, substantive content, and educational resources outside of the normal class time is expected by SRNAs. In addition, students must not be passive learners, but must identify their individual needs and through self-directed learning move to bridge the gap of knowledge and skill. They must take accountability for their learning and individual preparation, taking advantage of extra educational opportunities or by creating their own.

The concept of self-reliance was discussed by Colleen Sunday in her dissertation work (2015), which explored the experiences of female doctoral nursing students who completed their degrees. Her research found that the doctoral nursing students who completed their studies demonstrated self-reliance as an attribute. They were self-motivated, organized, and accepted responsibility for the progression of their work. Sunday's findings could also be applicable to

describe success in graduate-level nursing education globally, as her findings of self-reliance and self-direction are mirrored in my study.

**Safety.** The next part of positive assimilation is safety, which has two facets: safety net and security for the learner, and of great importance, patient safety. Although two facets were identified, they are not mutually exclusive. Safety and security for the learner entails knowing the school and clinical preceptors are available to the learner and will provide the learner with proper instruction and support. Bree felt this support at her first clinical location, "*And, I think that was a really good first clinical rotation, because they were very student friendly. They were welcoming, um, encouraging of the learning atmosphere and asking questions.*" Although Carol has reported a traumatic first clinical experience, she expressed comfort with her CRNA preceptors, "*Ah, just watching the CRNAs and whoever I was with, you know I told them up front that we didn't really have anything, so they would have to walk me through it.*"

Having the initial support of preceptors was a critical step in ensuring patient safety. As Aaron explained, "*You know you have a mentor right there next to you as a resource and to stop you if you were going to do something dangerous.*" This falls into the realm of knowing and not knowing, and recognizing the consequences of actions or inaction. As Darrin was older and had more years of critical care experience than others in his cohort, he felt his experience differed from that of his younger classmates:

> *Darrin: Yeah, well, different perspective and, and maybe, you know, I had the perspective of knowing from experience, a little more than the ones that were so much younger, so a little less experience, that they didn't know.*
>
> *Author: Know, like the consequences of your actions?*
>
> *Darrin: Yeah, or not just actions, but ah, outcomes. So, ah*

*Author: So you were worried about hurting somebody?*

*Darrin: I would've thought all the time, still do.*

Ed attributed patient safety to being prepared to perform:

> *Yes, I think it was always stressful in that, stressful, because you don't want to do anything to harm the patient and you don't want to do anything to make yourself look bad. Um, but, the way I was able to deal with it is, clinically I knew I could do it, I just may not know how to do things here, but I felt that I was ready to do it. So, all I needed to do was learn how you do it here and be safe in that process. Be as safe as I can, so that meant coming in very early, decreasing some of the anxiety and just focus on what is important. That's basically the way I did it.*

In summary, safety in the OR was attributed to having safety and security in preceptor support and being prepared to perform clinically. Knowing that someone would be physically at their side during their first clinical experience to monitor their actions and prevent them from doing harm decreased anxieties and ensured patient safety, and thus a positive assimilation. Also, having the knowledge and skills necessary to be prepared to provide anesthesia care greatly attributed to patient safety, again attributing to a positive assimilation.

**Gaining confidence.** The last component to positive assimilation is gaining confidence, which is composed of the facets of excitement and coping/self-assurance. Excitement occurs when the student begins to realize their goal of becoming a CRNA is not out of their grasp. It starts with an initial reaction of starting a new path in life, as evidenced by Ed:

> *Um, nervous, ah, maybe a little bit naïve to a point, and well excited at the same time. I think it was nerve wracking because, just because it was a new experience. I never experienced anything like it before. And, it is different when you actually have a person*

*in front of you. Ah, the assessment was a little bit different, you know meeting the patients, and interviewing and talking to them. Ah, but exciting that you are starting a new thing, a new career and I wanted to learn everything, I guess was my excitement.*

After the initial excitement of a new beginning and adventure, excitement builds with the knowledge that one is prepared to perform. Although Hugo had expressed a desire for RLS prior to starting clinicals in his front-loaded program, he found joy in knowing he had a great didactic foundation to begin clinical administration of anesthesia:

*Author: Ok, alright, so before you hit clinical, you actually knew except for some advanced things, you had a nice didactic foundation of everything you needed to know.*

*Hugo: It was awesome, yes.*

*Author: That's great.*

*Hugo: I loved it!*

Even with a strong foundation and RLS, there are still anxieties, fears, and self-doubt to be dealt with. Each SRNA needs to find a healthy, personalized mechanism to learn to cope and provide self-assurance. Sometimes the answer is as simple as a pep talk, such as Aaron's account, "*So, I think that it was just kind of a nervous, because it's new to you, but yet, beyond that there was no reason to be scared.*" Ed would also give himself a vote of confidence, "*The way I was able to deal with it is, clinically I knew I could do it, I just may not know how to do things here, but I felt that I was ready to do it.*"

Practice and repetition helped Darrin:

*At the given moment, maybe I was a little more cynical than I probably should've been, but getting into the OR, I would say, any chance you get to start to practice what you want to say and rehearse how you want to speak to somebody, maybe makes you sound a*

*little more confident. It makes you seem a little more competent and the patient then gets a little better feeling.*

Knowing resources are available is another way to cope, again as evidenced by Darrin's account:

*And I would wear the coat, so that I could put lots of things in my pockets, cause being a nurse and you know, having nurse pants with all the pockets on the sides and stuff, I was always one to just load up on junk. That's why I thought, I would take, you know, up to the OR. That was my comfort measures, really.*

Greg tried to keep looking at things positively. Instead of telling himself it was too hard, he would look at his experiences as positive learning opportunities. "*And so, it kind of pushed me that much farther and harder. So, I don't know. The benefit is, I think it's good sometimes to be overwhelmed.*" I myself relied on pep talks and grit to get me though. I recall a feeling of total performance inadequacy and was contemplating withdrawing from school. Then I thought of all the others who went before me, and all those who would go after me, and determined if my NAP accepted me, they thought I was capable, and therefore I would not become a casualty.

The excitement, coping, and self-assurance that contributes to a feeling of confidence provides a feeling of satisfaction for the SRNA, as well as promotes confidence to patients, preceptors, and OR staff, lending to a positive assimilation to clinical learning and the OR environment. Anxieties and fears are lessened, and greater learning can ensue due to the absence of distress. Both psychological and patient safeties are enhanced, and expectations of self and the NAP are defined promoting a stable learning platform. These three key concepts of gaining confidence, known expectations and safety comprise the positive assimilation aspect of the model. Positive assimilation has thus occurred, providing a great springboard for clinical education.

## Theoretical Models

Two theoretical models were used in this study. Both Symbolic Interactionism and Benner's Novice to Expert Model were chosen as their premises seem to be directly applicable to the study. After completing the study their applicability was certainly deemed appropriate, and in fact led to new insights described below.

### Symbolic Interactionism

According to SI, humans respond to a situation depending on how they define it through past interactions, spoken and unspoken language, and concept of self. (Aldiabat & Le Navenec, 2011; Charmaz, 2014). Charmaz (2014) further explains that SI "views interpretation and action as [a reciprocal a process]" which "recognizes that we act in response to how we view our situations." As a personal example, I started my neuroanesthesia rotation on September 10, 2001. On the second day of this rotation one of the most tragic events to occur on American soil took place, which is ubiquitously referred to as "9/11." I was a student at the University of Pittsburgh who happened to be sitting in a research class that day. I will never forget how the professor turned white and had to sit when a messenger from the Dean arrived to alert us to the situation of planes crashing into the World Trade Center and the Pentagon, and sent us home. In the traffic leading home to our duplex on the north side I learned from the radio that another plane crashed somewhere south of Pittsburgh. Later that day I received word from my program that clinicals were canceled for the time being; however we were to be on alert to mobilize in the event we would receive any wounded from the attack. As we all know, none came. In the subsequent weeks that followed, elective cases were on hold, with residents being assigned to any neuro emergencies that were booked. In total I took part in only two neurosurgical cases during that rotation, and was left with a negative connotation for neuroanesthesia which incites

both a fear and distaste that persists even today. To frame my experience through SI, the extreme event and lack of cases which occurred during my neuroanesthesia rotation has caused me to approach this specialty as stressful, and view myself as professionally inadequate to perform this type of anesthesia. Thankfully and gratefully, when I do find myself with such an assignment, I usually finish the day with a sense of relief and pride that I was able to safely and adequately perform, and subsequently chastise myself for my negative assumptions.

