

**THE CONTEXTUAL NATURE OF SAUDI ARABIAN
NURSING INTERNS' CLINICAL REASONING WHILE
UNDERTAKING MEDICAL/SURGICAL CLINICAL
INTERNSHIP**

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ABSTRACT

Today's dynamic and complex health care systems require contemporary nurses to be effective thinkers and decision makers. To develop this clinical reasoning and decision making ability, students of nursing require time and development to achieve the required skills, competency and reasoning ability. Nursing students in Saudi Arabia undertake a period of nursing internship which represents a transitional period from their nursing college studies to the commencement of professional practice. Little is known however about how these internship programs assist in the development of the nursing interns' clinical reasoning skills or their ability to make effective clinical judgements when involved in actual patient care situations.

The aim of this study is to determine the contextual nature and influences of a medical/surgical clinical internship program on the development of clinical reasoning in a cohort of female Saudi Arabian nursing interns.

A sequential explanatory mixed method research design was used to gather and analyse the data obtained. The complex nature of clinical reasoning required the researcher to apply triangulation in the form of multiple triangulations using a mixed methodology of three data sources. This methodology enabled the researcher to apply a credible approach to the study of the development of clinical reasoning in the cohort. Data were collected in two phases with phase one consisting of quantitative data collection via questionnaires introduced to 28 Interns twice at the beginning and end of Medical/Surgical rotations; and phase two comprising semi structured interviews with both the nursing interns, their clinical resource nurses and their clinical preceptors. The quantitative and qualitative data from both phases were then compared, contrasted and melded to present an overall picture of the contextual nature of the female Saudi Arabian nursing interns' development of clinical reasoning while undertaking their clinical internship medical/surgical rotations.

The data revealed that the interns experienced a reasoning leap following action impelled reasoning which enabled them to build the personal mental parameters needed to undertake both routine and non-routine clinical judgements. They identified that reflection on their practice and their questioning, which they self-monitored, were important. Of interest to the researcher was the possible effect of

cultural influences on the female interns and how this might possibly impact on their clinical reasoning development. The data, however, revealed a deliberate behavior of the female Saudi Arabian interns that facilitated their clinical reasoning development and enhanced the attainment of professional abilities.

The study found that the role of the nursing unit environment and the support of both the clinical resource nurses and the clinical preceptors were important in assisting the nursing interns to develop their clinical reasoning skills. The role of the college and the acquisition of prior knowledge were also identified as important to the nursing interns when undertaking their clinical rotations. The link between the academic body and the experiential clinical learning context was noted to be inseparable and an important factor to consider when preparing cohorts of nurses to enter the profession of nursing.

CERTIFICATION

I certify that the ideas, experimental work, results, analyses and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

Signature of Candidate Date

ENDORSEMENT

Signature of Supervisor/s Date

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CHAPTER 1 INTRODUCTION

This chapter outlines the foundation for this dissertation starting with an overview of information on the background of the study of nursing clinical reasoning, including its importance in undergraduate nursing education. An overview of the Saudi Arabian nursing internship program follows. The chapter then presents the research problem and its significance and underlining rationale for targeting nursing student interns as a senior student group to enable an understanding of the nature of their clinical reasoning when undertaking non-routine clinical judgments. Next, the research questions and the relevant processes, including the adopted methodology and the researcher's motivation for the clinical reasoning research, are presented. Finally, the chapter concludes with a general overview of the dissertation.

1.1 Background and significance of the study

Effective clinical reasoning is the antecedent to sound clinical nursing judgments (Tanner 2006) and involves the recognition and response to unfolding clinical situation (Mahoney et al. 2012). With current global nursing shortages and understaffing (Al-Kandari & Thomas 2008; Ferrario 2003; Scott, Engelke & Swanson, 2008) and increased patient acuity levels in dynamic and complex health care systems, contemporary nursing practice needs effective thinkers and decision makers (Harjai & Tiwari 2009). This should be established early in undergraduate students (White 2003) to enable them to develop the systematic and logical thought processes essential for the delivery of safe and optimal nursing care (Levett-Jones 2013). Rahayu and McAleer (2011) indicated that clinical reasoning skills are not separable from knowledge relevant to a specific problem, but are individualized to individual learners. In their study, the authors concluded that expert physicians used illness scripts that usually develop in the third year of undergraduate study. These mental images of basic diagnostic knowledge aided the experts in diagnosing routine cases.

1.1.1 The Problem

Contemporary teaching and learning approaches do not always facilitate the development of a required level of clinical reasoning (Levett-Jones et al. 2009) though clinical reasoning skills are essential components of nursing competence (Banning 2008). Levett-Jones and colleagues (2009) emphasised recent global reports in the USA and Australia describing critical patient incidents that often involved poor clinical reasoning by graduate nurses and indicated unsafe clinical reasoning scores of more than two third of graduate nurses. Moreover, Saintsing, Gibson and Pennington (2011) indicated that between 49% and 53% of novice nurses with less than one year of clinical experience are involved in errors of nursing care. Similarly, Doody, Tuohy and Deasy (2012) highlighted that new nursing graduates in Ireland are lacking confidence in their knowledge and in their ability to make clinical judgments. A Middle Eastern report paralleled the previous highlights and indicated that many graduates were unable to demonstrate suitable decision making skills (Jahanpour et al. 2010). An adopted strategy in the UK to manage concerns about graduates' competence is to allow students to have a six month period of unsupervised practice towards the end of their program (Anderson & King 2008). This training period is labelled as unsafe despite of students' positive reports.

In addition to these problems, an estimated 30% to 50% of all new registered nurses in the USA elect to change positions or leave nursing completely within the first three years of clinical practice (Mackusick & Minick 2010, p. 335). The authors identified fatigue and exhaustion resulted from demanding job requirements, lack of support as new nurses were left alone, and emotional distress related to patient care as the major causes for changing positions or leaving nursing completely. One coping strategy for the nursing shortage resulted from this attrition includes the hiring of new nurses as soon as they graduate, sometimes even before sitting for licensure (Saintsing, Gibson & Pennington 2011).

1.1.2 The Solution

In facing the previous challenges, changes are called for in undergraduate clinical education to meet the accelerated demands of the changing healthcare systems for

competent graduates who can undertake effective clinical decisions (Tanda & Denham 2009; Tanner 2006). Hence, nursing educators and curriculum designers of undergraduate nursing programs need to identify workable enabling strategies for nursing students to reach effective and timely clinical judgments (Ferrario 2003; Simmons 2010). Oliver and Butler (2004) indicated that this is attained when the nature of the students' clinical experience, including their clinical reasoning, is strategically considered while implementing clinical learning in undergraduate nursing curricula. This should be superior to the continuous addition of more clinical hours to increase the level of nursing competence (Oliver & Butler 2004; Wotton & Gonda 2004), or undertaking unsafe measures of involving senior students in unsupervised practice periods towards the end of their program (Anderson & Kiger 2008) or hiring graduate nurses (Saintsing, Gibson & Pennington 2011) without ensuring their readiness to undertake safe and effective clinical decisions.

Benner and colleagues' (2010) called for radical transformation of nursing education to teach the nursing student how to be a nurse rather than doing nursing (Vitello-Cicciu 2010). In their book, Benner and colleagues' (2010) recommended a shift from an emphasis on critical thinking to an emphasis on clinical reasoning and suggested a postgraduate year of internship in a clinical setting to help reform nursing education. According to these authors, the recommended reform calls for finding a more effective approach to the teaching knowledge base and assisting students to apply this knowledge.

In Saudi Arabia, the internship period is of paramount importance. Student internship represents a transitional period to professional practice. The internship programs in Saudi Arabia are sponsored by academic institutions and facilitated by medical facilities. However, little is known about how these programs consolidate academic nursing knowledge with clinical experience and no supportive evidence is available showing their influence on the development of interns' clinical reasoning. Throughout this dissertation, the female Saudi Arabian nursing interns will be referred to as 'interns'.

The Saudi internship program was initiated to facilitate job engagement and interns' retention upon graduation and to help students attain the requirements of professional

practice while under supernumerary status. When the nature of interns' clinical reasoning is strategically considered in internship curriculum design, implementation and evaluation, the internship rotations can be utilized to their maximum potentials to graduate safe, confident, and competent decision makers. The baseline for this integration is the exploration of interns' clinical reasoning development throughout an internship rotation and the identification of factors that facilitated or hindered this development.

1.1.3 Methodological and Theoretical Inadequacies

The literature revealed many theories and methodologies, reasoning patterns or styles, and definitions linked to clinical reasoning. Unfortunately, a search of the literature for valid and reliable tools and approaches to measure the development of clinical reasoning yielded no results (Victor-Chamil 2013). Likewise, research on the reasoning patterns used by nursing students in their clinical judgment revealed inconsistent and contradictory findings. Benner (2001) indicated that nursing students used only a hypothetical deductive reasoning pattern (i.e. conscious rational calculation) when making clinical judgments (Benner 2001). Tanner (2006) argued that student decision making based on intuition may begin to develop early in the nurse's career and can strengthen or lessen in time depending on their clinical experiences and development of individual expertise. This is supported by Standing's (2007) study that concluded students' knowledge changed with experience and intuition and that students matured during the program and felt more self-confident. Chartier's (2001) study into nursing students' diagnostic reasoning skills indicated that the knowledge base of novice nurses lacks logical links. Diagnostic reasoning is an analytic approach that is extensively studied by nursing researchers (Chartier 2001; Da Cruz & Arcuri 1998; Ferrario 2003; Ritter 2003; Wong & Chung 2002).

Most of the research on students' decision making, problem solving or clinical judgment has been conducted by exposing students to a written scenario or simulated situation then asking them questions incorporated into a written test or an interview. Lee, Chan and Phillips (2006) questioned the think aloud techniques and protocol analysis as methodological or analysis tools in clinical reasoning or decision making

research as they affected subjects' performances and has not sufficiently approximated real life clinical performance. Other authors explored the trajectory of students' clinical reasoning or decision making by means of a reflective journal (Standing 2007)—which affected the neutrality of the adopted approach. Wong and Chung (2002) highlighted factors that contributed to insignificant findings in decision making and reasoning research in nursing. These include insensitive measures, small sample size, or the case study used. Additionally, the role of people involved in students' clinical training has never been explored. It is unrealistic to assume that students can acquire decision making skills without any formal guidance (Wong & Chung 2002).

1.1.4 A collective Approach

Throughout nursing clinical reasoning history, certain developmental milestones have been documented in the study of nursing clinical reasoning, decision making, and clinical judgment. Examining these milestones might result in producing a collective workable approach to study the development of students' clinical reasoning. The developmental areas encompassed the adoption or the development of basic theories and models that guided clinical judgment and reasoning research since 1960s. These efforts that were triggered by certain professional needs or meta-changes were developed to help nurses and nursing students to reason systematically in specific situations to acquire appropriate and safe clinical judgments. Subsequently, the nursing profession will continue evolving as new needs emerge. The current study is part of this sustained effort. The following paragraphs outline the major theoretical models that guided nursing clinical judgment and clinical reasoning research and the subsequent drive to adopt these models.

The 1960s witnessed the inaugural work of Hammond (2007) and colleagues who investigated the cognitive tasks representative of nursing problems (Taylor 2000). The many studies of Hammond applied to healthcare and other disciplines have resulted in the development of the Cognitive Continuum Theory (Hammond 2007). The adoption of this theory in nursing research was prompted by the researchers' belief that decision-making in nursing should result in rational and logical actions that are explicit and can be taught. This required complete reliance on a rationalist,

positivist approach to decision making to accord well with the trend toward rationale-based nursing, research and accountability (Lee, Chan & Phillips 2006). The major assumption of this theory is that decision making by practitioners and students contains both intuitive/experiential and analytical/rational thinking and that the context in which they work has a significant influence on the type of clinical judgment they undertake and, consequently, their decision making (Offredy, Kendall & Goodman 2008; Standing 2007).

Thompson and Dowding (2002) outlined three limitations linked to the social judgment approaches including the Cognitive Continuum Theory. Firstly, the approach assumes the information attached to a judgment situation in the environment can be identified. Secondly, the approach assumes that information is linked to a particular situation in a consistent fashion. Thirdly, the approach often uses vignettes (not real patients). Despite these limitations, the Cognitive Continuum Theory continues to document its significance in guiding decision-making research in nursing and other disciplines (Dhami & Thompson 2012; Offredy, Kendall & Goodman 2008).

The 1980s and the 1990s were the most influential periods in the study of decision making, problem solving, clinical judgment and reasoning in nursing. This leap has identified nursing as a distinguished science for its contribution to health care, education and research. In the eighties, the majority of the research into clinical judgment was informed by both decision theory and Information Processing (IP) theory (Taylor 2000). The IP Theory is a descriptive theory evolved through the work of Newell and Simon in the 1970s (Taylor 2000). They pointed out that human reasoning is limited by the capacity of the human memory (Thompson & Dowding 2002) and effective problem solving relies on the individual's ability to adapt to these limitations (Taylor 2000). The model is called the hypothetico-deductive model (Lee, Chan & Phillips 2006). Hypothesis generation means holding tentatively one's initial prediction (guess) based on pattern recognition and past experience and submitting it to empirical testing (Elaine, Fahy & Sundin 2010). The IP approach was criticized for its oversimplification in the diagnostic process which provides an incomplete picture that does not represent the reality of clinical practice (Lee, Chan

& Phillips 2006; Taylor, C 2000; Thompson & Dowding 2002). Additionally, the context is deemphasized by the model (Lee, Chan & Phillips 2006).

A third group of research work in these two decades was directed by Benner's (1984) seminal work as nurses resorted to another theoretical perspective away from the rigidity and artificiality of the statistical decision theories to continue pursuit of rational diagnostic reasoning and clinical decision making (Lee, Chan & Phillips 2006). The bulk of nursing decision-making research in the 1990s focused on testing Benner's (1984) skill acquisition model in clinical practice, exploring dimensions of expertise, or adopting the IP Theory as an alternative to Benner's approach to guide relevant research and clinical decision making. While Benner's (1984) skill acquisition model adopted a hermeneutic, intuitive approach, the IP Theory focused on rational thought (Thompson & Dowding 2002). The intuitive models suggest that the knowledge regarding clinical judgments and decision making is intangible and almost impossible to communicate (Thompson & Dowding 2002). Altmann (2007) claimed that the relationship between the context and the trajectory towards expertise was not clearly described by the skill acquisition model.

The possible drivers for this scholarly work in the 1980s and the 1990s were the generation of the social policy statement by the American Nursing Association (ANA) in 1982 and the shift towards competency-based education and practice. The social policy statement has separated nursing from medicine and represented nurses' decisions as scholarly in nature in the United States of America (USA) (Hobbs 2009). As a result, the terms 'diagnose', 'diagnosis', and 'scope of practice' began to have legal implications and the 'Nursing Process' became the foundation for clinical judgment (Alfaro-LeFevre, 2004). These accountability obligations demanded a definition of the independent clinical decisions carried out by nurses (Thompson & Dowding 2002). Accordingly, extensive research targeting the diagnostic reasoning component of the nursing process was a major product of this period. Unfortunately, the main focus of practice in nursing is less obvious than the focus in medical practice (Thompson & Dowding 2002). In medicine, clinical competence involves diagnosing known and undefined clinical problems that will guide subsequent data collection to solve these problems (Anderson et al. 2008; Lee, Chan & Phillips 2006). The core in nursing appears to be directed to the management of patient

problems and their treatment, not their diagnoses (Thompson & Dowding 2002). Therefore, the need continues for a model that addresses the unique nature of nursing practice.

In response to the competency-based requirements, general competency statements and standards were generated by regulatory bodies in the USA, the United Kingdom (UK) and Australia to ensure that graduating nurse generalists meet clients' and societies' needs for safe clinical practice (Alfaro-LeFevre 2004; Delaune & Ladner 2002; Grealish & Smale 2011; Thompson & Dowding 2002). Effective clinical judgment, reasoning and problem solving are recognized as integral components of a nurse's competence (Taylor, 2000; Thompson & Dowding 2002). In the 1990s, regulatory bodies in the USA and the UK demanded that critical thinking and reflection become essential components of nursing curriculum and professional practice (Kuiper & Pesut 2004). Nursing faculties in these two countries and Australia were mandated to cultivate and assess the critical thinking of undergraduate students (Ku 2009). Hence, extensive relevant research started being published during this period. Difficulties linked to definitions of competency, measurement and assessment have shifted the focus towards more tangible components like critical thinking disposition or the cognitive aspects of critical thinking such as reasoning (Ku 2009).

The 'competence level' is one of the skill acquisition stages of Benner's model (1984) that described the abilities of a competent practitioner. This might be a possible reason for nursing leaders adopting this model as a competency model, in addition to its original purpose as a developmental model, to assist nurses gain specific abilities in a particular setting. The model's abstraction (Altmann 2007) did not support this manoeuvre but, rather, may have led to the development of a relevant competency model based on its propositional statements as a philosophy. Benner, Tanner and Chesla (2009, p. 9) stated that 'the domains in which such skills develop admit of a potentially unlimited number of relevant facts and features. The ways that these elements interrelate to produce later events is often unclear and not capable of being captured by precise rules'.

Another development in the study of clinical reasoning and decision-making flourished as the Evidence Based Practice (EBP) movement encouraged nurses to rely more on melding individual clinical judgment and expertise with the best available external evidence to generate the kind of practice that is most likely to lead to a positive outcome for a patient (Day 2009). The definition recognizes the reliable professional judgment gained through superior, reproducible performance as a major component of EBP. A shift in the focus in the new millennium to the competency-based clinical judgment and expertise paralleled the EBP movement. High fidelity simulators and skill labs became effective means to enhance students' and professional nurses' clinical reasoning and judgment where mechanisms relevant to skill maintenance, enhancement and testing were examined (Ericsson et al. 2006; Schaverien 2010).

Consequently, many clinical judgment models were engendered to help nurses and nursing students attain related independent practice as an essential milestone in their journey towards expertise. Tanner's (2006) model is one of the models generated based on an integrative review of about 200 qualitative and quantitative research papers. Tanner (2006) questioned the nursing process, citing that its usefulness is limited to only teaching new students one style of problem solving; and, subsequently, proposed a four step model that includes noticing, interpreting, responding and reflecting.

Lasater (2007) attempted to evaluate Tanner's (2006) model to develop a relevant rubric as an assessment tool that delineates the expectations for a task or assignment. The rubric was designed to facilitate communication among students and provide students, preceptors and faculties with the appropriate language to foster both feedback and discussion. Tanner's (2006) model is utilized because it fulfills the nursing clinical judgment situation in complex patient situations that involve changes in status and uncertainty. The rubric is a credible tool to assess clinical judgment development in the simulation environment (Victor-Chmil 2013).

The most recent initiative is the work of Hoffman (2007, in Levett-Jones et al. 2010, pp. 516-517) and Levett-Jones (2013) that resulted in the development of a model or a prescriptive clinical reasoning cycle aligned with the work of Tanner (2006) and

Lasater (2007) and generated to inform nurses' and students' decision making. The cycle consists of the stages of look, collect, process, decide, plan, act, evaluate and reflect (Levett-Jones 2013). The clinical reasoning cycle represents an alternative to the traditional nursing process to guide nursing practice.

Despite being inadequate to continue supporting and guiding nursing clinical reasoning and clinical judgment as a single framework, each of the previous theoretical models (i.e. the Cognitive Continuum, the IP, and the Skill Acquisition Model) constitute a significant milestone in the trajectory of the study of these mental processes in nursing. Additionally, the clinical judgment models of Tanner, Lasater, and Hoffman and Levett-Jones represented possible substitutes for the traditional nursing process. The fundamental strengths of the individual theoretical or clinical judgment model need to be analysed to formulate a collective approach to explore and explain the complex nature of nursing clinical reasoning and clinical judgement. This analysis is employed by this study (see chapter two) and presents a major contribution to the clinical reasoning research. The developed approach to study the development of clinical reasoning within an internship context with its invented tools (see chapter 4) will contribute to enhance internship programs in Saudi Arabia and will constitute the basis for future research with similar global programs. Results can be cascaded to the relevant undergraduate bachelor program through various workable recommendations incorporated into chapter six of this dissertation.

1.2 The internship program

Undergraduate nursing students from a major nursing education facility in Saudi Arabia undertake their year-long post theoretical clinical internship in an associated tertiary medical facility that offers them a facilitated clinical experience in all areas. Currently, the nursing program is restricted to female candidates. This clinical nursing internship has been designed to meet the Saudi Arabian Nursing Board's (SANB) requirements for registration, as well as increase nursing students' confidence, competence and retention. The 12-month program was designed with the focus on the clinical teaching process for consolidation purposes.

At the time of the program, it is assumed that students have the fundamental information needed for the care of adult patients and are ready to be exposed to clinical experiences to solidify their clinical competence. A College of Nursing at a national university offers a four-year Bachelor of Science in Nursing (BSN) program degree through a conventional program (Stream I) to high school graduates, and a two-year accelerated program (Stream II) to university graduates with a degree in physics, chemistry, mathematics or biology. Both programs are restricted to females. The driving force for establishing the accelerated program was the shortage of Saudi nurses (Suliman 2006). The Internship Program must be completed prior to the nurse obtaining a nursing license. As such, it is part of the BSN curriculum, commencing immediately after successful completion of the academic requirements and course work of stream I or stream II. The program is designed to enhance the socialization of new graduates into the professional nursing role, and to assist them in application of their theoretical knowledge to clinical practice, while consolidating their clinical nursing skills in medical, surgical, pediatric and maternity areas. This period of extensive supervised clinical training is intended to facilitate the transition of graduates to a nurse generalist role.

The Internship Program consists of two phases. During the initial mandatory phase, students spend three months in a general medical unit, three months in a surgical unit, one month in a general paediatric unit, and one month in an obstetrics/gynaecology unit. By the end of the sixth month, the intern is expected to assume full patient load at a general adult care unit under the supervision of her preceptor. The second elective four month phase is designed to meet the intern's preference regarding placement after graduation. The program has a director at the college level and a coordinator at the hospital level. They collaborate to meet the objectives of the clinical nursing internship program which contributes to the overall objectives of the Bachelor of Nursing program. Furthermore, the intern coordinator at the hospital level is responsible for the nursing interns' clinical placements. This ensures equitable intern distribution to the various units (College of Nursing-King Saud Bin Abdulaziz University for Health Sciences 2009).

A Clinical Resource Nurse (CRN) or the nursing unit educator, who reports to the unit nurse manager, is responsible for overseeing and evaluating interns' clinical

experiences in the individual units including competency validation. While in the clinical setting, interns are expected to function within the defined Scope of Practice which delineates their role and clinical scope while in the clinical learning environment. This document is regarded as a comprehensive guide for Nursing Services staff, providing them with guidelines on how to manage, supervise, monitor and evaluate Intern clinical training experiences. Thus, this document protects interns, patients and their families. The Internship Program involves the use of experienced registered nurses as clinical preceptors. The preceptor who clinically supervises the intern - on one to one basis - is responsible and accountable for all aspects of patient safety, and thus it is essential that preceptors are fully informed of intern scope of practice to ensure that delegation of patient care under direct supervision is safe, appropriate and consistent. The preceptor provides the unit CRN with daily reports regarding intern's progress.

The internship program is reviewed annually by the college in collaboration with the hospital's Nursing Services to determine the level of achievement of the program objectives and to identify obstacles impacting the program. Focus groups are formulated from different parties involved in the interns' clinical training and are facilitated by the Director of Interns Program, College of Nursing (CON). To date, the role of CRN and clinical preceptor in interns' clinical judgment or clinical reasoning has not been explored.

Within this introductory background, a brief description of the cultural context of the Saudi Arabian healthcare system will help in understanding the subsequent study results. The majority of the nursing workforce in Saudi health care facilities is constituted of expatriate nurses and only 29.1% of this workforce are Saudis (Almalki, FitzGerald, & Clark 2011). Although the majority of patients and their families are Saudis with Arabic as their first language, most healthcare providers communicate in English. However, many expatriate nurses do not speak English as their first language nor are they competent in Arabic. Moreover, the expatriate nurses have their own beliefs and values that may differ than those in Saudi culture (Almalki, FitzGerald, & Clark 2011, p.305). Although the unit assistant who is usually Saudi or Arabic speaking clerk is responsible to interpret for the expatriate nurses and patients, the Saudi nurses are helping in these interpretation efforts.

Therefore, the Saudi families are providing a family member ‘sitter’ to assist in these communications. This sitter is usually a guardian or an older brother/sister to the patient.

1.3 Study significance and Rationale for targeting the Internship program

In addition to the previous reasons highlighted into the study’s significance (section 1.1), the internship program was targeted by this study to provide a workable baseline for the subsequent improvement efforts recommended to develop the clinical reasoning abilities of interns in Saudi Arabia. This was attained as the contextual nature of interns’ clinical reasoning (when assessing adult medical or surgical patients to identify significant cues, interpreting data to identify patient’s problems, and deciding to intervene, respond, or take an action, or not) was explored. Additionally, the reasoning styles or patterns used by the interns in their non-routine clinical judgments and factors which facilitated or hindered the development of these patterns, including the role of people involved in the nursing interns’ clinical training at adult medical or surgical units, were described and explained.

This study was an opportunity to develop a unique Saudi Arabian clinical reasoning contextual model to guide the training of undergraduate nursing students and nursing student interns. Designing a relevant model and offering recommendations to improve the current internship programs in Saudi Arabia required the availability of credible clinical judgment or reasoning empirical evidences obtained by reliable means invented by this study that recognised the complexities of both clinical judgment and clinical reasoning.

The local Saudi studies on thinking processes were designed to uncover students’ learning styles, critical thinking, and then link these with other variables such as academic success (Suliman 2010; Suliman 2006). Suliman (2006) focused on providing a snap shot of the learning styles and critical thinking abilities of Stream I and Stream II nursing interns from a major Saudi Arabian tertiary nursing institution. No other variables that may influence clinical reasoning skill development were

identified in this study. In a later study, Suliman (2010) found no relationship between learning abilities or styles and emotional social intelligence and academic success (Suliman 2010). Furthermore, neither of these studies focused on how nursing students develop their clinical reasoning skills or clinical judgment processes during their clinical training.

Other reasons for targeting the internship program including its unique nature as linked to the undergraduate program of the same local college of nursing. This will facilitate the implementation of the dual set of recommendations targeting both the internship and the undergraduate programs which will ensure cohesion. The recommendations when cascaded to the undergraduate program can benefit individual courses and the entire program for better clinical reasoning development. The interns' supernumerary status ensured patient safety at all times as the clinical preceptors were accountable for interns' patient care decisions. While under the supernumerary status, the student shall not, as part of their program of preparation, be employed by any person or body under a contract to provide nursing care (Allan, Smith & O'Driscoll 2011). This guaranteed that these decisions were discussed with their preceptors before implementation which provided the study with a credible data source who was well versed of these decisions before and their underlying clinical reasoning implementation. This was the reason for including clinical preceptors as major data sources in this study.

While testing the adequacy of the length of the internship program is beyond the scope of the current study despite it was being debated in Saudi literature (Almalki, FitzGerald & Clark 2011), however, the study findings and recommendations can base for future research initiatives investigating the suitability of the program- or even its rotations- duration.

The current study was guided by the following assumptions that supported the adoption of the subsequent research strategies:

1. Clinical reasoning is a complex phenomenon that requires a comprehensive research approach.

2. Interns are involved in routine and non-routine clinical judgments on a daily basis. Any experience with a new patient represents a non-routine encounter.
3. Nursing processes and care planning direct nursing actions and students' clinical training in adult care medical/surgical general units.
4. Clinical reasoning has a contextual nature—based on the most comprehensive clinical judgment and reasoning review by the theoretical models of Tanner (2006), Hammond (2007), and Benner, Tanner and Chesla (2009).
5. Human reasoning contains rational and intuitive components based on the individual's rational-intuitive tendencies (a researcher's assumption based on his thorough analysis of relevant literature).
6. The interns possess a combination of studentship and professional characteristics. This will facilitate reflecting the study results to both the undergraduate program and the early stage of professional practice.

The exploration of the contextual nature of interns' clinical reasoning included description and identification of interns' perceptions of the level of independence in their clinical reasoning and clinical judgment, general reasoning behavior (antecedents, patterns and consequences of their clinical reasoning), their rational-intuitive tendencies, and the impact of their internship experience and adult medical/surgical experience on these reasoning components. The reasoning patterns or styles used by interns who experienced changes in the previous factors during their internship experience at medical or surgical units were identified. To facilitate full exploration of the clinical reasoning phenomenon, interns' clinical reasoning experiences when making non-routine clinical judgments for adult medical or surgical patients were described. This qualitative description of interns' clinical reasoning was based on the perceptions of both the interns themselves and those who facilitated the interns' clinical experience (i.e. CRNs and clinical preceptors).

An explanation of how interns developed their clinical reasoning processes included the identification of factors that facilitated or hindered this development throughout their medical/surgical internship experience. These factors include the role of CRNs and clinical preceptors in this development (or not) as perceived by interns, CRNs, and clinical preceptors. The adopted research approach with its invented tools has resulted in the development of an internship contextual clinical reasoning model that

will enhance the development of Saudi interns' clinical reasoning and the best utilization of clinical internship to its maximum potential.

1.4 Research questions

The purpose of this study is to address and answer the following central questions:

1. What impact does the medical or surgical internship experience have on Saudi female nursing interns' perceptions of their general reasoning behavior, level of independence in clinical judgment and reasoning at the time of uncertainty, and rational-intuitive tendencies?
2. What processes occur in developing clinical reasoning skills at medical or surgical units by Saudi female interns to enable them to make non-routine clinical judgments for adult patients?
3. What factors influence the development of clinical reasoning abilities in female nursing interns at medical or surgical units in Saudi Arabia?

To explore the complex nature of the clinical reasoning of female Saudi Arabian interns' and to determine how they develop clinical reasoning skills and the factors that might influence this development, a mixed method research design was adopted to guide this study. Whitehead and Elliot (in Schnieder et al. 2007, pp. 248-267) discussed the importance of understanding how methodological approaches must complement each other to ensure each provides a more complete and comprehensive research outcome.

A sequential explanatory research design was used to conduct this study (Creswell & Zhang 2009; Whitehead & Elliott, in Schnieder et al. 2007, pp. 248-267). As these authors stated, the sequential design might initially separate the quantitative and qualitative research paradigms, but the two are eventually combined to determine the overall findings. The complex nature of clinical reasoning demanded the use of strategies to increase the overall credibility of the study (Creswell 2007). The strategy generating the most interest is triangulation (Burns & Grove 2005)—which

refers to the use of two or more theories, methods, data sources, investigators or analysis methods in a study (Burns & Grove 2005; Streubert & Carpenter 2011). Multiple triangulations (i.e. the combination of more than one type of triangulation) were employed by using mixed methodology (i.e. between-methods triangulation) and three data sources. The quantitative data were collected via a questionnaire and the qualitative part has utilized in-depth interviews as the method for data collection. The latter method entailed collecting data from multiple sources (interns, CRNs, and nurse preceptors) in an attempt to obtain diverse views of the phenomenon under study and attain credibility for the study. This refers to data triangulation (Burns & Grove 2005).

The study was conducted in two phases. **Phase one** was devoted to quantitative data collection. A questionnaire composed of five parts was used. These included a demographic or background section, Clinical Reasoning-Antecedents and Consequences Scale (CRACS) as a measure of the general reasoning behavior, independence in clinical judgment and clinical reasoning, and the rational-intuitive styles' scale. The questionnaire was administered at the beginning (appendix A1) and at the end (appendix A2) of the medical/surgical internship rotation. The information obtained has provided an answer to the first research question which explores the impact of medical/surgical experience.

Phase two comprised semi structured interviews with interns with the questions based on the interpretation of data collected in phase one. Additionally, the CRNs overseeing interns' clinical training and the Nurse Preceptors were also interviewed using semi structured interviews. At the end of this phase, answers to the second and the third research questions were obtained. The qualitative phase was guided by the Husserlian phenomenological descriptive philosophy (Burns & Grove 2009). The data of the two phases were then compared and melded to present an overall picture of the contextual nature of the interns' clinical reasoning when undertaking non-routine clinical judgments. Finally, the validation and contrasting of the quantitative and qualitative results presented a credible approach to study the development of clinical reasoning in nursing, especially in undergraduate nursing programs.

By obtaining a full understanding of the nature of these mental processes and by identifying the factors that facilitate or hinder the development of female nursing interns' clinical reasoning skills and the nature and trajectory of these skills, recommendations were made explicit for future program development and for better utilization of CRNs' and preceptors' abilities in helping interns develop these mental processes. Additionally, the recommendations were cascaded to the undergraduate program to help junior nursing students

1.5 Researcher's motivation for clinical reasoning research

One of the major motivations for this study is the researcher's passion for nursing and the belief that clinical reasoning is central to any professional development. As a nurse educator for more than 18 years, the researcher has also constantly held the belief that reliable nursing actions are based on good reasoning and demonstrates the vital contribution nursing has to individual patient welfare and to society.

Throughout the course of the study, the researcher constantly bracketed these passions and experiences aside in order not to impact the study data and to maintain neutrality. The researcher's instructional theoretical background and knowledge about the internship program constituted the main bracketing areas. This has been done within the context of reflexivity and the Husserlian phenomenological descriptive philosophy described in chapter three. Examples of this reflexivity are incorporated into chapters four and five.

1.6 Overview of the dissertation

Following this introductory chapter, the literature review chapter (Chapter 2) presents and integrates the information available in the clinical reasoning and mental processes literature as defining the core concepts of the study, including clinical reasoning, clinical judgment and the various reasoning patterns. The review includes different theories and models that informed clinical reasoning research in nursing and other disciplines. Additionally, factors that impacted these mental processes were identified. Chapter 3, Methodology, discusses the adopted mixed method approach

and its significance in explaining the clinical reasoning processes. The discussion includes a rationale for the inclusion of various components and scales into the quantitative questionnaire, the utilization of the qualitative approach and its governing philosophy, and the adoption of various measures to support the internal validity of the quantitative component and the trustworthiness of the qualitative part. The sampling techniques and data collection and analyses procedures are also presented. Chapter 4, Results, presents both the quantitative and the qualitative findings separately. Chapter 5, Discussion, presents the essence of the study results and then compares both the qualitative and quantitative data sets with relevant literature to determine their relevance to the body of clinical reasoning knowledge. The chapter concludes by melding the two sets after comparing and contrasting with each other and with relevant literature. Specifically, it presents a thorough description of the nature of clinical reasoning of female Saudi interns when undertaking non-routine clinical judgments for medical/surgical adult cases. Chapter 6, Conclusion, takes the results to a higher level and presents recommendations targeting the entire internship program. Additionally, the recommendations are cascaded to the undergraduate program. Nursing implications are also presented, and educational and professional fields that may benefit from the study results and from the adopted research methodology are identified. The limitations of the study are also outlined in Chapter 6.

CHAPTER 2 LITERATURE REVIEW

This chapter represents an extensive review and analysis of relevant literature significant to the research questions posed in this study. The centre of attention is the development of mental processes of senior nursing students and the factors affecting this development. Though considered undergraduate students, Saudi nursing interns are at a transitional period between studentship and professional practice. It is assumed that they possess a combination of both dependent (novice) and independent (more experienced) reasoning styles. Hence, the scope of this literature review has been broadened to include literature relevant to more experienced nurses. A detailed description of the Saudi Arabian nursing internship program was described in Chapter 1.

Moreover, the review offers explanations for the inconsistencies within relevant research with a focus on the background theory and the utilised methodology. This aided in generating the study's major assumptions and the conceptual definition of major study concepts and relevant reasoning patterns. These definitions have impacted the subsequent operational definitions of these variables incorporated into the methodology chapter. The evaluation of the relevant theoretical and empirical literature has furthermore contributed to developing a credible approach to study the development of clinical reasoning in nursing clinical education. This approach has ultimately aided in setting the recommendations to improve the clinical reasoning skills of female nursing interns in Saudi Arabia.

The framework for this review encompasses four sections following this introduction. Section one analyses definitions relevant to clinical reasoning, clinical judgment, decision making, problem solving, and diagnostic reasoning. This approach is employed as considerable overlap exists in the literature concerning the meaning attributed to these concepts. Section two examines the types of clinical judgment, decision making, and reasoning patterns, styles or strategies found in the literature. Additionally, this section presents the debate regarding the usefulness of the nursing process as a problem solving or clinical judgment process. From the analysis in sections one and two, relevant definitions are identified for consistent use

throughout the thesis to facilitate understanding and meaning. Section three summarizes the factors affecting these mental processes followed by the chapter's conclusion. The conclusion includes a final summary and 'lessons learned' that address the researcher's reflective component regarding this chapter. Within these sections, relevant research is presented and debated.

In order for the researcher's openness not to be influenced by the information in the literature, phenomenologists believe in reviewing the literature after data collection and analysis (Burns & Grove 2009). Hence, the literature review of this study was conducted in two parts. The initial literature review was completed to support the study's rationale and to facilitate the development of the quantitative questionnaire and the overall research approach. The second and more comprehensive review commenced after data collection and analysis. This extensive review explored a wide variety of published English literature, including journal articles, books and dissertations, and utilised various bibliographic databases, namely, the Cumulated Index to Nursing and Allied Health Literature (CINAHL), Medical Literature online (MEDLINE), Science Direct, Psychology Information (PsycINFO), SAGE, Joanna Briggs Institute (JBI), Cochrane Library, and the National Guidelines Clearinghouse. The review focused mostly on recent literature (beyond 2000), however, for historical purposes, earlier literature is included. The keywords used were Clinical Reasoning, Clinical Judgment, Clinical Decision Making, Clinical Problem Solving, Diagnostic Reasoning, Nursing, Nursing Students, Adult Care Units, Hospital, and Saudi Arabia.

2.1 Clinical judgment, reasoning and decision making

There is a considerable overlap in the literature concerning the meaning attributed to clinical decision making, clinical judgment, diagnostic reasoning, and clinical reasoning (Alfaro-LeFevre 2004; Oliver & Butler 2004; Thompson & Dowding 2002). This section analyses various concepts relevant to these mental processes in an attempt to clearly label these concepts and their defining attributes for consistent use throughout the thesis to facilitate understanding and meaning.

Alfaro-LeFevre (2004) considered clinical judgment as a synonym for clinical reasoning and the latter is used to define critical thinking. Additionally, the author used the label 'decision making' inconsistently—and often interchangeably—with problem solving. This intertwining of these interrelated concepts prevents defining their attributes for operational purposes. In relation to problem solving, there is little disagreement in the literature regarding its meaning. The concept constantly describes the process whereby a dilemma is identified and corrected (Sullivan & Decker 2005).

Contrary to problem solving, critical thinking is a concept describing mental processes that is very much debated in the literature. Kuiper and Pesut (2004) referred to critical thinking as the intellectual work of mind (cognition) that involves reasoning and self-discipline. They added that cognition and meta-cognition (reflective thinking) are essential components for the development of reflective clinical reasoning. The authors defined reflective thinking as a careful consideration and examination of issues of concern related to an experience. This integrative review highlighted that the literature revealed a link between the cognitive skills of the critical thinker and his/her years of practice, but not with his/her clinical judgment or decision-making abilities (Kuiper & Pesut 2004). The numerous difficulties coupled with critical thinking definition, measurement and assessment have shifted the focus towards more tangible components like critical thinking disposition or the cognitive aspects of critical thinking such as reasoning (Ku 2009). In the current study, narrative-reflective thinking is one of the three targeted reasoning patterns that were measured in the phases of data collection.

In healthcare practice, clinical judgment and clinical decision making are interlinked (Thompson & Dowding 2002). Dessler (2004) referred judgment to the cognitive or thinking aspects of the decision making process. This inference is congruent with Dowie's (1993, cited in Thompson & Dowding 2002, p. 7) significant distinction between the two concepts. Dowie (1993, cited in Thompson & Dowding 2002, p. 7) defined judgment as 'the assessment of alternatives' and decision as 'choosing between alternatives'. A more recent contribution by Thompson and Stapley (2011) supports the notion of Dowie (1993, cited in Thompson & Dowding 2002, p. 7) and indicates that judgment represents an evaluation, and decision represents a choice

between alternatives. Despite these authors' significant 'theoretical' distinction between the two concepts, there is lack of supporting empirical evidence for this consecutive, sequential link between clinical judgment and decision making. It is evident that these concepts represent inseparable mental processes that occur concurrently. This is supported by the educational literature that asserts assessment and evaluation as processes that usually result in a choice or a selection based on criteria (Bastable 2003; Quinn 2000). Hammond (2007) viewed judgment as an integral part of the cognitive activity and used the terms judgment and decision making interchangeably. Hammond and colleagues were the inaugural authors who investigated nurses' mental processes in the 1960s (Taylor 2000). This study will use the terms 'judgment' and 'decision making' interchangeably.

Clinical judgment is defined as 'an interpretation or conclusion about a patient's needs, concerns or health problems, and/or the decision to take action (or not), use or modify standard approaches, or improvise new ones as deemed appropriate by the patient's response' (Tanner 2006, p 204). This process of modification and inauguration of new approaches to meet patients' responses is supported by Taylor (2006), who indicated that decision making is composed of a series of 'assessment-change-reassessment' cycles. Benner, Tanner and Chesla (1996) clarified the individualized and social dimension in the previous definition when they referred to clinical judgment as 'the ways in which nurses come to understand the problems, issues, or concerns of patients, to attend to salient information and to respond in concerned and involved ways'. Unfortunately, these crucial social terms, in addition to the two major concepts of Benner's model 'expertise' and 'intuition', were only described phenomenologically and not operationally in Benner's studies (Altman 2007). Nevertheless, the social component of the clinical judgment process cannot be neglected (Tanner 2006). Because of its comprehensiveness and applicability to all aspects of nursing care, this study will utilize Tanner's (2006) definition of clinical judgment.

The central concept of the current study is clinical reasoning that is usually interlinked with clinical judgment. Simmons (2010, p 1155) defined clinical reasoning as 'a complex process that uses cognition, meta-cognition, and discipline-

specific knowledge to gather and analyse patient information, evaluate its significance, and weigh alternative actions'. This definition indicates that the reasoning process entails many cognitive components that are attained at the evaluation cognitive level. This inference is supported by the defining attributes of clinical reasoning presented by Simmons (2010). These include data analysis, deliberation, heuristics (informal thinking strategies), inference (speculation), meta-cognition (reflective thinking), logic (argument), cognition (perception or awareness), information processing (organizing data), and intuition (Simmons 2010, p 1155). Despite their exclusive, exhaustive presentation, the abstraction of the previous attributes restricts their operational utility. Interestingly, the three major reasoning patterns (analytical, intuitive, and narrative) described by Tanner (2006) and operationalized in this study are part of the previous list of attributes. Tanner (2006, p 204) linked clinical reasoning directly with clinical judgment as this author defined clinical reasoning as 'the processes by which nurses and other clinicians make their judgments'. The recognition of these 'processes' in the form of three reasoning patterns (analytical, intuitive, and narrative) is not sufficient in clearly conceptualizing the 'clinical reasoning' concept for operational purposes because these patterns represent the means by which people reason, rather than the essence of reasoning. Paul and Elder (2008) defined clinical reasoning as a self-guided, self-disciplined thinking attempt to 'figure' something 'out', to settle some question or solve some problem. The concept 'figure out' implies 'a discovery' of a decision or a solution, or the creation of a mental model for a task or a meaning for a fact (Petrina 2007). The creation of the mental model or the meaning is attained through a careful examination (evaluation) of the situation based on criteria or relevant rules. Due to the workability of the expression 'figure out' (despite its informal capacity), it will be incorporated into the subsequent definition of clinical reasoning.

Cranley et al. (2012) linked the two essential components 'clinical judgment' and 'reasoning' with the two primary nursing actions 'assessment' and 'decision making'. These primary nursing actions are essential components in each step of the nursing process because the nurse is required to continuously examine different sets of data (according to relevant criteria) when assessing a patient's condition to identify (and decide on) significant cues; when interpreting data to identify (and decide on) patient's problems; and when deciding to intervene, respond, or take an

action (or not). The relevant criteria are of two forms (types), internal or external. The internal criteria are individualized mental checklists or rules that are experientially learnt and developed. This form is asserted by both the hermeneutic-intuitive and the information processing theories and the relevant research, including heuristics studies (Benner, Tanner & Chesla 2009; Ferrario 2003; Simmons et al. 2003). Clinical guidelines, evidence based protocols, computerized decision support, and experts' opinions provide the best external 'criteria' sources of decision support in times of uncertainty (Thompson & Dowding 2002).

Despite the continuous debate regarding its practicality and usefulness, the nursing process is a conceptual framework that enables the student or the nurse to think systematically and process pertinent information about the patient (Huckbay 2009). While Alfaro-LeFevre (2004) viewed the nursing process as a systematic approach and the foundation for clinical judgment, Tanner (2006) argued that it is only useful to teach beginner students one type of problem solving; and it fails (when used as a single judgment tool) to account for the complexity of clinical judgment and its related factors. However, due to its use as the primary tool to guide students' clinical training by the College of Nursing of the Saudi Arabian interns targeted by this study, and because of its significance when coupled with clinical judgment and clinical reasoning, this research utilized the nursing process as incorporated into Tanner's (2006) definition of clinical judgment to direct data collection of study data in both the quantitative and the qualitative phases. More discussion of this approach is included in the methodology chapter of this dissertation.

A major component of the nursing care process that attracted many nursing authors to examine nurses' mental processes is the concept of 'diagnostic reasoning' (Chartier 2001; Ferrario 2003; Ritter 2003; Wong & Chung 2002). Lee and colleagues (2006) in their critical literature review of this concept found that the early literature in the 1970s and 1980s described the concept as 'clinical judgment' and the latter literature in the 1990s identified it as 'diagnostic reasoning'. Ferrario (2003) viewed diagnostic reasoning as a complex cognitive process for solving problems. Others viewed diagnostic reasoning as a component of decision making that involves recognition of cues and analysis of data in clinical situations (Wong &

Chung 2002). Lee, Chan and Phillips (2006) presented a framework illustrating the process of diagnostic practice and factors affecting this process. The process begins with interaction and communication, followed by the information seeking phase and, finally, the cognitive functioning phase that is composed of a series of clinical judgments. Personal, psychosocial and structural variables affect this process (Lee, Chan & Phillips 2006). While seeking to explore nurses' diagnostic reasoning process, the authors targeted the two reasoning processes—analytical and intuitive—and utilized one of three approaches: statistical theories, the Information Processing (IP) theory, or a phenomenological approach. Statistical theories aid in predicting diagnostic decisions; IP reveals the use of a hypothetico-deductive, analytical approach in diagnostic processes; and the phenomenologist researchers highlighted the intuitive reasoning pattern (Lee, Chan & Phillips 2006).

It is evident that the diagnostic reasoning research utilized similar approaches used by the decision making, clinical judgment and clinical reasoning studies. Additionally, the diagnostic reasoning process is recognized as a clinical judgment process rather than a separated component of the nursing care plan. Therefore, diagnostic reasoning literature is included in this review.

In summary, this section analysed various concepts pertinent to the mental processes, especially when a patient care judgment or decision is undertaken in healthcare clinical settings. This dissertation uses the terms 'clinical judgment' and 'decision making' interchangeably. Additionally, diagnostic reasoning literature was included in this review because the diagnostic reasoning process is identified as a clinical judgment process. Finally, clinical reasoning is conceptualized as an individualized mental ability that precedes clinical judgment or decision making with an attempt to figure out significant cues during assessment; patient's problems; and the required actions or patient care interventions. There is always a social dimension associated with each undertaken reasoned judgment in a clinical setting. Moreover, this mental ability can be regulated and developed to produce sound clinical judgments or decisions.

2.2 Types of clinical judgment and reasoning patterns

Decision making, clinical judgment and reasoning literature addressed numerous interrelated clinical reasoning types and patterns. This section provides an overview and a thorough analysis of the reasoning patterns used by nurses and nursing students at times of uncertainty or high error tendency; or when making non-routine clinical judgments.

Sullivan and Decker (2005) identified two types of clinical judgments or decisions. These are routine and adaptive or non-routine decisions. Routine decisions are made when the problem is relatively well-defined and quite common and where there are well-established guidelines such as rules, policies and procedures that can be used to solve the problem. Non-routine clinical judgments are needed when the problem has some unusual features and/or it is partially comprehended. While targeting nursing interns' clinical reasoning, this study focuses on the non-routine clinical judgments of this novice group.

Non-routine clinical judgments are usually linked with levels of uncertainty (Thompson & Dowding 2002). Moreover, the accelerated patients' acuity levels with complex disease processes, coupled with increased sophistication of medical technologies, precipitated high error rates in clinical judgments and patient related decisions (Cosby 2011; Levett-Jones et al. 2010). This calls for critical attention by nursing researchers to consider uncertainty (as a process component) and error (as an outcome component) when studying clinical decision making.

To contribute to the purpose of this study, the scope of the undertaken analysis is expanded to examine the most influential decision-making frameworks that guided nursing and medical clinical reasoning research for the following reasons:

1. While the current study focuses on developing a clinical teaching model that recognizes the special features of the nursing internship programs in Saudi Arabia—hence not guided by a decision making framework—this analysis of the theoretical literature (coupled with empirical evidences) facilitated the

development or adoption of relevant assumptions to enhance the logic of the entire study and rigorously guide its different phases.

2. The foci of the frameworks vary: while intuition is the main theme of Benner's model, rationality is targeted by the Information Processing Theory and both rationality and intuition are acknowledged by Hammond's Cognitive Continuum.
3. The types of the frameworks vary: some are process models such as Benner's model, and others are outcome/normative models such as Hammond's Cognitive Continuum.
4. The scopes of the frameworks vary: while some are too broad (e.g. Benner's model), others such as the Information Processing Theory have a limited scope.
5. The analysis of relevant theoretical and empirical literature solidified the conceptualization of the reasoning patterns used by less experienced nurses when making non-routine clinical judgments at a time of uncertainty. This comprehensive conceptualization facilitated the subsequent operational definition of these patterns.

This analysis has targeted the most influential theoretical perspectives in medical and nursing decision making research such as those of Hammond's Cognitive Continuum Theory (2007), Gestalt psychology (Bastable, 2003), Information Processing Theory (Newell & Simon 1972), and Benner's intuitive-humanistic decision-making model (Benner, Tanner & Chesla 2009). Despite the limited utilization of the principles of Gestalt psychology in nursing research, the Gestalt principle of insight was utilized as a criterion for comparison purposes due to its clarity and stability in the educational literature. In this section, the effectiveness of any theoretical perspective is judged against the consistency of its presentation in relevant literature and the clarity and feasibility of its proposed operational means to attain reasoned judgments and clarity in describing the consequences of the reasoning thought.

Because of the unclear nature of intuition in decision making literature, especially at times of uncertainty, the views of the above theories related to intuition and uncertainty were explored and analysed in this section. Additionally, major factors addressed by these theories that contribute to decision making were highlighted. A summary of these factors and those found in nursing decision making research are incorporated at the end of this chapter.

Several convenient reviews of decision making and clinical reasoning literature are readily available (Rovithis & Parissopoulos 2005; Simmons 2010; Tanner 2006). One of the most comprehensive reviews is Tanner's (2006) review of the clinical judgment and reasoning literature. Professor Christine Tanner is one of the pioneering nursing scholars who started studying diagnostic reasoning and decision making in the mid-1970s. Tanner (2006, p. 207) indicated that research shown at least three interrelated reasoning patterns used by experienced nurses in their decision making: the analytical (rational), the intuitive and the narrative patterns. Each is evoked in a particular non-routine, underdetermined clinical situation. According to Tanner (2006), the analytical processes come into play when nurses lack knowledge or are faced with a mismatch between what is happening and what is expected, or when they have to make a decision when multiple options are available. Intuition is characterized by immediate apprehension (i.e. recognition of pattern) of a clinical situation (Benner 2001; Tanner 2006) and response without recourse to calculative rationality (Benner, Tanner & Chesla 2009). Narrative thinking involves trying to understand the particular case through an interpretation of human concerns, intents and motives; and it is an important tool of reflection that helps turn experience into practical knowledge and understanding (Tanner 2006). When a timely and effective reasoning happens, a safe and effective clinical judgment will follow (Tanner 2006).

Despite its limited use in nursing literature, there is consensus about the link between narrative thinking and reflection (Kuiper & Pesut 2004; Price 2011; Tanner 2006). Stories about practice stimulate thought relating to skills performed or care provided as nurses relate to a professional practice style (Kuiper & Pesut 2004; Price 2011). Unlike the subsequent 'reflection-on-action' that is carried out after the event, 'reflection-in-action' is a concurrent process embedded into the action (Tanner 2006). It is inferred that the narrative-reflection link is of a concurrent rather than a

subsequent nature because the nurse or the nursing student is changing perceptions and modifying his/her mental images while telling or listening to a clinical story (experience). Price (2011) recommended taking reflective notes and reflecting after the event when narrative analysis is used as an interventional strategy to improve clinical reasoning. This study will use the 'narrative-reflective' reasoning prototype to describe the reasoning pattern utilized to figure out an idea or a solution while sharing a patient-care story with a colleague, with another health worker or with a trainer.

Contrary to rational and narrative thinking, there is lack of operational clarity and consensus over the terms used to describe intuition, but there is agreement that intuition is a sudden realization or a perception by way of insight (Thompson & Dowding 2002). According to Woolfolk (2004), perception is the process of detecting a stimulus and assigning meaning to it based on both representations from the world and our existing knowledge. Individuals are selective in their attention based on their previous experience. Gestalt cognitive psychology views insight as a judgment instance where gaps, missing pieces, or hidden relationships are detected within the patterned pressures of the whole display of perceptual information (Rovithis & Parissopoulos 2005). Insight arrives suddenly, spontaneously and wordlessly (Bastable 2003). This Gestalt psychology view is similar to the meaning attributed earlier to the term intuition.

Social Judgment Theory provides another cognitive view that targets intuition and investigates the processes and outcomes of judgment under conditions of uncertainty (Hammond 2007). The use of a reasoning mode (intuitive, quasi-rationality, and analytical/rational) in a decision making task depends on the structure of the task; the number of information cues in the task; and the time available to make the judgment or decision (Hammond 2007). Additionally, the context which they work in and the feedback they receive have a significant influence on the type of clinical judgment undertaken.

Hammond's Intuition is used in a case of poorly structured tasks, with a lot of information cues available and not much time (Hammond 2007). The ultimate goal of the Social Judgment Theory is rationality that provides the decision maker with

the needed logical and empirical bases for his/her judgments. But because of the changing needs of customers (patients) that constantly demand changes in task structures in a special social ecology (the hospital) to provide timely and safe services (nursing care), the most common form of cognition is quasi-rationality (common sense) that is used most of the time by practitioners.

Quasi-rationality is a combination between intuition and analysis thought, and imagining future consequences is a prime determinant for flexibly moving between the rational and intuitive poles (Hammond 2007). Hammond (2007) indicated that stress leads to cognitive changes and often drives people to the end of the cognitive continuum (i.e. to the intuitive or the rational mode). Criticism of the theory has focused on the representativeness of the judgment tasks used and the artificiality of the approach. Nevertheless, the prescriptive nature of the model can help individuals improve their decision making abilities (Thompson & Dowding 2002). Consistent results of relevant nursing research and other disciplines are evident (Dhami & Thompson 2008; Offredy, Kendall & Goodman 2008; Standing 2007).

In a study designed to explore decision making processes of a district nurse in the community, Kennedy (2002) related the study findings to the Social Judgment Theory rather than the IP Theory because the latter does not account for the pre-decision and the feedback phases. In another study, Han et al. (2007) related task complexity to the number of steps in the task and referred to task patterns (short, intermediate and long) to classify various nursing tasks in critical care units. Despite the utilization of the IP theory to guide the research, the findings of this study can be explained according to the Social Judgment Theory because the task patterns (identified by the study) represent different forms of structuring the tasks, as indicated by Hammond (2007).

The cognitive continuum conclusions support Tanner's stance regarding the reasons for adopting an intuitive or a rational reasoning pattern to figure out a suitable solution or an idea at the time of an undefined, complex or ambiguous clinical situation. Unexpectedly, Tanner (2006) indicated that, with familiar situations, the experienced nurse is able to respond intuitively based on an immediate clinical grasp. This contradicts Tanner's own statements about the triggers for certain reasoning

patterns (including intuition) at the time of undefined clinical situations. Hammond's (2007) concepts of 'common sense' or 'robust flexibility' remove much of the contradiction between Tanner's (2006) statements describing intuition and experts' clinical judgment. What Tanner (2006) was describing is a concept similar to intuition or one that contains 'more intuition and less rationality'. The experienced nurse may have developed a mental system or an algorithm that could have assisted him/her in making these judgments. Most of Tanner's (2006) extracts about intuition are rooted in Benner's (1984) model.

Unlike the Cognitive Continuum Theory that provided a balanced view regarding intuition and rationality, Benner's (1984) model shifted towards the intuitive dimension of human thought. Professor Patricia Benner is one of the pioneers in nursing clinical judgment research. Like many other nursing researchers who were striving for professional identity and while trying to understand the processes of clinical judgment, Benner resorted to a more descriptive theoretical perspective away from the 'rigidity' and 'artificiality' of the statistical prescriptive decision theories (Lee, Chan & Phillips 2006). Benner, Tanner and Chesla (2009) defined intuition as 'understanding without rationale' and they incorporated the key aspects identified by Dreyfus and Dreyfus (1980) into the model: pattern recognition, similarity recognition, commonsense understanding, skilled know-how, sense of salience, and deliberative rationality (Blum 2010; Ritter 2003). These concepts were regarded as highly abstract and cannot be operationalized to guide nursing research; hence, Benner's model is regarded as a middle range theory (Taylor, Kermode & Roberts 2006) or as a philosophy (Altmann 2007).

Benner's model linked intuition to the clinician's years of experience in a specific domain and emphasized that this experience plays a major role in refining theory learned at earlier stages (Benner, Tanner & Chesla 2009). Additionally, Benner, Tanner and Chesla (2009) indicated that in cases of novel situations, experts will try first to seek other experts' opinions and (if impossible) they will elicit competent calculated behavior. The authors added that while the novice or beginner nurses feel no responsibility for the outcome of their actions, the competent nurse feels

responsible and emotionally involved, and she/he will not draw back at the time of uncertainty.

While the justifiable judgment is the ultimate goal and the main emphasis of the Cognitive Continuum Theory, intuition is the focus of Benner's model. While both theories agreed that intuition is the opposite of a justifiable judgment, they are contradictory regarding the nature of the situation that will evoke it. Benner, Tanner and Chesla (2009) share similar views with Tanner (2006) regarding the term intuition and both agreed that intuition is evoked at the time of familiar situations rather than uncertainty. Moreover, Hammond (2007) indicated that intuition has no place in important judgments and Benner, Tanner & Chesla. (2009) pointed out that there is 'no doubt' at the moment of involved intuitive response and the latter authors considered intuition as a defining attribute of expertise.

Unlike the Cognitive Continuum Theory and Gestalt psychology that viewed intuitive thinking as a trigger for analytic thought in problem solving situations, Benner's aspects of intuitive thought are used only as phenomenological criteria (Altmann 2007) for descriptive rather than prescriptive purposes. Benner's model provides no operational means for how to enhance intuitive thought of less-experienced nurses (Altman 2007). Benner, Tanner and Chesla (2009, p. 200) questioned the decision theory views by stating that 'the continuing use of this language, and the characteristic focus on conscious analysis, often results in an inappropriately broad generalization that all expert judgment is deliberative and analytic, and if not, it could be improved by making it more analytical'. Benner, Tanner and Chesla (2009) linked the deliberate, conscious decision-making characteristics with the competent performance and the holistic discrimination and intuitive response with proficient and expert performance that also uses a kind of deliberative rationality to check the whole issue of intuitions.

Benner's interpretive, hermeneutic analysis was used in nursing research to produce paradigm cases and supportive exemplars for research conclusions (Polit & Beck 2006). These paradigm cases were questioned (Altmann 2007; Han et al. 2007) and prototypical or general cases were proposed as reference points (Han et al. 2007).

Additionally, Altmann (2007) questioned the ‘mixture’ of inductive and deductive approaches used by Benner. Kim and Kollak (2006) questioned the appropriateness and interpretive correctness of nursing studies adopting a Heideggerian method. Despite its wide espousal, there are research findings that contradict the tenets of Benner’s model. Rischel, Larsen and Jackson (2007) indicated that nurses’ competence seems to be situational rather than related to the levels in Benner’s model. In some observed variables of admission assessment in an orthopaedic ward, the authors found that inexperienced nurses showed experts’ behavior and experienced nurses acted as experts. Nevertheless, the study findings of Benner’s work were consistent over three decades.

Hammond (2007) recognized the time dimension in the development of justifiable rational thought and claimed that because rationality (a hard analytical cognitive component) is not a natural function of the human brain, individuals need to be taught to use it. Imagining future consequences is the prime determinant of Hammond’s ‘robust flexibility’ that describes an individualized ability developed to overcome restrictions in cognitive activity. Robust flexibility is an analytical-intuitive capability that combines the two types of rationality (calculative and deliberative) described by Benner’s model. Calculative rationality is employed by less experienced nurses (including new graduates) to improve their theories and rules and help in developing a mental checklist to know what to ‘watch for’ in particular patient situations. When Benner’s experts become unable to elicit the answer from expert colleagues, they use calculative rather than deliberative rationality (reflection) to ‘figure out’ solutions in novel situations. These responses are similar to the system aided judgment (mode 4) and the peer aided judgment (mode 5) on the cognitive continuum. These modes are closer to the intuitive pole of the cognitive continuum that has six modes of inquiry, namely, scientific experiment, controlled trial, quasi experiment, system aided judgment, peer aided judgment, and intuitive judgment (Standing 2007). The scientific experiment in the laboratory (mode 1) is the most analytical mode of inquiry. The personal mental checklist can be considered as a modified version of the system-aided judgment tools (e.g. protocols and practice guidelines) that are evidence-based extracts which were tested empirically. Therefore, the calculative-deliberative rationality equals Hammond’s imaginative-flexibility.

It is evident that the two models are using the same concept to describe two different phenomena that belong to the same paradigm. Benner's 'intuition' is similar to Hammond's 'robust flexibility' or 'common sense'; and Benner's experts, with their fluid response, are similar to what Shaverien (2010) called 'routine experts'. Hammond's (2007) intuition can be described as 'absolute intuition'. Common sense is an aspect of intuition described by Dreyfus model and used by Benner (1984). Tanner (2006) indicated that this apprehension (intuition) is often represented in the form of pattern recognition which is a Gestalt concept that precedes problem solving (Bastable 2003) and is regarded as a trigger, rather than an ultimate end.

Both Hammond's and Benner's models recognized the role of the context and cue recognition in making decisions. As discussed earlier, Hammond (2007) indicated that the use of the reasoning modes (intuition, quasi-rationality, or analytical) in decision making is based on the kind of cues in the person's natural environment (social ecology). Additionally, the level of 'intuition' and 'analysis' needed to make a judgment is more related to the task at hand and the knowledge the person brings to the task. The author extended this view to the various professions. He stated that occupations vary widely in the relative amounts of intuition and analysis they require. Offredy, Kendall and Goodman (2008) claimed that system aided judgment (mode 4) is the most appropriate form of cognition that suits healthcare professions. Mode (4) is more to the intuitive pole of the cognitive continuum. This might be the reason why Benner's model focused more on intuition than rational thinking in the nursing profession. Nevertheless, expert nurses learned to use fewer (Benner 2001) and a wider range of cues (Hoffman, Aitken & Duffield 2009) when making clinical judgments. Therefore, experience—as recognized by both Benner (2009) and Hammond (2007)—in the rapidly changing healthcare system contributed to structuring this cue recognition and differentiation ability.

On these lines, a new perspective to intuition is conceptualized by this study based on the views of both Hammond's cognitive continuum and Benner's model and nourished by Gestalt and Tanner's (2006) additions. Intuition is conceptualized as having two facets: absolute and routine. The routine facet of intuition refers to the sudden recognition of the whole display of a pattern or a mental presentation of an

idea or a problem and/or a solution (a judgment task) in a flexible way without the means of calculative rationality. This automatic realization is the result of repeated successful encounters of the same 'entire' judgment task. The absolute intuition refers to the sudden recognition of a gap in the whole display of a pattern or a mental presentation of an idea or a problem and/or a solution (a judgment task) in a flexible way without the use of calculative rationality, which will induce a level of stress resulting from the estimated error/risk or the uncertainty with the judgment task. This will result in an automatic rapid judgment or will persuade a calculative-rational or a narrative-reflective process.

This analysis parallels that of Rovithis and Parissopoulos (2005) who viewed intuition as the integration of forms of knowing in a sudden realization which then precipitates an analytical process which facilitates action with a patient or client. Furthermore, they stated that intuition occurs in response to knowledge and is a trigger for nursing action or reflection.

Reliance on intuition to the exclusion of rationality can limit the availability and use of knowledge (Hammond 2007). This might be the reason for the IP Theory to focus completely on the analytical/rational reasoning thought. The IP theory posits that human reasoning is limited by the capacity of the human memory (Thompson & Dowding 2002) and effective problem solving relies on the individual's ability to adapt to these limitations (Taylor 2000).

The IP theory is the most influential theory in nursing and medical decision making research, especially diagnostic reasoning research (Thompson & Dowding 2002). Based on signs and symptoms (cues), initial general, tentative hypotheses are generated followed by an interpretation and, finally, the evaluation stage will judge the pros and cons of each hypothesis to select the one favoured by the majority of evidence (Thompson & Dowding 2002). Based on IP premises, Schaverien (2010) argued that experts will revert to backward reasoning when the patient problem does not seem to follow usual patterns or when hypotheses (hypothetico-deductive rationality) fail to explain available data or new information. This uncertainty triggers the backward reasoning to search available data for support or substantiation of a clinical hunch (Schaverien 2010; Thompson & Dowding 2002). Backward

reasoning is commonly used by novice practitioners (Thompson & Dowding 2002; Wong & Chung 2002). This IP inference regarding experts' decision making at the time of uncertainty is similar to that of Benner, Tanner and Chesla (2009), with an exception to the initial process component. Benner's expert begins with an intuitive rather than a forward hypothetico-deductive reasoning thought.

Lee and colleagues (2006) indicated that IP oversimplifies the diagnostic process. These authors argued that the context is deemphasized by the model. This notion is contrasted by Taylor (2000) who highlighted that the IP theory describes problem solving as an interaction between the IP system (problem solver) and a task environment. As discussed earlier, the ability of the IP theory to determine the complexity of the decision making process is questioned. Kennedy (2002) related the findings of her study to the Social Judgment Theory and Ferrario (2003) called for combining methods to capture the complexity of the diagnostic judgment process. Research using the hermeneutic phenomenological approach revealed almost similar processes like those of the IP theory. In a study designed to uncover the reasoning processes of community nurses when managing noise that interrupts signal detection in patients' homes, Carr (2004) found that need identification is preceded by the naming and framing processes. The author concluded by emphasizing the role of the environment in the decision making process in community settings. Others claimed that the IP theory does not reflect the nature of nursing thought in clinical settings (Han et al. 2007). Han and colleagues (2007) identified four thinking processes namely: reviewing, validation, consideration, and rationalization, which show the mental processes when making decisions. Nevertheless, signal detection was identified as the most difficult challenge encountered by nursing students (Carr 2004). 'Signal detection' equilibrate to Tanner's (2006) emphasis on "Noticing".

In medical research, argument demonstrates that the IP model is too general, unrelated to expertise and, in most cases, the accuracy of diagnostic statements was related to experts' knowledge (Meterissian 2006). Recent research has attempted to overcome the inadequacies associated with the 'think-aloud' approaches used in most IP research by requesting the nurse informant to think aloud while carrying an audiotape and a headphone as he/she cares for his/her patient in the Critical Care Unit (Han et al. 2007).

Despite the fact that the diagnostic practice may consist of both analytical and intuitive components, the IP theory neglected intuition's existence (Lee, Chan & Phillips 2006) and emphasized the importance of structuring 'chunks' in the brain to be used in future encounters as memory and perception aids (Jefford, Fahy & Sundin 2011). Nursing researchers advocated the use of these 'chunks' and their modified forms of 'heuristics' in clinical judgment (Benner, Tanner & Chesla 1996; Ferrario 2003; Simmons et al. 2003). A heuristic is a mental representation used to reduce a complex multilevel judgment into familiar categories or patterns (Ferrario 2003). Hammond (2007) highlighted that heuristic is not a synonym for intuition and may lead to errors in judgment. Heuristics are used by experienced (Simmons et al. 2003), expert and novice nurses (Ferrario 2003; Ritter 2003). Contradictory findings regarding the use of heuristics based on situation complexity were revealed. While Han et al. (2007) indicated that heuristics were used with routine or simple tasks, Ferrario (2003) highlighted that they were used to deduce a complex judgment. Other research indicated that these short cuts were used with simple, moderate and complex reasoning processes (Simmons et al. 2003).

Heuristic use may answer the contradiction in Tanner's (2006) and Benner, Tanner and Chesla's (2009) conclusions about the use of intuition by experts in routine situations. The authors may have used 'heuristic' to describe the intuitive, flexible ideas that are repeated as a result of experience. For example, Han et al. (2007) indicated that nurses skipped the consideration step with simple routine tasks.

Recognizing a pattern was identified by Simmons and colleagues (2003) as the commonly used heuristic by experienced nurses. The 'pattern recognition' form was identified as the most common form of intuitive thought used by nurses (Tanner 2006). It is evident that intuition is an antecedent that precedes clinical judgment and heuristics are consequences for the repeated successful judgments. This is different from the unbreakable judgment task when suddenly realized as a whole in routine intuitions.

While regarded as a strategy to manage uncertainty by Hammond's cognitive continuum, Benner's model considered the intuitive reasoning pattern as a defining

attribute of expert routine practice. Benner, Tanner and Chesla (2009) stated that experts will try to recall the rules and scientific knowledge learnt at an earlier stage to cope with novel situations. At the time of uncertainty, novices and beginners feel no responsibility for the outcomes of their actions, and they also do not reflect on these actions (Benner, Tanner & Chesla 2009). This view is debunked by many researchers (Baxter & Rideout 2006; Garrett 2005; Standing 2007) who indicated that students had a perceived sense of accountability and they valued the role of professional practice in decision making. Oliver and Butler (2004) indicated that inexperienced nurses were engaged in creating opportunities for learning in the ward, which contradicts the passivity of Benner's novices or beginners. The inconsistency continues related to the research on the reasoning patterns used by nursing students (as part of the novice group) in their clinical judgment.

Benner (2001) indicated that nursing students used only a hypothetical deductive reasoning pattern (i.e. conscious rational calculation) when making clinical judgments. Tanner (2006) argued that student decision making based on intuition may begin to develop early in the nurse's career and can strengthen or lessen in time depending on their clinical experiences and development of expertise. This is supported by Standing (2007) who found that students' experience was changed to experience and intuition and students had matured during the program and felt more self-confident. While Chartier's (2001) study into nursing students' diagnostic reasoning skills indicated that the knowledge base of novice nurses lacks logical links, Wong and Chung (2002) documented the use of the narrative reasoning pattern by nursing students. The previous inconsistencies require decision making nursing researchers to explore or examine different types of reasoning patterns used by nursing students to facilitate future program development.

Research into the thought processes recognized other types of reasoning including convergent (inductive) and divergent (deductive) reasoning (Petrina 2007). In convergent reasoning, the individual is drawing inferences and distinguishing commonalities from a range of different data (synthesis). In divergent reasoning, differences are identified and ideas are diversified (analysis). It is evident that the hypothetico-deductive approach utilizes the above reasoning types because it starts

inductively with cue acquisition and proceeds deductively to decide on the best alternative (Banning 2008; Jefford, Fahy & Sundin 2011). In order not to clash with the hypothetico-deductive reasoning identified by the IP theory which became the essence of rational thinking, the current study will be limited to the rational, intuitive, and narrative-reflective reasoning patterns.

In summary, this analysis was neither directed to refute the theories nor to differentiate between experts and novice practitioners. The widespread decision making research in nursing has utilized either the IP or the hermeneutic, intuitive theories. Both approaches are of a descriptive nature that considers only knowledge about the processes rather than the outcome of clinical reasoning. This might be the reason for the inconsistencies in clinical reasoning research findings. Hammond's (2007) cognitive social view is incorporated into the previous analysis to balance between the separated intuitive or rational views. Nevertheless, human thought can be analytical, intuitive (absolute or routine), or narrative-reflective. Research shows that some people are more naturally intuitive than others (Dessler 2004). Hammond (2007) rejected the idea of intuitive tendency and advocated the continuum over the dichotomous view when linking intuition and rationality. The previous analysis shows a consistent view across the humanistic-social and cognitive perspectives (including Hammond's) regarding the role of experience in the rapidly changing healthcare system in structuring nurses' cue recognition and differentiation ability. Therefore, innate versus experiential intuitive-rational tendencies need to be investigated as part of any research initiative designed for exploring reasoning and judgment abilities of nursing groups in their natural clinical contexts.

Due to the relative consistency in their presentation in decision making and clinical reasoning research, this study will use the two types of decisions (routine and non-routine) identified by Sullivan and Decker (2005) and Tanner's (2006) three reasoning patterns (with slight modification), namely, analytical (rational), intuitive (absolute and routine) and narrative-reflective.

2.3 Factors affecting mental processes among nurses with various years of experience in different settings

This section highlights factors impacting on nurses' mental processes for possible inclusion into the quantitative component of this study and to be used as criteria for comparative purposes between the factors encountered by nurse interns in the current study and those extracted from theoretical and empirical literature.

The preceding theories (IP, Benner and the Cognitive Continuum) commonly guiding nursing decision making research agree that the context of decision making has an impact on the development of the practitioner's reasoning and judgment abilities. Both Benner's social model and the IP cognitive theory highlight the importance of the practitioner's experience in decision making. Hammond's (2007) cognitive continuum has implicitly supported this view. According to IP theory, the practitioner will learn how to select the needed cues to trigger relevant experiential information stored in the long-term memory. This experiential learning process is employed to overcome the limited capacity of the short term memory. Therefore, individuals learn to develop their own ways (heuristics) to process large amounts of data (Thompson & Dowding 2002). A similar view worth noting in Benner's model points toward the use of calculative rationality by less experienced nurses to improve their theories and rules. Calculative rationality is a kind of inferential reasoning where analysis and evaluation are employed to attain reasonable conclusions (Benner, Tanner & Chesla. 2009). Hammond's (2007) views parallel those of Benner's and the IP theory where he stated the adoption of the reasoning response is a task; a cue; and is time related. This implies 'a calculative' response based on the three criteria (task, cue, and time). Additionally, these factors are prime determinants of the amount of stress linked to the decision task (in a specific context) that postulates the calculation or estimation of the risk or error of implementing (or not) the relevant decision or decisions.

Consistent findings were evident among studies relevant to students' mental processes in relation to the positive contribution of experience and prior knowledge to enhance clinical reasoning and decision making abilities of undergraduate students. This experience will help enhance students' confidence to make a decision

and to act on that decision independently (Baxter & Rideout 2006; Standing 2007), especially when task complexity increases (Botti & Reeves 2003). With less complex tasks, students' academic ability may help in making relevant decisions (Botti & Reeves 2003). Suliman (2010) debunks this by stating that learning ability and academic success have no relationship.

Students linked their expertise in decision making with their ability to reproduce context-specific knowledge in concrete experiences rather than using cognitive skills in unfamiliar situations (Garrette 2005). Reflection will add to this expertise (Garrette 2005). The quality of students' reasoning, especially when making diagnostic decisions, depends on students' motivational orientation and structuring and accessibility of prior knowledge (Cholowski & Chan 2004). This highlights the important role of clinical instructors or educators in helping nursing students structure their knowledge and acquire practical skills (Cholowski & Chan 2004) and enhance their decision making abilities (Baxter & Rideout 2006; Wong & Chung 2002). Furthermore, the relationship between students and their clinical instructors (Baxter & Rideout 2006) and working with experts (Croke 2004) contributes positively to enhancing students' clinical reasoning and decision making. Studies revealed contradictory results regarding the impact of students' learning styles on their mental processes (Suliman 2010; Suliman 2006; Wong & Chung 2002).

Findings of research relevant to nurses' mental processes added more factors to this list or paralleled factors revealed by research targeting students' decision making. These include the complexity of the situation, the context, having a professional orientation to decision making, time pressures, relationship with the patient, and physicians' decision making.

Complexity of the clinical situation impacted nurses' decision making (Han et al. 2007) and determined the utilized reasoning techniques or patterns (alone or in combination) in these decisions (Taylor 2006). Additionally, nurses felt unsure about the quality of their decision making when under time pressures and when managing multiple crises (Sands 2009). These decisions are improved when the time management ability of novice nurses improves (Oliver & Butler 2004).

Despite being impacted by physicians' decision making (Oliver & Butler 2004), nurses decision making is restricted when nurses hold paramedical orientation (i.e. physician's helper) and is increased when holding a professional occupational orientation (Hoffman, Duffield & Donoghue 2004).

Previous clinical experience informs nurses' decisions and clinical judgments (Benner 2004; Sands 2009). With more clinical experience nurses become more aware of opportunities and constraints that will guide nurses' actions and interactions (Benner 2004). This experience will determine the selected heuristics utilized by experienced or non-experienced nurses (Simmons et al. 2003). The quality of this experience rather than the number of years is the prime determinant of this experience (Oliver & Butler 2004).

Lack of a sense of understanding guides nurses' problem solving (Benner 2004) that is enhanced with more reflection and questioning (Benner 2004; Simmons et al. 2003). This requires openness and responsiveness by the learner to improve practice over time (Benner 2004), coupled with ethical concerns and good relationships with patients (Benner 2004; Oliver & Butler 2004).

In summary, while both categories (students and nurses) of decision making, clinical judgment or reasoning research stressed the significance of past clinical experience in improving students' or nurses' mental processes, nurses' decision-making research highlighted the importance of the quality of the experience in this improvement, rather than the number of years or clinical hours. Research into students' decision-making focused on the role of acquiring context-specific knowledge in improving their mental processes. The role of the clinical tutor in helping students acquire this knowledge is highlighted by research about students' mental abilities as a major finding or in the form of a recommendation. Reasoning patterns and heuristics used by students or nurses are selected or combined based on the complexity of the clinical situation. Additionally, reflection plays a major role in developing clinical reasoning and decision making or judgment of nursing students or professional nurses.

Finally, congruence is evident between the theoretical and empirical literature in relation to the factors impacting mental processes of nurses with varied years of experience. Congruencies in relation to the role of the context, experience (previous knowledge and skills), time, and cue identification are evident. Hammond's Cognitive Continuum (2007) agrees with research into students' decision making regarding the impact of feedback on the improvement in decision making ability. Cue identification should take precedence over other decision making phases when the decision making research is targeting nursing students.

2.4 Conclusion

The various aspects of the literature review have sharpened the researcher's vision regarding the interrelated concepts relevant to the crucial variable of interest, 'clinical reasoning'. The comprehensive literature review was undertaken on two occasions. These included: (1) reviewing allocated relevant studies followed by (2) in-depth review that included the theoretical literature. The latter has given a shape and structure to this review, and became its backbone. This enhanced the debate and relevant analysis carried out within various sections.

The researcher's reading about the historical development of decision making research in nursing has solidified the understanding of the different theoretical and methodological approaches used in decision making and clinical judgment research which have contributed to providing a visionary anticipation of where the study of decision making and clinical judgment and reasoning is going, especially in the nursing profession.