This example is reflective of the experience of SRNAs entering their first clinical rotation. To describe within the framework of SI, having a negative assimilation to clinical practice can have far reaching consequences throughout one's career. Bree had a negative assimilation, and even four years post-graduation, still harbors bitterness towards her NAP as she blames her traumatic experience on her program. She felt grossly unprepared for her first clinical experience, and thus incompetent, which was a huge difference from her previous role as an expert critical care nurse. Bree self-explained her feeling of incompetence as a product of her NAP's inadequacies, and was bitter and embarrassed while completing her program. Even with these feelings, her view of self as a competent clinician did not change as she felt her incompetence was a result of not given the tools to succeed by her NAP. However, her feeling of incompetence and lack of preparation, and thus starting clinical education as an advanced beginner, led to a negative assimilation, and consequentially, a pervasive bitterness.

Carol's traumatic experience became evident to the point of needing to suspend our interview momentarily so that she could compose herself and cope with her feelings before proceeding. Again, she came to her NAP as an expert critical care nurse, but not having any preparation for clinical education gave her no choice but to start as an advanced beginner. Unfortunately, she equated her feeling of incompetence with inadequacy and self-doubt. After

our interview, we ended up talking about how her first clinical experience made her feel inadequate throughout her entire program, with these feelings persisting into her professional career. Carol has allowed her first clinical experience to question her professional adequacy and is still filled with self-doubt. SI explains how the negative experience with her initial clinical rotation has led to how she defines herself professionally. We then looked at all she had accomplished since Carol started with her career, and when I mentioned she had become skilled in high-acuity cases by being a member of the open heart team, she relaxed with this realization and mumbled, with both slight hesitation and a smile, "*Maybe I did make it."* Although both participants had negative clinical experiences which have affected them professionally, they chose to overcome, and remain passionate about their careers and making experiences better for future SRNAs. Both Bree and Carol are currently enrolled in DNP programs. Bree is now an Assistant Director of an NAP to ensure SRNAs do not have the same educational experience, and Carol is focusing her capstone on SRNA orientation to clinical education.

Aaron and Fawn both declared positive assimilation to the clinical environment, and met their initial clinical rotations with excitement and confidence. Through strong pre-clinical preparation curricula at their respective programs, they were able to start clinical education as competent SRNAs. Although not practicing at the same expert level they had left as critical care nurses, they recognized they had the tools to proceed with safety and confidence, and thus a positive, competent assimilation. Both stated that they felt "they could do it" and would use this mantra to maintain their confidence. At the time of their interviews Aaron had only been practicing for two years, and Fawn for one, but they both started their professional careers with the same excitement and confidence that made their coworkers think they were seasoned practitioners and not new graduates. The definition of their clinical selves as competent

clinicians persisted when starting a new clinical experience in an independent, certified, professional role. Early in their careers both volunteered and took on leadership roles and big projects, and no one questioned their abilities for these roles as being "newbies" as their approach and actions were that of experienced practitioners.

It's clear that assimilation to clinical education and practice has far reaching implications beyond the first rotation. The interaction from moving from an expert critical care nurse to that of an advanced practitioner leaves one with feelings of inadequacy and possibly self-doubt. However, starting clinical education with a positive, competent assimilation motivates and instills confidence. Negative or positive assimilation becomes a frame of reference for how one remembers or approaches clinical practice both as an SRNA and a CRNA, and if negative, is up to the individual as to his or her response. Succinctly, the anesthetist can decide to quit, to always hold on to the negative connotation, or to move past it and succeed. Bree and Carol both view their clinical experiences as stressful and traumatic, and their responses to clinical experiences were, and continue to be, reflective of this view. Conversely, Aaron and Fawn viewed clinical experiences as exciting and a worthy challenge, and their responses to clinical experiences also reflect this view. Symbolic Interactionism is a critical component to nurse anesthesia clinical education, as clinical preparedness provides a frame of reference towards clinical practice and education, and shapes that mindset for years to come.

**Benner's Novice to Expert Model**

As discussed in Chapter One, Benner's Novice to Expert Model describes five benchmarks of clinical practice: novice, advanced beginner, competent, proficient, and expert (Benner, 1982). The application of Benner's Model to SRNA education was described in Chapter One using the designation of novice as the starting point of a SRNA's education. The

rationale for this assumption was based on the SRNA entering a new profession, akin to a pre-licensure student entering the profession of nursing. However, it became clear during this research that the original model is not directly applicable to SRNA education, as it describes benchmarks of initial learners who lack prior professional knowledge, thus making the model applicable to pre-licensure education. Advanced practice nursing education, however, requires that all students be nurses, and specific to nurse anesthesia education is the pre-requisite of critical care nursing experience. As such, SRNAs already have a working knowledge of emergency drug administration and titration, basic and advanced patient monitoring, intravenous line placement, and physical assessment skills. Dependent on other certifications, such as Advanced Cardiac Life Support, or critical care roles such as flight nursing, SRNAs may also be versed in airway management and ventilator therapy. Many schools choose to administer a basic critical care exam to all applicants to test for a required knowledge base, and others will test during the first few weeks of didactics to see what remedial help on basic knowledge may be necessary, thus signifying critical care knowledge is essential to nurse anesthesia practice.

It was this realization that led to the discovery of a new application of Benner's Novice to Expert Model to nurse anesthesia education. The body of knowledge SRNAs bring to their education therefore starts them at the benchmark of advanced beginners. They may be novices in the administration of anesthesia, but they are not novice nurses. They may not be able to perform an anesthetic but would know basic critical care for application to their new practice. For example, the new SRNA would know what to do in the event of asystole, hypotension, or to troubleshoot a dampened arterial line waveform. However, the application of critical care nursing skills and knowledge base may seem challenging in a new environment with new role expectations. Part of the difficulty is the new-found autonomy inherent in nurse anesthesia

practice, in which the SRNA would be able to apply their knowledge base without a physician order to do so. That being said, their critical care knowledge base is not enough to safely or effectively administer an anesthetic as they do not possess an anesthetic knowledge base, which is why advanced beginner sits on the left side of the TCA continuum, associated with a negative clinical assimilation.

Carol and Aaron's experiences illustrate the wide dichotomy between starting clinical education as advanced beginners and competent practitioners, which is also the dichotomy between negative and positive assimilation. Carol started clinicals only two weeks into her program, with an extremely limited introduction to anesthesia. Essentially, all she had in her arsenal to begin her clinical education was the patient care knowledge she had accumulated during her years as a critical care nurse. Unfortunately, this knowledge did little more than help with a portion of a pre-anesthetic assessment, patient monitoring, and knowledge of the few similar medications used in anesthesia she was familiar with in her previous position. Being that the knowledge base she possessed was grossly inadequate for the prevision of anesthesia, her participation in anesthetic care was initially stressful, traumatic, and unsafe. Thus, Carol began her clinical education as an advanced beginner, and experienced a negative assimilation as graphed on the TCA continuum.

Aaron experienced a much different introduction to clinical education. His NAP took a few months to build on his critical care knowledge base to add basic anesthesia specific information necessary to safely and effective deliver proctored anesthesia care. Aaron was afforded education on anesthesia specific medications, techniques, and necessary advanced skills, as well as orientation to the process, the anesthetist role and the environment. In other words, he received a strong foundation with education in each of the preparational triad of

orientation, didactic, and simulative instruction. In addition, he also received substantive RLS to synthesize his new anesthetic knowledge base, providing the experiential context necessary to advance in Benner's model. Aaron's pre-clinical preparation afforded advancement to the level of competent practitioner as defined by Benner, and subsequently a positive assimilation when graphed on the TCA Continuum.

The right side of the TCA continuum assigns the competent benchmark to positive assimilation, which is what lends to TCA's namesake. As described in Chapter Three, the competent nurse has accumulated a level of past experiences which enables organization and prioritization to enter into his or her practice of managing eventualities. Speed and flexibility may not yet be optimized, but they benefit from "practice in planning and coordinating multiple, complex, patient care demands" (Benner, 1982). The key to obtaining experiential context prior to commencing clinical education, and therefore catapulting the SRNA to the benchmark of competent practitioner, is RLS. The purpose of RLS is to synthesize the components of the preparational triad, so a strong foundation must be laid with orientation, didactic, and simulative instruction for RLS to be effective. Without substantive RLS and a strong preparational foundation, clinical assimilation sets itself at a point on the left side of the TCA continuum, leading to negative assimilation as an advanced beginner.

## Conclusion

The Theory of Competent Assimilation describes a continuum of clinical assimilation, which is contingent on clinical preparation prior to the commencement of clinical education. A foundation comprised of a preparational triad including the instructional components of didactics, simulation, and orientation is the basis for clinical preparation. The content of each component should be geared toward providing a minimum basic knowledge and skill base which

will allow a student to clinically perform safely and effectively. However, the content of each arm of the triad does not ensure competent, positive assimilation to clinical practice. The key is the synthesis of foundational components through substantive use of RLS. RLS provides not only synthesis of a knowledge base but also provides an experiential context from which a student can draw, creating competent entry to clinical learning. This positive assimilation in turn allows the SRNA to interpret his or her experience as a positive environment, and through the SI model, associates clinical learning and practice with a positive connotation. Chapter Five will serve to reflect on these findings, discuss meanings and understandings, and provide implications and relevance of the study.