Research into students' or nurses' mental processes revealed serious methodological inadequacies and highlighted the importance of using multi-faceted approaches and a mixture of data collection methods to reveal in-depth understanding of the complex nature of clinical reasoning or clinical judgment. Furthermore, inconsistent and sometimes contradictory findings call for more attention to the sampling design of the study to include those involved in students' clinical reasoning and clinical judgment (e.g. nurse preceptors and instructors or tutors) and to consider factors that

might interfere with the generalization of findings (e.g. power analysis, sample size and representativeness of different subclasses of the population).

The definitions of clinical judgment and clinical reasoning incorporated into section two of this chapter and the reasoning patterns conceptualized in section three will be used as the bases to operationally define these variables and patterns in the methodology section. Additionally, the assumptions related to the uniqueness of the internship experience; the use of the nursing process and its inclusion into the conceptual definitions of both clinical judgment and clinical reasoning; and the innate versus the experiential intuitive-rational tendencies will direct various aspects of the adopted methodology of this research.

CHAPTER 3 METHODOLOGY

This chapter describes the research approach and the adopted method design utilized to collect data to answer the research questions. It is categorized into eleven sections. The first section presents the research approach guiding the entire study and its governing philosophy. The second and the third sections describe the study setting and the study subjects, respectively. The research design is then presented in the fourth section. Section five details the sampling processes and how the sample sizes of both the quantitative and the qualitative components were obtained. As linked to the sampling processes, the questionnaire and then the administration and management processes of the interviews are outlined in sections six and seven, respectively. The data collection methods and instruments are then detailed in section eight. Section nine presents the measures utilized to ensure the reliability and validity of the questionnaire. The data analysis plan is incorporated into section ten, followed by a summary of the chapter.

3.1 The research approach

For full understanding of the complex nature of interns' clinical reasoning at the time of uncertainty when making non-routine clinical judgments, this study utilized a mixed method approach to describe the interns' clinical reasoning experiences and to explain how this cohort of female Saudi Arabian interns developed clinical reasoning skills and the factors influencing this development. Whitehead and Elliot (in Schnieder et al. 2007, pp. 248-267) discussed the importance of understanding how methodological approaches must complement each other to ensure each provides a more complete and comprehensive research outcome. Confirmation of the quantitative results was another reason for adopting the mixed method approach. These purposes for mixing are presented by Borbasi and Jackson (2012) who added initiation, development, expansion and enhancement of significant findings to the purpose list. It is hoped that this study will produce a credible approach for use to assess the development of clinical reasoning over a period of time. Victor-Chmil's (2013) search for valid and reliable tools to measure this development revealed no result. Moreover, the serious methodological inadequacies of clinical reasoning research outlined and discussed in chapter two have highlighted the importance of

using multi-faceted approaches and a mixture of data collection methods to understand the complex nature of clinical reasoning or clinical judgment. Inconsistent and sometimes contradictory findings of relevant research called for more attention to the sampling design of the studies. This study managed to overcome many of the sampling difficulties encountered by previous research. Factors that might interfere with the generalization of findings (e.g. power analysis, sample size and representativeness of different subclasses of the population) were considered when the samples were selected. Additionally, the inclusion of those who were part of the clinical educational context and were involved in students' clinical reasoning and clinical judgment (e.g. nurse preceptors and instructors or tutors) is one of the most effective strategies contributing to the validity of the study findings. The contextual components were addressed by relevant nursing research (Tanner 2006) and strongly emphasised by both the skill acquisition model (Benner, Tanner & Chesla 2009) and the cognitive continuum model (Hammond 2007).

The study was conducted in two phases. **Phase one:** in this quantitative phase a questionnaire (appendix A1 & A2) was introduced to the interns twice—at the beginning and end of their medical or surgical rotations (chart 3.1). This phase established the impact of the medical/surgical internship experience on interns' perceptions of their general clinical reasoning behavior measured by the CRACS, level of independence in their clinical judgment and reasoning, and their rational-intuitive tendencies. The results from phase one informed the sampling plan of participants in phase two and directed the interview questions which facilitated in-depth description of the nature and presentation of interns' clinical reasoning when making non-routine clinical judgments and contributed to a full explanation of its processes.

Phase two utilised semi-structured interviews to help complete the interns' clinical reasoning picture (chart 3.1). It was planned that by the time of the interviews the interns who experienced changes and those who did not experience changes in the previous factors (i.e. antecedents and consequences of their clinical reasoning, level of independence in their clinical judgment and reasoning, and their intuitive-rational tendencies) as a matter of their internship experience at medical or surgical unit, would be identified. The prime determinant for the classification is the deviation of

the individual score from the overall significant group score on the particular scale (more details are presented in the sampling section of this chapter). The informants were interviewed without briefing them about the previous findings of phase one to ensure a natural flow of the interviews to contribute to the validity of the previous findings and to the overall bracketing procedures. The interns were asked to describe (1) their clinical reasoning experiences when making non-routine clinical judgments for adult medical or surgical patients as perceived by the interns themselves, (2) the presentation of interns' clinical reasoning patterns, and (3) to explain how they developed their clinical reasoning skills throughout the medical/surgical rotation, including the identification of factors associated with this development and the role of the CRN and clinical preceptors who oversee the clinical training of the nursing interns in their units. Moreover, the clinical facilitators (CRNs and Nurse Preceptors) overseeing the interns' clinical training were interviewed using semi-structured interviews asking the participants to describe (1) interns' clinical reasoning experiences when making non-routine clinical judgments for adult medical or surgical patients as perceived by those CRNs or preceptors, (2) the presentation of interns' clinical reasoning patterns, and (3) to explain how the interns developed their clinical reasoning skills throughout medical/surgical rotation, including the identification of factors associated with this development and the role of CRN and clinical preceptors who oversee the clinical training of interns in their units. The descriptions and explanations enabled a full understanding of the nature and trajectory of the interns' clinical reasoning and the factors associated with this journey, including the role of CRN and preceptor in the development of these processes.

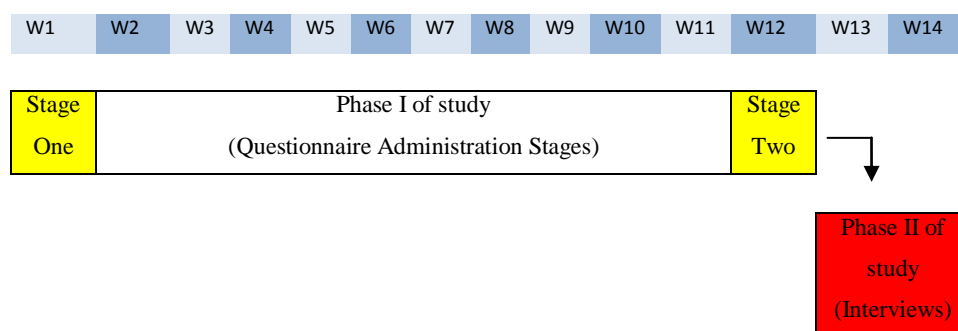


Chart 3.1: Study phases. Note (1) Rotation weeks are in blue, (2) The two Questionnaire administration stages are in yellow and (3) Phase II of the study is in red.

The description and explanation of the Saudi Arabian female interns' clinical reasoning experiences in non-routine clinical judgments as perceived by the interns themselves, the CRNs, or the clinical preceptors was guided by the Husserlian phenomenological (Polit & Beck 2006) view. The Husserlian view insists on careful description of ordinary conscious experience of everyday life; a description of things (e.g. hearing, seeing, believing, acting, feeling, remembering, deciding, evaluating) as people experience them (Polit & Beck 2006).

Husserlian philosophy stresses the need to engage in a thorough inspection, analysis, and description of life as encountered by the participant and a living picture can emerge only when domain after domain has actually been tramped and the 'problem-vistas' or the invariant features (Giorgi 2012) it possesses opened up for all to see (Burns & Grove 2005). Additionally, engagement in inter-subjective dialogue about the phenomenon and contextual features will fully develop the phenomenon (Burns & Grove 2005). Reflection, bracketing and intuiting are key components of the process that help in filling out the phenomenon and features (Burns & Grove 2005). Bracketing refers to the process of identifying and holding in and setting aside any prior thought, conception and judgment the researcher has about the phenomenon (Sadala & Adorno 2002). This is attained when the researcher maintains a reflexive journal where he/she prepares, evaluates and provides systematic feedback about the effectiveness of bracketing (Polit & Beck 2006) then integrates the bracketed material into the analysis (Burns & Grove 2005).

Eidetic variation of the object being studied (i.e. interns' clinical reasoning experiences when making non-routine clinical judgments) to identify unvarying components (the invariable aspects that define the object's essence) will be the major phenomenological reduction technique to highlight the intentional character of consciousness turned towards the world once it brackets the reality conceived by common sense and cleanses the phenomenon of everything that is unessential and accidental in order to make what is essential visible (Sadala & Adorno 2002). These processes are detailed into the subsequent qualitative data analysis section at the end of this chapter.

The adoption of a descriptive rather than an interpretive qualitative philosophy and research approach was congruent with the natural and neutral trend of the current study. This Husserlian epistemological approach (Holloway & Wheeler 2002; Schneider et al. 2013; Taylor, Kermode & Roberts 2006) assisted the researcher to fully understand the contextual nature of the interns' clinical reasoning by asking questions about their experiences gained through conscious awareness (Taylor, Kermode & Roberts 2006). The researcher managed to remain within the tenets of the epistemological zone by using different data sources to describe the interns' clinical reasoning experiences and by using reflexivity. Several informants' statements that are interpretive in nature are outlined, bracketed, and incorporated into the subsequent results and discussion chapters for clarification purposes.

The researcher kept a reflexive journal to ensure objectivity of processes and authenticity of information during the course of data collection and analysis. In addition to their support in remaining within the epistemological track, the journal entries have reflected personal values that could have affected data collection and interpretation at the end of each phase of this study. These are detailed at the end of this chapter. Additionally, the researcher kept a record of the events that organized and time framed data and events. Dialogue with academic supervisors during the course of the study about the researcher's experience, reactions or decisions and their implications were also documented in a separated electronic file (also containing decision trails) and became an integral part of these reflections and notes. This has enhanced the auditability (i.e. the degree to which an outside person can follow the researcher's methods, decisions and conclusions) of the inquiry which contributed to the confirmability (objectivity and neutrality) of data (Polit & Beck 2010). All electronic files were password protected.

This pragmatic mixed method approach (Borbasis & Jackson 2012) to clinical reasoning has revealed the nature of this experience. This could never have been comprehensively uncovered by means of a single research paradigm. The rigour of this study was attained as the rigour of its quantitative and qualitative components was established (Borbasis & Jackson 2012). Measures to ensure the validity of the quantitative data and the trustworthiness of the qualitative data are discussed in the subsequent research design section of this chapter. Additionally, two strategies were

used to contribute to the credibility of the research processes and results. The first strategy was the adoption of the Husserlian tenets as a governing philosophy to guide the qualitative data collection, analysis and presentation.

The integration and congruency between the various elements of the philosophical tenets and the relevant phenomenological approach have given the qualitative component of this study its cohesion. The second strategy was the contrasting between the qualitative and the quantitative components that preceded the final mixing of results. This strategy has provided an additional validation step that contributed to the study's rigour. The research approach of this study provided workable prescriptive means to enhance the current internship program and can be cascaded to both the undergraduate program and the subsequent internship and professional periods for the current interns. These aspects are discussed in chapter six of this dissertation.

3.2 Study setting

The Saudi Arabian nursing interns are undergraduate baccalaureate students who come from a nursing school linked to the medical facility and to a national university in Saudi Arabia. After completing the academic courses, the students are enrolled into the internship program for 12 months to consolidate and increase their nursing knowledge, skills and attitude in the application of nursing processes to the care of patients of different age groups in various specialty areas. As indicated in chapter one, the students begin their internship with a three-month medical or surgical rotation. During these three months they work under the license of a Registered Nurse (RN) who is responsible for the overall clinical supervision of the nursing interns and for the safety of patients. This RN will precept the student interns and delegate responsibilities as per the interns' scope of practice. Within these three months, the intern is expected to achieve the program's mandatory competencies to support safe patient care delivery. The intern will progress to providing supervised total patient care to two moderate acuity patients within the three month timeframe. This study is restricted to those nursing interns who are in their initial rotation at the adult medical or surgical units as a contingent learners' cohort who possess the fundamental information needed for the care of adult patients as they commence this

initial rotation. The study results and the adopted research approach will eventually be cascaded to both the undergraduate courses and the remaining nursing internship rotations.

The nursing interns are trained at a tertiary health-care facility in Riyadh—the capital of Saudi Arabia. The facility is a hospital with 1000 beds and contains eight medical units and nine surgical units. Each unit has one or two CRNs to oversee nursing students' clinical training.

Each student has a clinical preceptor and their entire experience is supervised and facilitated by a Clinical Resource Nurse (CRN). The CRN is the unit's clinical educator who has a dual responsibility role. These CRNs are responsible for the nursing students, as well as for the continuing education and on-the-job training of unit nursing staff. The competency framework and the nursing process constitute the frame of reference for the students' clinical training. The responsibilities of the different parties involved in the nursing students' clinical training are outlined in the Collaborative Model developed to regulate the relationship between the hospital and the academic body. The requirement for clinical preceptorship is attendance at the preceptor workshop sponsored and executed by the Nursing Service of the health care facility. The CRNs are usually registered nurses promoted from staff nursing positions and who are prepared to undertake their clinical education duties by the mean of an orientation program and unit-based training.

3.3 Study subjects

The Internship Program commences with two intern intakes each year—one in March, and the second in September. It is estimated that 25-30 interns start in each cohort. Usually, the interns start their internship with the medical or surgical rotation.

The sampling design of phase one was random in nature. Twenty-eight of the thirty-two interns of the September 2011 group were randomly selected (see section 3.5). The invitation to participate in the study was planned to be carried out at the intern workshop conducted at the beginning of the clinical rotations. As per the same plan, the researcher sought to contact in person those interns (in their clinical areas) who were unable to attend this workshop and who were part of the selected sample.

The distribution of the questionnaire (stage one) was planned to be carried out at the end of the workshop.

The questionnaire was administered again two weeks prior to the interviews (stage two) at the end of the internship medical/surgical rotation. Those interns who (1) were part of the simple random sample, (2) completed and returned stage one questionnaires and (3) concluded their medical or surgical rotation were contacted to complete stage two questionnaires. The contact was carried out during a scheduled mandatory workshop attended by all the interns. These contacts were arranged in coordination with both the interns' program director and the placement coordinator.

The Participant Information Sheet (appendix C) in the questionnaire envelope asked for consent to participate in the interview at the end of the medical or surgical rotations. The consent form for the study was attached to this Participant Information Sheet that was distributed to the interns in the two questionnaire administrations. The interview informants from the interns' group were selected from the questionnaire respondents who consented to be interviewed. To be further eligible, the interns needed to have completed a minimum of twelve weeks of their clinical internship and be part of the September 2011 cohort included in this study. Additionally, they should have responded to the questionnaire on both occasions.

The preceptors and CRNs of the medical or surgical units who supervised the September 2011 intern group were contacted in person by the researcher through their nurse managers and were invited to participate in the study. The purpose and the terms of the interview were explained to them verbally and a Participant Information Sheet (appendix E) containing all information was also provided. Preceptors and CRNs who agreed to participate in the study, by signing the consent form, were also interviewed.

3.4 Study design

For the complex nature of clinical reasoning, combinations of quantitative and qualitative approaches were adopted and a sequential explanatory research design was used to direct the data collection of this study (Creswell & Zhang 2009;

Whitehead & Elliott in Schnieder et al. 2007, pp. 248-267). This design was chosen because little information was known about the interns' clinical reasoning phenomenon (Borbasis & Jackson 2012). The sequential design might initially separate the quantitative and qualitative research paradigms, however, the two are then combined to determine the overall findings (Creswell & Zhang 2009; Whitehead & Elliott in Schnieder et al. 2007, pp. 248-267). Therefore, this study started with its quantitative component where the two questionnaire administrations (at the beginning and end of medical or surgical rotations) were employed to uncover the impact of the internship experience at a medical or surgical unit on the interns' clinical reasoning and judgment aspects incorporated into the questionnaire. To contribute to this purpose, the following research hypotheses were tested at the end of this quantitative phase:

1. There is a difference in the perceptions of female Saudi Arabian interns of the level of independence in their patient care non-routine clinical judgments at the beginning and end of adult-care medical or surgical internship clinical rotation.
2. There is a difference in the perceptions of female Saudi Arabian interns of the level of independence in their clinical reasoning when making non-routine patient care clinical judgments at the beginning and end of adult-care medical or surgical internship clinical rotation.
3. There is a difference in the perceptions of female Saudi Arabian interns of antecedents, styles (patterns) and consequences of their clinical reasoning at the beginning and end of adult-care medical or surgical internship clinical rotation.
4. There is a difference in the perceptions of female Saudi Arabian interns of their rational-intuitive tendencies at the beginning and end of adult-care medical or surgical internship clinical rotation.

Additionally, the relationships between the background information (i.e. interns' age, stream type, and perception of academic success) and the interns' perceptions of the antecedents and consequences of their clinical reasoning, level of independence in their clinical judgment and reasoning, and their intuitive-rational tendencies were

explored. The significance of these relationships cannot be attained by any other means except the current quantitative component of the adopted sequential explanatory mixed method design. These relationships were validated throughout the subsequent qualitative phase of this study. Additionally, the unpredicted quantitative findings were also explained during the in-depth interviews as relevant questions were added to the question lists previously prepared for these interviews (appendices B & D).

After obtaining supportive empirical evidence for the previous research hypotheses, the qualitative interviews explored the nature of the interns' clinical reasoning when making non-routine clinical judgments and thoroughly described and explained the how and why components of its processes. This included the presentation of the reasoning patterns or styles linked to actual patient care encounters and the factors that impacted these processes. Additionally, the role of the preceptors and CRNs in these processes, as the clinical facilitators for the interns' clinical training, was explored. Eventually, the contextual nature of the interns' clinical reasoning and patient care judgments was highlighted, which reflected a full picture about interns' clinical reasoning experiences when making non-routine judgments for adult patients at general medical or surgical units in a tertiary health care facility in Saudi Arabia.

The multi-faceted nature of clinical reasoning when making non-routine clinical judgments demanded the use of strategies to increase the overall credibility of the study (Creswell 2007). The strategy generating the most interest is triangulation (Burns & Grove 2009)—which refers to the use of two or more theories, methods, data sources, investigators or analysis methods in a study (Burns & Grove 2009; Streubert & Carpenter 2011). Multiple triangulations (i.e. the combination of more than one type of triangulation) were employed using mixed methodology (i.e. between-methods triangulation) and three data sources (i.e. Interns, Clinical Resource Nurses, and Preceptors) as interview informants. In addition to triangulation, the following strategies were employed to ensure data quality and trustworthiness and internal validity of the design:

1. Training a female interviewer to assist in data collection and an administrative assistant (AA) to help in data management. Due to the conservative nature of the

Saudi Arabian society, the female interns were given the option to be interviewed by the female interviewer. This was communicated verbally and in writing to the interns. The training of the female interviewer was employed to ensure consistency in communication with the informants when collecting and managing data which added to the researcher's credibility. The training focused on how to conduct the interviews, reflexive writing, note taking and documenting, and briefing and debriefing techniques. The training of the female interviewer, who was Masters prepared, was carried out during the second and third week of September 2011. During the same period, the AA was also trained to ensure accuracy and smooth operations throughout the data collection processes, including research record keeping and blinding procedure. Both the female interviewer and the AA signed confidentiality agreements with the researcher (Appendix F).

2. Blinding procedure was employed to further contribute to the bracketing procedures in order for the researcher to start the interviews without being affected by the overall results of phase one or by relevant information to the individual informants. The two sets of questionnaires were collected and coded by the AA. Analysis of the anonymous data of phase one was carried out by the researcher and the interviews were conducted in a neutral and natural way without previous knowledge about the informants.
3. Decision trails (that articulate the researcher's decision rules for categorizing data and making inferences in the analysis) were negotiated with the academic supervisors of the researcher and were documented in a separate file and became an integral part of the researcher's reflections and notes. These decision trails are incorporated as audit trails appendices to contribute to the auditability of the dissertation (Polit & Beck 2010).
4. During data collection and analysis, weekly reports summarising notes between the researcher and his academic supervisors were employed to serve as inquiry audits to scrutinise data and relevant supporting documents by external reviewers which will contribute to data confirmability and dependability (Polit & Beck 2010).

5. Keeping a reflexive notes file designed to include the researcher's reflexive and critical reflection notes throughout the research journey. Additionally, this file aimed to incorporate extracts from dialogue, briefing, and debriefing between the researcher and the female interviewer on a daily basis.
6. Marginal remarks (Burns & Grove 2009) documented the researcher's comments after reviewing the notes taken during the interviews and while analysing data. These remarks were written immediately in the right-hand margin of the notes.

3.5 Sampling procedures and samples' sizes

The intern participants in phase one of the study were randomly selected from the September 2011 intern group (N=32) at the beginning of their clinical rotation at the hospital. Twenty-eight interns were randomly selected. This sample size was calculated using the CUSTOMINSIGHT.COM software with 95% confidence level. The entire intern group were involved in adult care assignments. The cohort was divided equally between medical and surgical areas. The medical and surgical groups were separated at the time of the random selection to ensure representativeness. Names of the individual interns were written on small pieces of paper for the random selection that was carried out by the researcher himself. The final sample composed 28 interns divided equally between the medical and surgical units. It was planned that if the target sample size was not obtained on this occasion due to interns' refusal to participate or due to a low response rate, another random selection from the March 2012 intern group would be employed to complete the sample size needed to ensure representativeness of the selected sample. The questionnaire was introduced again at the end of their medical or surgical rotations to those interns who completed and returned the first stage questionnaires. A table was available to the AA for coding and tracking purposes.

The interview informants from the intern group were selected by way of convenience sampling (Borbasi & Jackson 2012; Burns & Grove 2009; Polit & Beck 2010). This ensured that the interns who experienced the phenomenon (development—or not—of clinical reasoning in medical/surgical contexts) and were willing to articulate their

experience were included in this sample. This sampling procedure was enriched by the use of quota sampling from the questionnaire respondents who consented to be interviewed. The quotas were used to increase the representativeness of the sample in relation to certain characteristics (Polit & Beck 2010).

Significant findings (from the two questionnaire administrations) from phase one were utilized to guide the interns' selection for interviews. Interns who agreed to be interviewed were grouped according to variables proven to be significant in phase one. This process recognized changes over time in the interns' reasoning style/tendency and/or the interns' ability to make independent patient care judgments or clinical reasoning.

The grouping variables could have included interns' age, stream type, previous major, academic success, type of rotation (adult medical or adult surgical), or the two major groups (i.e. interns encountered changes in their perceptions of antecedents and consequences of their clinical reasoning, level of independence in their clinical judgment and reasoning, and their intuitive-rational tendencies versus those who did not encounter changes). Informants were selected to represent sub groups' proportions in the interns' group who agreed to be interviewed. It was originally proposed that the interview sample would comprise 50% of those interns who consented to be interviewed if the consented number approached 20 candidates. The final interview informants' group constituted eight interns. Details about the numbers as per the significant variables are incorporated into chapter four. The final sample of intern informants constituted eight interns.

The preceptors and clinical resource nurses were recruited from those who supervised the September 2011 nursing intern group during their clinical placement at adult medical/surgical units. A convenience sample of five preceptors and five CRNs who agreed to participate in the study was obtained.

3.6 Questionnaire administration and management procedures

The College of Nursing (CON) and Nursing Services were contacted one week before the internship workshop to ensure full collaboration and to be allocated a time at the workshop for subjects' briefing and distribution of the questionnaires. Subjects who completed the questionnaire were requested to write down their names to facilitate administration the second time to the same group. The names were removed by the AA who was employed for this purpose. The AA gave each questionnaire a number placed in a box at the top right angle of the questionnaire's front page. The AA developed a contact information sheet (name/number table) that linked each intern's name with the number of her questionnaire. The questionnaires were kept in a locked closet to ensure full protection.

It was planned that the introduction to the second questionnaire be carried out at the end of the adult medical/surgical internship rotation two weeks prior to the interviews. To overcome the attrition threat anticipated with similar occasions and studies, the interns were reminded of these dates through the hospital's email system, highlighting the importance of their contribution and participation in this study. It was planned that the interns be contacted through their units' nurse managers via the researcher, in coordination with the interns' director and placement coordinator, one week before the distribution day to ensure availability. The interns were requested to return the questionnaires within two days via the interdepartmental hospital mail system. The same coding procedure for the questionnaires was carried out by the AA who planned to collect the questionnaires from the clinical areas. Questionnaire data collected was stored in a locked closet in a designated area within the nursing education centre.

3.7 Management procedures for interviews

At the time of the second administration of the questionnaires, interns who agreed to be interviewed were requested to type their names and to sign the Consent Form attached to the Participant Information sheet (appendix C) and enclose it in the same envelope as the questionnaire—to be collected by the AA. Anonymity of subjects was assured by the mean of blinding. The Participant Information Sheet advised the

informants that the envelopes would be unsealed by the AA to receive the Consent Forms without seeing interns' answers to the questionnaire questions. The AA allocated each questionnaire the same number of the first administration and the name space was cut from the questionnaire. The participant number was then placed in the box at the top right angle of the questionnaire's front page.

The researcher analysed the data from the questionnaires (of the two administrations) and then obtained the quotas by using questionnaire numbers without linking information to the names of interns. The questionnaires remained in the locked closet placed in the AA's office. Selected numbers were given to the AA who contacted the interns for the interviews according to the contact information sheet. The AA provided the selected interns with an interview time and place one week before the interviews were scheduled. The interns were requested to confirm their participation in the interview within two days of receiving the interview time and place sheet.

It was planned that the AA would contact the Preceptors and CRNs one week prior to interviews to provide them with a sheet containing the time, date and place of the interview. Preceptors and CRNs were requested to sign the study Consent Form at the time of the interview.

Interview data was numbered as per their questionnaire numbers to protect the participants' confidentiality and collected and placed in the same locked closet. The researcher was the only person who performed data entry and the computer was password protected.

3.8 Data collection methods, instruments used, and measurement

This research project was completed in two phases where a coded questionnaire was used in phase one for the collection of quantitative data that involved pre and post clinical experience comparisons. Phase two involved semi structured interviews with consenting female interns based on the data obtained from responses to the first questionnaire.

The Questionnaire (Appendix A1 & A2)

The structure of the questionnaire was based on extracts from the initial literature review and the study assumptions incorporated in chapters one and two. The questionnaire was composed of five parts, namely, background information, Clinical Reasoning Antecedents and Consequences Scale (CRACS), independence in patient care judgments and clinical reasoning, and Rational-Intuitive Styles' Scale.

The background information constituted the intern's age as the only demographic variable. Gender is not considered since all interns are female. Grade Point Average (GPA) was the only predictor for academic success in Suliman's (2010) study. Three predictors for academic success were incorporated into the questionnaire of the current study. An intern's GPA and her duration of enrolment were used as objective predictors, in addition to a subjective parameter revealing the intern's perception of her theoretical and clinical practicum success throughout the preceding four years of internship. Finally, the type of stream and the previous major (for stream two students) were explored in the background section. The inclusion of the type of stream was based on findings of a local study (Suliman 2006) that indicated minor differences between the two streams in relation to students' critical thinking abilities. Nevertheless, due to the link between critical thinking and the mental processes of clinical reasoning and clinical judgement (Victor-Chmil 2013), the students' stream was incorporated into part one of the questionnaire. The variables of part one were included in the design of the study to eliminate their possible impact on the dependent variables of the study (i.e. the general reasoning behavior, the independence in clinical reasoning and clinical judgment and the rational-intuitive tendencies of the interns). With this blocking procedure (Burns & Grove 2005), part one variables were considered as independent variables and their impact on the study dependent variables were revealed by statistical procedures when data were analysed (see chapter four).

Part two of the questionnaire is the Clinical Reasoning Antecedents and Consequences Scale (CRACS) designed by the researcher, based on findings from the literature, to explore antecedents and consequences of interns' Clinical Reasoning as perceived by the interns. Factors identified in the literature that impacted clinical reasoning and judgment are incorporated into this eleven-item, 5-point Likert-type

scale. These factors include relationship with the nursing team and patients (Lee, Chan & Phillips 2006; Tanner 2006, Taylor 2006), confidence when making clinical judgments (Baxter & Rideout 2006; Lee, Chan & Phillips 2006; Oliver & Butler 2004; Standing 2007; Tanner 2006), and knowing the next step when dealing with patients (Craven & Hirnle 2003; Lee, Chan & Phillips 2006). A statement considering interns' ability to substantiate their clinical judgments (Blanzola, Lindeman & King 2004; Han et al. 2007) was added. Statements considering the intuition and rational/analytical reasoning patterns (Banning 2008; Tanner 2006) were incorporated into the scale. Finally, the use of reflection on action (Kuiper & Pesut 2004; Ritter 2003) by the interns was also measured by a statement incorporated into the CRACS.

Feeling part of the team was selected as the major indicator and outcome of the good relationship with the nursing team of the unit. This also reflects a welcoming unit atmosphere for those who are new to the unit environment and usually feel overwhelmed (Zinsmeister & Schafer 2009). Grealish and Smale (2011, p. 52) highlight this aspect in their statement:

Students' access to appropriate clinical experiences and learning is dependent upon staff nurses' openness to students' presence and inclusion of students in their everyday practice.

Two statements were incorporated into the CRACS that examined the interns' relationship with their patients. One of these was a direct statement that explored this relationship as levelled on a below average-above average dichotomy. The 'below-average' pole was defining this negatively-worded statement against which the interns were requested to indicate their degree of agreement or disagreement. The second statement was also negatively-worded and tested the intern's need for prompting from her preceptor to initiate a therapeutic relationship with patients. The therapeutic relationship is recognized as critical to 'being with the people' (Levett-Jones 2013). Initiating this relationship requires a mixture of abilities such as (but not restricted to) effective communication; knowledge about the patient's culture, needs, and disease process; and possessing the required assessment and patient teaching abilities.

Having full control over daily activities was identified as a defining attribute of competent decision making (Oliver & Butler 2004) that emphasised the contextual nature of nursing clinical reasoning and clinical judgment (Rochmawati & Wiechula 2010; Tanner 2006). This overall ability has a patient care component, demanding the nurse know the next step in patient care (Craven & Hirnle 2003; Lee, Chan & Phillips 2006). Additionally, the reasoning behavior requires the nurse or the nursing student to verify their clinical judgments at all times. This entry level expectation demands knowing why these actions are relevant (Blanzola, Lindeman & King 2004). The final two components of the antecedents and consequences of clinical reasoning are the confidence and the accuracy of clinical judgments. The consequences might be antecedents to another clinical reasoning encounter. This is congruent with Tylor's (2006) cyclic view of decision making.

The main reasoning styles incorporated into the CRACS are the analytical and the intuitive styles. These are the two common styles or patterns found in the clinical reasoning and clinical judgment literature (Tanner 2006). Tanner (2006) indicated that the analytical reasoning processes are used to break down a situation into its elements. When this reasoning pattern is linked to an information processing view, a hypothesis or a tentative prediction is generated and validated through a series of sequential steps (Elaine, Fahy & Sundin 2010).

Hammond's (2007) view paralleled the step-by-step information processing view and added that analytical thought is a logically defensible process. This study has adopted Tanner's (2006) conceptualization of the analytical reasoning pattern, nourished by the logical component attributed by Hammond (2007), to formulate an operational definition of this pattern. This mode of thought was defined as analytical and logical and incorporated into the CRACS as one statement. The intuitive style or pattern was also operationalized and explored by one statement incorporated into the CRACS.

This definition relates intuition to the ability to anticipate before sufficient data is available. This anticipation is based on a sudden realization or comprehension of a pattern (Tanner 2006), or an understanding of the situation as a whole (Banning 2008). These views are similar to those conceptualized by the current study and incorporated into the literature review chapter that elaborated on the previous

definition of intuition and related the ‘anticipation’ to the sudden recognition of either the whole display (routine intuition) of a mental presentation of an idea or a gap in this ‘whole’ display (absolute intuition).

The third reasoning pattern identified in Tanner’s (2006) review is the narrative style. In this study, this style is labelled as the ‘narrative-reflective’ pattern and conceptualized as the reasoning pattern utilized to figure out an idea or a solution while sharing a patient-care story with a colleague, a health worker, or a trainer. The learner or the practitioner reflects-in-action as the link between the story telling and the reflective act is concurrent rather than subsequent. Reflection was viewed sometimes as a decision making or judgement type like intuition (Standing 2007) or as a consequence for an intuitive thought (Rovithis & Parissopoulos 2005). Tanner (2006) considered reflection as a component of the clinical judgment process that entails the reasoning processes. Therefore, this study considers reflection as a crucial element of the general reasoning behavior measured by the CRACS. Narrative-reflective reasoning style is explored through the qualitative component of this study.

As stated earlier, the reciprocal relationship between the antecedents and the consequences of clinical reasoning underlines a continuous and a dynamic interaction between these forces (antecedents and consequences). The reasoning styles (analytical/rational and intuitive) are at the middle of this interaction. This dynamic and continuous interaction between the internal (personal) and the external (contextual) forces, when measured at a point of a time, reflects behavior relevant to clinical reasoning. The clinical reasoning behavior, measured by the CRACS, represents interns’ averaged perceptions and reactions to the antecedents, thought processes and styles, and consequences of their clinical reasoning. The term ‘reactions’ is used to reflect the transformation of the external (contextual) forces into internal drives that become essential components of clinical reasoning behavior. For example, the contextual requirement from the practitioner to know the next step has transformed into a personal desire to constantly know the next step. Hence, the latter is a reaction for the former. Therefore, the clinical reasoning behavior is operationalized as the overall averaged reasoning behavior measured against the CRACS on an 11-item 5-point Likert-type scale.

The Likert-type scale is the most commonly used scaling technique to measure attitude (Burns & Grove 2009). The scale allows for structured self-reporting by means of several declarative statements reflecting a view point on a topic (Polit & Beck 2010). The terms used within the CRACS reflect the competent behavior dichotomy. Terms such as ‘constantly’, ‘all’, ‘full’ or ‘at all times’ were used to reflect the previous notion. Levett-Jones (2013) indicated that effective reasoning is a competent practice requirement. Some of the CRACS statements (2, 3, and 5) are negatively worded to control response biases (Burns & Grove 2009). Responses to these statements were reversed before analysis.

Incorporating the components of the reasoning behavior into a Likert-type scale allowed for more sophisticated statistical analyses as the item and the summed scores were treated as interval-level data (Burns & Grove 2009). The major limitation of this type of scale might be linked to the use of the controversial neutral ‘undecided’ or ‘uncertain’ response (Burns & Grove 2009). Consideration to these options should be recognized when a large number of subjects have selected these options (Burns & Grove 2009). The pilot testing of the questionnaire (see section 3.9) indicated impartial responses, especially on the ‘undecided’ response of the CRACS. The CRACS 5-point responses were congruent with the original version of the Likert-type scale (Burns & Grove 2009) and the ‘undecided’ response created an odd-point agreement-disagreement scale.

Part three was developed to explore the level of independence in patient care judgments when the interns assessed patients to identify significant cues; interpret data to identify patients’ problems; and decide to intervene, respond, or take an action (or not). These patient-care areas were extracted from Tanner’s (2006) definition of clinical judgment and are congruent with the entry level expectations of professional practice (Blanzola, Lindeman & King 2004). Three items were incorporated into this section. Multiple-choice (fixed-response) format was used to collect this information (Schneider et al. 2007) where respondents were requested to choose from among four alternatives for each item in this part. This part has operationalized the independence level as to how often the intern relied on her preceptor or CRN when undertaking non-routine patient care clinical judgments. The response choices ranged from ‘constantly relying on CRN/preceptor’ to ‘making all

clinical judgments and the CRN/preceptor supported them'. Despite the latter choice representing the highest independence level, it also recognized the accountability of the CRN/preceptor for the intern's actions. The choice needed to be supported by either the CRN or the preceptor.

Part four also utilized the multiple-choice format to uncover the interns' independence in clinical reasoning when significant cues, patients' problems, and required actions were 'figured out' by the intern. The patient care areas were recognized by the conceptual definition of clinical reasoning described in chapter two. This definition identified clinical reasoning as a mental ability preceding clinical judgment. The four alternatives (choice options) were structured to determine interns' level of independence in their clinical reasoning.

The independence level in clinical reasoning was operationalized as to how often the intern relied on her CRN/preceptor to 'figure out' significant cues, patient problems, and the needed actions in patient care encounters. The options ranged from 'independent (alone) at all times' to 'dependent on the CRN/preceptor at all times'. The patient care aspects of both part three and four were based on Tanner's (2006) definitions of clinical judgment and clinical reasoning. Additionally, Paul and Elder's (2008) definition of clinical reasoning impacted the design of part four of the questionnaire.

Many authors indicated that clinical reasoning constitutes two styles, rational and intuitive (Dessler 2004; Lee, Chan & Phillips 2006; Rovithis & Parissopoulos 2005) and some people are more naturally intuitive than others (Dessler 2004). Hence, tools were developed to measure the person's habitual preference for either of the two styles (Wittman et al. 2009). Some authors referred this to the individual profiles (Allwood & Salo 2012) or the rational-intuitive complementarity (Taggart & Valenzi 1990). These dual-process views (Wittman et al. 2009) were challenged by Hammond (2007) who advocated the continuum over the dichotomous view. Nevertheless, the habitual rational-intuitive preference (or tendency) needs to be recognized when clinical reasoning is investigated.

The literature review chapter highlighted that the rational-intuitive tendency is introduced to this study based on a relevant assumption asserting the individual innate rational-intuitive tendencies. Therefore, a relevant hypothesis was introduced to reveal the impact of experience on these tendencies. Previous research indicated that these tendencies or profiles tend to be fairly stable over time (Allwood & Salo 2012). Hence, a further step was undertaken and the relationship or the impact of these tendencies on the general reasoning behavior and on the independence in both clinical reasoning and clinical judgment was thoroughly revealed.

Therefore, part five of the questionnaire explores how rational or intuitive the intern is as responding to the rational-intuitive tendency (style) scale of Taggart and Valenzi (1990). The 30-item, 6-point Likert type scale measured the responses of interns in term of frequencies (ranging from never to always) to the six modes of management behavior that are the core of the Human Information Processing (HIP) metaphor. The scale was developed to assess individuals in terms of the analysis, planning and control modes of the rational tendency and the insight, vision and sharing modes of the intuitive tendency (Taggart, Valenzi & Lowe 1997). Five statements were used to assess each mode. All of the scale’s statements were positively worded. The term ‘tendency’ in this study replaced the term ‘style’ that was originally used by Taggart and Valenzi (1990) to avoid duplication of ‘style’ used to term the analytical and the intuitive reasoning styles incorporated into the CRACS. Tendency was operationalized as the frequency of a group of modes describing interns’ self on Taggart and Valenzi’s (1990) scale.

The rational-intuitive tendency scale of Taggart and Valenzi (1990) has management, educational, physiological, and philosophical foundations. The scale’s construct validity was established by obtaining the evidence of convergent and discriminant validity (Taggart & Valenzi 1990). The authors arranged the scale’s six modes on a continuum from most rational to most intuitive where each two modes formulated a complementary pair responsible for a reasoning function (figure 3.1).

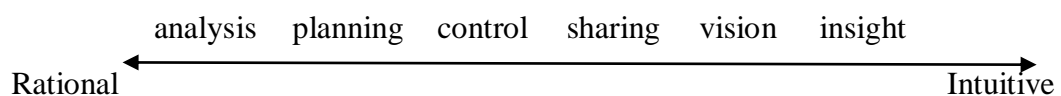


Figure 3.1: The Rational-Intuitive mode continuum

Table 3.1 summaries the three functions linked to the three pairs. For example, the control-sharing pair represents how the individual approaches work. These functions will support various recommendations and implications incorporated into the subsequent conclusion chapter. Therefore, the intuitive tendency was operationalised as the frequency of the sharing, vision and insight modes describing intern’s self on 15-items of the Taggart and Valenzi (1990) scale. Similarly, the rational tendency was operationalised as the frequency of the control, planning and analysis modes describing an intern’s self on 15-items of the Taggart and Valenzi (1990) scale.

Table 3.1: Summary of the mode functions

Rational	Intuitive		
	<i>How does the individual solve problems?</i>		
Analysis	Analyse Organize Control	Insight	Explore Pattern Synthesize
	<i>How does the individual prepare for the future?</i>		
Planning	Propose Predict Design	Vision	Imagine Foresee Invent
	<i>How does the individual approach work?</i>		
Control	Conform Possess Prohibit	Sharing	Associate Cooperate Share

Adopted with permission from Taggart and Valenzi (1990)

All of the questionnaire’s data were collected by means of self-reporting. Despite the natural and neutral responses obtained by this mean, people tend to place themselves under the best light when responding to these measures (Polit & Beck 2010). This study adopted various measures to validate its quantitative data and to ensure credible responses. Subjects’ assurance integrated into the participants’ information sheet and the blinding procedures explained earlier in this chapter (section 3.4) were of the initial efforts that contributed to the credibility of subjects’ responses. The inclusion of the negatively worded statements into the CRACS was an additional measure that contributed to the validity of the collected data. Additionally, data

obtained in the second qualitative phase have contributed to validation of the quantitative data, as outlined in chapter five. Moreover, the utilized reliable and valid data collection measures ensured data quality (see section 3.9).

3.9 Questionnaire reliability and validity

A License Agreement (appendix G) was obtained from the Copyright Clearance Center of John Wiley and Sons, the licensed content publisher, to use the content of the figure/tables of Taggart and Valenzi's study (1990), including the rational-intuitive style (tendency) scale. As this scale has been previously used to collect research data, its reliability and validity have already been demonstrated. Cronbach's alpha for the six scales (i.e. analysis, planning, control, insight, vision, and sharing) were .75, .83, .53, .69, .65, and .63 respectively. In addition to the demonstrated internal consistency (based on the previous measures), the correlations are consistent with theory derived patterns which indicate that the HIP measures are construct valid (Taggart & Valenzi 1990).

The questionnaire was introduced to a group of five interns (from the March 2011 group) who started their internship rotations before the current cohort to obtain evidence supporting the scales' internal consistency as a reliability measure. Additionally, this pilot group was asked about the clarity of the questionnaire statements. The time needed to complete the questionnaire was also calculated on this occasion. The questionnaire's content validity (including its tools) was established via a University of Southern Queensland (USQ) research approval processes. A panel of six nursing experts (including the researcher's two academic supervisors and another four professors from USQ) reviewed the questionnaire for appropriateness, accuracy and representation of the variables and the content area of interest (Burns & Grove 2009). The panel has extensive experience in the field of interest and familiarity with the relevant literature and theory. Additionally, the questionnaire and the entire research proposal were reviewed by the scientific committee of King Abdullah Research Centre as the scientific body for both the hospital and the College of Nursing of the current interns. The questionnaire was refined according to the feedback obtained from various sources, including the intern pilot group, and results of the reliability testing.

Reliability measures of the four scales were obtained using the Statistical Package for the Social Sciences (SPSS) software (version 19). Cronbach alpha reliability index (Polit & Beck 2010) was adopted for its wide use in internal consistency measures, especially with instruments using Likert-type scales (Schneider et al. 2007). This index compared each item in the scale with all items and consideration was indicated if the item is deleted from the scale. The first scale tested was the CRACS. Table 3.2 shows CRACS items' statistics including Cronbach's alpha measures of the CRACS if the item is deleted for the 11 items of the scale. This step of reliability testing provided information on the contribution of the individual items to the overall reliability of the entire scale. The CRACS item statistics showed relative stability among these items. The scale's overall reliability coefficient was 0.765, which indicates a satisfactory reliability measure (Polit & Beck 2010).

Table 3.2: CRACS Item Statistics

	Scale mean if item deleted	Scale variance if item deleted	Cronbach's alpha if item deleted
Item 1	34.261	37.383	0.753
Item 2	34.261	39.020	0.789
Item 3	34.435	35.984	0.754
Item 4	34.478	33.261	0.731
Item 5	34.783	37.542	0.774
Item 6	34.174	36.332	0.730
Item 7	34.652	37.783	0.757
Item 8	34.957	37.043	0.737
Item 9	34.913	38.538	0.753
Item 10	34.652	30.146	0.697
Item 11	34.000	37.455	0.737

The reliability measures of part three (exploring the interns' independence in their non-routine clinical judgment) indicated high Cronbach's alpha coefficient ($r = 0.807$). A satisfactory Cronbach's alpha coefficient ($r = 0.729$) was linked to part four that explored interns' independence in clinical reasoning. The final set of reliability measures was performed for both the overall rational-intuitive tendency scale and its sub-scales of various modes. Table 3.3 shows the coefficient alpha measures of the rational-intuitive tendency scale when the relevant sub-scale was deleted. Marginal variability between the six reliability measures is indicated. The overall reliability coefficient of the 30-item rational-intuitive tendency scale indicated high internal consistency of the scale ($r = 0.835$).

Table 3.3: Rational-Intuitive Modes Statistics

	Scale mean if item deleted	Scale Variance if item deleted	Cronbach's alpha if item deleted
Analysis	20.967	7.173	0.628
Planning	20.611	6.407	0.567
Control	21.456	6.498	0.618
Insight	22.011	6.308	0.624
Vision	21.368	7.907	0.668
Sharing	21.256	6.658	0.741

The wording of item number eight of the CRACS was changed following a recommendation from the primary academic supervisor of the researcher. The verb 'verify' replaced 'substantiate' for more clarity. The subjects of the pilot sample recommended changing the wording of item eleven of the same scale by replacing the term 'reflecting-on action' with an expression to give clearer meaning. The new item was changed to read: 'I am continuously examining and thinking about my patient care actions/judgments after been implemented'. Finally, no changes to the questionnaire were recommended by either the USQ panel of experts or the scientific committee of the research centre of the hospital/college of nursing.

The interviews

The interviews were semi-structured in nature, using a prepared list of proposed questions (Appendix B) which guided the interns to describe and explain their contributions in patient care and how they arrived at care decisions when caring for patients.

To attain a full description of the nature of interns' clinical reasoning when making non-routine clinical judgments for adult patients at medical/surgical units, the interview commenced with the question, 'How do you describe your clinical reasoning when making non-routine clinical judgments for adult patients in this medical/surgical unit?' This was done to ensure that neither the researcher nor the intern informants were affected by conceptions resulting from previous discussions, questions and answers. For example, the questionnaire questions and the interns' responses to those questions in the second administration of the questionnaire could have resulted in misconception or contamination (Polit & Beck 2010). This has contributed to the bracketing processes. Then the interview proceeded by asking the intern to respond to the following: 'Tell me about a non-routine incident with a patient where you felt your contribution to the patient care affected the patient's clinical outcome and what assisted you to make that contribution?' The informant's responses directed the sequence of the interview that tried to extract the trajectory of interns' clinical reasoning and the utilized patterns or styles throughout their adult medical or surgical rotations. Additionally, factors impacting these processes were explored, including the role of the CRN and preceptors in the development (or not) of clinical reasoning throughout medical/surgical internship experience. Changes to the questions' flow in these interviews were employed after reflecting on the initial two interviews. These changes are discussed in the results and the discussion chapters.

The interview plan considered the timing of the interview and the training of a female interviewer to participate in the administration of the interviews. Each interview lasted for about 45-60 minutes and the interviews were tape recorded and then transcribed verbatim.

The second set of interviews was conducted with clinical preceptors and CRNs who supervised the female interns. Appendix D details a list of questions for the preceptors and the CRNs. The interviews were digitally recorded and transcribed verbatim. These interviews were conducted to contribute to a full description of the nature of interns' clinical reasoning by exploring CRNs' and preceptors' perceptions regarding this phenomenon. The interview started by asking the CRN or the preceptor: 'How do you describe interns' clinical reasoning experience(s) when making non-routine clinical judgments for adult patients at this medical/surgical unit?' Then the interview proceeded by asking the CRN/preceptor to respond to the following question: 'Tell me about a non-routine incident with a patient where you felt intern's contribution to the patient care affected the patient's clinical outcome and what do you think assisted the intern to make that contribution?'

The informant's responses impacted the flow of the interview that tried to extract the trajectory of interns' clinical reasoning and the utilized patterns throughout their adult medical/surgical rotations of their internship as perceived by CRNs and preceptors. The purpose and the terms of the interview were explained to them verbally; and a Participant Information Sheet (Appendix E) containing all information was given to them when contacted by the researcher in the week prior to the interviews. The CRNs and preceptors who agreed to participate were requested to sign the study Consent Form attached to the Participant Information Sheet at the time of the interview. Each interview lasted for about 45-60 minutes and was tape recorded and then transcribed verbatim. The entire data collection plan was implemented after obtaining ethical approval from both USQ (appendix H) and King Abdulaziz Medical City (appendix I).

3.10 Data analysis plan

Data analysis commenced with the quantitative data that informed the sampling procedure of phase two. Finally, and following qualitative data analysis, data sets were integrated or combined to serve the study's general purpose of aiming to explore the nature of interns' clinical reasoning at the time of uncertainty when undertaking non-routine clinical judgments.

Analysing phase one-quantitative data

The researcher utilized the SPSS (version 19) statistical software to analyse the quantitative data of the study. The researcher performed the data entry and analysis. Subsequently, descriptive and inferential statistics were performed. The inferential part attempted to test the four hypotheses of phase one to determine the effect of the clinical experience on interns' perceptions of antecedents and consequences of clinical reasoning, level of independence in making clinical judgments and reasoning, and interns' intuitive-rational tendencies.

For each data collection stage, descriptive statistics of the background variables were performed. Frequencies and percentages were tabulated to describe the study sample. Additionally, descriptions of the subjects' responses to individual statements of the various scales were tabulated. Overall results on each scale were then presented. Inferential statistics were performed to reveal significant differences between the subgroups of the background variables on subjects' responses on various scales. Pearson product-moment correlation coefficient and Analysis of Variance (ANOVA) tests were used to reveal the relationships between and among these sub-groups in relation to subjects' responses on different scales of the questionnaire. Pearson's coefficient was used to designate the magnitude of relationship between two numerical variables at the ratio or interval level (Polit & Beck 2010). ANOVA was performed to detect significant differences between interns' responses to different statements or scales distributed among the three response categories (average, above average, and excellent) of the academic success theoretical and practical components. The ANOVA procedure is usually testing the mean difference among three or more groups (Polit & Beck 2010). The change in the interns' perceptions of their theoretical and practical academic success as a matter of experience between the two stages of questionnaire administrations was tested using Pearson's Chi-square test. This test was used as the groups' differences were presented in frequencies because the variable is measured at the nominal level where data was presented in the 'yes' and 'no' categories (Burns & Grove 2009).

Paired samples t-test was used to test the research hypotheses of the study examining the statistical significance of the difference between the means of the two groups (stages) in relation to the study dependent variables (Polit & Beck 2010). The

dependent variables included interns' general reasoning behavior, independence in clinical judgment, independence in clinical reasoning, and rational-intuitive tendencies. The independent variable or the presumed cause or influence (Polit & Beck 2010) in all of the previous hypotheses was the medical/surgical internship experience.

Phase two-qualitative data

The qualitative data was analysed to identify, describe and explain how Saudi Arabian interns perceived their clinical reasoning experiences and how they developed their clinical reasoning skills and the factors influencing this development, thus understanding the full nature of the interns' clinical reasoning when undertaking non-routine clinical judgments.

Giorgi's (2012) analysis framework was used to analyse the qualitative sets of data. This framework is frequently recommended by nursing scholars (Burns & Grove 2005; Holloway & Wheeler 2002; Polit & Beck 2010; Streubert & Carpenter 2011) and researchers (Therkleson 2010; Whitehead et al. 2007) for its practicality. In addition to its clarity, practicality and congruency with the Husserlian philosophy, Giorgi's (2012) method was selected because it differentiated clearly between the understanding that preserves the descriptive meaning and the interpretation found in hermeneutic research. This understanding requires analysis and reflection on the presented meanings within the informants' descriptions to intuitively grasp the gestalt of the intentional act linked with these meanings (Giorgi 2012). The 'intentional act' - 'meaning' couple eventually gave a good description rather than a paraphrase, a hypothesis or an assumption. For the researcher herein, who is interested in describing precisely the interns' clinical reasoning phenomenon without additions or omissions, the mental processes involved in description and interpretation are separated by 'a fine line' that can be crossed at any time in data analysis and interpretation. Therefore, Giorgi's method provided the researcher with a well-defined and a distinct description zone that helps describe interns' clinical reasoning at the time of uncertainty within a clinical learning context.

Giorgi (2012) presented a five step process that began with reading the entire set of protocols (interviews' transcriptions) to obtain a sense of the whole to understand the

shape and presentation of data. The researcher then reread each description to constitute parts (meaning units). These parts were identified and marked whenever there is a transition in meaning within the description. Giorgi (2012, p. 5) indicated that these meaning units are arbitrary and carry no theoretical weight at this stage. The third step in the process involved transforming the data into expressions (interpreted meanings) of the psychological value of what the subject said. In other words, the researcher expressed the insight that was contained in the meaning units (Polit & Beck 2010; Holloway & Wheeler 2002) after perceiving their unity (Giorgi 2012).

Essential aspects and relevant themes were the products of this central step (Whitehead et al. 2007). The direct and more sensitive expressions (relevant to the phenomenon) were then compiled into a written statement representing the essential structure of the experience (Giorgi 2012). Finally, the essential structure was used to clarify and interpret the raw data of the research (Giorgi 2012, p. 6). This final step aided in validating the representativeness of the description of the essential structure of the experience (Whitehead et al. 2007).

Giorgi (2012) urged researchers to assume the attitude of phenomenological reduction before starting the analysis process. This attitude has resulted in making explicit the invariant features and qualities of the phenomenon (Kim & Kallak 2006). Phenomenological reduction was attained through the processes of imaginative variation and bracketing (Whitehead et al. 2007). According to Giorgi (2012), the imaginative variation is a reflective process that involves examining various possible expressions (interpreted meanings) to find out the one that describes precisely the essence of the subjects' statements.

Bracketing involves identifying and holding in abeyance preconceived beliefs and opinions about the phenomenon under study (Polit & Beck 2010). Therefore, the researcher maintained a weekly meeting with his academic supervisors for additional reflection and validation to ensure an effective interpretation, analysis and transformation of data (Taylor, Kermode & Roberts 2006). These meetings also ensured effective implementation of the imaginative variation processes to extract themes and structures. Additionally, the researcher kept a reflexive journal to ensure bracketing (Polit & Beck 2010).

The reflexive journal entries were ongoing self-awareness tools (Kingdon 2005) that separated the researcher from the research process (Jootun, McGhee & Marland 2009) and documented not only his or her biases, beliefs, assumptions and position but also his or her knowledge of the social setting that may impact the research findings (Doyle 2013; Jootun, McGhee & Marland 2009; Kingdon 2005; Lambert, Jomeen & McSherry 2010), as well as the researcher's personal development (Smith 2006). The researcher's subjectivities benefited the entire study when incorporated into the final report text (Burns & Grove 2005; Lambert, Jomeen & McSherry 2010; Smith 2006). Unfortunately, qualitative research reports lack reflexivity (Newton et al. 2013). The potential for embarrassment when their flaws are revealed in the public arena and some publication requirements might be possible reasons for researchers' reluctance to write about the self in scientific journals (Smith 2006). Nevertheless, in this study, reflexivity was a rigorous tool to enhance research quality, trustworthiness, credibility, and transparency (Jootun, McGhee & Marland 2009; Lambert, Jomeen & McSherry 2010; Smith 2006). Additionally, this bracketing tool documented the researcher's capacity to tolerate uncertainty and openness to the unexpected because it was both a state of mind and a practice (Doyle 2013).

While Daley (2013) regarded reflexivity as a reflection-in-action state and critical reflection as a state that involves reflection on action, Matthew and colleagues (2013) emphasized that reflexivity involves both reflection in action and reflection on action. The current study has adopted the latter notion because reflexivity took place during an interview or immediately after its analysis; however, both cases were reflexive journal entries. For an effective and comprehensive reflexivity to take place, Wan Yim Ip et al. (2012) advocate the use of a set of questions or to respond to areas of researcher bias (Kingdon 2005) that were structured to guide the reflexivity process. Wan Yim Ip et al. (2012, p. 262) adopted Johns' (1995) Structured Reflection Model (SRM) that included a reflexivity area used to promote ongoing learning from a clinical incident.

The reflexivity questions included: How does this connect with previous experiences? Could I handle this better in similar situations? What would the

consequences be of alternative actions for the informant (modified from the patient), myself, and the entire study? How do I now feel about this experience? Can I support myself, others, and the entire study better as a consequence? Has this changed my ways of knowing? (Wan Yim Ip et al. 2012, p. 262). Kingdon (2005) acknowledged ten areas to identify a researcher's potential bias. The researcher was asked to respond to these areas that were articulated as learning objectives. The researcher was requested to (1) write down personal issues, (2) clarify his or her value systems, (3) describe areas of conflict, (4) identify gatekeepers' interests, (5) recognize feelings that could indicate a lack of neutrality, (6) write down new or surprising components or events in data collection or analysis, (7) reframe blocks in the research process, (8) reflect on how you write up your account, (9) consider whether the supporting evidence in the literature really is supporting your analysis, and (10) acknowledge the outcomes of resolving bias (Kingdon 2005, p. 625). The fourth area is included here to identify significant conflict of interest which is supported by other research (Doyle 2013).

The researcher of the current study has responded to these areas at the beginning of each phase of the study and has used Wan Yim Ip et al.'s (2012) questions immediately after significant events. Additionally, any reflection in action encounter that resulted in modifying an approach or adopting a new one was a reflexive entry that was discussed with the researcher's academic supervisors. When these reflective remarks were incorporated into the analysis section, double parentheses (()) were used to separate them from the rest of the notes (Burns & Grove 2005).

Transforming data into expressions is a core component of Giorgi's (2012) analysis method. This central step requires a reflective task that will result in perceiving the unity of meanings as an intuitive grasp (Schneider et al. 2013). Intuition is a core component of descriptive phenomenology and it requires the researcher to remain open to the meanings attributed to the phenomenon by those who experience it (Polit & Beck 2010). The current study explores and explains various sets of data through its qualitative component, the in-depth interviews. These sets include the nature of interns' clinical reasoning at the time of uncertainty and how interns developed their clinical reasoning throughout the medical or the surgical internship rotation.

Additionally, relevant factors connected to this development formulated a third set of data.

The researcher has kept an eye on these sets and their related documents (reflective notes and discussion notes of the meetings with the academic supervisors). Additionally, data transformation, reflection, and relevant intuiting thought were separated. This was attained by grasping first the essences (themes) relevant to the core and initial set of data pertaining to the nature of interns' clinical reasoning. The researcher used Kingdon's (2005) reflexivity areas to separate his biases before data collection began and then repeated after completing the analysis of each data set. Additionally, the reflexivity questions presented by Wan Yim Ip and colleagues (2012) were used following data transformation episodes. Streubert and Carpenter (2011) presented five transformation episodes where data reduction uncovered the essence of informants' experiences.

The researcher transformed (1) experiences into language, (2) what is seen or heard into an understanding of the original experience, (3) what is understood about the phenomenon into conceptual categories (essences), (4) essences into a written document, and (5) the written document into an understanding that functions to clarify all preceding steps (Streubert & Carpenter 2011, pp. 88-89). These transformation episodes were congruent with Giorgi's (2012) analysis method. While recognizing the interrelation between the aforementioned three sets of qualitative data where bias was inevitable, maintaining reflexivity (the researcher alone or with academic supervisors) as a bracketing mean and remaining within the epistemological zone while collecting, analysing, interpreting and transforming qualitative data has eliminated much of this bias. With this in mind, the researcher has maintained the knowing behavior of the Husserlian phenomenology (Schneider et al. 2013).

Bracketing (in this study) started before data collection by postponing the extensive literature review until after both data collection and data analysis. Additionally, data analysis started with data obtained to describe interns' clinical reasoning experiences when making non-routine clinical judgments as perceived by interns and their clinical facilitators (i.e. CRNs and clinical preceptors). This strategy aided in preventing any contamination that could have resulted from analysing any other data

before the core qualitative component of the study (description of interns' clinical reasoning experiences). More details about the data analyses processes are described in chapters four and five.

It was planned that the analyses would proceed to describe the presentation of the reasoning patterns used by interns in their non-routine clinical judgments. The informants' stories of how they reached their non-routine clinical judgments were related to the definitions of the reasoning patterns operationalized into this chapter and include the analytical/rational, intuitive and narrative-reflective reasoning styles. A judgment was made about each clinical reasoning event considering its presentation as described by the intern in her answers to the interview questions 1, 4 and 5 (see appendix B).

The next analysis task was directed to answer the 'how' and 'why' questions relevant to the development of the interns' clinical reasoning. Each informant's case was addressed separately. Then the overall development picture for all informants who experienced the development was described. Afterwards, the how of individual cases was structured depending on the intern's answers to the interview questions 4, 5, 6, 7 and 10 (see appendix B). The overall 'how' for individual informants and then for all informants was diagrammed on the medical/surgical experience continuum (i.e. beginning or end). This contributed to explaining how interns develop their clinical reasoning. Reasons for and factors contributing to this development (questions 8 and 9 of the interview questions) were added to the previous diagram for individual and informant group cases. Throughout these analysis episodes, efforts were made to classify findings according to nursing activities in assessing patients to identify significant cues, interpreting data to identify patient problems and deciding whether to intervene, respond, or take an action (or not). The same previous procedures were employed when analysing CRNs' and preceptors' interviews. The results were then grouped according to the title (CRN or Preceptor). These sets of findings were compared to those of the interns and a comprehensive picture was presented about interns' clinical reasoning and the factors impacting its processes.

It was planned that the responsibilities of the female interviewer in data collection and analysis include:

1. Conducting the interviews for those interns requesting to be interviewed by a female interviewer as per the interview schedule prepared by the AA.
2. Keeping a record of her notes during the interview. It was planned that this record will be handed to the researcher on a daily basis as a Word document.
3. Keeping a reflexive record communicated to the researcher on a weekly basis as a Word document.
4. Participating in daily briefings and debriefings with the researcher.

None of the female informants requested to be interviewed by the female interviewer. Throughout data analysis and on a daily basis, interview data were transcribed verbatim by the researcher who interviewed all informants. An initial fresh attempt to extract themes from the transcripts was done. Codes were written in the margins of these transcripts. Data were sorted by codes as per interview questions. Then codes and categories relevant to a research question were filed separately. An additional file documenting various encounters throughout the interviews while analysing data and any significant event requesting documentation was kept. Remarks about these notes were written immediately in the right-hand margin of the notes. Following transcription, cassettes were labelled and safely locked in a closet where all material, questionnaires and consent forms were kept.

Due to the huge amount of data collected in these interviews and the large volume of information that was revealed, weekly reports summarizing the notes between the researcher and his two supervisors were employed to serve as inquiry audits to scrutinize data; and relevant supporting documents by external reviewers have contributed to data confirmability and dependability (Polit & Beck 2010). Out of these inquiry audits, aiding decision trails were articulated to describe decision rules for categorizing data and making inferences in the analysis (Polit & Beck 2010). At

the end of all interviews, a thorough analysis was carried out considering the previous notes (including reflexive notes) and remarks.

3.11 Ethical Consideration

The study was approved by both USQ (appendix H) and King Abdulaziz Medical City (appendix I). Answering phase one questionnaire implicitly denoted an obtained consent from Interns. All phase two Informants (Interns, CRNs, and Nurse Preceptors) were asked to sign a consent form before being interviewed. The consent form contained information regarding the study purpose and interview terms (see appendices C & E). To ensure full understanding of study terms, an Arabic translation for the content of the Participants Information Sheets (Appendix C & E) was provided.

As detailed in section 3.7, participants were assured of their right of anonymity and confidentiality throughout the study. While information gained during the study may be published, participants were assured that they will not be identified and their personal results will remain confidential. Additionally, their right for self determination was assured by informing the participants that they can withdraw from the study at any time. In accordance with the conservative nature of the Saudi culture, all participants were assured that they have the freedom to choose between a female and male interviewer (the researcher) and the interview location. All interviews were conducted at the hospital in a conference room that was booked for the study purpose.

To ensure full protection of subjects' data and information, the female interviewer and the Administrative Assistant (AA) have signed confidentiality agreements with the researcher (Appendix F). As indicated in section 3.6, all audiotapes, interview transcripts, the completed questionnaires of the two stages, and all print outs were kept and will continue to be kept (as per USQ policy) in a locked closet to ensure full protection. Moreover, all computer files relevant to the study were password protected.

3.12 Chapter summary

This chapter presented the strategies, philosophies, and processes that were designed to answer the three research questions. The adopted mixed method research approach has complemented the shortcomings of the single methodologies that usually provide a partial clinical reasoning picture. While the quantitative component was designed to determine the impact of experience on interns' clinical reasoning, the qualitative component was structured to explain its processes. Measures to ensure the internal validity of the quantitative design and the trustworthiness of the qualitative data were employed. In addition to its benefit in understanding the contextual nature of interns' clinical reasoning, it is hoped that the adopted research approach and its processes will result in a credible research approach to determine the development of clinical reasoning in particular educational or professional development periods and contexts.

CHAPTER 4 RESULTS

4.1 Introduction

This chapter discusses the results of both the quantitative, exploratory and qualitative, explanatory phases of this sequential explanatory study to understand the nature of female interns' clinical reasoning. The initial quantitative data was collected via a questionnaire (see appendix A) administered in two stages to the 28 interns of the September 2011 internship cohort. The questionnaire was presented at the beginning and at the end of their medical and/or surgical rotations to explore the impact of their internship experience on the development of certain aspects of their clinical reasoning and judgment. This data addressed the first question of this study and included the interns' perceptions of their general reasoning behavior, level of independence in clinical judgment and reasoning at the time of uncertainty, and rational-intuitive tendencies across their internship experience. The second qualitative phase utilized a semi-structured in-depth interview to answer the remaining two questions of this study. The interviews were designed to reveal the development of the interns' clinical reasoning skills and the factors that influenced this development. Interviews with the students' clinical facilitators were also conducted.

The inclusion of the facilitators' interview data was employed as a triangulation mean to eliminate the intrinsic bias that Polit and Beck (2010) explain may result from having only a single group informing the study. The data were collected over five months, from the beginning of the medical/surgical internship until the completion of the clinical rotation. Therefore, the following two major sections present the quantitative and the qualitative results of the study.

4.2 Quantitative results: Phase One

This section begins with a full description of the quantitative sample, including relevant descriptions of the selection of subjects, the administration of the questionnaire and the response rates. The quantitative results are then presented as per the four research hypotheses. The target areas of these hypotheses include the

impact of time (experience) on interns' perceptions of their general reasoning behavior (antecedents, styles and consequences of their clinical reasoning), independence in clinical reasoning and in non-routine clinical judgments, and rational-intuitive tendencies. An additional area presenting the impact of this experience on the interns' perceptions of their academic success will precede the major hypotheses testing results. As the hypotheses testing procedures indicated significant development, an additional section that illustrates the significant relationships between various variables throughout the internship experience has been included.

The paired-samples t-test, chi square test, and one-way ANOVA (Analysis of Variances) were used to detect significant differences in the interns' perceptions relevant to the study variables across the two stages and to test the research hypotheses. Pearson-product moment correlation coefficient was used to reveal the significant relationships among study variables in the two stages. SPSS (19) software was used to analyse the quantitative study data. These quantitative relationships and the hypotheses testing results were used to formulate the basis that supports or contrasts the qualitative findings when both results were compared to present a comprehensive picture of the nature of the interns' clinical reasoning at the time of uncertainty.

4.2.1 Phase one sample description

The sample of nursing interns' for the initial quantitative stage was composed of (28) subjects who were selected randomly from the September 2011 intern group (N = 32). Initially it was planned to administer the first stage questionnaire to the interns at the internship orientation workshop during the first week of their clinical rotation. Due to changes in the starting date of this rotation, this was not possible. The questionnaire was distributed to the interns in their clinical areas during the first week of their rotation. The participants' information sheet (see appendix C) and the consent form (attached to the participants' information sheet) for the data collection, including the qualitative interviews, were provided to the interns at the time of distribution. The completed questionnaires were then collected by an administrative assistant recruited for this purpose. The questionnaires were then coded by the administrative assistant as explained in chapter three. The second questionnaire was

administered at the end of the rotation during a mandatory workshop attended by all the interns. The questionnaires were then collected by the administrative assistant who repeated the same coding procedure matching the second questionnaire responses with the first. Ten of the twenty-eight responses (35%) were not able to be matched when the second questionnaire was coded as the ten participants did not write down their names where indicated when completing the questionnaires. Also, it was noted that three participants did not complete questionnaire two, resulting in an overall 89% response rate for stage two. Consequently, the comparisons were limited to the intra-episode relationships including the responses of the twenty-eight subjects and to the inter-episodes relationships that included the eighteen subjects who were coded in the two stages. The hypotheses testing procedures were not affected by this ‘expected’ anonymity encounter because these parametric procedures used the overall measures of the paired samples or the groups rather than the ‘case-by-case’ matching employed by the correlation methods (Polit & Beck 2010).

The mean age of the sample is (23.8 ± 1.8) years and the majority of them (78.6 %, $n = 22$) are stream one students. Most of the stream one group (77.3 %, $n = 17$) are aged between (23-24) years. The distribution of the subjects according to their stream and age groups is shown in table 4.1.

Table 4.1: Distribution of the age groups according to stream type

Stream	Age Groups			Total
	22 years	23 – 24 years	25 – 26 years	
One	2	17	3	22
Two	0	0	6	6
Total	2	17	9	28

Only (14) interns responded to the optional Grade Point Average (GPA) question and one was a stream two student. Most of the respondents to the GPA question ($n = 9$) had a GPA between three and three point seven (3-3.7) out of five (5). Four were above three point seven-two (3.72) and one was two point seven-three (2.73). The sample was distributed equally between the medical (50 %, $n = 14$) and surgical (50 %, $n = 14$) placement areas.

4.2.2 Changes in study variables as a matter of time and hypotheses testing

This part of the quantitative results presents the findings of the hypotheses testing procedures relevant to the four main hypotheses, in addition to the interns' change in perceptions of their theoretical and practical academic success resulting from their internship medical or surgical experience.

4.2.2.1 Change in the interns' perceptions of their theoretical and practical academic success

The number of subjects who indicated their perceptions according to response categories (average, above average or excellent) in the two stages are incorporated into a cross tabulated table (table 4.2). Due to the limited numbers in stream two cells, the comparisons are restricted to the cells of stream one of the two stages. The Pearson's Chi-square test results (3.469, Asymp. P = 0.628) shows no significant differences between the twelve different cells (theoretical and practical) of stream one results as per response category (average, above average or excellent) in the two stages. This indicates that the interns' perceptions of their academic success in both the theoretical and the practical components did not alter across the timeframe of their medical/ surgical internship rotations.

Table 4.2: Distribution of subjects' perception of their academic success according to the stream type in the two stages

			Stage One			Stage Two		
			Average	Above Average	Excellent	Average	Above Average	Excellent
Stream	One	Theoretical	9 (48%)	6 (31%)	4 (21%)	9 (50%)	7 (39%)	2 (11%)
		Practical	5 (27%)	8 (42%)	6 (31%)	5 (28%)	9 (50%)	4 (22%)
	Two	Theoretical	3	0	0	2	1	0
		Practical	0	3	0	1	1	1

Hypothesis (1): There is a difference in perceptions of Saudi Arabian female interns of their general reasoning behavior at the beginning and end of adult-care medical or surgical internship clinical rotation.

The CRACS is designed to measure interns' perceptions of the antecedents, styles and consequences of their clinical reasoning. Each of the eleven statements represents a variable that might change as a result of time and clinical experience. Central tendency measures and paired-samples t-test are used to reveal differences in subjects' responses in the two stages in relation to each individual variable or statement. The analysis of this section included testing the impact of time on the overall scale in the two stages of questionnaire administration. Table 4.3 shows the overall weighted mean and standard deviation of interns' responses to each item in both stages.

Table 4.3: Weighted mean and standard deviation of participants' responses to CRACS

Wording	Statements	Stage One		Stage Two	
		— X	SD	— X	SD
	1. I constantly feel that I am part of the nursing team	3.678	0.945	4.320	0.556
—	2. My relationship with patients is below average	2.432	1.306	2.000	1.195
—	3. I need prompting, help from the preceptor to initiate a therapeutic relationship with patients	2.480	1.194	1.710	0.069
	4. I have full control over my daily activities	3.370	1.275	3.960	0.611
—	5. I lack confidence when making clinical judgments	2.785	1.197	2.357	1.008
	6. I constantly know the next step in patient care	3.703	0.869	4.000	0.816
	7. All of my clinical judgments are accurate	3.214	0.995	3.280	0.613
	8. I am able to verify my clinical judgments at all times.	2.964	0.793	3.480	0.714
	9. I am anticipating patient's situation before there is sufficient data about his/her condition.	3.074	0.828	3.160	0.986
	10. My mode of thought is analytic and logical.	3.407	1.308	3.800	0.763
	11. I am continuously examining & thinking about my patient care actions/judgments after been implemented.	3.857	0.705	3.880	0.725

As stated in chapter three, some of the scale items are negatively worded to contain the extreme and the central tendency response biases of the respondents. With these statements, the lower the mean score the better. A considerable change in the mean scores of the two stages is evident in the interns' responses to statements 1, 2, 3, 4, 6,

8 and 10 which indicate ‘tentative’ improvements at the end of the clinical rotations. The mean scores and the standard deviations of each statement were then computed into the paired-samples t-test to reveal significant differences between the two stages. Reversing the t-tests’ results of the negatively worded statements may create some confusion. Much of this confusion was eliminated by recoding subjects’ responses on the negatively worded statements prior to the t-testing. In this process, the (5, 4, 3, 2, 1) response codes are recoded into (1, 2, 3, 4, 5) respectively. Hence, all the variables in table 4.4 are stated in the positive form. This table presents the statements with significant t-test results with (95%) confidence level at ($\alpha = 0.05$). The negative t-values indicate significant results in favor of stage two of the questionnaire administration at the conclusion of the internship clinical rotations. For example, the significant result of statement (3) indicates that interns needed more prompting at the beginning of their internship rotation.

The t-test result (-5.669) for the differences in the overall CRACS scores of the two stages indicates a significant difference in the overall clinical reasoning behavior perceived by the interns at the end of their clinical rotations. This demonstrates an improvement of their overall reasoning behavior (including clinical reasoning antecedents, styles and consequences) as a result of their medical or surgical internship experience.

Table 4.4: Significant t-test results of CRACS statements and overall score

variables	t value (between the 2 stages)	p*
1. Feeling part of the nursing team.	- 3.18	0.004
2. Having good relationship with patients.	- 2.585	0.016
3. Needing no prompting, help from the preceptor to initiate a therapeutic relationship with patients	- 4.394	< 0.001
4. Having full control over daily activities	- 2.815	0.010
6. Constantly knowing the next step in patient care	-2.769	0.011
8. Ability to verify clinical judgments at all times.	- 4.243	< 0.001
10. Having an analytical and a logical mode of thought.	-2.251	0.034
CRACS overall score	-5.669	< 0.001

*Two-tailed test significant at ($\alpha = 0.05$)

Hypothesis (2): There is a difference in perceptions of Saudi Arabian female interns of the level of independence in their patient care non-routine clinical judgments at the beginning and end of adult-care medical or surgical internship clinical rotation.

The mean scores of respondents' answers on the three items in this section in the two stages range between (2.173 – 2.782) out of (4) that represents an intern's full independence in making clinical judgments that are supported by the CRN or the preceptor. This indicates that interns are 'occasionally' or 'rarely' relying on CRN's or preceptor's judgments when assessing patients to identify significant cues; when interpreting data to identify patients' problems; or when deciding to intervene, respond, or take an action (or not) throughout their medical or surgical internship clinical rotations. When the paired samples t-test is performed to reveal significant results between subjects' responses in the two stages in relation to the three items, item (2) of this section documented the single significant result (t value = - 2.517, p = 0.020). This indicates that interns' reliance on CRNs' or preceptors' judgments when interpreting data to identify patients' problems have decreased at the end of their medical or surgical internship rotations.

Hypothesis (3): There is a difference in perceptions of Saudi Arabian female interns of the level of independence in their clinical reasoning when making non-routine patient care clinical judgments at the beginning and end of adult-care medical or surgical internship clinical rotation.

The mean scores and the standard deviations of subjects' answers on the three items of this section indicate improvements in these three areas. Table 4.5 shows the descriptive differences in respondents' answers in the two stages (at the beginning and at the end of internship rotation).

Table 4.5: T-test Results for the independence in clinical reasoning in various patient care aspects

Items	Stage One		Stage Two		t value (between the 2 stages)	p*
	\bar{X}	SD	\bar{X}	SD		
1. I am figuring out significant cues during patient assessment	2.920	0.640	3.240	0.435	-3.874	.008*
2. I am figuring out patients' problems	2.680	0.690	2.920	0.493	-1.541	.136
3. I am figuring out the needed actions or patient care interventions.	2.333	0.701	2.833	0.564	-2.769	.011*

*Two-tailed test at ($\alpha = 0.05$)

The paired-samples t-test revealed two significant results between the two stages of the first and the third item of this part that explored respondents' opinions regarding their assessment and interventional clinical reasoning abilities. The negative t-values (-3.874; -2.769) indicate that the improvements occurred at the end of their medical or surgical internship rotations.

Hypothesis (4): There is a difference in perceptions of Saudi Arabian female interns of their rational-intuitive tendencies at the beginning and end of adult-care medical or surgical internship clinical rotation.

The interns' responses to the rational-intuitive styles scale of Taggart and Valenzi (1990) shows minimal differences in the central tendency measures between different modes and tendencies of the two stages. Additionally, the results of the paired-samples t-test for the differences in subjects' responses in the two stages for the individual modes or tendencies indicate no significant differences between the two stages (table 4.6).

Table 4.6: T-test results for rational-intuitive tendencies and their relevant modes

Modes and Tendencies	Stage One		Stage Two		t value (between the 2 stages)	p*
	\bar{X}	SD	\bar{X}	SD		
1. Analysis mode (items 1, 2, 3, 4, 5)	4.970	0.723	4.660	0.640	1.629	0.127
2. Planning mode (items 11, 12, 13, 14, 15)	4.640	1.050	4.840	0.690	-0.897	0.386
3. Control mode (items 21, 22, 23, 24, 25)	3.980	0.859	3.920	0.760	0.374	0.715
4. Insight mode (items 6, 7, 8, 9, 10)	3.170	0.772	3.180	0.760	-0.138	0.893
5. Vision mode (items 16, 17, 18, 19, 20)	4.370	0.660	4.130	0.440	1.481	0.162
6. Sharing mode (items 26, 27, 28, 29, 30)	4.110	0.790	4.200	1.160	-0.366	0.720
Rational tendency (analysis, planning, & control).	4.480	0.521	4.480	0.529	0.038	0.970
Intuitive tendency (insight, vision, & sharing)	3.890	0.491	3.840	0.510	0.389	0.704

*Two-tailed test at ($\alpha = 0.05$)

Another set of paired-samples t-tests was performed to reveal differences between the modes and tendencies of the same stage and then between different modes and tendencies of the two stages. Significant results show superiority of the rational tendency and its related modes above the intuitive tendency and its related mode in all parametric t-tests, except for four cases. Two of these have tested the existence of significant differences between the rational tendency and the sharing mode of stage one and the same tendency and the vision mode of stage two. Another two non-significant results were of those tests detecting differences between the intuitive tendency and the control mode of the two stages. These results significantly indicate that the superior component is more frequently describing the intern's true self rather than the other component of the t-equation. Table 4.7 shows these results.