# CHAPTER FIVE

# REFLECTIONS ON THE FINDINGS

The findings of this research using Constructivist Grounded Theory methodology suggests that the key to competent, positive assimilation to clinical education for SRNAs consists of a foundation rich in content, with synthesis of foundational components through RLS. RLS provides `experiential context for clinical application, which elevates the SRNA's practice from advanced beginner to competent, as described by Benner. In addition, a positive assimilation to clinical education is conducive to a positive connotation towards clinical practice, thus promoting confidence and less anxiety towards clinical practice which extends well beyond the first clinical experience. The findings of this study are important as the constructed theoretical model can aid NAPs in the understanding of the importance of a smooth introduction to clinical education and the necessary steps to promote a positive, competent assimilation to clinical practice. Having this understanding will also be helpful for governing bodies such as the COA in creating guidelines for minimal preparation before clinical education, thus ensuring standardization across all NAPs. In addition, the findings suggest increased safety and a stronger workforce immediately post-graduation, further punctuating the importance of solid pre-clinical preparation.

## Introduction

Interviews with eight CRNAs representing diverse demographics provided rich data for grounded theory analysis, which afforded the construction of the Theory of Competent Assimilation. The constructed theoretical framework explains the components necessary for positive, competent assimilation to clinical education. First, a strong foundation must be laid which includes the preparational triad of orientation, didactics, and simulation. Orientation

includes familiarization with both the role of the nurse anesthetist and the clinical environment. Didactics provide scientific background and introduction of processes for clinical decision making and implementation. Simulation includes practice of skills via repetition for mastery using a variety of simulation fidelity. Preparation itself consists of the components of gaining understanding and knowing/not knowing. A rich foundation alone is not enough for competent assimilation. The key to this achievement is the use of substantive RLS, which synthesizes the foundation and provides an experiential context for application to clinical practice. These steps promote a positive assimilation and the achievement of competent provider status per the Benner Model.

The theoretical model of TCA is a continuum reflective of foundational content and degree of RLS, with positive assimilation on one end, and negative assimilation on the other. Data analysis attributes three qualities to positive assimilation, each comprised of two additional components of their own. Known expectations include a contract with the school and self-motivated learning. Safety includes a safety net and security of the learner, and safety of the patient. Gaining confidence includes both excitement and coping and self-assurance. Negative assimilation is composed of three qualities, each with three additional components of their own. Unknown expectations predispose to nervousness and anxieties, feeling overwhelmed, and having a traumatic experience. Lack of safety is caused by fear, lack of support, and being "thrown to the wolves." Distress occurs due to feelings of inadequacy, disdain and disappointment, and despair.

Two theoretical models were used, each aiding in the understanding of clinical assimilation to first clinical educational experiences. Positive and negative assimilation findings are consistent with SI, which proposes the way one approaches a situation is reflective of an

interpretation based on past experiences and concept of self, hence positive and negative views. Furthermore, a new application of Benner's Novice to Expert to advanced practice nursing education was discovered. The data suggests that SRNAs start their program as advanced beginners rather than novices, as they already possess critical care knowledge and experience as a requirement for NAP admission.

This final chapter will begin by comparing the assumptions and biases put forth in Chapter One to the results of the study. Next, the meanings and understandings of different components of this study will be discussed. Implications and relevance for NAPs and the COA will also be discussed, as well as strengths and limitations of the study. Finally, recommendations for future research will be provided at the conclusion of the chapter.

## Assumptions and Biases

In Chapter One, five assumptions and biases were put forth based on both my personal experience as an SRNA, as well as my professional observations as a CRNA. My first assumption stated "pre-clinical preparation is integral for providing a foundation to promote and enhance clinical learning while concurrently decreasing anxiety." This assumption was strongly supported through participant comments which led to the construction of TCA. TCA describes the foundation necessary to positively assimilate to clinical learning by becoming a competent practitioner. In doing so, the SRNA is well prepared to begin clinical education, and possesses the tools necessary to approach clinical learning without the extreme anxieties caused by fear of the unknown and the possibility of doing harm through ineptitude. Participants who professed a competent, positive assimilation to clinical education described much less anxiety than those with a negative assimilation citing the above reasoning.

The second assumption overlaps the first, as it stated "anxiety that is experienced during a first clinical experience is resultant from a lack of knowledge and skill set which could be alleviated through pre-clinical preparation." This assumption was also strongly supported, especially via the recollections of those who professed a negative assimilation to clinical education. Those participants explicitly stated that their lack of preparation caused them major anxieties of presenting a poor performance, the possibility of doing harm, of self-doubt, and of presenting ineptitude. Those with a positive assimilation, who had strong pre-clinical preparation, still described some anxiety, however it was based on the fear of the unknown as they started their first rotation of a new profession, and not of being unprepared.

My third assumption was that pre-clinical preparation enhances patient safety. Again, this was confirmed. One of three identified manifestations of negative assimilation was lack of safety, which yields fear, feeling thrown to the wolves, and either the real or perceived lack of support. As TCA describes the cause of negative assimilation as poor pre-clinical preparation, and negative assimilation manifests a lack of safety, it follows that pre-clinical preparation enhances patient safety.

My fourth assumption of "each new career role change produces a series of transitions that reverts the nurse back to incompetence or novice and progresses forward to competence as new role expertise is acquired" was only partially realized. As there is certainly a transition required to advanced practice nursing as the SRNA becomes oriented to the role expectations, and acquires the necessary didactic knowledge base and skill set necessary to perform the role, the SRNA brings with them critical care knowledge that is integral to nurse anesthesia and a requirement for enrollment in a NAP. SRNAs do start as a novices to anesthesia management and would be deemed incompetent without any anesthesia instruction, however SRNAs are not

novice nurses and bring to their education their own experiential context from their time as expert critical care nurses.

Finally, my fifth assumption was that "pre-clinical preparation enhanced clinical learning and clinical progression of competency which consequently accelerates professional role acclimation post-graduation, and in turn, promotes patient safety." This assumption was again supported by the creation of TCA and the participants' experiences. As already discussed and explained by TCA, pre-clinical preparation enhances clinical learning by bringing SRNAs to the level of competent practitioner before beginning clinical education through a strong foundation. This foundation is most importantly synthesized through RLS, which is the key to creating the experiential context necessary to achieve the level of competency as described by Benner. The descriptions of starting the role of CRNA post-graduation were direct reflections of their assimilation to clinical education. Those with a negative assimilation approached starting both clinical education and their new careers with anxiety, fear, self-doubt, and apprehension. Those with a positive assimilation approached both new experiences with some anxiety, but also with excitement and confidence. Although safety when starting professional careers as CRNAs was not discussed, it could be inferred that lack of safety due to beginning clinical education as advanced beginners was also present if the CRNA did not enter the workforce at a level sufficient to perform as independent, non-proctored practitioners. However, that would need to be substantiated by another study.

## Meanings and Understandings

When I designed this study, the criteria for sample inclusion stipulated CRNAs with less than 10 years of experience post-graduation as the cohort of participants. The rationale for this stipulation was two-fold. First, even after 14 years since graduation, and 16 since my first

clinical rotation, it was such a significant point in my life that I still remember it with clarity. I was confident that limiting the timeframe to 10 years' post-graduation would still ensure a vivid recollection. Second, I wanted data to reflect a review of the experiences with the expertise of "knowing" what worked and didn't, rather than that of "not knowing what you don't know" as a SRNA may provide. With this in mind, SRNAs were excluded. I determined interviewing seasoned CRNAs would provide data through a reflection of their individual experiences filtered through their professional expertise, possibly pinpointing significant moments not realized as a novice. I was not at all disappointed on either account.

As a former SRNA myself, and now a seasoned CRNA, I shared a passionate connection with the study participants, having endured the "first clinical experience" myself 16 years ago. The experience of my own first clinical rotation started with a healthy amount of excitement and performance based anxieties. My integrated NAP provided a strong foundation complete with RLS, which I did not fully appreciate until I performed this research. I knew what was expected of me in my new role and had the knowledge and skills to provide basic anesthesia under close proctorship. Looking back, I do identify gaps in the RLS provided which would have made my transition smoother, and would have helped me to realize I knew more about anesthesia due to my preparation than I recognized. I am very fortunate to have been provided a solid foundation synthesized with RLS, which gave me a positive, and not at all traumatic, assimilation. Because I could have used more RLS, I would not equate my entrance to clinical education as fully competent, but it certainly resided on the more positive end of the continuum.

The reflection of participant experiences through a seasoned lens was beneficial for both data collection and to their own understanding of what they went through as novice SRNAs. So often in discussion after an interview I would hear how valuable it was to re-visit that time in

their lives and make sense of what they went through. Some commented that they had not realized what they didn't know at the time, nor recognized what would have helped them through without introspection. This was justification enough in my inclusion criteria, and I was pleased to know the interviews were in some part cathartic. Even Carol, who needed to pause her interview at one point due to overwhelming emotions, appreciated the chance to look back, dissect, and then appreciate her accomplishments.

What impressed me most about the interviews was more than the clarity and evaluation of their recollections, but rather the impact their introduction to clinical practice had and still harbors today. This rings true to my own experience. With the exception of neuroanesthesia, I approached my inaugural job with the same excitement and performance based anxieties as my first clinical experience. Even today when faced with a new surgery or anesthetic technique, this is still my approach, however it's now coupled with a career of experiential context to supply confidence and clinical strategy.

The same is true for my participants. Those who had traumatic introductions to clinical practice are still scarred, in some manner bitter, and still exhibit signs of self-doubt made clear through both their verbal and non-verbal cues during their interviews. Conversely, those with positive assimilation experiences displayed confidence. Those whose experiences placed them in the middle of the continuum reflected topic-dependent confidence, and a large amount of introspection and examination of their experience. Those with mid-level assimilation all attempted to dissect what worked and what could have been done better in both their school-based and self-initiated instruction to a great degree, and could not provide quick, concrete answers. Those with either positive or negative assimilation could easily identify assets and deficiencies in their preparation. I attribute this difference to knowing and not knowing. Those

with positive or negative assimilation had already determined what worked or not, as their preparations where either good or poor, and the substantiality of resources was apparent. Those with mid-level assimilation did not have a clear-cut view of what part of their preparation (or lack thereof) attributed to their successes or failures until retrospectively viewed through their experienced lenses.

I was also impressed with the recognition of self-motivation and self-reliance the participants demonstrated in their education. Each participant expressed the need for self-evaluation of their individual educational circumstances, their strengths and weaknesses within learning strategies and material content, and the educational resources available to them. This introspective maturity could be attributed to being a motivated adult learner determined to succeed. I do not attribute negative assimilation to the lack of motivation for self-directed learning, as all participants expressed this attribute. Rather, I believe the lack of resources or direction provided by their NAP to facilitate self-directed learning through various pedagogical methods contributed to a negative assimilation. All the study participants successfully completed their programs and became board certified nurse anesthetists, which suggests the attributes of motivation and self-reliance could be indicators of success, and could be explored during NAP admission processes. Additionally, this finding suggests that NAP should examine the educational resources available to students within a variety of pedagogical strategies to provide learners resources that best fit their pedagogical strengths.

What was made exceedingly clear was the need for both a sound foundation and RLS, and that one component without the other would not suffice. What created my "aha moment" was the interview with Hugo, who attended a front-loaded NAP. Although he had completed his didactic coursework in entirety, RLS was positioned in the curriculum well after his clinical

learning had begun. He possessed an understanding of his role, and had completed skill repetition through simulation, but the entirety of his new knowledge was not synthesized for clinical application. He possessed knowledge, but experiential context was not created for clinical application. To that end, he still found his first clinical experience to be quite overwhelming. He did not characterize his assimilation as negative, although, by his admission, it was not as positive as it could have been had RLS been incorporated into his preparation. Anxiety levels in pre-clinical experiences have been reported as being less in front-loaded programs (Imus et al., 2015) due to having the full provision of didactic knowledge imparted prior to clinical education. However, incorporating RLS into a front-loaded program would further decrease anxieties and provide a smoother transition and assimilation as evidenced by the data collected in this study.

A potential flaw in NAP curriculum design is the lack of recognition of RLS as a simulation classification itself, as it is a relatively new concept. RLS is instead confused as high fidelity simulation, which is a common misconception. Simulation has historically been classified as low or high fidelity, with low fidelity being attributed to non-interactive simulators, and high-fidelity being attributed to interactive simulators. However, the concept of high-fidelity has been blurred, as frequently high-fidelity simulation is exclusively attributed to "scenarios" such as intubation and experiencing the ensuing sympathetic response, rather than being solely a classification of the fidelity of the simulator itself (O'Donnell & Phrampus, 2017). I found this blurred definition prevalent in my data collection, and needed to extrapolate whether their simulation was just performed on high-fidelity simulators or was truly RLS based on the descriptions of their experiences. RLS may use any fidelity of simulator, with its true purpose being to experience, instruct, and practice responses to real-life scenarios, imparting and

synthesizing knowledge bases, and creating an experiential context on a simulator before facing the experience in actual clinical practice. This relatively new concept and shift in defining simulation by fidelity or purpose is supported by this study in nurse anesthesia education. As simulation fidelity and use classifications are further delineated in literature and best practices are established, RLS will become more widely recognized as an essential teaching technique and genre for preparing clinical practitioners. RLS will then more readily move into curriculum development as an effective and necessary pedagogy.

Another substantive finding of this study was the use of RLS in the advancement of stages put forth in Benner's Novice to Expert Theory. As previously discussed, progression from advanced beginner to competent practitioner necessitates experiential context from which a practitioner may consult as a point of reference for common occurrences and effective treatments associated with particular events (Carlson et al., 1989). As evidenced by this study, an effective means to obtain experiential context before clinical experiences is RLS, which provides those experiences in a controlled, proctored atmosphere geared specifically toward gaining context and learning processes before clinical administration on live patients. This "practice" also serves to provide safety, as learning occurs without the danger of causing patient harm while gaining knowledge of best practices and proper treatment modalities.

## Implications and Relevance of the Study

The Theory of Competent Assimilation has far reaching implications in the realm of SRNA education as well as advanced practice nursing education and the simulation arena. The theoretical model explains the process of assimilation to clinical education. The following section provides suggestions for application of TCA within NAP curriculum, suggestions for COA guidelines, and the application of Benner's theory to advanced practice nursing education.

**Nurse Anesthesia Curriculum Development**

Applying TCA to a NAP requires a curriculum structure which provides a strong foundation based on the three curricular components identified in my research. Particularly, the curriculum must offer SRNAs specific educational opportunities prior to starting their clinical education component. Based on the data collected, what follows are content recommendations for curriculum design for each component of the triad and RLS.

**Orientation.** This preparational component seemed to be most lacking among the participant's experiences, signifying that the importance of orientation has not been recognized. Two types of orientation should be provided. First, orientation to the role of nurse anesthetist must be explored and explained. Nurse anesthetist job expectations and professional responsibilities differ greatly from that of the critical care nurse, causing a huge paradigm shift during SRNA education. Without knowing job expectations, the SRNA cannot be expected to perform to those expectations. An example is the degree of autonomy with which CRNAs practice, and the expectation for autonomous decision making (AANA, 2013). Before clinical education, SRNAs should be introduced to the AANA Scope of Practice, which outlines practice expectations and responsibilities (AANA, 2013). Their specific role in the OR should be given in the context of a work day, ideally in the form of a flow sheet and discussed during a lecture. For example, suggested arrival time, case preparation of medications, equipment, AGM check out, anesthetic pre-operative interview and assessment, anesthesia consent, and report with both room staff and pre-operative RN before transporting the patient to the OR would be a concise outline of responsibilities to follow before the first case of the day.

The second part of orientation would be to an OR itself, and additionally to the facility where their first clinical rotation is scheduled. A preliminary guided visit by faculty or a senior

student to any OR suite and exploration of an empty room without cases would aid in gaining comfort in the new environment. Time should be given to explore the set-up, perform a machine check, and practice with the bed controls. My NAP provided this experience, and while standing in a group of around eight, one of my classmates got light headed and nearly passed out due to anxiety. Thankfully this initial visit allowed her to work through her difficulty, and she did not experience another episode for the remainder of the program.

Furthermore, a site-specific orientation should be offered by a clinical coordinator before an initial rotation, further familiarizing with the specific layout, resources, and anesthesia department make up and coverage model, which can differ per institution. A tour would include pre- and post-op units, supply areas, and emergency carts. Hospital specific policies, phone numbers and communication expectations, medication protocols, transport policies, and anesthesia technician roles should be provided. Instruction should be given on charting systems, the OR schedule, and the SRNA specific role expectations at that institution. The orientation to the site should be comprehensive, meaning it would involve at the very least half of a day of instruction to be able to provide the necessary information, along with a folder complete with references for future use.

Additional orientation resources would be that of a mentor and shadow experiences. Mentors can provide extra orientation in personal instruction and support, and shadow experiences allow students to see firsthand what their new profession entails. Walking blindly into an unfamiliar site and situation where one is expected to perform without knowledge of performance expectations sets the stage for major anxiety and a lack of safety. Proper orientation to the role and the environment lessens anxieties and increases safety for both the patient and themselves.