Table 4.7: Significant differences between different tendencies and modes of the Rational-Intuitive tendency scale

Modes and Tendencies pairs	Stages®	t value (between the modes or tendencies)	p*
1. Rational tendency AND Intuitive tendency	1-1	5.710	0.000*
2. Rational tendency AND Intuitive tendency	1-2	4.382	0.001*
3. Rational tendency AND Intuitive tendency	2-1	3.341	0.006*
4. Rational tendency AND Intuitive tendency	2-2	4.030	<0.001*
5. Rational tendency AND Insight mode	1-1	6.350	0.000*
6. Rational tendency AND Insight mode	2-2	5.300	0.000*
7. Rational tendency AND Vision mode	1-1	1.335	0.203
8. Rational tendency AND Vision mode	2-2	3.504	0.002*
9. Rational tendency AND Sharing mode	1-1	5.181	<0.001*
10. Rational tendency AND Sharing mode	2-2	1.015	0.323
11. Intuitive tendency AND Analysis mode	1-1	-7.129	<0.001*
12. Intuitive tendency AND Analysis mode	2-2	-3.809	0.001*
13. Intuitive tendency AND Planning mode	1-1	-3.071	0.007*
14. Intuitive tendency AND Planning mode	2-2	-7.326	<0.001*
15. Intuitive tendency AND Control mode	1-1	-1.394	0.184
16. Intuitive tendency AND Control mode	2-2	-0.559	0.583

® The stages' two numbers represent the stages of the mode or tendency targeted by the t-test.

*Two-tailed test significant at ($\alpha = 0.05$).

4.2.3 Significant relationships among study variable

4.2.3.1 Age of interns

The age of the participants is correlated with three variables distributed across various study scales (table 4.8). The first relationship is documented between the age of the participants and their perceived level of independence in patient care non-routine clinical judgments when deciding to intervene, respond, or take an action (or not) ($r = 0.439$). This positive significant relationship is evident in stage one of the questionnaire introduction. The second stage witnessed two positive relationships between the subjects' age and the control mode and the intuitive style on the rational-intuitive styles' scale of Taggart and Valenzi (1990). Hence, the sampling design of stage two considers the age of the participants when selecting informants for interview.

Table 4.8: Significant relationships for the interns' age with other variables

Variables	stage	r	p
1. Independence in patient care non-routine clinical judgments when deciding to intervene, respond, or take an action (or not).	1	0.439*	.032
2. Control mode	2	0.499*	0.030
3. Intuitive tendency	2	0.475*	0.046

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.2 Participants' GPA

The results show two positive relationships ($r_1 = 0.710$; $r_2 = 0.650$) in the two stages between the participants' GPA and the second statement of the CRACS that explores a participant's perception of the level of their relationship with their patients. This indicates that the higher the interns' GPA, the higher the relationship with their patients throughout the medical or surgical rotations.

4.2.3.3 Participants' perceptions of their academic success

To reveal significant relationships between the study variables and the interns' perceptions of their academic success, one-way ANOVA (Analyses of variances) test is performed to detect significant differences between interns' responses to different statements or scales distributed among the three response categories (average, above average, and excellent) of the academic success theoretical and practical components. The ANOVA tests revealed a single significant relationship between the academic success theoretical component of stage one and the second statement of the CRACS that explores participants' perception of the level of their relationship with their patients ($F = 6.235$, $p = 0.020$). Then, a multiple comparison procedure using the Tukey test is performed to determine the difference between the three response categories. The difference is documented in favour of the 'above average' and the 'excellent' categories above the 'average' category ($p = 0.020$ and 0.043 , respectively). These results indicate that those interns who have a higher perception of their theoretical success have a better perception of the relationship with their patients at the beginning of the medical or surgical internship rotations.

Due to the previous two significant relationships between the GPA and the academic success and the second statement of the CRACS, a question area related to the

relationship with the patients was incorporated into the semi- structured interview at this stage of the study.

4.2.3.4 Clinical Reasoning Antecedents and Consequences Scale (CRACS)-(Part Two)

The following subsections highlight the significant relationships between each statement of this scale (as a study variable) and the other statements of the CRACS, as well as the items in parts three, four and five. Pearson product-moment correlation coefficient was used to reveal significant relationships between different variables. The overall CRACS scores were found to positively correlate with the three items of independence in the clinical judgment section considering the assessment ($r = 0.512$), the identification of problems ($r = 0.467$), and the intervention ($r = 0.520$) components. Additionally, the insight mode is linked with the overall CRACS score in stage one ($r = 0.663$) at the (0.01) level.

4.2.3.5 Constantly feeling part of the team (Part 2-1)

The current variable (statement) is significantly correlated with four variables of CRACS; with all aspects of independence in the clinical judgment group (part 3); and the initial variable of patient care clinical reasoning group (part 4). Table 4.9 shows these variables and the relevant correlation levels. The correlation with the confidence statement ($r = 0.466$) indicates that interns' confidence increases when they feel part of the nursing team. This is mostly evident at the end of the medical or surgical internship rotations.

The relationships between the current statement and the fourth ($r = 0.732$) and sixth ($r = 0.447$) statements of the CRACS point to the importance of feeling part of the team to perceive full control over the daily activities and to know the next step in patient care, especially at the beginning of the internship rotation. Additionally, feeling part of the team appeared to precipitate a more analytical ($r = 0.501$) style at the beginning of the internship training. Finally, the results show that the more the

intern constantly feels being part of the team the higher the level of independence in all aspects of patient care clinical judgments at the beginning of internship and in figuring out cues during patient assessment as perceived by interns at the end of the medical or surgical rotations ($r = 0.529$).

Table 4.9: Significant relationships of ‘constantly feeling part of the team’ with other variables

Variable No. in the questionnaire	Variables	Stage®	r	p
(part 2-4)	1. Having full control over daily activities.	1-1	0.732**	<0.001
(part 2-5)	2. Having confidence when making CJ.	2-2	0.466*	0.022
(part 2-6)	3. Knowing the next step in patient care.	1-1	0.447*	0.019
(part 2-10)	4. Analytic/rational style	1-1	0.501**	0.008
(part 3 – 1)	5. Independence in patient care non-routine clinical judgments when assessing patients to identify significant cues.	1-1	0.381*	0.050
(part 3 – 2)	6. Independence in patient care non-routine clinical judgments when interpreting data to identify patient’s problems.	1-1	0.390*	0.044
(part 3 – 3)	7. Independence in patient care non-routine clinical judgments when deciding to intervene, respond, or take an action (or not).	1-1	0.435*	0.023
(part 4-1)	8. Independence in clinical reasoning when figuring out cues during patient assessment.	2-2	0.529**	0.007

® The stage’s two numbers represent the stages of the correlated variables (statements).

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.6 Relationship with patients (Part 2-2):

As indicated in section (4.2.3.2), this variable is linked with students’ GPA in both stages of questionnaire administration. This indicates that the higher the intern’s GPA, the greater the relationship with their patients throughout the clinical rotations.

4.2.3.7 Needing no prompting from the preceptor to initiate therapeutic relationships with their patients (Part 2-3)

The single significant relationship evident for this variable is with the second statement of part three of the questionnaire that explores the interns’ perceptions of the level of independence in their non-routine clinical judgments when interpreting data to identify patients’ problems. The negative correlation coefficient ($r = - 0.433$)

indicates that the greater the intern's ability to initiate therapeutic relationships with patients without CRN's/preceptor's prompting or assistance, the less their independence in non-routine clinical judgments when interpreting data to identify patients' problems. It was previously indicated in section 4.2.2 that the interns' need for prompting and their dependence on CRNs' and preceptors' judgments when interpreting data to identify patients' problems have both decreased at the end of their medical or surgical internship rotations. Hence, the unexpected relationship identified in this section will be discussed in the second part of this study.

4.2.3.8 Having control over daily activities (Part 2-4)

This variable is significantly and positively correlated with five variables of the CRACS and also with the three items of the clinical judgment section (part three of the questionnaire). Table 4.10 shows that eight of the nine relationships are evident in stage one; and the second stage has identified the single significant relationship between the current variable and interns' perceptions of the level of independence in their non-routine clinical judgments when interpreting data to identify patients' problems ($r = 0.419$). The remaining results indicate that the interns feel more in control over daily activities when they feel part of the team ($r = 0.732$); when they know constantly the next step in patient care ($r = 0.588$); when all of their clinical judgments are accurate ($r = 0.380$); and when they experience independence in all aspects ($r_6 = 0.625$, $r_7 = 0.533$, & $r_9 = 0.697$) of non-routine patient care clinical judgments. Additionally, this feeling of being in control over daily activities will precipitate the interns' analytical style ($r = 0.505$) and their ability to verify clinical judgments at all times ($r = 0.536$).

Table 4.10: Significant relationships of ‘having control over daily activities’ with other variables

Variable No. In the questionnaire	Variables	Stage®	r	p
(part 2-1)	1. Feeling constantly part of the team.	1-1	0.732**	<0.001
(part 2-6)	2. Knowing constantly the next step in patient care	1-1	0.588**	0.002
(part 2-7)	3. Accuracy of clinical judgments	1-1	0.380*	0.050
(part 2-8)	4. Ability to verify clinical judgments at all times.	1-1	0.536**	0.004
(part 2-10)	5. Analytic/rational style	1-1	0.505**	0.009
(part 3-1)	6. Independence in clinical judgment when assessing patients to identify sig. cues.	1-1	0.625**	0.001
(part 3-2)	7. Independence in clinical judgment when interpreting data to identify patients’ problems.	1-1	0.533**	0.005
(part 3-2)	8. Independence in clinical judgment when interpreting data to identify patients’ problems.	2-2	0.419*	0.042
(part 3-3)	9. Independence in clinical judgment when deciding to intervene, respond, or take an action (or not).	1-1	0.697**	<0.001

® The stage’s two numbers represent the stages of the correlated variables (statements).

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.9 Confidence when making clinical judgments (Part 2-5)

All the significant relationships between the confidence component of clinical judgment and other variables occurred in stage two of the questionnaire administration (table 4.11). It is evident that the increased confidence precipitated more analyticity in the interns’ reasoning style at the end of the internship rotation. Additionally, the increased confidence is significantly correlated with an increase in the interns’ perceptions of being part of the nursing team in the unit ($r = 0.466$). Also, in the second stage of data collection the interns’ confidence was found to be correlated with their perception of their independence in clinical reasoning when figuring out patient’s problems ($r = 0.497$). This result indicates that the higher the confidence level, the higher the independence in clinical reasoning when figuring out patient’s problems.

Table 4.11: Significant relationships of ‘Confidence when making clinical judgments with other variables

Variable No. in the questionnaire	Variables	Stage®	r	p
(part 2-1)	1. Feeling constantly part of the team	2-2	0.466*	0.022
(part 2-10)	2. Analytic/rational style	2-2	0.463*	0.023
(part 4-2)	3. Independence in clinical reasoning when figuring out patients’ problems.	2-2	0.497*	0.014

® The stage’s two numbers represent the stages of the correlated variables (statements).

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.10 Knowing the next step in patient care (Part 2-6)

This variable has five significant relationships with other variables of the CRACS where two of these are evident in stage two of the questionnaire administration. Table 4.12 shows that interns’ feeling part of the team and having full control over daily activities at the beginning of their internship rotation are positively correlated with their ability of knowing the next step in patient care. Additionally, when nursing interns know the next step they are able to verify their clinical judgments ($r = 0.508$) at the beginning of their medical or surgical internship rotations and are also able to continuously undertake accurate clinical judgments at the end of these rotations ($r = 0.499$). Finally, the knowledge of the next step predisposes the reflective style at the beginning of these rotations and the analytical reasoning style at the completion of them.

Table 4.12: Significant relationships of ‘Knowing the next step in patient care’ with other variables

Variable No. in the questionnaire	Variables	Stage®	r*	p
(part 2-1)	1. Feeling constantly part of the team.	1-1	0.447*	0.019
(part 2-4)	2. Having full control over daily activities.	1-1	0.588**	0.002
(part 2-7)	3. Accuracy of clinical judgments	2-2	0.499*	0.011
(part 2-8)	4. Ability to verify clinical judgments at all times	1-1	0.508*	0.032
(part 2-10)	5. Analytic/rational style	2.2	0.668**	<0.001
(part 2-11)	6. Reflective style	1-1	0.388*	0.046

® The stage’s two numbers represent the stages of the correlated variables (statements).

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.11 Accuracy of clinical judgments (Part 2-7)

As previously discussed, the interns felt that their clinical judgments were accurate when they had more control over their daily activities ($r = 0.380$), especially at the beginning of their internship and when they knew the next step ($r = 0.499$) at the completion of their medical/surgical rotations. These results indicate that at the beginning of their internship the accuracy of their clinical judgment (as the major consequence of the reasoning processes) is perceived by the interns to be positive when they felt they had full control over daily activities rather than knowing the next step in patient care. Furthermore, this perception of accurate clinical judgments at the beginning of the rotation is strongly linked with interns' ability to verify their clinical judgments at all times ($r = 0.527$). Knowing the next step is linked with the accuracy component at the end of the medical or surgical internship rotations. Though highly correlated ($r = 0.588$) in section (4.2.3.10), the results of this section indicate that the two variables (having full control over daily activities and constantly knowing the next step) are not compatible because having full control over the daily activities is broader than knowing the next step and the former is a requirement or a need at the beginning of internship rotation.

This is the first factor linked with insight mode ($r = 0.557$) as an aspect of the intuitive tendency at the beginning of their internship. This indicates that the more interns feel their clinical judgments are accurate, the more they are insightful (table 4.13).

Table 4.13: Significant Relationships of 'Accuracy of clinical judgments' with other variables

Variable No. in the questionnaire	Variables	Stage®	r	p
(part 2-4)	1. Having full control over daily activities.	1-1	0.380*	0.050
(part 2-6)	2. Knowing constantly the next step.	2-2	0.499*	0.011
(part 2-8)	3. Ability to verify clinical judgments at all times	1-1	0.527**	0.004
(part 5-2)	5. Insight mode	1-1	0.557*	0.020

® The stage's two numbers represent the stages of the correlated variables (statements).

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.12 Ability to verify clinical judgments at all times (Part 2-8)

This is a central variable that sustained its relationship with both the analytic style and the insight mode throughout the medical-surgical internship rotations. As discussed earlier, this variable is positively correlated with both ‘having full control over daily activities’ and the ‘accuracy of clinical judgment’. Table 4.14 shows that the more the interns’ ability to verify their clinical judgments increases, the more reflective they become ($r = 0.437$), especially at the end of their medical or surgical internship rotations.

Table 4.14: Significant relationships of ‘Ability to verify clinical judgments at all times’ with other variables

Variable No. in the questionnaire	Variables	Stage®	r	p
(part 2-4)	1. Having full control over daily activities.	1-1	0.536**	0.004
(part 2-7)	2. Accuracy of clinical judgments.	1-1	0.527**	0.004
(part 2-10)	3. Analytic/rational style	1-1	0.525**	0.005
(part 2-10)	4. Analytic/rational style	2-2	0.565**	0.003
(part 2-11)	5. Reflective style	2-2	0.437*	0.029
(part 5-2)	6. Insight	1-1	0.515*	0.035
(part 5-2)	7. Insight	2-2	0.458*	0.037

® The stage’s two numbers represent the stages of the correlated variables (statements).

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.13 Thinking intuitively (Part 2-9)

Table 4.15 shows the relationships between the current variable and three other variables linked to the interns’ reasoning processes. The first logical positive relationship is the one linking this variable with the variable ‘insight mode’. Insight tendency is a dominant variable that belongs to the intuitive tendency group (insight, vision and sharing). The remaining two relationships are linking the current variable with the analytic style as perceived by interns ($r = 0.596$) in stage one and with the planning mode ($r = 0.507$) as part of the analytic tendency group (analysis, planning and control) of the Taggart and Valenzi rational-intuitive tendency scale in stage two.

Additionally, this intuitive style is positively correlated ($r = 0.459$) with the interns' independence in clinical reasoning when considering patient care actions required at the beginning of the internship.

Table 4.15: Significant relationships of 'Thinking intuitively' with other variables

Variable No. in the questionnaire	Variables	Stage®	r	p
(part 2-10)	1. Analytic/rational style	1-1	0.596**	0.001
(part 4-3)	2. Independence in clinical reasoning when figuring out the needed actions	1-1	0.459*	0.018
(part 5-2)	3. Insight mode	1-1	0.549*	0.023
(part 5-3)	4. Planning mode	2-2	0.507*	0.011

® The stage's two numbers represent the stages of the correlated variables (statements).

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.14 Thinking analytically/rationally (Part 2-10)

This variable has the highest number of relationships with other variables in the quantitative results' section. Some of these relationships have been discussed in previous sections of this chapter. As highlighted in table 4.16, the interns' perception of their rational style was found to be significant with five variables at the beginning of their internship rotation and with only one variable throughout the entire rotation. These results indicate that the interns' perception of their rational style increased at the beginning of their internship as they felt they were part of the patient care team ($r = 0.501$) and had control over daily activities ($r = 0.505$) as their perceptions of their intuitive style ($r = 0.596$) and their insight mode ($r = 0.572$) increased, and as their independence in clinical judgment when assessing patients to identify significant cues increased ($r = 0.453$). Additionally, the interns' perception of their rational style increased throughout the medical or surgical internship rotations as their ability to verify their clinical judgments increased. The results indicate that the more the interns display planning tendencies and know the next step in patient care, the more analytical they become as they complete their medical or surgical internship rotations. Finally, as the interns' rational style increased, their reflective style increased as well.

Table 4.16: Significant relationships of ‘Thinking analytically/rationally’ with other variables

Variable No. in the questionnaire	Variables	Stage®	r	p
(part 2-1)	1. Feeling constantly part of the team	1-1	0.501**	0.008
(part 2-4)	2. Having full control over daily activities	1-1	0.505**	0.009
(part 2-5)	3. Having confidence when making clinical judgments	2-2	0.463*	0.023
(part 2-6)	4. Knowing constantly the next step in patient care.	2-2	0.668**	<0.001
(part 2-8)	5. Ability to verify clinical judgments at all times	1-1	0.525**	0.005
(part 2-8)	6. Ability to verify clinical judgments at all times	2-2	0.565**	0.003
(part 2-9)	7. Intuitive style	1-1	0.596**	0.001
(part 2-11)	8. Reflective style	2-2	0.406*	0.044
(part 3-1)	9. Independence in clinical judgments when assessing patients to identify sig. cues.	1-1	0.453*	0.020
(part 5-2)	10. Insight mode	1-1	0.572*	0.016
	11. Planning mode	2-2	0.525**	0.008

® The stage’s two numbers represent the stages of the correlated variables (statements).

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.15 Thinking reflectively (Part 2-11)

This variable has significant relationships with six variables distributed equally between the two stages of questionnaire administration (table 4.17). None of these relationships is manifested throughout the medical or surgical rotations. The results of stage one show that interns’ reflective style increased as their ability of knowing the next step increased ($r = 0.388$). Additionally, as the interns’ perception of their reflective style increased, their sense of independence in their clinical judgment increased when assessing patients to identify significant cues ($r = 0.654$). Unexpectedly, the results indicated that those interns with a higher perception of their reflective style had a decreased sense of independence in clinical reasoning when identifying or ‘figuring out’ cues ($r = -0.450$). Stage two relationships indicated that the more reflective the intern, the more able they were able to verify their clinical judgments ($r = 0.437$). Additionally, their rationality ($r = 0.406$) and intuitive tendency ($r = 0.471$) increased as they become more reflective.

Table 4.17: Significant relationships of ‘Thinking reflectively’ with other variables

Variable No. in the questionnaire	Variables	Stage®	r	p
(part 2-6)	1. Knowing constantly the next step in patient care.	1-1	0.388*	0.046
(part 2-8)	2. Ability to verify clinical judgments at all times	2-2	0.437*	0.029
(part 2-10)	3. Analytical/rational style	2-2	0.406*	0.044
(part 3-1)	4. Independence in clinical judgment when assessing patients to identify sig. cues.	1-1	0.385*	0.047
(part 4-1)	5. Independence in clinical reasoning when figuring out the significant cues.	1-1-	- 0.450*	0.016
(part 5)	6. Intuitive tendency	2-2	0.471*	0.036

® The stage’s two numbers represent the stages of the correlated variables (statements).

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.16 Independence in clinical judgment (Part Three)

The three variables of the current set or part have highlighted significant relationships with variables of different scales of the study questionnaire (table 4.18) and with items of the same part that explored the interns’ independence in making clinical judgments (table 4.19). The interns’ perceptions of ‘having full control over daily activities’ is the only variable in table 4.18 that has a positive relationship with all three variables (statements) of this part at the commencement of their internship. This relationship indicates that the greater the interns’ perceptions of their independence when making clinical judgments (in all aspects of patient care), the more they feel in control over daily activities. Additionally, ‘having full control over daily activities’ is found to be significantly correlated at the completion of the rotation with the second variable of this part that explores independence in clinical judgment when interpreting data to identify patient problems ($r = 0.419$). This indicates that when the interns felt in control as daily activities increased, their independence in clinical judgment when interpreting data to identify problems increased.

Another significant relationship is found between the second variable of this part (independence in clinical judgment when interpreting data to identify problems) and

the interns' independence in clinical reasoning when identifying patients' problems ($r = 0.441$) at the end of their rotations. This positive relationship indicates a logical link between the clinical reasoning and the clinical judgment component (variables) targeting the same area (independence in identifying patients' problems) at the end of the medical or surgical internship rotations. This underlines that the more independence in clinical reasoning, the more independence in clinical judgment perceived by the interns when identifying patients' problems at the completion of their rotations.

The remaining set of relationships in table 4.18 is the one linking the current variable with the reasoning styles or tendencies. The results show that the increased independence in clinical judgment when assessing patients to identify significant cues predisposes the analytical ($r = 0.453$) and the reflective ($r = 0.385$) reasoning styles as perceived by the interns at the beginning of their internship. Additionally, interns' rational tendency, as measured by (15) items of the Taggart and Valenzi 30-item scale, is positively correlated with their independence in clinical judgment when interpreting data to identify patients' problems ($r = 0.509$) at the beginning of internship and negatively correlated with the same statement (variable) at the end of their internship rotations ($r = -0.460$). Another negative relationship ($r = -0.560$) is linking the interns' control tendency, as one of the three modes (analysis, planning and control) comprising the rational tendency on the Taggart and Valenzi scale, with their independence in clinical judgment when interpreting data to identify patient problems at the completion of their medical or surgical rotations.

These unexpected findings are relevant to the second statement (variable) of part three of the questionnaire and will be discussed thoroughly in chapter five (section 5.1). Relevant questions were incorporated into the qualitative interviews for a possible explanation of these findings. The remaining variables ('interns' age' and 'needing no prompting') in table 4.18 have been discussed in previous sections of this chapter.

Table 4.18: Significant relationships of independence in clinical judgment (part 3) with other variables

Variable No. in the questionnaire	VARIABLES	Independence in Clinical Judgment (Part 3)		
		When assessing patient to identify cues (3 – 1)	When interpreting data to identify problems (3 – 2)	When deciding to intervene, respond, or take action (or not) (3 – 3)
(stage 1)	1. Age			• r = 0.439*, p 0.032
(2 – 3) (stage 2)	2. Needing no prompting to initiate therapeutic relationship with patients.		• r = -0.433*, p 0.039	
(2 – 4) (stage 1)	3. Having full control over daily activities.	• r=0.625**, 0.001	• r=0.533**, p 0.005	• r=0.697**, p< 0.001
(2 – 4) (stage 2)	4. Having full control over daily activities.		• r = 0.419*, p 0.042	
(2 – 10) (stage 1)	5. Analytical/rational style	• r= 0.453*, p 0.020		
(2 – 11) (stage 1)	6. Reflective style	• r=0.385*, p 0.047		
(4 – 2) (stage 2)	7. Independence in CR when figuring out patient's problems.		• r = 0.441*, p 0.031	
(5 – 5) (stage 2)	8. Control tendency		• r= -0.560**, p 0.008	
(5) (stage 1)	9. Rational tendency		• r = 0.509*, p 0.044	
(5) (stage 2)	10. Rational tendency		• r = -0.460*, p 0.041	

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

The relationships between the three statements (variables) of this part are shown in table 4.19. The results indicate that the three variables are correlated and interrelated in stage one of the questionnaire administration and they are chained in stage two. This has been interpreted to mean that there is not a direct link between the interns' own perceptions of their independence in clinical judgment when assessing patients to identify significant cues and their independence in clinical judgment when deciding to intervene.

Table 4.19: Significant relationships of the components of the independence in clinical judgment (part 3) with each other

	VARIABLES	Independence in Clinical Judgment (Part 3)	
		1. When assessing patient to identify cues.	2. When interpreting data to identify problems.
Independence in Clinical Judgment	2. When interpreting data to identify problems.	<ul style="list-style-type: none"> • $r_1 = 0.469^*$, p 0.016 • $r_2 = 0.499^*$, p 0.013 	
	3. When deciding to intervene, respond, or take action (or not).	<ul style="list-style-type: none"> • $r_1 = 0.748^{**}$, p 0.000 	<ul style="list-style-type: none"> • $r_1 = 0.566^{**}$, p 0.002 • $r_2 = 0.561^{**}$, p 0.004

r_1 = correlation coefficient between the two variables in stage 1

r_2 = correlation coefficient between the two variables in stage 2

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.17 Independence in clinical reasoning (Part Four)

This set of variables represents the interns' own perceptions of their independence in identifying cues, problems and interventions relevant to patient care. Significant relationships are evident with various variables of different study scales. The initial five relationships in table 4.20 were discussed earlier. Three positive relationships are evident between the groups of statements in part four. Two of these are chaining the three statements (variables) in stage one. They indicate that the more independence in clinical reasoning when identifying significant cues during a patient's assessments, the more independence in clinical reasoning when figuring out the patient's problems ($r = 0.451$).

As the latter variable (4-2) increased, the interns' perceptions of their independence in clinical reasoning when intervening increased ($r = 0.602$) at the beginning of the internship. Additionally, it was noticed that the greater the interns' independence in clinical reasoning when identifying patients' problems, the greater the independence in clinical reasoning when figuring out the needed intervention ($r = 0.673$) at the completion of the medical or surgical internship rotations. The results also indicate that as the interns' vision mode increased, their independence in clinical reasoning when identifying patients' problems increased ($r = 0.526$) at the beginning of their internship. Unexpectedly, the first statement of this part has a negative relationship

($r = -0.618$) with the control tendency at the beginning of their internship. This result indicates that as the interns' control tendency increased their independence in clinical reasoning when identifying significant cues during patient assessment increased at the beginning of their internship.

Table 4.20: Significant relationships of the independence in clinical reasoning (part 3) with other variables

Variable No. in the questionnaire	VARIABLES	Independence in Clinical Reasoning (Part 4)		
		When figuring out sig. cues during patient assessment (4 – 1)	When figuring out patient's problems. (4 – 2)	When figuring out the needed action or patient care interventions (4 – 3)
(2 – 1) (stage 2)	1. Feeling constantly part of the team	• $r = 0.529^{**}$, $p 0.002$		
(2 – 5) (stage 2)	2. Having confidence when making clinical judgments		• $r = 0.497^*$, $p 0.014$	
(2 – 9) (stage 1)	3. Intuitive style			• $r = 0.459^*$, $p 0.018$
(2 – 11) (stage 1)	4. Reflective style	• $r = -0.471^*$, $p 0.036$		
(3 – 2) (stage 2)	5. Independence in CJ when interpreting data to identify patient's problems		• $r = 0.441^*$, $p 0.021$	
(4 – 1) (stage 1)	6. Independence in CR when figuring out cues during patient assessment		• $r = 0.451^*$, $p 0.016$	
(4 – 2) (stage 1)	7. Independence in CR when figuring out patient's problems.			• $r = 0.602^{**}$, $p 0.001$
(4 – 2) (stage 2)	8. Independence in CR when figuring out patient's problems.			• $r = 0.673^{**}$, $p < 0.000$
(5 – 4) (stage 1)	9. Vision mode		• $r = 0.526^*$, $p 0.030$	
(5 – 5) (stage 1)	10. Control mode	• $r = -0.618^*$, $p 0.011$		

** Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

4.2.3.18 Rational-Intuitive tendencies (Part five)

This section presents the various relationships between the two major areas (intuitive and rational) and their related modes in the two stages of questionnaire administration. Table 4.21 shows the different patterns of these relationships in the two stages. In stage one, the three modes of each major tendency area are connected only with that major area, except for the sharing tendency—which is linked with both the intuitive ($r = 0.717$) and the rational ($r = 0.675$) tendencies. The second stage identified a major change in the pattern of the relationships. For example, while the sharing and insight modes maintained their relationships with the intuitive tendency, the vision mode (as an intuitive mode) is linked with both the rational

tendency ($r = 0.470$) and its planning mode ($r = 0.521$). Additionally, the rational tendency and its planning mode indicate increased relationships with the intuitive side. Besides the links with its three modes (analysis, planning and control), the rational tendency has three additional relationships with the intuitive group that include the intuitive tendency ($r = 0.530$) and the insight ($r = 0.468$) and the vision modes. The planning mode is linked with the rational tendency ($r = 0.672$) and the analysis mode ($r = 0.422$) from one side and with the intuitive tendency ($r = 0.533$) and the vision mode from the other. These results indicate that as the planning mode increased, these tendencies and modes also increased.

A third area of relationships revealed the links between the variables of the two stages. These relationships are evident only among the modes and tendencies of the same group (rational or intuitive). For example, the intuitive tendency and the insight mode of stage one are positively correlated with the intuitive tendency of stage two. Additionally, the insight modes of the two stages are strongly correlated ($r = 0.872$), as well as the sharing modes ($r = 0.659$). Similarly, the planning modes of the two stages are positively correlated ($r = 0.610$); and, at the same time the rational tendency of stage one is linked with the planning mode of stage two ($r = 0.714$). Finally, the control mode of stage one is correlated with both the control mode ($r = 0.715$) and the rational tendency ($r = 0.615$) of stage two. The previous relationships are shown in table 4.21.

Table 4.21: Significant relationships between the rational-intuitive tendencies and modes

		Analysis		Planning		Control		Insight		Vision		Sharing		Rational		Intuitive	
		stage 1	stage 2	stage 1	stage 2	stage 1	stage 2	stage 1	stage 2	stage 1	stage 2	stage 1	stage 2	stage 1	stage 2	stage 1	stage 2
Analysis	stage 1													0.706** (0.002)			
	stage 2													0.777** (0.000)			
Planning	stage 1				0.610 (0.021)									0.685** (0.003)			
	stage 2		0.422* (0.045)							0.521** (0.009)				0.714** (0.006)	0.672** (0.001)		0.533** (0.018)
Control	stage 1						0.715** (0.009)							0.548* (0.028)	0.615* (0.033)		
	stage 2													0.758** (0.000)			
Insight	stage 1							0.872** (0.000)								0.535* (0.027)	0.597* (0.024)
	stage 2													0.468* (0.043)			0.725** (0.000)
Vision	stage 1															0.693** (0.002)	
	stage 2													0.470* (0.031)			
Sharing	stage 1											0.659* (0.010)		0.675** (0.004)		0.717** (0.001)	
	stage 2																0.807** (0.000)
Rational	stage 1																
	stage 2																0.530* (0.024)
Intuitive	stage 1																0.582* (0.029)
	stage 2																

**correlation is sig. at the 0.01 level (2-tailed)

*correlation is sig. at the 0.05 level (2-tailed)

4.2.4 Summary of the quantitative results

This part of the results section presented findings describing the quantitative study sample; testing research hypotheses considering the effect of time or experience on certain clinical reasoning and clinical judgment components and relevant factors (answering research question one); and uncovering significant relationships between these components and factors throughout the medical or surgical internship experience of the Saudi Arabian female interns.

The results show that the perceptions of the interns who completed the questionnaire in the two stages regarding their theoretical and practical academic success did not change over time. When the relationships between the components (theoretical and academic) of the interns' academic success and all questionnaire variables were tested in the two stages using the one-way ANOVA test, only one significant result was revealed indicating that those interns who had a higher perception of their theoretical success had a better perception of their relationship with their patients (part 2-2) at the beginning of their medical or surgical internship rotations. Additionally, this statement (part 2-2) is significantly correlated with the interns' GPA in the two stages. Based on these findings, the interns' relationships with their patients were examined during the qualitative interviews to better understand this relationship with these variables and other relevant variables to the interns' clinical reasoning and clinical judgment. Despite their limited significance, the interns' GPA and theoretical academic success were considered when selecting the qualitative sample for the semi-structured interviews.

The impact of time is tested with other questionnaire parts and scales using the paired-samples t-test. Results showed an improvement in CRACS overall scores at the completion of the rotations, but no significant changes were evident in relation to the interns' overall responses in the two stages on the Taggart and Valenzi rational-intuitive scale. Additional significant differences were documented related to individual components of these scales. Significant changes were evident between the interns' responses on the four statements of the CRACS in the two stages. The changes indicated that the interns felt increasingly more part of the team and of having more of a relationship with their patients at the completion of the rotation than they did at the beginning. The interns also needed more prompting to initiate

therapeutic relationships with patients at the beginning stage than at the completion of their rotation. The data indicates they felt in control when performing daily activities and became increasingly more confident in both knowing the next step in patient care and verifying all of their clinical judgments at the completion of the rotation. In relation to their mode of thought, the interns possessed more rationality at the completion of their internship rotations.

Considering the changes in the interns' responses on the components of Taggart and Valenzi's rational-intuitive scale, significant results indicated superiority of the rational tendency and its related modes (analysis, planning and control) over the intuitive tendency and its related modes (insight, vision and sharing) within the same stage and across the two stages. These results indicate that the rational tendency and its related modes are describing the interns' true reasoning self, more than the intuitive tendency and its related modes. The final significant differences documented in relation to the interns' independence in their non-routine clinical judgments (part 3) and clinical reasoning (part 4) showed that only one aspect of patient care in part three and two aspects in part four were found to show significant changes as a matter of time and experience. These included the interns' independence in clinical judgment when interpreting data to identify patients' problems and their independence in clinical reasoning when identifying significant cues during patient assessment and when identifying the required actions or interventions.

The relationships subsections are the major components of this quantitative section. The relationships in stage one between the different factors of the two major parts of the questionnaire (parts two and five) are summarized in figure (4.1a). The factors' links show the direct and indirect relationships between the twelve variables that are chained around the analytical, rational style with a significant link noted with the reflective style. Insight, vision and control are the only intuitive modes of the Taggart and Valenzi scale that are part of this chain. The three variables that have critical links with the rational, analytical style are the interns' ability to verify clinical judgments at all times and their perceptions of having full control over their daily activities and feeling part of the unit's nursing team.

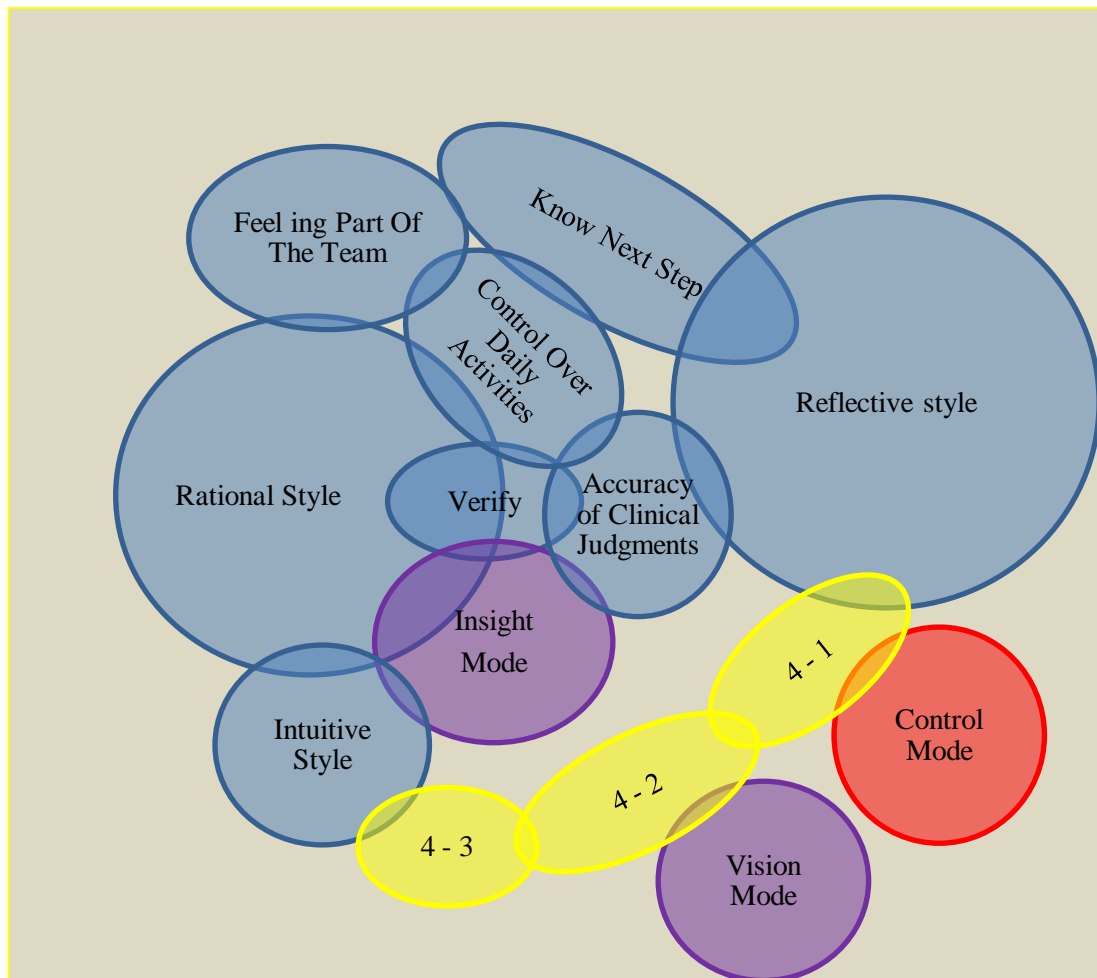


Figure 4.1a: Stage One Relationships (Part A). Note (1) the shapes and sizes of circles hold no representational weight or meaning, (2) the CRACS variables are in blue, (3) the independence in clinical reasoning variables are in yellow, (4) the modes of the intuitive tendency are in purple, and (5) the modes of the rational tendency are in red.

The importance of these links is related to their bridging ability between the analytical style and both the accuracy of clinical judgment as a major consequence of clinical reasoning and knowing the next step as a consequence and a process component of clinical reasoning. For example, the interns' need to be part of the team has resulted in more control of daily activities and these two variables together have called, from one side, for more knowledge about the next step in patient care and, from another, for more analyticity. By feeling part of the team and having more control over their daily activities, the interns' independence in clinical judgment increased in relation to all aspects of patient care (figure 4.1b). Another example in stage one is related to the accuracy of clinical judgments. This variable was found to be strongly correlated with the interns' ability to verify their clinical judgments and

the latter is strongly linked with their analyticity. These results indicate that rationality calls for enhanced ability to verify clinical judgments and the latter (verifying clinical judgments) will improve when interns experience more accuracy in their clinical judgments at the beginning of internship.