**Didactics.** Another area with much variability is the didactic content provided before clinical education begins. As front-loaded programs provide all didactic content upfront before clinical education, the following recommendations are intended for integrated NAP.

As the collected data purports, the length of time of didactic education or quantity of material presented is less important than the content and quality of presented material. Those who reported the most positive assimilation started clinicals between 8 and 12 weeks, therefore punctuating content and quality over quantity. All didactic material presented before starting clinicals should be geared towards providing basic information necessary for basic anesthetic administration. Areas for didactic instruction prior to clinical instruction as mentioned by the study's participants include: Common drugs used in anesthesia administration, the anesthetic machine, administration of monitored anesthesia care and general anesthetics for non-specialized cases, the airway and airway securement techniques, fluid management and replacement, ventilation basics and techniques, patient positioning, peripheral and central line placement, patient monitoring, sympathetic and parasympathetic nerve innervation, and the physiological effects of anesthesia and surgery with sequalae treatment options. In addition, a basic overview of regional and pediatric anesthesia were referenced as they also could be encountered during first clinical rotations. This curriculum structure would provide a springboard for advanced physiological instruction to be given during future classes, such as advanced ventilation and respiration, as well as specialized anesthetics including cardiothoracic and vascular anesthesia, obstetrics and pediatrics, trauma, and transplant. However, if there is a possibility a specialized anesthetic area, such as obstetrics, may be encountered during an initial clinical rotation, instruction should be provided prior to the rotation.

Another suggestion by participants is the testing of required knowledge via written examination with satisfactory achievement as a gateway to entering clinical education. This process instills confidence and ensures that knowledge retention has occurred. In addition, synthesis of didactic knowledge should be demonstrated via management plan creation. Anesthetic management plan construction varies among NAPs, however the premise is to provide a comprehensive anesthetic plan based on surgical or procedural intervention (ex. colonoscopy), patient history, and anesthetic technique, with rationales provided for each part of the detailed plan. Management plans are used during clinical education to prepare for cases, so requiring plans as an assignment during pre-clinical didactic preparation allows the SRNA to synthesize didactic knowledge and acclimate to their role and responsibilities. SRNAs gain familiarity with surgical cases themselves, as well as the knowledge of how to research and prepare for cases. Instructors would need to provide specific hypothetical patient data; however, the remainder of the plan creation would be identical to plan creation for real patients. Integration and synthesis of didactic knowledge in this fashion would provide the SRNA with practice expectations as well as plans for if or when difficulties may be encountered, thereby enhancing patient safety and decreasing SRNA anxieties.

**Foundational simulation.** The use of simulation is essential for learning skills prior to being expected to perform in clinical practice. In addition to establishing muscle recall through repetition, simulation provides organization, familiarization with equipment, and allows for a deeper understanding of skill components for troubleshooting. Certain skills should be simulated as part of clinical preparation, which includes airway management and securement (ex. intubation techniques, cricothyrotomies, LMAs) for both adults and pediatrics, peripheral venous and arterial line placement, patient positioning, AGM checkout and set up, and anesthetic

medication preparation. Each of these skills may be encountered in the provision of basic anesthetics. Optional skills would include fiberoptic intubations and spinal, epidural, and central line placement, as they could be encountered during initial clinical experiences but are considered advanced techniques. Each NAP should assess the clinical opportunities offered during first clinical rotations and ensure advanced skills, such as regional or central line placements, are reviewed prior to clinical entry if necessary.

The simulators themselves do not need to be high-fidelity, however they need to be of adequate fidelity to be able to accomplish necessary training. For instance, it is not necessary to intubate a mannequin whose vocal cords move or to draw up actual medications. However, the ability to check ventilation after LMA placement by auscultation with simulated lungs is ideal. Some simulation could be very low fidelity, such a gel block with embedded tubes for line placements. Others would be best with standardized patients, such as positioning on an actual OR table. Using an AGM to practice machine checkouts, as well as syringes and labels with used medication vials replaced with saline to practice case set up would be necessary to most effectively provide simulative education.

As certain skills are necessary for the provision of anesthesia, it would be necessary to demonstrate proficiency as a gateway skills examination, as was the case for those participants who reported positive assimilation. Those with a positive assimilation also reported that their NAPs provided additional access to simulation for students to practice on their own. If possible, this service would also be recommended as a valuable learning tool.

**Real-like simulation.** One of the most important findings of this study was the realization of the impact RLS has on SRNA clinical preparation and the importance of including RLS as part of a clinical preparation curriculum. It was obvious that some schools are not yet

aware of RLS as an educational technique, or as a category of simulation, as it is commonly, and incorrectly, referred to as high-fidelity simulation. RLS serves to synthesize the preparational triad's instructional components and provide real-like application to the clinical setting. This technique allows SRNAs to practice clinical processes, obtain a clearer understanding of the nurse anesthetist role, orient to that role, and learn the processes of anesthesia itself. Furthermore, safety is enhanced through the creation of experiences which enhance troubleshooting, critical thinking, and emergency preparedness and action.

As per study participant suggestions, certain scenarios should be required as part of clinical preparation, which include: induction, emergence, severe hypertension and hypotension, bradycardia, exsanguination, patient "moving" while under a general anesthetic, airway and ventilation issues, and assuming responsibility of a case from another provider. It would be ideal if each SRNA could individually experience each scenario, and more than once to build confidence. However, the feasibility of this in consideration of class size and simulation facilities may not be possible. For this reason, it is recommended that the prescribed scenarios are bundled and incorporated into fewer scenarios so that the learners encounter two or three experiences in each simulation. Also, the simulations should be done in groups, with other group members possibly participating via enacting the part of another surgical team member, or watching via video feed. After each scenario, a debriefing session should be held, including general critiquing and review of best practices.

As a gateway to clinical education, each SRNA should demonstrate clinical ability by passing a scenario proficiency examination. Again, specific clinical scenarios can be bundled into one experience. Also, it is recommended that the simulation laboratory be offered for extra practice opportunities for motivated students. RLS provides an opportunity for experiential

context to be formed prior to direct patient care, as well as confidence in clinical abilities, role acclimation, and increased safety through experience troubleshooting and implementation of preparational knowledge.

**Application to Council on Accreditation Standards**

The COA standards, specifically section C, "Standards for Accreditation of Nurse Anesthesia Educational Programs," provides general guidelines regarding curriculum development (Appendix C). C14 and C15 outlines specific courses with recommended hours of instruction for didactic education, but does not recommend when in the program those courses should be situated, nor does it supply specified course content recommendations. Other sections provide generic recommendations for clinical education and number of required cases. The only standard which addresses didactic and clinical progression is C3, which states, "The program sets forth the curriculum in a logical manner with sequential presentation of classroom and clinical experiences." This standard alludes to the need to present didactic knowledge prior to clinical entry, however the generic statement leaves much room for interpretation. I propose C3 be expanded to add:

a. *Coursework, both role and site orientation, and simulation is provided before the first clinical experience, providing a knowledge base adequate for basic anesthetic administration.*
b. *Real-like simulation experiences are used to simulate induction, emergence, and common anesthetic complications prior to clinical experiences.*

These additions to the COA guidelines would help ensure that students are not scheduled to begin clinical education before they have the proper preparation to promote clinical success.

### Application of Benner's Novice to Expert Theory to Advanced Practice Nursing Education

Benner's initial intention of her theory was to describe the progression of a nurse's journey from entry level student to expert nurse. The COA recognizes the experience of critical care nurses prior to beginning nurse anesthesia school, and requires that NAPs create a curriculum based on their knowledge base and experiences (see Appendix C). The application of Benner to nurse anesthesia education was realized as a result of this study as a means to describe the progression to competent practitioner necessary for positive assimilation to clinical education. This knowledge can help guide curriculum development to determine the gateway knowledge base, skills, and RLS experiences to achieve advanced beginner status.

## Strengths and Limitations

Various strengths and weaknesses were identified in the study. Credibility and dependability were provided by my dissertation chairperson, an expert on grounded theory, who was consulted on the interview process, data collection, coding, and theory construction. Accuracy, credibility, criticality, and plausibility were achieved through memo writing, theoretical saturation, and verbatim transcription. Line by line coding also lent to credibility and accuracy, as well as the use of NVivo® for coding and diagramming. Use of the constant comparative method during data compilation and analysis strengthened accuracy, dependability, transferability, and confirmability.

More strength lies within the sample. Although the number is small at eight, it was sufficient to provide theoretical saturation and the use of theoretical sampling via two confirmatory interviews. Each participant shared vivid memories of their pre-clinical preparation, both positive and negative, and their data was rich in detail and emotion. The richness of the detail provides insight into their experiences that can be used by NAPs seeking to

provide evidence based changes to the clinical preparation aspect of their curriculum. Many of the participants shared after their interview that revisiting that time in their careers was cathartic, in that it allowed them to share and sort emotions and review how much they have achieved. It was clear that their entry to clinical practice left a deeply seated psychological impression that persists to this day.

One limitation is that those participants with negative assimilation felt speaking freely did not come easily as they were attempting to be professional and "be tough." Two of the participants stated they were ashamed and embarrassed of their programs, their initial clinical performance, or both. However, assurance that showing emotions was ideal for data collection and was not a sign of weakness allowed more openness and introspection. The demographics presented eight different NAPs, with only one coming from a front-loaded program. More participants who attended front-loaded NAPs would have provided additional data from that perspective, however the data gleaned from the single participant was detailed, informative, and created no additional coding categories signifying the need to sample more front-loaded NAP attendees. Another recognized weakness is my lack of expertise using a grounded theory methodology for research. To combat this shortcoming, Charmaz's Constructivist Grounded Theory methodology was closely followed as described in Chapter Three, and my dissertation chairperson was consulted for advice at every step.

A further strength of the study resides in the relevance of the findings. The derivation of TCA will provide educators with a theoretical framework for curriculum design and points to the importance of each necessary facet of pre-clinical preparation. This knowledge can be directly applied to clinical education preparation, strengthening clinical education itself, decreasing anxiety, and promoting safety. The COA can use the findings to create standards to further

enhance SRNA education. The data also demonstrated that the type of assimilation a student encountered had far reaching effects into their professional careers, which is a finding not yet expressed in literature. This recognition can point educators to the importance of promoting positive assimilation, which will in turn produce a more confident, stronger work force.

Strength also resides in the application of the results of this study to other advanced practice nursing disciplines. The discovery of the application of Benner's Novice to Expert theory to advanced practice nursing education, in addition to TCA, provides a framework for understanding the relationship between preparation and clinical assimilation, and the necessary components preparation must entail. The importance of RLS in clinical preparation has not yet been described, and this knowledge can assist educators in all advanced practice disciplines to better prepare their students through curricular design and gateway testing.

## Suggestions for Further Research

This research provides a foundation upon which to engage in further research. Additional research could interview a greater number of students from front-loaded programs to gather more data examining the effectiveness of their preparation regimes. NAPs who have been identified through student interviews as either fostering positive or negative assimilations could be individually investigated to gather further data on what is effective or ineffective clinical preparation. That data could help greater define and pinpoint particularities of instruction integral to the preparational triad and RLS, in addition to gateway objectives.

Using TCA as a framework for curriculum development should be explored through further research on this topic and theory testing. If shared in the literature, program administrators could examine their curricula and identify areas for improvement that would lead to a stronger assimilation. This may help form better clinical partnerships for their students who

will be viewed as more competent and have less of an impact on patient safety errors. Adjustments and redesigns could be made based on the TCA framework, with pre- and post-intervention studies designed to determine the success of these changes. This type of intervention would not need to be focused only on NAPs with an identified negative assimilation. Any NAP with less than positive assimilation could compare their curriculum with the TCA framework to identify missing components, and administer pre- and post-intervention studies to ascertain intervention effectiveness. Data from this study showed that RLS was deficient even in those schools with a strong preparational triad, and so the education and implantation of RLS alone would be significant research to pursue. Additionally, research to better define simulation fidelity and categories of usage would dissolve the current ambiguity and result in more organized use in curriculum development.

The long-term effects of both positive and negative assimilation to entry of clinical education should be further examined. Study participants expressed an emotional range of trauma and despair to excitement and engagement because of their placement on the assimilation continuum. The resultant impact of these effects on school performance should be explored. NAP attrition, board passage rates, GPA, and absenteeism could be impacted by level of assimilation, emotional well-being, and self-confidence levels. In addition, study participants suggested their first clinical experience has impacted them during their career through manifestations of confidence levels, self-worth, clinical acumen, and personal feelings towards their education and NAP itself. Further research should be performed to examine how first clinical education assimilation impacts entry to professional practice. Qualitative research should be used to explore this subject to determine position on the TCA continuum and participant experience of entry to professional practice.

This study identified the application of Benner's Novice to Expert theory to clinical assimilation, describing positive assimilation to be equated with the "competent" level in Benner's theory. Further exploration is needed to determine what level a SRNA should achieve upon graduation and entry to professional practice. My personal assumption is that the graduate should be "proficient" per Benner's definitions, and "expert" would be attained through gaining expertise through professional practice.

One other area that should be explored is the application of TCA to other advanced practice disciplines. As this study focuses on nurse anesthesia education, it would follow that TCA could also be applied to anesthesia resident preparation for clinical education, as their first year of residency is not in the clinical arena. TCA could also be applied to any advanced practice nursing profession, as well as the education of physician assistants. This would entail a replication of the current study to determine relevance and applicability to curriculum arrangement of clinical experiences.

## Conclusion

The purpose of this study was to examine CRNA memories to explore and interpret the experience of entering a first clinical rotation with the purpose of constructing a theory which addresses the process of transition to clinical education. Using Constructivist Grounded Theory methodology, eight CRNAs with less than ten years' experience were interviewed to attain insight into their first clinical experiences in the context of their NAP's preparational strategies. The findings point to a continuum of negative to positive assimilation with an adaptation of Benner's Novice to Expert Theory to SRNA entry to clinical education. The adaptation suggests SRNAs start NAPs as advanced beginners as they already possess a critical care knowledge base, which, if little or no instruction is given before clinical instruction, would equate to negative

assimilation. Conversely, strong preparation allows the SRNA to achieve competent status and a positive assimilation. Also uncovered were the components of clinical preparation, which include the preparational triad of orientation, didactics, and simulation, as well as the importance of real-like simulation to synthesize the triad of preparational components. Thus, the Theory of Competent Assimilation was constructed, which provides a framework for curriculum development for nurse anesthesia programs. Use of the TCA framework in curriculum development will help facilitate substantial clinical preparation to achieve positive assimilation to clinical education as a competent practitioner. This achievement will lessen anxieties and promote confidence and safety in clinical education. Future research should examine such concepts as TCA application and theory testing, long-term effects of positive and negative assimilation, application of Benner for entry to professional practice, and TCA application to other disciplines.

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Appendix A

Minimum Clinical Requirements for Graduation From a NAP as Set by the COA



## Appendix (+)

The minimum number of anesthesia cases is 550.

| CLINICAL EXPERIENCES | Minimum Required Cases | Preferred Number of Cases |
|---|---|---|
| **PATIENT PHYSICAL STATUS** | | |
| Class I | | |
| Class II | | |
| Classes III & IV | 100 | |
| Class V | | 5 |
| TOTAL CASES | 550 | 650 |
| **SPECIAL CASES** | | |
| Geriatric 65 + years | 50 | 100 |
| Pediatric | | |
| Pediatric 2 to 12 years | 25 | 75 |
| Pediatric (less than 2 years) | 10 | 25 |
| Neonate (less than 4 weeks) | | 5 |
| Trauma/Emergency (E) | 30 | 50 |
| Ambulatory/Outpatient | 100 | |
| Obstetrical management | 30 | 40 |
| Cesarean delivery | 10 | 15 |
| Analgesia for labor | 10 | 15 |

| CLINICAL EXPERIENCES | Minimum Required Cases | Preferred Number of Cases |
|---|---|---|
| **POSITION CATEGORIES** | | |
| Prone | 20 | |
| Lithotomy | 25 | |
| Lateral | 5 | |
| Sitting | 5 | |
| **ANATOMICAL CATEGORIES [1]** | | |
| Intra-abdominal | 75 | |
| Extrathoracic | 15 | |
| Extremities | 50 | |
| Perineal | 15 | |
| Extracranial | 15 | |
| Intracranial | 5 | 20 |
| Oropharyngeal | 20 | |
| Intrathoracic | 15 | 40 |
| Heart | 5 | 10 |
| Lung | 5 | |
| Neck | 5 | 10 |
| Neuroskeletal | 20 | |
| Vascular | 10 | 20 |

[1] Count all that apply.

| CLINICAL EXPERIENCES | Minimum Required Cases | Preferred Number of Cases |
|---|---|---|
| METHODS OF ANESTHESIA | | |
| General anesthesia | 350 | |
| Induction, maintenance, and emergence | | |
| Intravenous induction | 200 | |
| Inhalation induction | 10 | 25 |
| Mask management | 25 | 40 |
| Laryngeal mask airways (or similar devices) | 25 | 40 |
| Tracheal intubation | | |
| a. Oral | 200 | |
| b. Nasal | | 10 |
| Total intravenous anesthesia | 10 | 25 |
| Emergence from anesthesia | 200 | |
| Regional techniques | | |
| Management | 30 | |
| Administration [2] (total of a, b & c) | 25 | |
| a. Spinal | | 50 |
| b. Epidural | | 50 |
| c. Peripheral | | 40 |
| Monitored anesthesia care | 25 | 50 |