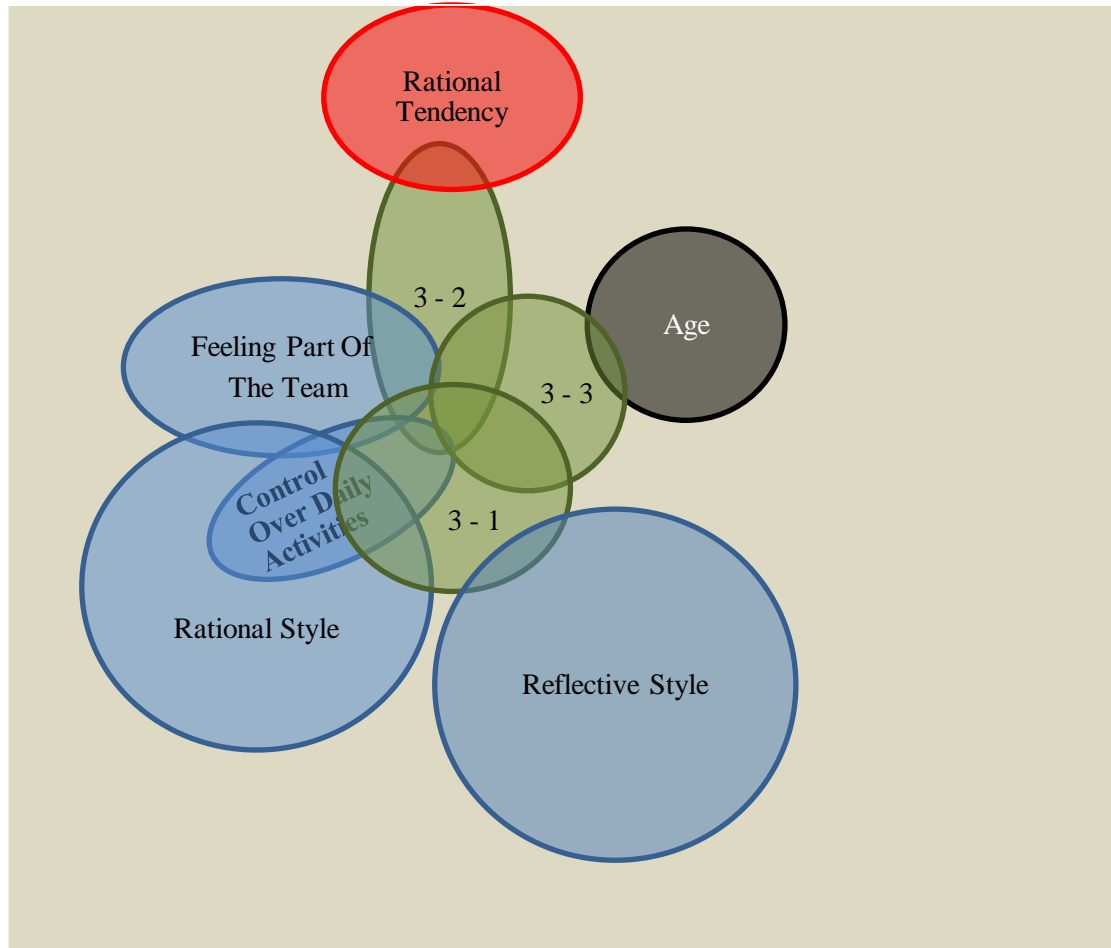


Figure (4.1b): Stage One Relationships (Part B). Note (1) the shapes and sizes of circles hold no representational weight or meaning, (2) the CRACS variables are in blue, (3) the independence in clinical judgment variables are in green, (4) the rational tendency is in red, and (5) age is in black.

The interns' age is positively correlated in stage one with the interventional component of the independence in clinical judgment group (figure 4.1b). Additionally, the interns' age is positively correlated in stage two with the intuitive tendency and the control mode. As stated earlier, the interns' age was considered when selecting the sample for interview in stage two of this study.

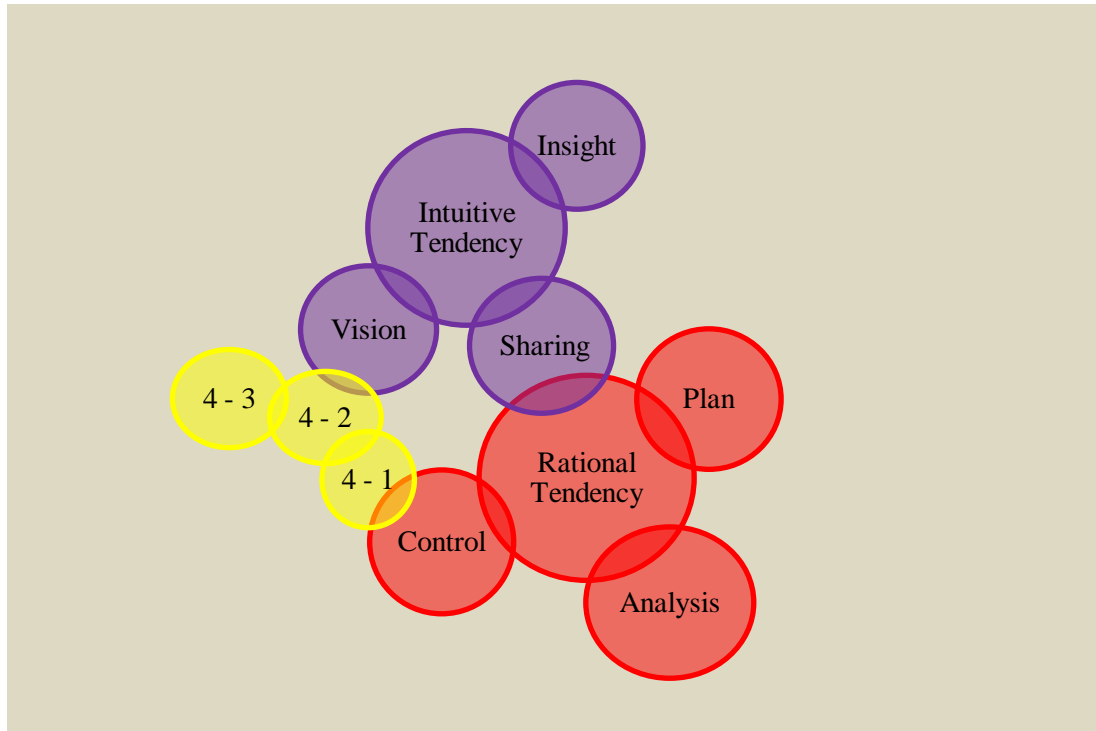


Figure (4.1c): Stage One Relationships (Part C). Note (1) the shapes and sizes of circles hold no representational weight or meaning, (2) the independence in clinical reasoning variables are in yellow, (3) the intuitive tendency and its modes are in purple, and , (4) the rational tendency and its modes are in red.

Figure (4.1c) summarizes the relationships between the different modes and the two tendency areas (intuitive and rational) and indicates that the sharing mode is the intersection between the intuitive and the rational groups. The three components of the interns' independence in clinical reasoning (part 4) are chained in a set of relationships and linked with both the rational and the intuitive groups. The first statement of part four is linked with the control mode and intersected with the intuitive group via a link between the second statement (variable) of the chain with the vision mode.

The second stage witnessed a shift from the 'chain' link to the 'pair' form of relationships between the variables of the two major scales (CRACS and Taggart and Valenzi scale). The only variable that sustained its links with the analytical reasoning style is the interns' ability to verify their clinical judgments (figure 4.2a). This variable continued its links with the insight mode and initiated a new link with the reflective style that starts to be linked with the analytical style. In this stage the

interns' confidence starts appearing, indicated by the connection with their analytical style and their feeling of being part of the team. Knowing the next step starts directly calling for more analytical thought and begins a bridging between the accuracy of clinical judgments and the interns' rationality.

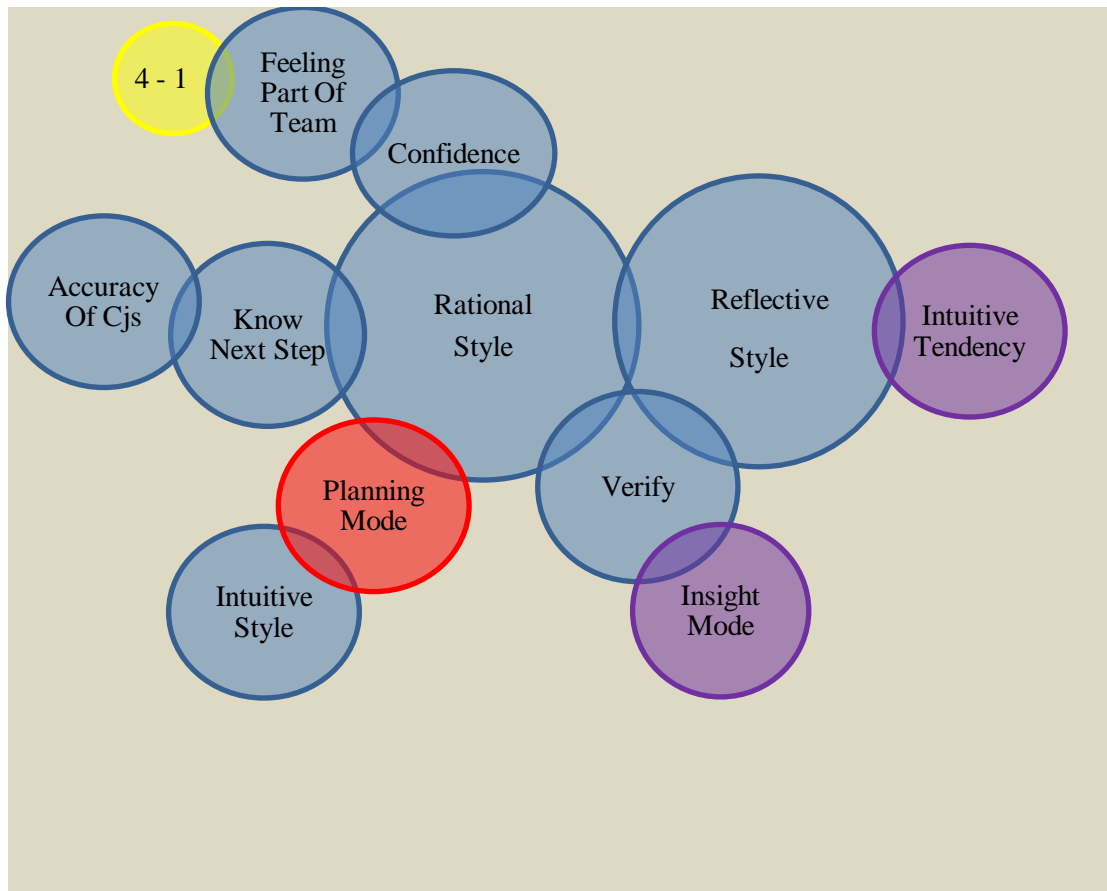


Figure (4.2a): Stage Two Relationships (Part A). Note (1) the shapes and sizes of circles hold no representational weight or meaning, (2) the CRACS variables are in blue, (3) the independence in clinical reasoning variables are in yellow, (4) the intuitive tendency and its modes are in purple, and (5) the modes of the rational tendency are in red.

These results that linked the ‘accuracy of clinical judgments’ with ‘having full control over daily activities’ in stage one and then linked this accuracy with ‘knowing the next step in patient care’ in stage two provide an inference worth noting. This inference indicates that the variables ‘having full control over daily activities’ and ‘knowing the next step in patient care’ are not compatible because, as stated earlier, ‘having full control over daily activities’ is broader than ‘knowing the

next step in patient care'. Interestingly, the interns' perceptions of both variables had increased at the completion of the medical or surgical internship rotations. When knowing the next step, the interns experienced greater ability to verify their clinical judgments at the beginning of their internship and were able to undertake more accurate clinical judgments at the end of their medical or surgical internship rotations.

The increased verification ability predisposes more analyticity and insightful thought throughout the medical or surgical internship rotations and more reflective thought at the end of the rotation. While the reflective thought is precipitated by more intuitive tendencies, the analytical thought appears to be linked to the planning tendency.

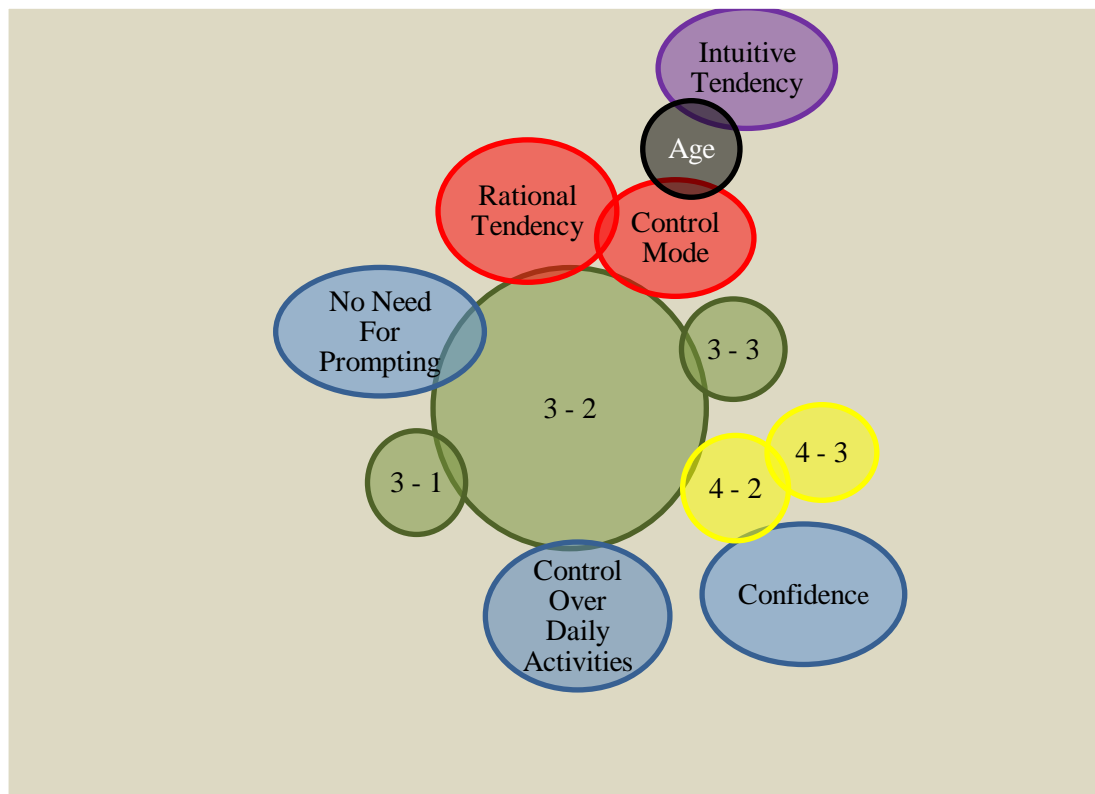


Figure (4.2b): Stage Two Relationships (Part B). Note (1) the shapes and sizes of circles hold no representational weight or meaning, (2) the CRACS variables are in blue, (3) the independence in clinical reasoning variables are in yellow, (4) the independence in clinical judgment variables are in green, (5) the intuitive tendency is in purple, (5) the rational tendency and its modes are in red, and (6) age is in black.

The three components of independence in the clinical judgment group (part 3) are chained together, as shown in figure 4.2b, by positive relationships. The main link in this chain is the second component that measures interns' sense of independence in clinical judgment when interpreting data to identify patient problems. This variable is negatively correlated with the control mode, the rational tendency, and the 'need for no prompting to initiate a therapeutic relationship with patients. These unexpected negative relationships called for a thorough examination of this area (independence in clinical judgment) in the second part of this study when interviewing the interns to explain the significant relationships identified in this quantitative stage.

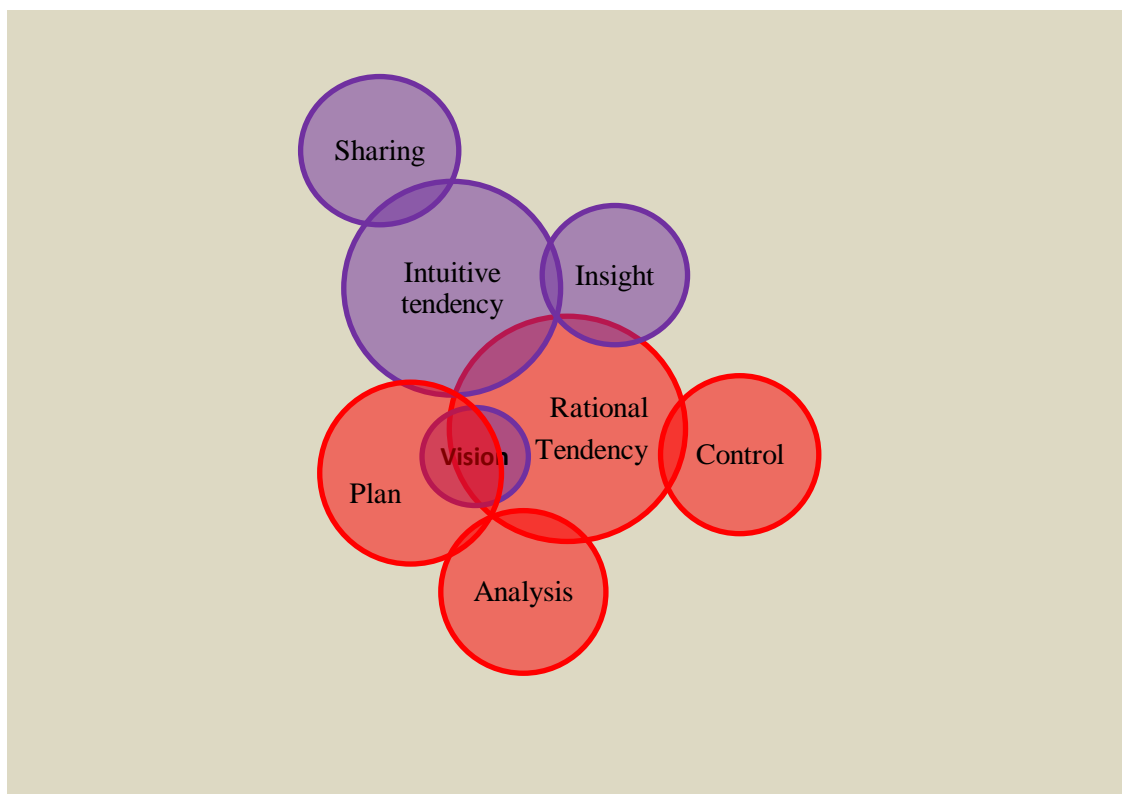


Figure (4.2c): Stage One Relationships (Part C). Note (1) the shapes and sizes of circles hold no representational weight or meaning, (2) the intuitive tendency and its modes are in purple, and (3) the rational tendency and its modes are in red.

The final set of relationships is linking the interns' modes and tendencies as measured by the Taggart and Valenzi scale. Figure 4.2c summarizes these relationships and shows that various modes are correlated with their relevant tendency area—except for the vision mode that is totally separated from the intuitive group and linked with both the planning mode and the rational tendency. It

represents an intersection between the two tendency areas. In-depth discussion is incorporated into the following discussion chapter.

4.3 Qualitative results: Phase Two

Data analysis in this section focuses on the three major areas targeted by the semi-structured interviews of phase two of the study with the interns, the CRNs and the nurse preceptors. These areas include the nature of interns' clinical reasoning when undertaking non-routine clinical judgments; the factors impacting on the development of the interns' clinical reasoning throughout the medical or surgical internship rotation; and the variables that were significant in the quantitative part of this study but required deeper exploration and explanation in the qualitative part of the study. The interns' relationship with their patients and their independence in clinical judgment are the two major areas that needed follow up in this stage of the study.

This part of the results chapter starts by describing the qualitative sample selection and the relevant variables considered when selecting these samples. The section then proceeds to describe the internship clinical education context as described by the interns, the CRNs, and the preceptors themselves. This description was revealed both unintentionally and sometimes intentionally by the three informant groups when making certain clarifications and when they wanted to complete the picture related to the interns' clinical reasoning. Interestingly, this latter description uncovered more variables that contributed (positively or negatively) to the development of interns' clinical reasoning at the time of uncertainty, including the role of both the CRN and the nurse preceptor in this development. The third component of this part of the results chapter will present the interns' description of the nature of their clinical reasoning at the time of uncertainty when undertaking non-routine clinical judgments. This includes relevant themes and the trajectory of their clinical reasoning throughout the medical or surgical internship rotation. This is followed by two sections presenting the CRNs' and the preceptors' descriptions of the interns' clinical reasoning at the time of uncertainty and its development.

Themes and clusters relevant to the factors that impacted on this development, as highlighted by the three parties, are then presented. The quantitative factors that needed more clarification are highlighted when applicable and then incorporated into the analysis in conjunction with the relevant qualitative components when combining the two sets of results at the conclusion of the discussion chapter. Finally, the essential structure of the nature of interns' clinical reasoning at the time of uncertainty and its trajectory, together with the factors that impacted on this development during the medical or surgical internship experience as described by interns, CRNs and nurse preceptors, is summarized. As indicated in the methodology chapter, these sections include parts of the researcher's reflective journal entries that add to the clarity, neutrality and objectivity of the utilized approach. These entries are the essence of the researcher's responses to Kingdon's (2005) areas of researcher bias at the beginning of both the data collection and data analysis stages of the qualitative phase. The researcher's responses to Wan Yim Ip and colleagues' (2012) reflective questions immediately after significant events and his reflective dialogue with his academic supervisors are included.

The various sets of data have been analyzed using Giorgi's (2012) analysis method. The data transcriptions undertaken at different levels have resulted in well-formulated structures describing the interns' internship and clinical reasoning experiences, as well as the factors impacting on these experiences. The descriptive statements of the individual interns relevant to various meaning areas have been tabulated into the main data sheet that became the major data source for the formulation of the various clusters of themes relevant to the various data sets. The theme clusters have then been incorporated into relevant decision trails that contain significant statements pertinent to different themes and their interpreted meanings.

To contribute to the study's clarity, rigor and auditability, the decision trails are incorporated as audit trails appendices (Burns & Grove 2005; Polit & Beck 2010). While developing the decision trails, the researcher constantly referred back to the original interview transcripts and tapes to validate certain statements incorporated into the main data sheet. The process of imaginative variations as a means of phenomenological reduction (Giorgi 2012) is employed throughout the data transformation at different levels. This was achieved by reflecting on all possible

expressions that might provide the interpreted meanings of informants' significant statements. This process was constantly employed with the researcher's primary academic supervisor during their weekly meetings. Despite starting the qualitative data analysis with an attempt to explore the nature of the interns' clinical reasoning at the time of uncertainty as the core target of this study, the qualitative results are presented with the most logical sequence to facilitate full understanding.

4.3.1 Description of the qualitative samples

The informants' groups for the qualitative interviews were selected by way of convenience sampling. The development (or not) in clinical reason was indicated in chapter three as the prime determinant for the qualitative sample selection. The quantitative results indicate that all the subjects of the intern group have encountered developments in their general reasoning behavior as measured by the CRACS. Therefore, the entire group who responded to the questionnaire in the two stages represented a cohesive cohort to inform phase two of the study. Due to the significant results linked to the age groups of the intern informants in the quantitative stage, age group quotas were considered when selecting the intern informants' convenience sample. Additionally, their placement area (medical or surgical) was also considered.

Their placement area (medical or surgical) was also considered at this stage to control the possible impact this variable might have on the collected data in this qualitative stage. As a result, the differences in interns' descriptions according to their placement area were revealed. The reason for including the placement area as a possible confounding variable at this stage is the infeasibility to test its impact with a representative sample in stage one. As indicated earlier, ten out of the twenty-eight subjects concealed their names when completing the questionnaire. Since the specialty area was not included as a variable in the stage one questionnaire, this latter act hindered classifying the entire sample according to the placement area.

As indicated in the methods chapter, the interview sample was composed of (50%) of those interns who consented to be interviewed. Ten out of the eighteen subjects who consented to be interviewed were part of a surgical placement. Five informants who

were placed in general surgical units and four in medical units were contacted and confirmed their participation in the interviews. One of the surgical group informants did not attend her scheduled interview. She confirmed her withdrawal from the study after being contacted by the researcher, without indicating a reason for her withdrawal. The final qualitative sample consisted of eight intern informants who are divided equally between the two specialty areas. The sampling procedure recognized the age groups' quotas and included two subjects from the (25-26 years) age group into the qualitative sample. One of those older interns was assigned to a medical unit; and the other a surgical assignment.

The final interview sample was composed of eight interns and eight clinical facilitators (five CRNs and three preceptors) who met the inclusion criteria. It was planned to interview five nurse preceptors, but two of them did not attend their scheduled interviews. The researcher's efforts to convince them to attend a rescheduled interview were unsuccessful. Due to time constraints, recruiting a substitutive couple was not feasible. Fortunately, a sense of saturation was attained by the third interview and the preliminary findings appeared congruent with the extracts from the CRNs' and interns' interviews. The three sets of interviews (interns, CRNs, and preceptors) were carried out over one month at the beginning of 2012.

4.3.2 The internship clinical education context as described by interns, CRNs and preceptors

This section provides a thorough description of the internship clinical education context as highlighted by the interns and their clinical facilitators. The description of this context by the interns as the learning party and by both the CRNs and the nurse preceptors as the teaching or facilitating parties will provide a comprehensive picture to fully understand this clinical education context and its components.

While trying to describe their clinical reasoning and while responding to the questions relevant to the areas or the factors revealed in phase one that needed further clarification and explanation in the qualitative interviews, the intern informants elaborated (intentionally and non-intentionally) on aspects of their

internship experience, especially the initial and current status. Their descriptions, clarifications, issues and concerns aided in exploring various stages of this internship clinical education experience. These stages served as the milieu for various factors impacting the trajectory of interns' clinical reasoning at the time of uncertainty. The relevant contributions of both the CRNs and the nurse preceptors confirmed the addressed classification.

The researcher's reflexivity is the main source that aided in revealing the structure of the internship education context. Jootun, McGhee and Marland (2009) indicated that effective reflexive notes should provide an analysis of the research context. The following reflexive commentary describes the researcher's encounters while trying to bracket the informants' non-reasoning descriptions. (Throughout the interviews with the interns, I flagged a banner to keep reminding myself of the study focus to facilitate answering the research questions. The banner states that 'The current study is describing interns' clinical reasoning experience not their internship experience'.)

The initial two interviews were a major reflection milieu used to refine certain approaches and to learn significant lessons that facilitated the attainment of informants' descriptions targeted by these interviews. During these two interviews, the researcher constantly attempted to bring the intern informants back to the clinical reasoning track. By doing so, the researcher felt he was blocking and curbing a strong desire by the interns to describe certain internship components—typically during the first half of these interviews when asking about their clinical reasoning experience at the time of uncertainty. Therefore, the researcher decided to untie the natural flow of the subsequent interviews to keep the clinical reasoning experience attached to its natural internship context wherein the many factors impacting interns' clinical reasoning originated. The interviews were monitored by the question list and the allocated timeframe. At this initial stage, it was kept firmly in mind the previously undertaken decision to carry out the analysis separately for the three interview targets (the nature of interns' clinical reasoning and the factors impacting the development of these mental abilities; plus a thorough explanation of certain findings that were significant during the quantitative part). These decisions at this early stage alleviated much of the tension caused by thoughts about the subsequent

steps of the research process. These decisions provided the study with an excellent opportunity to describe and sometimes to analyze the internship clinical educational experience (as the context for the interns' clinical reasoning experience) not by the researcher but, rather, by the interns' themselves as active participants. This analysis was complemented by CRNs' and preceptors' descriptions.

As discussed earlier in the methodology chapter, Giorgi's (2012) analysis framework was used to analyze the qualitative data sets, including the current section that describes the internship clinical education context. To facilitate data transformation, relevant statements of each intern informant were extracted and tabulated into a central table according to the major response areas (e.g. intern's description of her clinical reasoning and clinical judgment). Additional columns were added to the central table as new areas were revealed as trends across certain significant statements. The relevant clusters, themes, and meanings were revised many times and validated through several discussion meetings with the researcher's primary academic supervisor. Decision trails were then structured around the relevant significant statements supporting a feature of a theme or a cluster of themes. These clusters were used to formulate the essential structure of the main experiences of this study; the internship and the clinical reasoning experiences. This section presents the essential structure of the internship experience and section 4.3.3 outlines the essential structure of the clinical reasoning experience.

The essential structure of the internship clinical educational experience states: 'Within a supervised educational perspective and following an initial elusive stage, the interns experienced a professional stage of clinical practice'. The elusive and professional stages constitute the two clusters of themes relevant to the internship experience of interns. The audit trails of both clusters (appendices K and M) are followed by supplementary trails (appendices L and N) that contain significant statements extracted from both the CRNs and the nurse preceptors facilitating interns' clinical practice. While not revealing any additional themes to those disclosed by the interns, the CRNs' and preceptors' statements are separated from those of the interns for maximum report clarity.

4.3.2.1 The Elusive Stage

The interns' descriptions of the initial elusive stage of the internship clinical education experience revealed five themes that characterised and defined this stage. The themes include: doubtful as not knowing why and how; being cautious; shy and emotional; feeling lonely; and irresponsible learning behavior.

4.3.2.1.1 Doubtful or not knowing why or how

This theme is the core theme of this cluster. All of the intern respondents doubted one or more of the nursing care aspects at the beginning of their internship. These doubts were linked with their inability to know why or how these aspects were operating. Some of the interns were not sure of any aspect of patient care, including the assessment and the abbreviations. As one intern shared:

At the beginning I could not understand the abbreviations...I was asking the preceptor about everything, even the assessment.

This intern also expressed not talking to the doctors because she doubted her ability to respond to their queries. As she stated:

....I did not have the ability to talk to the doctors because if they asked for something I was afraid that I won't be able to provide the answer...

Sometimes these worries were aggravated because the intern was not receiving an answer to her questions. For one intern this became very time consuming:

The why was so hard for me; sometimes you will find no one answering your why and sometimes you will get a wrong answer, so you will start relying on self-teaching...it is time consuming.

At other times, the interns obtained the needed answer from her preceptor when doubting a nursing intervention. As one intern shared:

Deciding on the interventions was not that good with me...I used to go back to my preceptor.

In their new environments, the nurse interns were watching without knowing why as they lacked the knowing and the doing components of nursing actions in these particular contexts. This consumed most of their self-confidence. These doubts were revealed by an intern, who stated:

At the beginning I could not use the Quadramed. I was watching and seeing certain decisions without knowing why...they increase the drug dose...or decrease it...I don't know why. I thought I had the needed confidence because of my high GPA, but the story is totally different.

Another intern who struggled with her new environment doubted her capability to complete the requested competencies and revealed:

At the beginning I was seeing things that I could not reason, and I was focusing on my competencies...how am I going to finish my competencies and become familiar with the new environment.

4.3.2.1.2 Being cautious

This theme is the second theme which contributed to the 'elusivity' of this stage of internship. Two of the three interns contributed to this theme and considered patient safety as the main source of their cautious behavior. The interns maintained a questioning stance that corresponded with their cautious behavior, as evidence by the following statement from one intern:

I was asking about everything in order not to harm the patients.

Another intern was asking questions in order to avoid a mistake which may eventually compromise patient safety. The intern stated:

I kept asking my preceptor questions because I was afraid to encounter a mistake.

4.3.2.1.3 Shy and emotional

This is the third theme pertinent to this elusive cluster. It represents a group of strong feelings that were either putting the intern down or forcing her to undertake a corrective action or behavior. These strong feelings are presented as either antecedents or consequences in a cause and effect chain of relationships. One of the interns contributed to this theme with a significant statement after blaming herself for her negative encounters:

With negative encounters I was blaming myself...I used to give up.

Another emotional response in the form of an intern's frustration has resulted in a positive reaction towards the preceptor by requesting the preceptor to teach her. The intern stated:

I felt frustrated, so I said to my preceptor you need to teach me.

A similar reaction was experienced by a third intern who subsequently learned to control herself:

I was so emotional but I learned to control myself afterwards.

These strong emotional reactions are the result of the many doubts encountered by the interns at the beginning of their internship. All of the intern informants reported these doubts. The second part of the strong feelings that prevented the intern from engaging in an action (or made her reluctant to engage) resulted from shyness. This feeling is a special feature in Saudi Arabian society that makes it difficult for the female nurse to handle a male patient, especially when performing hygiene practices or Foley catheter care or insertion. A separated subsequent section will present a full description of the interns' practice as Saudi Arabian female learners. (The previous statement about the interns' shy behavior does not represent the researcher's point of view but, rather, an interpretive meaning that clarifies the strength of females' shy behavior in this society.) One of the interns stated:

I was shy to handle male patients.

Another intern is implicitly conveying her strong feeling of being shy, and how difficult it was dealing with male patients at the beginning, as she revealed:

It was a bit difficult dealing with male patients.

The shyness of a third intern prevented her from answering phone calls to the unit as she was afraid (or doubted) her ability to provide the right answer. The intern stated:

I was afraid and shy at the beginning...I did not answer any phone calls to the unit.

4.3.2.1.4 Feeling lonely and neglected

The fourth theme of this cluster indicates that the interns were feeling lonely and neglected at the beginning of their internship experience. This feeling refers to their perceptions of being neglected, ignored, dumped, unsupported or controlled by their preceptors or the nursing team. As one intern shared:

Some of the preceptors at the beginning reacted as if I am not there, she would do the procedures even without telling me.

Another intern felt controlled and sometimes lonely (not supported as she doubted her previous knowledge and ability) as she was receiving contradictory messages. She stated:

Some of the preceptors at the beginning tried to control me. They were saying you are a student and you are not allowed to be with the patient...just follow me. Others are saying this patient is not mine anymore, he is yours.

Similar responses from other interns support the pervasive nature of this theme where the interns felt ignored, dumped, neglected and unsupported in the initial two weeks. As one intern shared:

Sometimes no one is answering your WHY, it is time consuming searching yourself...the nurses were not cooperative the first two weeks.

One intern stated she felt challenged by her CRN and not supported by the rest of the nursing team. For her, physicians were more supportive than the nurses at the beginning of her rotation. She revealed:

After the CRN challenged me at the beginning, my reading became a habit...I wanted to prove something for them...The physicians are supporting us more than the nursing staff.

While at the beginning of their internships and while doubting their knowledge and skills, the interns demanded the provision of training opportunities from their preceptors but, unfortunately, some preceptors did not attend to the interns' learning needs which forced one intern to request changing her preceptor. This intern stated:

I requested to change my preceptor because she was not teaching me.

4.3.2.1.5 Irresponsible learning behavior

The final theme in this cluster is based on one description from an intern who was being detached from the team as a result of performing tasks without first notifying her preceptor. The theme describing this behavior is called irresponsible learning behavior. As the intern stated:

At the beginning and with similar cases, I could have taken the temperature and document it and that's it...maybe I won't inform my preceptor...But now, I will figure out solutions and will deal with it and let my preceptor know...I will keep considering my scope of practice.

The five themes are summarized into appendix K that includes also the interpreted meanings relevant to the significant statements of the interns' informants. The eight interns assigned the symbolic letters of A, B, C, D, E, F, G and H.

4.3.2.1.6 CRNs and Preceptors descriptions of the elusive stage

As stated earlier, the previous themes will be validated by relevant descriptions by the facilitators of the interns' learning experiences, namely the CRNs and the nurse preceptors. While the CRNs are given the symbolic letters of (I, J, K, L & M), the nurse preceptors are assigned the (N, O & P) letters to differentiate between the two groups within the relevant audit trails that are incorporated as appendices at the end of the dissertation. The significant statements of the two parties responsible for the interns' clinical training contain the same meanings revealed previously by the interns themselves. For example, the significant statements relevant to the theme 'doubtful or not knowing why and how' incorporated terms like 'struggle', 'low confidence', 'don't voice up', 'the routine dilemma', 'hesitant', 'they cannot answer', and 'hesitant talking to the doctors'. Most of the clinical facilitators, except for one CRN and one preceptor, have contributed to this core theme of the elusive cluster.

The major source of interns' doubts and worries was their struggle with procedures. One CRN revealed:

At the beginning they are worried because they still struggle with the procedures...They don't know how...You can see that their confidence is low.

Another CRN identified their doubtful behavior as they tended not to talk but just watch what the nurses were doing. The CRN attributed these doubts to the gap between what is learned at college and actual nursing performance. As she stated:

At the beginning they don't voice up...they will just observe and they tell me that what they have learned at the college is different...here is a gap...when they start working they try to bridge between the two...sometimes what they have learnt cannot be applied clinically, I mean based on the treatment of the patient and the case itself...sometimes you need to change a little bit.

Other CRNs pinpointed the interns' lack of familiarity with unit routine and the nursing tasks as sources of their doubts. One CRN added that interns' inability to multi task had aggravated their hesitation. She stated:

When they first come they are quiet and hesitant...they are more task and routine oriented...when to do QCPR documentation....when to give medications....which doctor is coming when...this is a bit of a sad time in the internship....I think they need [a] good 4-5 weeks to settle down into the routine...also they can't multi task.

One preceptor indicated that the interns are not able to know why and she supported a previous notion of an intern who indicated that her hesitation prevented her from talking to the doctors by revealing:

If you were asking why at the beginning they cannot answer...I don't know [if] it is because they are shy or they are not sure of the answer...at the beginning my current intern was just observing...She was hesitant talking to the doctors.

Being cautious—the second theme of this cluster—is also supported by significant statements from the facilitators' side. The majority of the informants indicated that the interns followed exactly the steps of their preceptors at the beginning of their internship. One CRN added that the interns will also query their CRN when encountering a novel situation:

Sometimes they observe how the nurses do things and if it happens again the intern will follow exactly what the nurses have done and in case of a case that has never happened previously they will ask the CRN.

Another CRN attributed the interns' cautious behavior to the instructions incorporated into their scope of practice and provided to them at the beginning of their rotations by their CRN. The CRN stated:

Actually they were informed that they cannot do anything without the preceptor's presence and we ask them to ask their preceptor first...as per their scope of practice.

This significant statement is supported by a preceptor who attributed this cautious behavior to the interns' inabilities and indicated that at the end of the rotation you can trust your intern, and stated:

Everything they do they will ask permission from the preceptor to do...they will be always beside their preceptor and in stage two you can trust them already...for interns in stage one you have to check if they are right.

One CRN supported the notions of the previous CRNs and preceptors, but indicated that following the preceptors' steps exactly will limit the interns' judgment abilities. As she disclosed:

They look at the thing from [a] student perspective and because they always follow the preceptor in what they are doing they have limited judgment in what they can do.

This citation is particularly critical when coupled with the statement of another CRN who indicated that the interns are eager to know not only how to do things but also why these things are done and are good at looking for learning resources. This indicates that in addition to them being cautious, they are keen to know the reason behind actions, which should not be restricted. The CRN stated:

The interns are keen to know why they are doing things and they are very good in resources.

The congruence between the interns' and the facilitators' statements is extended to the 'shy and emotional' theme. Three CRNs contributed to this theme by indicating that the interns were shy and emotional at the beginning of their internship. A CRN summarised why they exhibit this emotional behavior by stating:

With the procedures they will panic...even with an encounter with the patient's family they will panic....they need experience...They face difficulty with total nursing care at the beginning...when they were students they used to come only for one day...but now she needs to do everything for the patient...she needs to clean the patient...they are not used to do it...culturally...and sometimes because the patient is having a sitter...when we were asking them to do any of these procedures they used to run away...

Another CRN linked interns' emotional behavior with their low tolerance to receive feedback as evidenced by her statement:

At the beginning they are fragile when you are giving them feedback.

The theme 'feeling lonely and neglected' is viewed a little differently by the CRNs who attributed this aspect mostly to the busy preceptor schedule. One CRN indicated that interns' eagerness to know and to complete their assignments may be thwarted by a sidestepping response from the busy preceptor. This CRN revealed:

The preceptors need to finish their work...and interns need to complete the many assignments they have...some of the preceptors will take a short cut and say ask your CRN, others don't answer because they don't feel confident of their answer...they may ask the intern to go and look for the answer.

The other CRN who contributed to this theme attributed this to the type of service provided by the nursing unit and to the busy preceptor who was unable to initiate additional interesting learning opportunities for the intern. The CRN said:

The interns like challenging work...unfortunately, our unit is a long term unit and the work is static....I cannot blame the preceptors because they are working like robots....they just do, do, do, and they are not initiating an interesting learning environment.