[2] Students must have experience in each category.

| CLINICAL EXPERIENCES | Minimum Required Cases | Preferred Number of Cases |
|---|---|---|
| **PHARMACOLOGICAL AGENTS** | | |
| Inhalation agents | 200 | |
| Intravenous induction agents | 200 | |
| Intravenous agent - muscle relaxants | 200 | |
| Intravenous agent - opioids | 200 | |
| **ARTERIAL TECHNIQUE** | | |
| Arterial puncture/catheter insertion | 25 | |
| Intra-arterial BP monitoring | 25 | |
| **CENTRAL VENOUS PRESSURE CATHETER** | | |
| Placement [3] (total of a & b) | 5 | 10 |
| a. Actual | | |
| b. Simulated | | |
| Monitoring | 15 | |
| **PULMONARY ARTERY CATHETER** | | |
| Placement | | 5 |
| Monitoring | | 10 |

[3] Simple models and simulated experiences may be used to satisfy this requirement.

| CLINICAL EXPERIENCES | Minimum Required Cases | Preferred Number of Cases |
|---|---|---|
| **OTHER** | | |
| Intravenous catheter placement | 100 | |
| Mechanical ventilation | 200 | |
| Pain management (acute/chronic) | | 10 |
| Alternative airway management techniques (total of 1 & 2)<br>(see Glossary: alternative airway management techniques) | 10 | 40 |
| 1) Fiberoptic techniques [3] (total of a, b & c) | 5 | 15 |
| a) Actual placement | | |
| b) Simulated placement | | |
| c) Airway assessment | | |
| 2) Other techniques | 5 | 25 |

[3] Simple models and simulated experiences may be used to satisfy this requirement.

(+) Effective January 1, 2015, the clinical case experience requirements will be revised to match the clinical case experience requirements in the Practice Doctoral Standards.

## Appendix B

## Standards for Nurse Anesthesia Practice

Standard I --Perform and document a thorough preanesthesia assessment and evaluation.

Standard II --Obtain and document informed consent for the planned anesthetic intervention from the patient or legal guardian, or verify that informed consent has been obtained and documented by a qualified professional.

Standard III-- Formulate a patient-specific plan for anesthesia care.

Standard IV--Implement and adjust the anesthesia care plan based on the patient's physiologic status. Continuously assess the patient's response to the anesthetic, surgical intervention, or procedure. Intervene as required to maintain the patient in optimal physiologic condition.

Standard V--Monitor, evaluate, and document the patient's physiologic condition as appropriate for the type of anesthesia and specific patient needs. When any physiological monitoring device is used, variable pitch and threshold alarms shall be turned on and audible. The CRNA should attend to the patient continuously until the responsibility of care has been accepted by another anesthesia professional.

a. Oxygenation--Continuously monitor oxygenation by clinical observation and pulse oximetry. If indicated, continually monitor oxygenation by arterial blood gas analysis.

b. Ventilation--Continuously monitor ventilation. Verify intubation of the trachea or placement of other artificial airway devices by auscultation, chest excursion, and confirmation of expired carbon dioxide. Use ventilatory pressure monitors as indicated. Continuously monitor end-tidal carbon dioxide during controlled or assisted ventilation and any anesthesia or sedation technique requiring artificial

airway support. During moderate or deep sedation, continuously monitor for the presence of expired carbon dioxide.

c. Cardiovascular--Continuously monitor cardiovascular status via electrocardiogram. Perform auscultation of heart sounds as needed. Evaluate and document blood pressure and heart rate at least every five minutes.

d. Thermoregulation--When clinically significant changes in body temperature are intended, anticipated, or suspected, monitor body temperature in order to facilitate the maintenance of normothermia.

e. Neuromuscular--When neuromuscular blocking agents are administered, monitor neuromuscular response to assess depth of blockade and degree of recovery.

f. Positioning--Monitor and assess patient positioning and protective measures, except for those aspects that are performed exclusively by one or more other providers.

Standard VI--Document pertinent anesthesia-related information on the patient's medical record in an accurate, complete, legible, and timely manner.

Standard VII--Evaluate the patient's status and determine when it is safe to transfer the responsibility of care. Accurately report the patient's condition, including all essential information, and transfer the responsibility of care to another qualified healthcare provider in a manner that assures continuity of care and patient safety.

Standard VIII--Adhere to appropriate safety precautions as established within the practice setting to minimize the risks of fire, explosion, electrical shock and equipment malfunction. Based on the patient, surgical intervention or procedure, ensure that the equipment reasonably expected to

be necessary for the administration of anesthesia has been checked for proper functionality and document compliance. When the patient is ventilated by an automatic mechanical ventilator, monitor the integrity of the breathing system with a device capable of detecting a disconnection by emitting an audible alarm. When the breathing system of an anesthesia machine is being used to deliver oxygen, the CRNA should monitor inspired oxygen concentration continuously with an oxygen analyzer with a low concentration audible alarm turned on and in use.

Standard IX--Verify that infection control policies and procedures for personnel and equipment exist within the practice setting. Adhere to infection control policies and procedures as established within the practice setting to minimize the risk of infection to the patient, the CRNA, and other healthcare providers.

Standard X--Participate in the ongoing review and evaluation of anesthesia care to assess quality and appropriateness.

Standard XI--Respect and maintain the basic rights of patients (AANA, 2013, pp.1-2).

## Appendix C

### Standards for Accreditation of Nurse Anesthesia Educational Programs

C1. The program's curriculum builds upon prior nursing education and professional experiences, is congruent with the mission of the institution and is designed so that students benefit from the program.

C2. The faculty designs a curriculum that awards a master's or higher-level degree to graduate students who successfully complete graduation requirements.

C3. The program sets forth the curriculum in a logical manner with sequential presentation of classroom and clinical experiences.

C4. The nurse anesthesia program must be a minimum of 24 months in length or its part-time equivalent.

C5. The educational environment fosters student learning and promotes professional socialization.

C6. The educational environment provides opportunities for faculty development.

C7. The program designs a curriculum that enables graduates to attain certification in the specialty.

C8. The program designs, when appropriate, an experimental/innovative curriculum that enables graduates to attain certification in the specialty.

C9. The content of the curriculum is appropriate to the degree or certificate earned.

C10. The curriculum meets commonly accepted national standards for similar degrees.

C11. Distance education programs and courses satisfy accreditation standards and achieve the same outcomes as traditional educational offerings.

C12. The educational environment promotes academic quality as evidenced through a variety of indicators.

C13. The program enrolls only baccalaureate prepared students who meet admission criteria. Admission requirements include:

a. Registration as a professional nurse in the United States, its territories or protectorates.

b. At least one year of experience as a RN in an acute care setting (criterion discontinued effective January 1, 2015).

c. At least one year of experience as a RN in a critical care setting (criterion effective on January 1, 2015).

C14. The basic nurse anesthesia academic curriculum and prerequisite courses focus on coursework in anesthesia practice: pharmacology of anesthetic agents and adjuvant drugs including concepts in chemistry and biochemistry (105 hours); anatomy, physiology, and pathophysiology (135 hours); professional aspects of nurse anesthesia practice (45 hours); basic and advanced principles of anesthesia practice including physics, equipment, technology and pain management (105 hours); research (30 hours); and clinical correlation conferences (45 hours); radiology; and ultrasound.

C15. The didactic curriculum includes three (3) separate comprehensive graduate level courses in advanced physiology/pathophysiology, advanced health assessment, and advanced pharmacology.

C16. The amount of advanced standing or transfer credits awarded by the degree granting institution is clearly stated and publicized.

C17. The clinical curriculum provides students with opportunities for experiences in the perioperative process that are unrestricted, and promote their development as competent safe nurse anesthetists.

C18. The nurse anesthesia clinical curriculum prepares the student for the full scope of current practice in a variety of work settings and requires a minimum of 550 clinical cases including a variety of procedures, techniques, and specialty practice (Appendix C).

C19. The program provides opportunities for students to obtain clinical experiences outside the regular clinical schedule by a call experience or other mechanism.

C20. The program demonstrates that it has achieved its stated outcomes.

C21. The program demonstrates that graduates have acquired knowledge, skills and competencies in patient safety, perianesthetic management, critical thinking, communication, and the competencies needed to fulfill their professional responsibility.

a. Patient safety is demonstrated by the ability of the graduate to:

1. Be vigilant in the delivery of patient care.

2. Refrain from engaging in extraneous activities that abandon or minimize vigilance while providing direct patient care (e.g., texting, reading, e-mailing, etc.) (+)

3. Protect patients from iatrogenic complications.

4. Participate in the positioning of patients to prevent injury.

5. Conduct a comprehensive and appropriate equipment check.

6. Utilize standard precautions and appropriate infection control measures.

b. Individualized perianesthetic management is demonstrated by the ability of the graduate to:

1. Provide care throughout the perianesthetic continuum.

2. Use a variety of current anesthesia techniques, agents, adjunctive drugs, and equipment while providing anesthesia.

3. Administer general anesthesia to patients of all ages and physical conditions for a variety of surgical and medically related procedures.