The clinical facilitators contribute to the last theme in this elusive cluster 'irresponsible learning behavior' with a significant statement of a CRN who highlighted that some of the interns will not bother searching other resources when they fail to receive an answer for an assigned question or query from their CRN. The CRN revealed:

I noticed from my observation that when you give them an assignment...some are only interested in the short cut...She will just go and ask someone for an easy answer and if she will not find the answer she won't bother herself to look for the resources, she won't go through a policy or a procedure manual.

Appendix L summarises the five themes relevant to the elusive phase as described by the CRNs and the preceptors.

In addition to elusive, the previous cluster contains a driving force that might contribute to the development of the professional stage. This drive is stemmed within the cautious theme as the fears of the interns are linked with patient safety which explicitly indicates a sense of responsibility. This is also supported by the CRNs' contributions to the same theme, indicating that the interns are keen to know-why and they are good at looking for resources. Thorough discussion for this area will be carried out in the discussion section (5.2.1) relevant to the elusive cluster.

4.3.2.2 The Professional Stage

This stage represents the terminal stage of the internship clinical education experience. 'A growing sense of responsibility'; 'being trusted'; 'a reflective habit'; 'if I don't know I will ask'; 'having the needed confidence'; and 'becoming faster' are the six themes relevant to the professional cluster. Interns' significant statements relevant to this cluster contain terms like 'now' and 'currently' because the interviews were conducted at the end of the medical or surgical internship rotations.

4.3.2.2.1 A growing sense of responsibility

This is the first theme in the professional cluster. The interns' statements reveal a significant sense of responsibility towards their learning and knowing-why ability; patient safety; and improving their competence, clinical judgment and communication that grows throughout their medical or surgical internship rotations. This sense of responsibility is evident as they questioned doctors' orders; demonstrated increased compliance; admitted mistakes; grew socially; demonstrated a rational outlook; considered their scope of practice; and strived for excellence. The significant statements of the interns in this stage contain meanings that are directed to the interns themselves, to their patients, and to the professional code of conduct. The eight intern informants contributed to this theme. For example, sensing the need for learning as a self-development tool is revealed by an intern, who stated:

Really I want to learn...I am doing things to develop myself..

Another intern indicated that her sense of responsibility was directed towards her patients and towards herself and her professional development. She shared:

I believe that anything done for the patient is significant. The real development is in your communication and becoming good in the weak portions...really I want to excel but the nurses are doing only the basics.

Other interns directed their descriptions towards patient safety. One of them indicated that this development is attributed to their handling of real patients, and she stated:

We are dealing now with real patients...it is not like when we were students. One day I asked my preceptor to call the CCRT for one of our patients...she kept telling me it is too early...then I insisted based on the CCRT criteria...when the team came they did not question our decision.

As a component of possessing the required practical knowledge some of the interns had the courage to question a doctor's orders, which represents an indication of a growing sense of responsibility:

I got the courage to question the doctors' orders. I am learning from my mistakes...now I am following strictly the medication protocol, I am taking the medication sheet inside the patient's room.

Another intern directed all of her descriptions of her growing sense of responsibility towards patient safety as she presented herself as the patient advocate and revealed:

I feel that I am the patient advocate...it is the patient's life...if it is wrong just say it...It is all about safe practice.

Some interns even considered the psychological aspects of patient care as one of the prime indicators of their sense of responsibility. An intern advocated this holistic approach of patient care to be used by all nurses, but unfortunately these nurses

sustained their disease-oriented nursing care. She emphasised that everything she was doing was for the sake of the patients, even her arguments with the physicians. As she shared:

The nurses don't care about the psychological aspects when providing nursing care, they should care...I used to inform them but they do care about the medical issues only. My arguments with the physicians are for the sake of the patients.

Being the patient advocate was central to an intern's descriptions of her growing sense of responsibility towards her patients. The intern continued with therapeutic relationships with her patients despite the CRN's protective, conservative measures related to the social matter. The intern stressed her full compliance with the terms of interns' scope of practice and the hospital code of conduct in relation to patient safety and to strictly following the unit protocols. The intern highlighted:

I became more professional, we are the patient advocates...our CRN keeps relating to the social matter with the male patients because he is male and Saudi, he is trying to protect us, but I won't stop...I know the limits and nursing means caring. I am strictly following the protocols....I am discussing the plan with the NC because I don't want to harm the patient or violate our scope of practice.

4.3.2.2.2 Being trusted

This is the second theme of the professional cluster and it contains contributions from all intern informants. The interns described that they were trusted by their patients, their CRNs or preceptors, the nursing team, or by a combination of these. One of the interns indicated self-trust meant having a clear view about the patients and their cases and as becoming independent. She shared:

I am having a clear view about the patients and their cases...I don't want to go back to the dependent state.

Similar contributions by other interns indicated that they were trusted by both the nursing team and the patients as having the requisite ability and knowing their patients. One intern described this aspect as follows:

The preceptor and the CRN trusted me which gave me the needed trust in self and confidence. One of the patients who had a low O₂ saturation refused the nasal cannula...I brought the oximeter and showed her how it works and told her let's put the cannula on and see if it will change and if you are still not convinced we will remove it, then she agreed and after seeing the improvement she kept the nasal cannula. The primary nurse tried to convince this patient since morning and the patient continuously rejected but after my intervention the patient accepted the cannula; sometimes they need to see an improvement.

Another intern indicated that patients trust interns because they know that they care for them. As she stated:

The patients know that you are caring for them, they are appreciating and respecting what I am doing for them...I used to group things together allowing the patient more time to rest.

This trust was not immediate—it developed over time. One intern indicated that it took her two months to gain the preceptor's trust:

It took me two months when all of my decisions are supported by the preceptor.

One intern linked trust specifically to her completion of the mandatory competencies:

I became effective especially after completing my mandatory competencies...I have developed socially and my patient teaching abilities improved...I feel now on ease and feel trusted...the patients trust me...My NC relies on me...the CRN knew our capabilities, he trusted us.

Another intern related the preceptor's trust in her to her knowledge about the language and the culture. The intern acknowledged the team's style of 'testing while

trusting' enhanced her ability and added more trust to the relationship as they delegated more responsibilities to her. She revealed:

The team who have dealt with me are continuously testing me and trusting me...they handed things to me. My language and knowledge about the culture is helping the preceptor.

4.3.2.2.3 A reflective habit

This is the third theme of the professional cluster. Most of the intern informants reflected on their actions because they tested the benefits of reflection in improving their practices and for themselves personally. Their stories contained terms such as learning, improving, and making things better. Some interns indicated that their reflection became automatic—as one intern shared:

I used to reflect from the beginning until it became automatic.

A similar thinking intern who reflected frequently has realized how her reflective thoughts have impacted on the assessment and the intervention aspects of patient care, as she revealed:

I used to reflect...I realised how important it is in improving patient assessment because when you improve in the assessment you will improve the intervention.

With reflection, the interns were growing and learning from their negative encounters. An intern replaced blaming herself with reflected learning. The benefits of her reflective habit were extended to improve even the reflective process itself; it became comprehensive, serious, and ethical. Her statement contains this meaning:

I reflect on things quite often, it is my style rather than following mechanistic steps, and I used to correct my future actions....my reflection became more comprehensive, serious, and ethical...with negative encounters at the beginning I was blaming myself, but now I am learning.

A similar case of another intern who used to reflect frequently indicated that she learned to develop strategies to control her anger. The intern shared:

I am reflecting often...because if you don't revise yourself no change will happen in your life...I learned that when I am angry I need to control myself...This unit made me change; now I have different strategies...now I need to know the person with whom I am talking then I will react.

Others indicated that they started reflecting later in the rotation. An intern highlighted that she began reflecting in the final two months of her internship where she used reflective questions that targeted patient outcomes and relevant care processes. She shared:

I do reflect...but not at the beginning...in the last two months....When I go home I used to sit with [by] myself and ask: did that patient improve? What happened with him? I feel that I am improving.

4.3.2.2.4 If I don't know I will ask

The fourth theme in the professional cluster is 'if I don't know I will ask'. All of the intern informants indicated that in cases of new encounters, procedures or disease processes they would ask. One intern summarised this aspect by stating:

I have to ask when there is something new. I can check if I don't know...I can ask for help from my preceptor or other staff...now I can find solutions for these problems.

The previous notion indicates that the interns matured professionally throughout their medical or surgical rotations by learning how to find answers to their queries. They also developed professionally by asking the right questions—as one intern conveyed:

With the new cases I am asking but not about the details.

Others start asking the right people to know-why and then discuss the issue with their preceptors. One intern shared:

In order to start reasoning you need to know the reason...the rationale and the information...the doctors are so cooperative, so I start asking them and asking my CRN....but I am discussing everything with my preceptor.

The interns also discussed the entire nursing care plan with the Nurse Coordinator before its implementation. As one intern revealed:

Now, I set the plan and discuss it with the Nurse Coordinator.

4.3.2.2.5 Having the needed confidence

All of the intern informants have contributed to the 'having the needed confidence' theme of this cluster. The interns' confidence is linked mostly to the 'know-how' and the 'know-why' component of their competence. One intern summarised these two components of competence into her statement that declared:

Much of my decisions were related at the beginning to patients' assessments but now they are related to health assessments and interventions, I know now what to do...I became more aware... One day I noticed something with the patient but I didn't say, I was afraid to be blamed or my point to look silly, but when the doctor came he said why did nobody tell me about this thing, I swear to God I knew it...right now I don't hesitate to say things.

Others linked their confidence with both their ability to do things spontaneously and with patient safety. One intern shared:

I can say that my confidence now is 100%, I am doing things spontaneously...I am so broad that I am saving lives...safe patient at the end of the day.

An intern who was facing difficulty talking to the doctors at the beginning highlighted that she now possessed the courage to question the doctors' orders as she stated:

I got the courage to question doctors' orders.

Other interns linked their confidence with only the ‘know-why’ or knowing the reason or the rational for doing things. One intern conveyed this by stating:

I needed to know the reason because knowing the reason will improve your confidence

The patient is constantly present in interns’ significant statements. Patient safety and acceptance by the patient are the targets. For one intern, showing the patients that she has the confidence was the key to being accepted by her patients. She revealed:

My confidence is linked with not to cause harm to the patientLinked with knowing the patients and the disease process....and at the end I am accepted by the patients because I am showing that I have the confidence.

Another intern highlighted that she acquired confidence, even with male patients and male sitters, because she started taking things seriously. She described this as:

I got the needed confidence; even with the male patients...I can do any nursing care for them....Even the male sitters, they know my name...I got the confidence because I take things seriously.

4.3.2.2.6 Becoming faster

The final theme in this cluster is ‘becoming faster’, which describes how the interns realised the importance of the time factor when dealing with patients during their internship journey. As one intern stated:

I realized how important the time factor is.

Accordingly, they became faster with their actions, taking less time. As one intern described it:

I became more independent and faster and more aware of the patients’ needs.

In routine matters some interns undertook decisions automatically and without hesitation. As one intern revealed:

Now I am taking decisions with regular things automatically.

And, finally, the interns realised when their actions were not timely and appreciated the CRN for helping them with this aspect. As one intern stated:

My CRN aided me a lot with time management.

This concluded the interns' descriptions of this stage of their internship. Their comments revealed an improvement or a growing sense of certain aspects of professional behavior. Appendix M summarises the interns' statements relevant to the professional development stage of the internship experience. The initial validation of these descriptions will follow in a comparison with those of the CRNs and the preceptors. Subsequent validations, comparisons and contrasting will follow in the discussion section of the qualitative results.

4.3.2.2.7 CRNs and Preceptors descriptions of the professional stage

The professional cluster and its related themes are supported by the CRNs and nurse preceptors who undertook the clinical supervision of this group of interns. Their contributions to the first theme of this cluster—a growing sense of responsibility—revealed the interns' growing sense of responsibility towards both the nursing unit and their patients. Their descriptions highlight how the interns proposed practical solutions as active unit members. As one CRN stated:

A simple thing related to the crush cart happened with an intern who asked: why we don't put a label on the wall that the cart is in this room when the cart is moved to a patient's room.

Others were figuring out gaps in nurses' care plans and correcting them, as described in the following comment by a CRN:

At mid rotation, one intern who is very good and demonstrated a high level of initiative took a patient and she reviewed the nursing care plan and she said: the care plan is not written in the right way, some of the nursing problems are not mentioned here.

The interns' ability to react to clinical situations and their time management ability matured, which indicated a growing sense of professional responsibility. Their active, timely responses that replaced the initial doubtful and cautious behaviors were recognised by one CRN who stated:

Their ability to react to certain clinical situations is growing when they are here...their time management grows as well...One intern who felt at the beginning that we are so strict when implementing the electrolyte protocol missed a prompt in step...I informed her that there will be a delay because of her act...she learnt a lesson and she developed her own notes where she checks on certain things in the morning.

Similarly, the interns' improvement in communication is seen as a sign of a growing sense of professional responsibility, as one CRN described:

I think with time they are improving...even their communication becomes more professional.

The nurse preceptors contributed to this aspect by sharing that the nurse interns are not only responding competently to patients' needs, but also feeling these needs. One preceptor stated:

With a patient who was in need to have his Foley catheter reinserted, she said I won't leave the patient like this and go home....and she inserted the Foley...it was the right decision.

Another preceptor indicated that one intern reacted with a high sense of responsibility and accountability to her assigned task:

Maybe because I told her today is Wednesday and tomorrow is the weekend and there will be no offices maybe because of that she followed up the task promptly.

All the clinical facilitators contributed to the second theme of this cluster indicating that the interns are trusted by the end of their medical or surgical rotations. Both the CRNs and nurse preceptors highlighted that the interns were trusted because of their clinical abilities, including decision making abilities, when assessing patients to identify their problems and at the time of nursing interventions. As one CRN described:

At the end of the rotation you feel that their decisions are based on more complete assessment whatever the situation is...and based on that they are doing [in] their interventions...their improvement in decision making is something between 80-100%.

Another CRN indicated that the interns were being trusted because they were able not only to apply what they have learned in the clinical area and to discover patients' problem by themselves, but also they were aware of the rationale behind these nursing actions:

They are able to apply what they learnt in practice and they know why they are doing things. At the end they used to discover patients' problems alone.

The previous notion is supported by another CRN who added that the interns were no longer task oriented at the end of the rotation:

I can rely on them at the end of the rotation...they grasped the why and they are no longer task oriented.

A fourth CRN expressed her trust in the interns' evaluation ability when appraising nursing actions and listening to their recommendations:

But at the end the situation is different, they know the staff and they know everything...some students are coming to me after observing what is happening in the unit and they suggest and sometimes they even criticise the nurses.

Another CRN has implemented an intern's recommendation after discussing it with the unit leadership. The CRN revealed:

An intern suggested to start spiritual care for our patients...we have contacted the religious affairs department asking them to start providing the service to our patients...even our staff are in need to improve in their spiritual knowledge.

This CRN indicated that the interns are trusted by their patients:

The patients do trust them and this gives them more confidence.

This trust is extended to include male family members who were convinced by the female interns. As one preceptor shared:

She is the one referring and I was beside her and she was doing everything...there is really a lot of improvement since the beginning...they know the routine. The interns are the ones who convince the male family members of our patients with things...I can see that.

The other preceptors also trusted the interns' clinical judgments and indicated that these judgments were sound in situations:

We trust them and we guide them...their clinical judgment is really good for the situation.

The third theme confirmed by the CRNs and the preceptors is the reflective habit. Despite the contributions being limited to only one CRN and one preceptor, their contributions supported the reflective habit theme and its related constituents. The CRN indicated that the interns' reflection commences at the end of the rotation:

At the end of the rotation they are more reflective.

The nurse preceptor acknowledged the benefits of reflection in that the interns are learning and acknowledging their mistakes:

They reflect on their actions and I think it is a good sign that they are learning and they admit also if they encounter a mistake.

The contributors to the theme 'if I don't know I will ask' from the facilitators' group agree with the feature of the theme that the intern will come to her preceptor or CRN

if she does not know or when she encounters something she has never experienced. The one preceptor who responded to this theme added that the interns will give suggestions that will be modified if necessary. She stated:

If they don't know they will come for what I will suggest but some also will suggest and if is not convenient we will make it better.

The responses of the clinical facilitators' group also reflect the features of the interns' theme 'having the needed confidence' at the end of the medical or surgical internship rotation. One CRN attributed this to their passion as they grow by the end of the rotation:

At the end of their rotation the confidence is there; the more senior they are, the more passion they will have...they will grow.

Another CRN added that they are confident with the knowledge acquired as they are not asking the same questions they asked previously:

With time they are improving; they are not asking the same questions they used to ask in the past.

A preceptor related their high confidence levels to the completion of their mandatory competencies:

They are more confident after the competency assessment.

The final theme 'becoming faster' is supported by only one CRN, who stated:

...their time management grows as well.

Appendix N incorporates the significant statements of both the CRNs and the preceptors contributing to the six themes of the professional stage. The statements and the relevant interpreted meanings highlight that the interns have developed professional habits by the end of the medical/surgical internship rotations.

In summary, this section presented the results describing the medical or surgical internship experience as perceived by the interns themselves and supported by the CRNs and the nurse preceptors as their clinical facilitators. This experience represents the context for the interns' clinical reasoning experience that will be described in the following section. The qualitative analysis carried out in this section has utilised the five steps of Giorgi's (2012) analysis framework and the researcher has ensured the representativeness of the essential structure of the internship experience as the phenomenon targeted in this section. Further clarification for this final step will be carried out in the discussion section relevant to this part of the study (section 5.2.1).

4.3.3 The nature of interns' clinical reasoning at the time of uncertainty as described by the interns themselves

This section presents the major qualitative contribution to this study that captures the subjective descriptions of the interns regarding the nature of their clinical reasoning at the time of uncertainty when undertaking clinical judgments for medical or surgical cases in adult care units at a teaching hospital in Saudi Arabia. After reflecting on the extracted themes relevant to the phenomenon of interest, the essential structure of interns' clinical reasoning experience when undertaking non-routine clinical judgment is summarised as:

‘Within an internship clinical teaching perspective and following the adoption of an action impelled reasoning style, the interns experienced a reasoning leap that facilitated the development of their own reasoning style, analyticity, which enabled them to undertake non-routine clinical judgments at the time of uncertainty during a medical or a surgical rotation’.

The constituents of the three themes of this structure represent the interconnected micro-processes that evolved throughout the medical or surgical internship experiences to shape interns' clinical reasoning at the time of uncertainty and give it its unique nature.

The results of this section will be presented in the same manner as the interns' responses and are sequenced within their descriptions of their clinical reasoning at the time of uncertainty when non-routine clinical judgments are undertaken. The analysis will start with the 'action-impelled reasoning' followed by the 'reasoning leap' and will conclude with the theme 'developing own style: analyticity'. Selected experiences of individual interns will be assembled while presenting this third theme to show the links between the three processes.

While guided by Giorgi's (2012) analysis framework, the researcher has bracketed all the information relevant to the reasoning styles found in the initial orientation literature review to present neutrally the interns' descriptions of their clinical reasoning at the time of uncertainty. The discussion related to this section compares the extracted themes with the three main clinical reasoning patterns defined and discussed in the literature review and clarified in the methodology chapter.

4.3.3.1 Action Impelled Reasoning

The intern informants' statements and the interpreted meanings address action impelled reasoning. Each of the interpreted meanings represents an act of doing that is linked to both a reason substantiating this act and to a relevant goal directing its processes. These acts of doing, including the asking components, are directed mostly by the interns' lack of knowing-why and are aimed at knowing the reasons behind them. As one intern stated:

I followed the preceptor at the beginning, and then I am discussing everything with her. In order to start reasoning, you need to know the reasons that include the rationale and the information.

Other interns followed strict rules to become familiar with these acts that will later become the parameters for judging future patients' conditions. A significant contribution of an intern highlighted this as she revealed:

I needed to become familiar with abbreviations and signs and symptoms, and then compare them with what the

patient has. I followed strictly the medication protocol to avoid mistakes.

The same idea is described by another intern, who formulated her own rule that guided her initial reasoning behaviors:

I was seeing without knowing why, so my rule became to do it once, then put it in mind, then it will become automatic.

Sometimes the mandatory competencies the interns were required to complete by the end of the rotation represented the target set of acts as the intern was yet unable to reason. As one intern stated:

At the beginning I was seeing things that I could not reason...so I focused on my competencies.

Other interns tried to make the best use of their current knowledge and to follow mechanistic steps while relying on the preceptors to be able to extract cues directly. One intern described this aspect as follows:

I followed mechanistic separated actions...I focused on the assessment...deciding on the interventions was not that good with me, I used to go back to preceptor. The separated pieces from the college case studies and the clinical practicum did help...now I am extracting the cues with usual things directly.

The same strategy of relying on previous knowledge and skills was utilised by another intern, but for a different reason as she felt challenged by her clinical facilitators:

I relied at the beginning on my thinking; my previous knowledge and readings and my good communication skills...after being challenged by the CRN and the preceptor, I wanted to prove something for them...Our college is the best...Even our CRN was surprised when I was doing the palpation; I recalled everything. I wanted to do everything regardless of the scope of practice.

This statement is significant in that it describes an action impelled reasoning that has a unique feature. This will be highlighted in the third section describing the theme ‘developing own style: analyticity’ by relating the action-impelled statement to both the leap and the analyticity statements to present the intern’s full clinical reasoning picture. All of the interns’ statements relevant to the ‘action impelled reasoning’ theme and the relevant interpreted meanings are incorporated into Appendix O.

4.3.3.2 The Reasoning Leap

This theme describes the second stage of the clinical reasoning process. The interns’ statements relevant to this leap and the invariant features within all of these statements indicate an energising force that is guided by a rule developed by the intern herself. This force is a self-desire or a belief directed towards self or the patient to energise the intern’s reasoning processes guided by the intern’s rule that keeps the momentum of their powering force. Gaining more experience is a core factor appearing in most of the interns’ statements and will be discussed in a subsequent section. The interns’ energising forces linked to their experiences grow as they gain additional quality experiences monitored by their guiding rules. One of the interns who was applying this quality experience to figure out things promptly was monitoring this reasoning process by reflecting on her actions and sensing the joy linked with good decisions. The intern shared:

I want to get exposed to more experience to figure it out promptly. I feel happy as a consequence for making good decisions and it will encourage me more. Learning replaced blaming self as my reflection became comprehensive, serious, ethical, and patient related.

Another intern who used similar strategies to the previous intern went deeper to incorporate advocating for patients’ rights into her reasoning leap:

They taught me how, and then I start linking; building a reason for this action after having the experience...I used to reflect until it became automatic. I am the patient advocate; I was challenging the routine....I used to group things together allowing my patient more time to rest.

Another intern guided by a clinical mentor undertook patient safety as her energising force and used unit protocols and her mentor's opinion as her guiding rules. As she stated:

...I am practising as per the protocols...I set the plan and discuss it with my NC; I don't want to harm the patient; sometimes some parts are missing, I don't know them. My NC is focusing on the patient as a nurse...on patient care...bathing...considering the reaction of the patient...emotional relief...she supported us in this from the beginning. I am referring my improvement to her. She used not to agree with my decisions and problem identification because I was not aware of the patients' needs.

Other interns' forces were their courage to talk. One intern who was compelled by her frustration to talk and even to request changing her preceptor used what she was receiving from her preceptor as a clinical facilitator and teacher as the 'thermometer' for her frustration. The intern revealed:

...I requested to change my preceptor because she was not teaching me...I felt frustrated, so I said to my new preceptor you need to teach me, and then she start[ed] teaching me.

The time dimension was one of the reasoning guiding rules that demanded one intern to believe she could perform time actions by being aware of the significance of all patient care aspects. As she described it:

The development is in knowing how and knowing the common things. Realising how important the time factor and believing that everything done for the patient is important and believing in self were the keys.

In addition to its energising powers, the interns' reflections continued impacting on their practice until it became part of their professional self. One intern highlighted this aspect with the following comment:

The things changed when I start reflecting and taking things seriously. I said I will not imitate [the] preceptor's

style; I will have my own...because I am a staff nurse and will have my career.

One intern decisively indicated that she does not want to go back to her dependent state after feeling the joy of undertaking clinical decisions. In addition to its role as an energising force, her ability to undertake decisions was considered a guiding rule for her to seek more independence. As she stated:

...I had clear view about the patients and the cases and became able to take certain decisions...then I said I don't want to go back to the dependent state.

The achievements linked to the reasoning leap continue impacting the interns' clinical reasoning with routine and non-routine clinical judgments. This reasoning leap can be considered a primary factor that impacted on the interns' clinical reasoning. Appendix P summarises the interns' significant statements relevant to the reasoning leap and presents the interpreted meanings of these statements.

4.3.3.3 Developing own style: Analyticity

Analyticity is the third stage of the interns' clinical reasoning trajectory. Analyticity is the invariant feature or the core of the interns' statements that represent the mean units of the development of their reasoning style. Terms like 'criteria', 'general rules' 'references', and 'mental pictures' are used within these statements or within the researcher's interpreted meanings as supportive tools for the interns' analyticity. The statements indicate that the interns maintained their reasoning gains from the former action-impelled and leap stages to support their subsequent reasoning encounters with routine and non-routine clinical judgments. Some of the interns' statements are very direct in describing their analyticity as their developed style, as one intern stated:

After watching for two weeks, I start analyzing...comparing with college theory...filtering and discussing with my preceptor...and then deciding.

This intern followed sequential steps in order to reach her patient care decision. The reasoning leap of this intern included focusing on common things and incorporating the time factor into her clinical reasoning criteria that eventually, in conjunction with the background theory, constituted the rational base to compare and contrast sets of data while filtering and discussing with the preceptor. Another intern has added reflection on action to the process to maximise her gain from the learning opportunity. This strategy provided more automaticity to the intern's routine actions and sharpened her ability in recognising her patients, which she revealed as:

I will analyse while having the rationale and a goal, then I will do...and reflect to learn more...the clinical judgment is based on criteria...it became automatic...care without hesitation...but with new things, I will ask for patient safety. I start recognising patients more...I became so proud that I am saving lives.

Behaving as a patient advocate and adopting this as the guiding rule for this intern's reasoning leap has resulted in her self-pride at becoming a life-saver. Additionally, the experiential learning mode that the intern adopted in her leap enriched by her continuous reflective style has accelerated the development of a more stable reasoning style that she is comfortable with. Another experiential experience of an intern is also worth noting. This intern has developed her practice rules out of her experiences and then utilised these rules to guide her practice with similar cases in the future. The intern highlighted that this style and her accumulated knowledge have impacted her way of handling new cases in a way that means she is no longer asking about the details; she asks only about what is missing. As she explained:

I start developing general rules to guide practice...for example, any bedridden patient will be put on bowel protocol. The accumulated knowledge...my assessment...and the action that is validated by the preceptor or the CRN. With new cases, I am not asking about the details.

Another highlight worth noting about the previous intern is her reluctance to answer any phone call to the unit or to talk to the physicians at the beginning of her rotation.

This analysis and relying on criteria also applies to other interns. Sometimes, the utilised criteria are part of a well-structured evidence-based clinical protocol. After

analysing and evaluating her patient's condition according to protocol criteria, one intern summoned the courage to stand up for her decision to call the Critical Care Response Team. As she stated:

I am now comparing, analyzing and using criteria when making decisions...Recently, my preceptor kept telling me it is too early to call the Critical Care response Team (CCRT) and I said: we have to activate it now because of the patient's parameters, then we activated it, the CCRT team did not question our decision. With new things I ask and read.

This intern was investing what she has gained from her reasoning leap to benefit her patients. Her courage to speak up is illustrated in the previous clinical situation; and her use of the protocol criteria to support her clinical judgment is another gain and a lesson that will support subsequent non-routine decisions.

Similar growth is linked with another intern's experience that taught her to analyse thoroughly and to relate clinical events to references or to parameters gained from clinical evidence. The evidence was either witnessed by the intern or gained from her own experiences. Relating to unit protocol criteria was the starting point for this intern and constituted the guiding rule for her reasoning leap. The intern was originally relying on her own background as she felt challenged by her CRN and preceptors. The intern conveyed the previous meaning via the following statement:

Now I am relating everything to a reference or a parameter...or to a clinical judgment I got from experience or the expertise of others...thinking more deeply and having the clinical evidence...and my effective communication skills helped a lot. Now I need to know the person with whom I am talking, and then I will react...I will convince the CRN, the doctors and the team. The knowledge in this unit is very important...how important are the antibiotics for the patient...this is why we have to convince him to take it...but the nurses don't explain to the patient the consequences of not taking the medications. Having the rationale is having the confidence to clinical evidence.

These two experiences support and complement each other. Both interns ended up with a relatively stable style that relates to either a clinically tested criterion or to an evidence-based criterion that they will experience in nursing practice. The latter will

eventually become an experiential evidence or criterion that will guide similar encounters in the future.

A similar but unique experience was shared by another intern who developed her own definition of clinical reasoning that guided her clinical reasoning encounters. Clinical reasoning for this intern meant having a mental image or a picture that directs her actions or clinical judgments. These images aided her to ‘catch significant ‘things’ during a patient’s assessment while talking to her patient. Additionally, the intern learnt to ask at the time of uncertainty to formulate a new picture or to modify an existing one. As the intern stated:

Clinical reasoning means having an image or a picture inside my brain...I developed these through experience and my readings...I am not doing anything without having a picture...and I will ask if I don’t know. ‘I learnt to catch things during assessment and while talking with patients’.

While experiencing the joy linked with her good decisions as indicated by her reasoning leap, the intern continued structuring her experiential pictures which contributed to her sense of independence by having her own style that feeds her good decisions.

Another reflective intern who initially learned to compare sets of data within her scope of practice grasped the mental links needed for her clinical reasoning as analysing and evaluating information needed for her safe care routine. As she revealed:

Always comparing sets of data, always comparing things with my scope of practice, I start analysing and linking information together...If what I have in mind clashes with unit traditions, I will start my own routine, I know it is safe...I will talk to my preceptor if the problem happened suddenly telling her that there is a new problem...what do you think? I think I need to do this; what do you want me to do?

This intern learnt to take things seriously as an energising force for her reasoning leap.

The ultimate goal and the tangible result for the entire set of processes is to reason promptly in what has become known to them as routine situations (after being initially uncertain) and to verify facts and offer suggestions in novel situations. The following statement by an intern addresses this point:

I was working to develop [my] own style...to figure it out promptly. At the end I am undertaking clinical judgments that I am sure about...considering our scope. In new situations, I will...check...and suggest interventions based on my background knowledge and clinical practice.

Appendix Q summarizes the significant statements and their interpreted meanings relevant to the theme ‘developing own style: analyticity’ as described by the interns.

4.3.3.4 Interns’ Clinical Reasoning in Summary (as described by the interns)

The final step of Giorgi’s (2012) analysis framework advises the researcher to use the essential structure of the phenomenon to clarify and interpret the raw data. This in turn will validate the representativeness of the description of the essential structure of the experience. When referring back to the essential structure of interns’ clinical reasoning at the time of uncertainty, the individual clinical reasoning experience of each intern represents a story of success that began with a special form of reasoning linked with the individual actions called ‘action impelled reasoning’. This form of reasoning provided each intern with the minimal (but safest) and most definite parameters needed to undertake an action impelled clinical judgment. It was this that required her to focus only on the know-how component of the individual task and to grasp the reason behind it by asking her preceptor.

This reasoning style was adopted while all of the interns were experiencing a stage of internship called the elusive stage. While most of the interns’ experiences targeted individualised actions to know how and why things are carried out, two of the experiences targeted similar actions, but for other reasons. One intern recounted that she acquired the needed skills as a result of feeling challenged by her clinical

facilitators. She focused on familiar skills that she possessed throughout her studentship period and bridged the uncertain know-why gaps by her readings. The other intern also focused on separate familiar skills, but relied on her preceptor when faced with unfamiliar components to extract cues. Interestingly, all of the intern informants, including these two interns, had experienced the other reasoning processes and developed similar analytical reasoning habits by the end of their rotations.

The second gain in this reasoning journey was the reasoning leap as the interns moved a step higher than the action impelled reasoning as energised by a powering force and guided by a reasoning rule. The energising forces ranged from self-desire or a need for strong feelings or belief about self or their nursing care. These forces emerged or were prompted by relevant triggers that stemmed from the initial action impelled stage or its illusive context. Reflection on action represented the major guiding rule used by the interns to monitor their reasoning achievements. The other interns relied on their improved self-confidence, mastering more timely actions, and undertaking additional decisions that brought joy or contributed to patient safety. Interestingly, this reasoning leap represents the first encounter by the intern of monitoring her reasoning herself. The ultimate reasoning level was attained immediately as the intern started feeling the benefits of her reasoning encounters in her leap.

The analyticity of all interns took the form of relating clinical judgment events to rationales, criteria, rules, parameters, data sets, or images that were experientially gained, tested and structured. Expert opinions were added to these tools as the interns develop the needed professional ability of 'resourcing' that enabled them to ask the right questions of the right people. An example of this is the reasoning experience of the intern who was relating to the expertise of her mentor (by asking her) when she did not have the mental parameters that corresponded to the clinical judgment encounter. It is anticipated these successful clinical reasoning-judgment encounters will become mental parameters for future non-routine encounters.

This analysis was employed to highlight the relevancy of all of the respondents' statements to the relevant theme and to the essential structure of the clinical reasoning experience. This experience, for the purpose of this research states:

‘Within an internship clinical teaching context and following the adoption of an action impelled reasoning style, the interns experienced a reasoning leap that facilitated the development of their own reasoning style, analyticity, which enabled them to undertake non-routine clinical judgments at the time of uncertainty during a medical or a surgical rotation’.

This analysis highlights the representativeness of the descriptions summarised previously, including the three previous sections of the essential structure of the interns' clinical reasoning experience at the time of uncertainty when undertaking non-routine clinical judgments during medical or surgical internship rotations. Further analysis will be integrated into the discussion section relevant to these results.

4.3.4 The nature of interns' clinical reasoning at the time of uncertainty as described by the clinical resource nurse

After reviewing and reflecting on all the statements of the CRNs entailing their descriptions of the interns' clinical reasoning at the time of uncertainty, the essential structure of this experience is described as:

‘Within an internship clinical teaching context and following the adoption of an action impelled reasoning style, the interns experienced analyticity as a reasoning style to enable them to undertake non-routine clinical judgments at the time of uncertainty during a medical or a surgical rotation’.

This structure reflects two themes that constituted the relevant experience, the action impelled reasoning and analyticity. The processes of these two major reasoning clusters are integrated in succession within the internship educational context and resulted in the analytical reasoning style where patients' problems or nursing actions

are compared with mature criteria or well-developed guiding principles that reflected a growing reasoning ability.

4.3.4.1 *Action Impelled Reasoning*

The key words used within the CRNs' descriptions of the action impelled reasoning of the interns are 'panic', 'observe', 'procedures', 'ask questions', 'task oriented', 'college information' and 'patient assessments'. All of the CRNs' contributions highlight that the interns are following their preceptors' steps exactly. One of the CRNs described the interns' encounters as 'learners in the internship educational context with their limited reasoning abilities' in pointing to their limited assessment ability. The CRN commented:

They face difficulty with total nursing care at the beginning...with the procedures they will panic. The preceptors will let interns observe then they will ask them to do this with the next patient...the interns are asking questions. They are making decisions but not based on a comprehensive assessment. They need experience to react in emergencies.

It is evident that the CRN was referring mostly to outcomes when describing interns reasoning abilities. The only process indicator used in this statement is the questioning attitude of the interns.

Another CRN conveyed that at the beginning the interns were able to extract patient problems alone without prompting, based on both their background college information and what they observed with their preceptors. This indicates an early but limited analytical ability. As the CRN stated:

At the beginning they used to discover patient's problems alone without prompting based on what they saw with the preceptors and what they had in the college.

The same CRN added that all of the other intern decisions were linked to their preceptors and by the end they will be able to apply what they have learnt in practice. They will know the reasons—which indicates a growing reasoning ability. Another supportive view came from a CRN in a different specialty area who indicated that the interns do focus on patient assessments at the beginning because

they already have the ability, but indicated that the interns were following the steps of their preceptors because they are told to do so as per their scope of practice. This CRN revealed:

They focus at the beginning on the assessment decisions, they already had their physical assessment in the college and they have dealt with patients before. And with experience they are making certain decisions related to the interventions. Actually they are informed not to do anything without their preceptor being there...also because of their scope of practice....We ask them to ask their preceptor first.

Another CRN doubted what they have learned at the college by indicating a gap in this information and she related the interns' abilities to their prompt steps in following exactly what the preceptors have done. The CRN highlighted:

Sometimes what they have learned cannot be applied clinically...there is a gap...they observe how the nurses have done it...then they follow exactly what the nurses have done.

The final CRN in the group provided more detail about the situation in her description and indicated that the interns are more task oriented at the beginning because they cannot multi-task and they need their CRN or preceptor to put it together for them. The CRN related their clinical judgement ability to their clinical practice at the unit as they grow in their reactions and in their time management. As the CRN stated:

At the beginning they are more task and routine oriented...they were concerned for example with giving Lasix at 0900...not with if I will give Lasix what will happen to the electrolyte balance...At this stage they are focusing on tasks and competencies...if a CCRT is called they will think of it as an overload...they cannot multi-task.

At the end (of the rotation) they are not task oriented anymore; I can rely on them.

I can say with the patient assessment, it is something they can grasp...but with interventions, this is something they need support to know. I think they need the preceptor or the CRN to put it together at the time of uncertainty...the patient history and situation and the background and the assessment and the recommendations. I think the clinical judgment component comes while they are here not from what they

have gained in the college...the ability to react to certain clinical situations is growing when they are here...their time management grows as well.

4.3.4.2 *Analyticity*

The entire CRN group indicated that the interns clinical reasoning and decision making improved by the end of the rotation. The indicators for these improvements are the interns growing questioning and analytical abilities. Some of the CRNs did not overtly cite interns' analyticity but, rather, disclosed an outcome indicating its occurrence. For example, one CRN revealed that the interns are intervening effectively with all unit routine cases as their decisions are based on more complete assessments and they only need guidance with non-routine things. The interpreted meaning of this statement indicates that the interns mastered what they started their rotation with as a separated non-comprehensive ability. They learned how to do a complete assessment as they practised, asked, analysed, and practised again in the unit. As the CRN revealed:

At the end of the rotation you feel that their decisions are based on more complete assessment whatever the situation is...and based on that they are doing their interventions. They only need guidance with non-routine things.

Another CRN indicated that they did not ask the same questions and a third highlighted that they even criticised nurse actions as they matured in their questioning ability. The latter CRN related this improvement to the many experiences they had with their mandatory competencies as practised with many preceptors. They became more proficient, as evidenced by the statement:

They are growing in their questions. They sometimes criticise the nurses after having experience with different preceptors. They do their competencies many times before the three assessments. When they become competent they can manipulate...one of them who inserted the Naso Gastric Tube (NGT) and it is in the mouth....so she removed it without being told to remove it....she knows the proper procedure. At the time of uncertainty, for example during a dressing, they will decide on what is comfortable for the patient, sometimes they use their own judgment...based on their own experience...and based on their feeling...they ask the CRN, then they do it.

The previous statements indicated that the interns accumulated experiences that started with an observation of a competency which were then practised at a time of uncertainty, has resulted in timely and accurate responses to patient needs relevant to that particular competency. With subsequent encounters at the time of uncertainty the interns tended to seek the expertise of their CRN after analysing the situation. As one CRN indicated:

They gained their clinical reasoning ability at the end of the rotation with more experience...with more exposure to the things. At the time of uncertainty, they come to me to ask...to ask about why nurses did that...or tell me about this...they never came to me saying I think this patient is having this and I need to do this, but they may question something based on previous experience at other units and their analysis...for example, an intern's patient was on Heparine and the doctor ordered to hold the Heparine because the INR is high...she came to me asking why the INR and not the PTT since the patient is on a Heparine infusion?...then I explained to her why the INR not the PTT.