4. Provide anesthesia services to all patients, including trauma and emergency cases.

5. Administer and manage a variety of regional anesthetics.

6. Function as a resource person for airway and ventilatory management of patients.

7. Possess current advanced cardiac life support (ACLS) recognition.

8. Possess current pediatric advanced life support (PALS) recognition.

9. Deliver culturally competent perianesthetic care throughout the anesthesia experience).

10. Perform a comprehensive history and physical assessment.

c. Critical thinking is demonstrated by the graduate's ability to:

1. Apply knowledge to practice in decision-making and problem solving.

2. Provide nurse anesthesia care based on sound principles and research evidence.

3. Perform a preanesthetic assessment and formulate an anesthesia care plan for patients to whom they are assigned to administer anesthesia.

4. Identify and take appropriate action when confronted with anesthetic equipment-related malfunctions.

5. Interpret and utilize data obtained from noninvasive and invasive monitoring modalities.

6. Calculate, initiate, and manage fluid and blood component therapy.

7. Recognize and appropriately respond to anesthetic complications that occur during the perianesthetic period.

8. Pass the Council on Certification of Nurse Anesthetists' (CCNA) certification examination in accordance with CCNA policies and procedures.

d. Communication skills are demonstrated by the graduate's ability to:

1. Effectively communicate with individuals influencing patient care.

2. Utilize appropriate verbal, nonverbal, and written communication in the delivery of perianesthetic care.

e. Professional responsibility is demonstrated by the graduate's ability to:

1. Participate in activities that improve anesthesia care.

2. Function within appropriate legal requirements as a registered professional nurse, accepting responsibility and accountability for his or her practice.

3. Interact on a professional level with integrity.

4. Teach others.

5. Participate in continuing education activities to acquire new knowledge and improve his or her practice.

6. Demonstrate knowledge of wellness and chemical dependency in the anesthesia profession through completion of content in wellness and chemical dependency (COA, 2014, pp.5-8).

Appendix D

Recruitment Email

Dear CRNA colleague,

You are invited to participate in a research study as part of my doctoral study at Indiana University of Pennsylvania. If you are a CRNA who has been certified for ten years or less and speak English you are eligible to participate. The purpose of this study is to describe the experience of first SRNA clinical rotations in the context of pre-clinical preparation. Participation in this study will involve one or two individual interviews at a mutually convenient time and setting, which includes the option to conduct the interview being conducted via Skype. Each interview is expected to last approximately 30 to 40 minutes. There are no known physical risks. It is possible you may experience brief discomfort in relaying information if you have negative memories of your first clinical experience.

You may find the interview experience enjoyable, and as a participant you will help to add to the body of knowledge that strengthens SRNA education, as well as our future workforce.

Your participation in this study is voluntary. You are free to decide not to participate in this study or to withdraw at any time without adversely affecting your relationship with me. If you choose to withdraw, all information pertaining to you will be destroyed. If you choose to participate, all information will be held in strict confidence as you will be assigned a pseudonym in order to keep your information anonymous, and all information will be kept either in a locked file or password protected computer, both accessible only by me.

Attached is an informational sheet and consent for you to review. The consent will be signed at the time of your interview. In the event the interview is being conducted via Skype, the consent will be obtained prior to the interview. If you are willing to participate in this study, please reply to this email and I will contact you to set up an interview.

Thank you for your time and consideration to help with my dissertation study!

Sincerely, your colleague,

Rebecca Stoudt, DNP CRNA PhD(c)
qvvt@iup.edu
570-713-4453

## Appendix E

### Email Informational Attachment

As part of the requirements for a PhD at Indiana University of Pennsylvania, I am completing a dissertation. My study is concerned with how preparation SRNAs receive prior to starting their first clinical rotation affects their transition to the clinical environment. My Doctoral Committee has reviewed my study, and IRB approval has been obtained from Indiana University of Pennsylvania.

The study will involve one or two 30-40 minute interviews at a mutually agreed upon time and setting. You have been asked to participate because you are a CRNA certified for ten years or less who may still recall their first clinical rotation. Your participation is strictly voluntary, and you give consent for your participation by signing and returning the consent form. You have the option of withdrawing at any time—from before the study commences to after data collection has started. You may also withdraw after your interview is completed and your data will be destroyed.

I will ensure that no clues to your identity appear in the dissertation. Any extracts from what you say that are quoted in the dissertation will be entirely anonymous, and you will be assigned a pseudonym that will be used with your responses. The data will be kept anonymous for the duration of the study. No one in my dissertation committee will have access to your interviews or will be made privy to your responses. On completion of the dissertation, all data will be retained for three years in a locked file and password protected computer and then destroyed.

I don't envision any negative consequences as a result of your participation. However, it is possible that talking about your experience in this way may cause brief distress if you have a negative experience to share.

The results will be presented in the dissertation and will be seen by my dissertation committee. The dissertation may be read by future students, and the study may be published in a research journal or presented at a conference.

If you need any further information, please contact me. Thank you for your consideration!

Rebecca Stoudt DNP CRNA PhD(c)
(570) 713-4453
qvvt@iup.edu.

Appendix F

Consent Form

Working title: "A Grounded Theory Approach to Examining First Clinical Rotations in Nurse Anesthesia Education in the Context of Clinical Preparation"

You are invited to participate in this research study since you are a CRNA who has been certified for ten years or less. The following information is provided in order to help you make an informed decision whether or not to participate. If you have any questions please do not hesitate to ask.

The purpose of this study is to describe the experience of first SRNA clinical rotations in the context of pre-clinical preparation. Participation in this study will involve one or two individual interviews at a mutually agreed upon time and setting, which includes the option of the interview being conducted via Skype. Each interview is expected to last approximately 30 to 60 minutes. There are no known physical risks. It is possible you may experience brief discomfort in relaying information if you have negative memories of your first clinical experience.

You may find the interview experience enjoyable, and as a participant you will help to add to the body of knowledge that strengthens SRNA education.

Your participation in this study is voluntary. You are free to decide not to participate in this study or to withdraw at any time without adversely affecting your relationship with me. If you choose to participate, you may withdraw at any time. All information will be held in strict confidence as you will be assigned a pseudonym in order to keep your information anonymous, and all original data linked to your name will only be accessible to me. Upon your request to withdraw, all information pertaining to you will be destroyed.

If you are willing to participate in this study, please sign the statement below.

**Researcher**:
Rebecca Stoudt, DNP, CRNA, PhD candidate
Department of Nursing and Allied Health, Johnson Hall
Indiana University of Pennsylvania
Indiana, PA 15705
570-713-4453
qvvt@iup.edu
**Dissertation Chair**:
Dr. Lisa Palmer
211 Johnson Hall
Indiana University of Pennsylvania
Indiana, PA 15705
724-357-2558
lpalmer@iup.edu

*This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (phone: 724-357-7730)*

VOLUNTARY CONSENT FORM:

I have read and understand the information on the form and I consent to volunteer to be a subject in this study. I understand that my responses are completely anonymous and that I have the right to withdraw at any time. I have received an unsigned copy of this informed consent form to keep in my possession.

**Name** *(please print):* _____

**Signature**:_____

**Date**: _____ Phone where you can be reached:_____

Best days and times to reach you: _____

I certify that I have explained to the above individual the nature and purpose, the potential benefits, and possible risks associated with participating in this research study, have answered any questions that have been raised, and have witnessed the above signature.

**Date: _____ Investigator's signature**:_____

## Appendix G

### Interview Questions

1. Describe your first few weeks or months of your first clinical experience.
2. Describe your comfort level during your first clinical rotation.
3. What did your program do to prepare you for clinicals?
4. Tell me about your coursework, orientations, or simulation prior to your first clinical rotation.
5. Did you have any simulation training prior to your first clinical rotation? What were your simulation experiences?
6. What other kind of preparation did you receive prior to clinical education? (Ex. walk-throughs, site orientation)
7. Is there anything that you think would have helped you better prepare for your first clinical rotation?
8. Do you think you were adequately prepared to start your first clinical rotation? Why or why not?

### Demographic questions

9. In what state was your program located?
10. How many students were in your graduating class?
11. Did you graduate from a front-loaded or integrated program?
12. How long from entry to your nurse anesthesia program did you start clinical training?
13. Gender? What was your age when you started the program?
14. In what year did you graduate from your NAP?
15. How long were you a RN/critical care nurse before starting your NAP?