Another CRN indicated that this analysis is preceded with reflective practice as they possessed the knowledge base:

Most of them do reflective practice...then they analyse...and then they come to me asking why...I provide them with feedback. At the beginning they are logical and at the end they are more reflective...to be reflective you have to have a base of knowledge. They are looking at the work here as if they are having more puzzles towards the whole picture...

It was evident by the completion of the CRNs' contributions that the CRNs are much more concerned with the outcomes of the reasoning processes than the processes themselves. Nevertheless, they added a major dimension to interpreting the interns' analyticity represented by their growing questioning ability. (For more clarity, the researcher has incorporated certain aspects that were previously incorporated into the description of the internship clinical teaching experience.) The CRNs' statements and their interpreted meanings relevant to the two themes are incorporated into Appendix R.

4.3.5 The nature of interns' clinical reasoning at the time of uncertainty as described by the nurse preceptors

The descriptions by the nurse preceptors of the interns' clinical judgment at the time of uncertainty are similar to the descriptions revealed by the CRNs. The constituents of the essential structure of the interns' clinical reasoning phenomenon as described by the nurse preceptors are the 'action impelled reasoning' and the 'analyticity' themes. The absence of both the leap and developing own style from the preceptors' descriptions are noteworthy inferences at this stage of the results. More analysis will be carried out in the discussion section relevant to the nature of interns' clinical reasoning at the time of uncertainty. The essential structure of the interns' clinical reasoning at the time of uncertainty is identified as:

'Within an internship clinical teaching context and following the adoption of an action impelled reasoning style, the interns experienced analyticity as a reasoning style to enable them to undertake non-routine clinical judgments at the time of uncertainty during a medical or a surgical rotation'.

The preceptors' descriptions relevant to the two themes are presented consecutively to highlight the entire picture of the interns' clinical reasoning as described by the individual preceptors. The two themes are then summarized into the subsequent audit trail (see appendix S) that presents the preceptors' descriptions and the interpreted meanings relevant to the two themes.

The initial reasoning style linked to the individual skills and the competencies was adopted as the interns lacked these skills or abilities and/or lacked the knowledge base or the guiding principles to perform these abilities in the clinical areas. The interns' overt hesitation and lack of confidence confirmed their inabilities of knowing how and knowing the guiding principles of clinical skills and competencies. As one preceptor stated:

At the beginning my current intern was just observing....She was hesitant talking to the doctors...and at the end they are very confident, she is the one referring and I was beside her and she was doing everything...she really did not know the basics and was unable to read the doctor's order because she did not know the abbreviations [and] was relying completely on me even with the oral care and body hygiene, and I needed to tell her to do this and that and finally at the end she is the one doing everything...really you have to push her to do things. Some of them are very smart even though you will not teach them, they know the principles...after the competency assessment they will have confidence.

Within the internship educational context and particularly during its elusive stage, the intern who was mentioned in this statement was in need of someone to 'push' her to do things. As the intern become comfortable with the unit routine and the skills' guiding principles, she started suggesting or asking at the time of uncertainty. The following description revealed by the previous preceptor about the interns' analyticity summarises the previously interpreted meaning:

...with non-routine things I can say experience is the best teacher...Their background information and readings will help...they are suggesting with a particular problem...and sometimes they come to ask. When they are familiar with the routine, it will make them feel comfortable...then they will initiate things.

This descriptive statement also indicates that the development in their clinical reasoning is attributed to their experience, background information, and to their readings. This notion contrasts the existence of the reasoning leap that is developed and monitored intentionally by the interns to attain analyticity as their own style. The statements of another preceptor in a different specialty area revealed similar meanings. This preceptor conveyed that the interns focused at the beginning on individual familiar abilities such as patient assessments and their asking questions was the result of not having the knowledge base to complete their competencies. This knowledge base constitutes the rationale and the guiding principles for these competencies. This preceptor indicated that being deemed competent is more important to the interns than knowing the daily routine, as the preceptor contributed:

Their clinical judgments were more with the assessment at the beginning. They are approaching the physicians and they are asking the Nurse Coordinators (NC). Not all of them are well prepared...I mean their knowledge base. Their confidence increases after the competency assessments because somebody is questioning (during the assessments): what is the reason for that?...The competency assessment is more important to their confidence than knowing the daily routine.

As a result, the interns started analysing new situations as they had confidence based on previous relevant and common competencies. This enabled them to discover gaps in the whole presentation (absolute intuition) of the clinical situation and to ask relevant questions to fill these gaps. As the preceptor revealed:

Now they can make independent judgments and then they ask for your additions. One intern said: I think the breathing of the patient is not good, he is tachypnoeic....she asked me to inform the doctor about it...I said let's reposition the patient and if it does not work, we will inform the doctor. Another intern asked me after giving medications to her patient if there is an antihypertensive medication that causes coughing because her patient starts coughing after taking antihypertensive medications...we searched and found one of her medications caused coughing. It is called Explor.

The third preceptor shared the same initial views regarding the interns' action impelled reasoning and their hesitation when they do not know. Her contribution regarding their analyticity highlighted the role of their previous knowledge and their growing ability of correlating things from the school with the clinical encounters at the time of uncertainty. This analysis resulted in a decision that was verified with the preceptor. In complex situations, like a CCRT call, the preceptor emphasised the importance of the reflective debrief after the call to discuss the event with her intern. As the preceptor shared:

It is because of both their previous knowledge and what they see...the more they see, the more they are able to correlate things from the school to the clinical area their clinical judgment is really good for the situation. One intern said: I must recheck the Blood Pressure (BP) again...I said why? She said: because of the medication the patient is taking, they are correlating and linking. If she does not know or is unsure of the answer, she will listen for what I will suggest but some of them

will suggest and if it is not convenient we will make it better....I don't think they have the confidence to deal with non-routine things....we discuss it, for example after calling the CCRT I used to ask: why do you think we called the CCRT? And then we discuss the criteria.

The themes 'action impelled reasoning' and 'analyticity' are summarised into the audit trail (Appendix S) that also presents the interpreted meanings relevant to the preceptors' statements.

4.3.6 Factors affecting the interns clinical reasoning

This section presents factors affecting the interns' clinical reasoning throughout their medical-surgical internship journey. These factors will be added to the list of factors identified when discussing various stages of either the internship educational experience or the clinical reasoning experience. The list of factors consists of the energising force and the guiding rule of the reasoning leap—in addition to the professional stage themes of 'being trusted', 'if I don't know I will ask', 'a reflective habit' and 'having the needed confidence'. Each preceding reasoning process or type is a contributing factor to the process. Further analysis of these factors will be incorporated into the discussion section relevant to this results' section.

Three clusters of factors were identified from the statements of both the intern and facilitator interviews. They include the unit attitude towards the interns; the interns' learning behavior; and being accepted by the patient. The three themes or factors relevant to the unit attitude towards the interns are the 'CRN support', the 'preceptor support', and the 'nurses and health team support' of the interns. The interns' learning behavior cluster consists of the themes 'previous knowledge and experience', 'my readings', and 'the female Saudi Arabian learner'. 'Being accepted by the patients' is the only theme of the cluster. The initial cluster signifies how supportive the medical or surgical clinical unit is towards the interns throughout the four months rotation. The following themes are the product of the statements of both the interns and their facilitators (CRNs and Preceptors).

4.3.6.1 Unit Attitude Towards the Interns

This cluster consists of the themes ‘CRN support’, ‘preceptor support’, and ‘nurses and health team support’.

4.3.6.1.1 CRN Support

CRN support is the first theme of the cluster that describes the unit attitude towards the interns. It also represents how a supportive CRN assists the intern in relation to their internship experience, including their clinical reasoning experience. Most of the interns’ descriptions indicate that the CRNs are supportive. Two interns, however, indicated a detached CRN as described by their terms ‘unaware’ and ‘not much involved’. One intern even indicated that her CRN challenged her at the beginning, as she stated:

After the CRN challenged me at the beginning, my reading became a habit...regarding the social matter, he is against us ...he is male and Saudi. My CRN is not much involved.

Her reference related to the social matter will be discussed in sections (4.3.6.6 and 4.3.6.7) dealing with the female intern-male patient or family member relationship.

Another intern highlighted the important supportive role of CRN by indicating how time consuming it is searching for the information and how effective the CRNs’ answers to the questions were, especially at the beginning of the rotation. The intern revealed:

In order not to get wrong answers from the nurses I started asking the CRN...it is me who was asking but the CRN was unaware of my assignments or abilities. Sometimes it is so time consuming to rely on self teaching.

Unfortunately this CRN was detached from knowing either their assignments or their abilities.

The CRN clinical reasoning support as described by the other interns came in the form of asking and answering questions, giving assignments and case studies,

providing prompt feedback, and validating their readings. The CRN support was extended most of the time beyond supporting clinical reasoning to include aspects of professional practice. As one intern stated:

She supported me when I came and gave me the chance to do everything...without hesitation....made me work like a Staff Nurse 1. Despite this she was not observing but she was there all the time. With competency assessment, she used to give us a schedule ahead of time to help us to think.

This intern appreciated the indirect supervision of her CRN and her approach with the competency assessments. Another intern who used to be shy appreciated her CRN's style of acknowledging the supernumerary status of the interns and how the CRN encouraged her to manage her reluctance to answer the phone calls to the unit. This intern revealed:

He was so supportive at the beginning...he acknowledged the interns' supernumerary status. With competency assessment sometimes I was afraid of the many questions he asked...just the first time only. He asked me to answer the phone...he used to validate my readings.

This intern highlighted her fear of the many questions the CRN asked when assessing her initial competency which is congruent with her personality. Interestingly, she never felt intimidated by him validating her readings—which represents a sign of safe and comfortable training. Another intern who indicated her CRN's clinical reasoning support also revealed that her CRN encouraged her with her communication as well as the skills that she felt were difficult to perform. This intern stated:

My CRN is answering our questions and she kept asking why?
...she focused on my communication...she helped me to have the courage to perform tracheostomy care.

The following intern's description summarises three important aspects of CRN support relevant to the professional as well as the clinical reasoning processes. These include prompt feedback; help with time management; and asking the interns stimulating questions. As the intern stated:

They are the shadow for us, they are helping us indirectly and they used to correct any deviation in our performance by telling us about it...They helped us a lot with time management. Their prompt feedback did help. The CRN is asking to help me analyse and they were looking for the outcomes.

This intern's description entails an important notion supporting a previous discussion area regarding the CRN outcome-oriented style.

The second set of descriptions in this theme is relevant to CRNs' statements highlighting their support of their interns. In addition to their value in reflecting on CRNs' support, these statements provide explanations for earlier perceptions of interns regarding detached behavior of CRNs. One CRN, who indicated a low direct profile with intern training, indicated she used to rely on the interns' comments incorporated into the evaluation forms that the interns completed for feedback. She described:

These days we are not working with the interns too closelybut we are looking at the overall situation and whenever necessary we pick it up and we ask questions and then intervene if there is any problem....we listen to their comments. I don't assess if they reflect or not on their practice...but they incorporate their observations for the nurses into the evaluation form.

Reflection on action was not one of the components of the CRN's assessment of her interns. The CRN support, as previously stated, is shown in various ways and one of these is to devote the initial three days to orient them to unit staff, the environment, and the common procedures as an educational measure in the most overwhelming time of their internship. In addition to the previous measure, the following CRN, like most of the CRNs, is meeting with his interns on a daily basis to sort out their problems:

In the first three days I usually introduce them to the staff and to the environment to decrease their anxiety...I introduce them to their preceptors and explain the scope of practice and what the preceptor can do for them...the environment is the major

factor affecting them...it all depends on the type of personality of the intern. We meet the student on daily basis....we ask about the teaching style of the preceptor.

The most detailed explanatory statement that describes the CRN support is highlighted by the following statement by a CRN who revealed that in addition to his general orientation for the interns in the initial three days, he taught them how to keep in mind expected emergencies when doing a procedure and how to link information:

I used to show them the common procedures in the unit in the first three days and I used to ask them: what type of emergency could you expect with this procedure? I used to connect information with different aspects of patient's care...

He taught them how to minimise the risk of being rejected by the patients or the family members as care providers and he also minimised the worries they encountered when dealing with male family members.

I used to tell them communicate for few minutes with the patient or the family member and they will accept you as a care provider ... If they find a male family member with the patient they get worried and won't do it alone. I used to change their assignments many times till she got used to the thing.

As stated earlier, this CRN also enhanced the interns' professional behavior by emphasising the collegiality between the interns and unit staff.

Another supportive experience was described by a CRN who was working to enhance the preceptors' educational abilities at the same time as enhancing the abilities of the intern. She emphasised the important role of both constructive feedback throughout the entire experience and positive feedback at the beginning of the rotation. This CRN revealed:

While we are developing them we are developing the preceptors to be assessors...and how she is providing constructive feedback....to do two things at the same time and how to think three forward steps together....for me it is a challenge from both sides. At the beginning they are fragile when you are giving them feedback.....they need to receive a lot of positive feedback first.

The preceptors' descriptions did not include statements highlighting the CRNs' support for the interns' clinical reasoning or clinical learning experiences. Appendix T shows the statements of both the interns and their facilitators (the CRNs and the preceptors). As indicated earlier, the intern informants' letters are the (A-H) group and the facilitators are allocated the (I-P) letters where the letters (I-M) are allocated for the CRN informants.

4.3.6.1.2 Preceptors Support

One of the most crucial factors or themes of this study is the preceptor's support of the interns throughout their internship and clinical reasoning experiences. The constituents of the informants' statements, especially the parts describing the beginning of the rotation, have been used previously to support relevant themes on the elusive cluster of the internship teaching experience. The overall descriptions obtained from the different informants highlight an invariant feature relevant to this area stressing the importance of preceptor support throughout the medical or surgical internship rotations, especially at the beginning of the rotation. Similar to CRN support, this support is described in both the clinical reasoning and the internship educational areas or experiences. Some of the statements of either the CRNs or the preceptors explain much of what is taken for granted by the interns regarding the preceptors' non-supportive behavior. These descriptions will eventually provide a means to help improve the internship offerings, including those supporting the clinical reasoning and judgments of the interns. This, in turn, will maximize the outcome potential of similar internship programs. The informants' descriptions include a single support encounter by an intern at the beginning and throughout her rotation as her preceptors were involving, explaining, and pushing the interns forward. As the intern stated:

When there is something new or a procedure they used to call us to see...even with abnormal lab results they used to show us how to deal with it. They gave us the chance and pushed us to do it.

Another less intense form of support was experienced by an intern who indicated that the preceptor was supportive with the things that the intern knew and with regard to

teaching, the intern decided to follow the preceptor's steps to save time. As the intern revealed:

She supported me with the things that I am familiar with...as a matter of accountability. I followed the preceptor's steps because it is time consuming if you search for yourself.

The problem of searching alone, especially at the beginning of the rotation, was particularly frustrating for the one intern who requested her CRN to replace her preceptor. Then, by grasping what the new preceptor has taught her and applying it, the intern felt that she became part of the team and thus her confidence improved. As this intern revealed:

I used to ask her and she used to ask me to search for it...I changed her because she wasn't teaching me...many preceptors are good because you learn different ways. After feeling frustrated for the first two weeks, I said to my preceptor: you need to teach me...then she started teaching me everything. Being part of the team increased my confidence...the staff nurses are saying you became part of the team.

The following CRN description gives an explanation for the preceptor's non-supportive behavior by relating it to the many misconceptions the preceptors have about the interns. These misconceptions include comparing the interns' performance to staff nurse level and the preceptors' attitude of not initiating interesting learning environments based on the pretext of being busy:

Most of the preceptors are usually thinking that the interns are novice learners, they know nothing and their experience is at the beginning, usually their comments are not positive...it is very difficult to make the preceptor think that interns' level cannot be compared to our level. The preceptors are working like robots...they are not initiating an interesting learning environment.

This CRN indicated that other preceptors were supportive to the interns in their clinical reasoning by asking challenging questions to stimulate the interns' thinking and providing constructive feedback:

I think some of the preceptors are asking challenging questions in order to stimulate the students to think...I know this from the preceptors' comments in the evaluation form...some of them are good in stimulating questions. The constructive feedback from the preceptor can help...some interns told me that some preceptors are not giving them any feedback and others are giving them feedback in a very negative way...it de-motivated one intern who was told that you are too slow.

This informant added that the support is extended to include Arabic speaking preceptors talking to the families to convince them to accept the interns as capable carers of patients. She addressed this aspect with the following statement:

The Arabic speaking preceptors can help when interns are rejected by the patient's family...

This notion regarding the preceptors' support in convincing patients to accept the interns' intervention is supported by another CRN who indicated:

The preceptor is the one convincing the patient to allow the intern to intervene.

Regarding the preceptors' support for the interns in their clinical reasoning journey, preceptor (P) indicated that the preceptors are supporting, guiding and evaluating their recommended patient care decisions and reflecting with them on uncertain or complex decisions and situations. One CRN openly indicated lack of the preceptors' support in the interns' clinical reasoning experience, but highlighted their support in the overall internship trajectory and indicated that some preceptors are finding a way to involve the interns in total nursing care, especially patient hygiene. This CRN stated:

Some preceptors will guide them at the beginning and then let them work independently...some have a way in explaining and involving the intern...for example, they will tell the intern we need to do the dressing for the patient but before that we need to clean the patient.

This CRN attributed the lack of preceptors' involvement in activities supporting the interns' clinical reasoning to their busy schedule and to the many assignments the interns need to complete. The CRN also indicated that the more preceptors the better, as the intern will then be exposed to many approaches. The intern will, however, sometimes face difficulty when confronted with a style different to that of a previous preceptor:

The more preceptors is better...they will learn many right approaches, but some interns will face difficulty because they liked the communication style of the previous preceptor.

The ultimate goal of the preceptor's support is an improvement in the intern's reasoning abilities at the end of the rotation when the intern feels that her preceptor has 'brought her up'. One intern reflected on this meaning:

Some have tried to control me and others said that this patient is not my patient anymore...A good preceptor suited my style and she brought me up...I like listening to her rather than reading my old books. They taught me how and then I start linking...building reason for my actions after having the experience...I started challenging the routine.

This concept is emphasised by a preceptor who stressed the importance of pushing the intern to do things, to become familiar with the unit routine and then they are able to initiate things and have the ability to reason. She stated:

You have to push her to do things...if they are familiar with the routine of the unit they feel comfortable and then they will initiate things. At the end they are very confident; if you will ask them why they will answer.

Appendix U presents the statements relevant to the theme 'preceptor support' and their interpreted meanings.

4.3.6.1.3 Nurses and the Health Team Support

The third theme of the unit attitude towards the learners' cluster is the nurses and health team support for the interns. Most of the statements of the interns and their facilitators highlighted the support in the form of answering interns' questions. The lack of support from the nurses' side, as indicated by the various informants, is strong evidence of the need for this support. Most of the intern informants indicated that they were supported by the physicians because they responded to the interns' questions. As one of the responses from interns indicated:

I used to ask the doctors because I like to know...the doctors are cooperative.

Another intern referred to physician support by indicating that she used to be afraid at the beginning to respond to the physicians' questions:

I was afraid that the doctors will ask and [I] can't answer....now I can answer their questions.

A conducive experience was provided by an intern who indicated the support of a safe learning environment created by the nursing team. This was evidenced by a 'testing while trusting' experience. The intern indicated:

The nursing team told us about the resources and the references, and some doctors are helping us. The nursing team are testing us while trusting us.

This intern had previously indicated that both the CRN and the preceptor were particularly supportive.

Another supporting experience by the physicians to the interns was indicated by a CRN who believed that the physicians' acceptance was linked to the interns' being Saudis and they ask relevant questions. The CRN shared:

I think the physicians are accepting them more than the other staff because they are Saudis...and the interns are asking relevant questions.

Another intern identified receiving support from her NC and, accordingly, considered her as a mentor after being challenged by her preceptor. The intern conveyed the view that the NC and the physicians were more supportive than other nursing team members:

The NC and the physicians are very good, they answer...they are supporting us more than the nursing staff...now my NC relies on me.

Another non supporting experience is presented by an intern (G) who keeps hearing the nurses say that this is the routine when the intern questions any of the implemented strategies in the unit. According to one CRN this behavior should be replaced with supportive behavior similar to the following CRN behavior.

Sometimes we encourage them to ask questions and the team are answering and the doctors are helping. There are some nurses who used to say I don't know...the interns have incorporated that into the evaluation form...I will do something about it.

Appendix V summarizes the significant statements and their interpreted meanings relevant to the theme 'nurses and health team support'.

These previous support themes represent the unit attitude towards the interns which indicate how conducive this unit attitude is in enriching both the internship and the clinical reasoning experiences of the interns. The informants' statements indicative of non-supportive behavior also support the themes by indicating how important these factors are in producing a learning and thinking environment within an internship educational perspective. More analysis will be carried out in the discussion section relevant to the factors affecting the interns' clinical reasoning.

4.3.6.2 The Interns Learning Behavior

This cluster contains the themes ‘the role of previous knowledge and experience’, ‘my readings’, and the ‘female Saudi Arabian learner’.

4.3.6.2.1 The Role of Previous Knowledge and Experience

The role of previous knowledge and experience in their internship and clinical reasoning experiences were highlighted by most of the informants. Half of the interns indicated the positive impact of these ‘pieces’ of information in their clinical reasoning. Additionally, they had learnt reflection on action at the college. As an intern indicated:

The separated pieces from the college case studies and clinical practicum did help, additionally we learned reflection at the college...I said: I will not imitate the preceptor’s style; I will use what I know.

These ‘pieces’ helped another intern to provide suggestions to her preceptor with new cases:

I was suggesting with new cases based on studentship knowledge and experience.

Another indicated that the college student experience did help her with patient assessment:

I focused on patient assessment based on my previous knowledge.

Also, the intern who wanted to prove her ability after feeling challenged indicated the benefit of previous knowledge at the beginning of the rotation. She revealed:

I relied at the beginning on my previous knowledge and my readings...I wanted to prove something for them...our college is the best, I recalled everything...the assessment.

The benefit of previous knowledge and experience is questioned by another intern who followed the preceptor steps and kept asking questions to develop ability. This intern stated:

I was practising as in adult nursing practicum...I used to skip important assessment points...so I followed the preceptor and kept asking her questions to develop my assessment competence because when you improve in assessment you will then improve in the interventions.

Another intern indicated that they were just observing when they were students:

When we were students we were observing but now we are dealing with real patients.

The interns also stated that the college knowledge is regarded as being old:

The college knowledge is old...this is why I am unsure. Despite my high GPA, I thought that I was confident but the real story is totally different.

Most of the CRNs agreed with these views without disregarding the interns' knowledge but, rather, that they make the best use of it after the interns have adjusted their previous knowledge to suit the clinical situation. A CRN commented:

When they come to the unit they observe and they tell me that what they learnt is different to what they see...there is a gap...when they start working they try to bridge between the two...actually they have the theory and I am helping them with the real situations...sometimes what they have learnt cannot be applied clinically, sometimes you need to change it a little bit.

Another CRN described the students' limited clinical practice and how it affected the internship exposure:

At the beginning you face difficulty with them related to total patient care...when they were students they used to come for one day, they are not used to cleaning the patient, and when you ask them to do it they will try to run away by saying I want to do this or that...

Another CRN attributed their lack of clinical practice to them being away from the hospital for about one year to undertake other courses. He described this as:

They have other courses that take them away from the hospital ...to come back after almost one year to have their internship...they are new to the hospital.

The final CRN interview contributed to this theme by indicating that the college case scenarios are of great benefit to their mental processes before the internship experience where their ability to react to clinical situations is enhanced. The CRN stated:

They are doing case scenarios at the college that will structure the mind...but the ability to react in certain clinical situations grows when they are here.

One preceptor indicated that what they had at the college is different in theory to what is needed in clinical practice. She stated:

You have to assess what they had in the college because it is not what we are doing in the clinical area....they focus more on the theory...from your assessment you can make corrections.

Another preceptor indicated that their previous knowledge gives them the motivation to learn:

Their background is contributing to their motivation...and also what they see in the clinical area...I think as they go on and see things every day the more they are able to correlate things from the school to the clinical area...we trust them and we guide them...their clinical judgment is really good for the situation.

Those who had previous exposure to the unit benefited more from their internship, as indicated by a preceptor:

Not all of them are well prepared really. Those with a previous exposure to our unit when they were college students are better.

Despite the limited benefit of the college studentship knowledge and experience in the interns' clinical reasoning journey, it does play a major role as a clinical reasoning foundation base. This is evident when the interns are assessed by their preceptors and CRNs at the beginning of the rotation or when performing a task or a

competency. Appendix W summarizes the informants' significant statements and their interpreted meanings relevant to the theme 'previous knowledge and experience'.

4.3.6.2.2 My Readings

This theme was supported by all of the interns and most of their facilitators. The interns indicated that their readings aided them in both the internship and the clinical reasoning processes. Within their internship processes, their readings aided the interns in reaching the desired independence and helped them in the competency assessment processes. The maximum benefit was attained as these readings were validated by the CRN and the nurse preceptors. One of the interns stated:

The CRN and preceptors used to validate my readings.

These readings become the base for clinical reasoning, especially in the absence of obtaining the required answer to a question. One intern commented:

In order to start reasoning you need to know the reason...the rationale and having the information...Sometimes no one is answering the why...it is time consuming searching yourself.

Also, the interns' readings during their clinical experience help in developing the mental processes essential for clinical reasoning. An intern stated:

I am developing the mental chunks by the means of my experience and my readings.

With new cases it helped because, as an intern revealed, the hospital internet access is excellent, especially when needing to convince patients and to gain their trust. As an intern stated:

I kept relying on my previous knowledge and on my book...my reading became a habit...my readings help me in convincing the patients because if you don't have the trust of the patients, you can do nothing.

A CRN indicated that the interns' readings are positive encounters contributing to their clinical judgment and professional growth:

They are reading and accessing the internet...this contributes positively to their clinical judgment...they are growing.

Another CRN described this contribution by indicating that their readings are essential and are prerequisites for the case discussion with the CRN or the preceptor who can help in putting things together. She revealed:

The College Of Nursing (CON) interns are good...they are keen to know why they are doing things and they are very good at finding Evidence Based (EB) resources...I advise them to read at the low volume time after 4 pm. They have to read in order to have the knowledge...they have to have somebody to discuss with them what happened at the end of the day....if I see a knowledge deficit I used to tell them you have to go and read before discussing the case...I think stage one interns need the preceptor and the CRN to put it together....the patient history, the background, the assessment, and the recommendations.

The benefits of these readings are extended to the interns' in-service sessions where they are requested to present. These presentations enhance their confidence. One preceptor noted:

Doing an in-service will enhance their confidence.

All informants' statements and their interpreted meanings are summarised into Appendix X.

4.3.6.2.3 The Female Saudi Arabian Learner:

This area and the relevant interview question addressed to the CRNs and the preceptors asking about the interns' decision-making ability as females in Saudi Arabian society was triggered by a comment made by a CRN (L) who was interviewed first in the CRN group. Her comment is incorporated into the relevant audit trail (see Appendix Y) as a significant statement to the theme. The CRN stated:

It is nice to think of their culture and the environment they are living in and how well prepared they are to undertake independent judgments...it is unfair to compare it with other people from overseas.

Despite the interpretive nature of the previous 'opinion', the researcher started asking the CRNs and the preceptors in the subsequent interviews the question for clarification. A Saudi Arabian male CRN agreed with the previous interpretation, but elaborated to include the interns' confidence and how this aspect improved throughout the internship rotation. As the Saudi Arabian male CRN revealed:

I am 100% with you regarding that as females they were not given the chance to make decisions at home...really it has affected the female decision making....it has affected their confidence...but from the beginning until the end they are improving.

A third CRN explained that he faced more difficulty with Saudi Arabian females than males when working to improve their decision making abilities:

I can say I face with the Saudi female more difficulty regarding improving their decision making abilities.

However, the CRN did not indicate the type of difficulty he was facing regarding their decision making. After going back over the entire interview transcript the researcher believes the CRN was relating his comments to the interns' reluctance when involved in the personal hygiene component of the total nursing care requirement. This reluctance regarding the patient hygiene component was addressed by another preceptor who contrasted the previous CRN's notions about the females' decision-making ability. This male preceptor added that the Saudi Arabian female interns were the ones convincing the male family members of their Saudi patients in relation to aspects of patient care. The preceptor explained:

Some of them are smart enough even if you did not teach them they know the principle behind it...like the suctioning...they know the principle behind it...maybe with the competency assessment you can correct their performance which will give

them the confidence...maybe there is a cultural thing related to patient hygiene but related to their decision making ability I don't think that their culture or being a Saudi female have affected that...the interns are the ones who convince the male family members of our patients with things...I can see how they are doing that.

A similar supportive statement from another preceptor confirms this view:

They are confident and eager to learn...I don't think that being a Saudi female is affecting their courage, confidence, or enthusiasm...that attitude was evident before but lately we don't see this attitude anymore, they are confident and eager to learn.

After listening to these statements by the preceptors refuting the CRNs' interpretations, the researcher went back over all the intern interview transcripts searching for descriptive statements by the interns relevant to this matter. There was the statement by the intern who felt challenged when she first came to the unit. The intern decisively insisted on her advocacy role with male patients because she knows and respects the cultural and social limits controlling the male-female relationship in a conservative society such as Saudi Arabia and the importance of adhering to them. She commented:

The CRN is against us regarding the social matter but I kept going...we are the patient advocate and I know my limits.

The intern's families helped them with the social and the cultural aspects. This supportive (and encouraging) behavior of the intern's family is conveyed by one intern, who stated:

My family is helping...they are advising with cultural things.

Another intern stressed the importance of having the courage to prepare and present a difficult topic as she revealed:

I challenged myself by giving an in-service about what I don't know; the Intravenous (IV) and oxygen therapy.

These examples and many others that supported previous themes are good examples that demonstrate that the Saudi Arabian female interns were acquiring the courage and ability needed to practice professionally and to undertake health care decisions in the same way as any other national or international nursing staff member. The significant statements and the relevant interpreted meanings pertaining to the theme ‘a female Saudi Arabian learner’ are incorporated into appendix Y.

4.3.6.3 Being Accepted by the Patients

This theme represents a feature within all of the statements of the informants that conveys an acceptance story of all of the interns by their patients. The statements are from those interns who experienced this acceptance and of their facilitators who witnessed it. Only one preceptor did not contribute explicitly to this area. This preceptor emphasised the interns’ development in confidence and communication with the patients at the end of the rotation as they come to understand the unit routine. The statements of those who described the acceptance of the interns by their patients also indicated possible strategies or approaches that could be used to develop future internship programs. This theme covers the two developmental areas targeted by the qualitative analysis, namely, the internship and the clinical reasoning experiences. The terms used within the informant’s statements inclusive of ‘being accepted’ also included ‘being trusted’ ‘appreciated’ and ‘respected’. All of these terms are consequences of the interns ‘being accepted’. Some interns referred to this acceptance to their knowledge of the Arabic language which enabled the interns to know exactly what patients want. One intern explained this as:

The language is a barrier...with our patients I know exactly what they want...They will trust you which will impact on your confidence. Gaining patients’ trust...it will contribute to your confidence.

In addition to the intern’s Arabic language and knowledge about the Saudi Arabian culture, one intern indicated that she had a relevant goal from the beginning, namely, gaining the patient’s trust and acceptance—which she described as:

My goal from the beginning was to gain the patients trust and to be accepted by them. My knowledge about the culture and the language helped me a lot...I used to group things together in order to allow him more time to rest...They are appreciating and respecting us. I am a patient advocate.

Another intern contrasted the idea that a patient accept the intern because she comes from the same culture; and indicated that an intern's confidence and her provision of nursing care that considers the psychological status of the patient are the prime determinants of a patient's acceptance. This intern stated:

They won't only accept you because you are from the same culture; you need to show them your confidence in order to be accepted. I focused on the psychological aspects when providing nursing care to my patients.

Dealing with the male patients or male family members constituted a dilemma for most of the interns at the beginning of the rotation. One intern indicated that her patients tend to accept her as she believed in herself, has an appropriate introductory style and is becoming familiar with how to deal with male patients. This intern stated:

It was a bit difficult dealing with male patients at the beginning but at the end it became okay for me dealing with them because I believed in myself...I introduced myself to the patients and families as a trainee in my internship. When my patient feels comfortable when dealing with me, I feel at ease when dealing with him.

The reasoning analyticity of one intern was extended to include how she analyzed and evaluated the situation as per the patient's personality in order to be accepted by the patient. This intern revealed:

It is the way you are talking to old people...I learned to weigh it up as per the patient's personality.

Another intern explained that along with her patient education ability she had developed professionally and socially and this gained patient trust:

I already have patient education ability...but I needed to develop socially in order to gain their trust. If you don't have the trust with the patients you can do nothing. Some of our patients are agitated because of their treatment and they want to go home...I used to convince them to stay.

The CRNs statements supported the statements of their interns. A CRN who focused on development in the internship experience indicated that the interns were being accepted by their patients as care providers as they developed the needed confidence and clinical ability and developed their knowledge on how to deal with male family members. This CRN noted:

Some families will refuse to allow them do the procedures, especially the important ones like tracheostomy care...sometimes they are not confident despite that they know the culture and the language...if they find a male family member with the patient they get worried and won't do it alone. At the beginning they will panic...I used to face difficulty with them regarding this, I used to change their assignments many times until they got used to the thing...I think it is a cultural thing and this is a usual thing to happen, I do understand...and after that it depends on the personality of the intern.

Another CRN highlighted the importance of building a trustful relationship with the family as a prerequisite to being accepted as a care provider:

Some families don't mind allowing the student to do anything for their patient and others do not allow it...the student will then feel disappointed...those students who built a good relationship with the family won't find any difficulty.

Another CRN limited the patients' acceptance to only the assessment component of nursing care. As Saudi Arabian nationals, they are encouraged by the patients. As the CRN described it:

The patients are encouraging Saudi nurses...they treat them differently...they allow them to do the assessment and to take their history...but they are hesitant to allow students to do certain interventions for them. Their confidence increases once being accepted by the patient.

One CRN related the patients' acceptance to the support provided by the CRN and the preceptor while remaining with the intern when doing the procedures, stating:

Most of the patients are happy that they have an Arabic speaking nurse...they thank God that they are having a Muslim nurse...but some patients are suspicious related to the male-female component. We don't leave them alone with the patients...either the preceptor or myself are with them...it is about how you explain it to the patient...if there is a difficult patient I won't send the intern to him...also I don't want the intern to have a negative experience.

This notion was substantiated by a nurse preceptor who stressed the importance of the preceptors' support of the interns by remaining with them while they are performing nursing procedures:

I think because they are Saudis they are accepted by the patients and they are also explaining to their patients why I am with them while they are doing something...we are collaborating.

One preceptor indicated that the interns are tolerant of patient rejection of them as care providers because the intern will then try with another patient. The interns are accepted because they speak the language, which is a big help for the primary nurse. As the preceptor revealed:

Some of the patients are very vocal saying they don't like to have a student, so the student will step back but I don't think that it is the reason that affected their confidence and development, they will try another patient. The patients are more expressive to them because they speak Arabic. The interns are big help for us because they speak the language and they are really good at English and improving their documentation.

The main features of the informants' statements indicated that the interns are accepted by the patients as care providers. This acceptance is a major contributing factor to the interns' confidence. This confidence is a major component and indicator

of professional development as noted earlier when describing the internship clinical educational experience.

The theme of 'Being accepted by the patients' was added to the interview questions after being identified in the quantitative data as an area that needed further exploration and explanation. The data indicated that this intern-patient relationship is not only enhanced by speaking the same language or being part of the same culture, but also because the intern care provider possessed the required social, communication and psychomotor abilities that convinced the patients and their families of the capability of these national nurses. The audit trail of the statements relevant to the theme 'being accepted by the patients' is included in Appendix Z.

4.3.7 Summary of the qualitative results

The previous six sections presented various qualitative results collected by way of semi-structured interviews from eight interns and eight of their clinical facilitators divided into five CRNs and three nurse preceptors. From the 84 transcribed pages of these interviews, a total of 243 significant statements were extracted. Additionally, the many reflexive commentaries and statements incorporated into the results' text as bracketing tools became another source of data that enriched the results by providing further clarification of certain processes. The major outcome for this reflexive bracketing thought is the objective separation between the clinical reasoning processes and the internship educational processes where the latter became the context for the former processes. For greater clarity, the two sets of processes have been presented in two separate sections and the relevant decision trails are presented as appendices to ensure auditability.

The representativeness of the description of the essential structure of the interns' clinical reasoning at the time of uncertainty when undertaking novel clinical judgments for medical or surgical cases is validated through the final step of Giorgi's (2012) analysis method and incorporated into the summary of section (4.3.3) that presents the results relevant to the nature of the interns' clinical reasoning as described by the interns themselves. While the validation steps of the other processes such as the internship educational processes are incorporated into the discussion

chapter, this validation step is integrated into the results' section for more clarity as the interns were the primary informants of this core study component. The facilitators' descriptions presented a different view than the view of the primary informants. This prompt link is employed to prevent possible distortions in the meaning that could have resulted from the separation of the validation step and the analysis of the entire set of results relevant to the interns' clinical reasoning presented by the interns themselves. Additionally, further deeper analysis is employed within the discussion section regarding this experience. These measures are undertaken to add to the trustworthiness of the research data.

The description of the interns' clinical reasoning as a developmental experience represents the core of the study's qualitative results. The invariant features of the descriptions of both the interns and their facilitators highlight the 'action impelled reasoning' and the 'analyticity' as the major two reasoning processes of this experience. The interns added the reasoning leap as a bridge between the action-impelled reasoning and their own style as described only by the interns. These reasoning processes interact within the internship educational context with its two stages, the elusive and the professional. These processes are answering to the second research question, but thorough discussion (section 5.3) integrating the qualitative and quantitative results will reveal the true picture of these processes as a product of mixing.

The presence of certain variant features within the informants' statements describing the reasoning and the internship processes indicate that the various stages or sub-processes are interacting to produce the desired outcome of each process or can be considered as factors affecting both processes. From the interns' perspective, all of the reasoning processes are deliberative and directed by a goal. The facilitators' descriptions are sometimes linked to an interpretation that holds an error margin. Therefore, the researcher's interpreted meanings incorporated into the decision trails reflect solely the informant's intentional acts rather than his or her interpretation of the other's acts. These subjects' interpretations are highlighted when applicable. Additionally, the researcher has reflected on these interpreted meanings with his primary academic supervisor.

The results revealed three sets of factors affecting the development of the Saudi Arabian nursing interns in both their clinical reasoning and internship processes which contribute to the third research question of this study. These are the unit attitude towards the learners, the interns' learning behaviors, and being accepted by the patients. Preceptor support is found to be central to the unit attitude towards the learners, especially at the beginning of the rotations as all the interns who highlighted lack of support indicated a lonely and neglected feeling. Additionally, the results have contrasted a false perception or interpretation of the CRNs regarding the interns as a Saudi Arabian female learner. The study identified this factor as a driving force rather than an impeding factor for the development of the interns' reasoning processes and professional dimensions.

Another feature linked to the facilitators' descriptions is that they were describing their experiences with many interns which strengthened their descriptions as they presented a collective experience with the same intern cohort. This compensates for any shortcomings that could have resulted from the limited number of preceptors, despite saturation being attained at the end of the third preceptor interview informant.

The qualitative results show no differences between the informants from different placement areas and these results provided a comprehensive explanation of the two quantitative areas needing further clarification in this qualitative stage. These are the areas relevant to the interns' relationship with their patients and their independence in patient care clinical judgments. Being accepted by the patients is both a relevant theme describing the interns' relationship with their patients and a major factor contributing to both the internship and the clinical reasoning experiences. The interns' independence in their clinical judgments when assessing patients to identify relevant cues and problems and when deciding on interventions is incorporated and described by many themes, clusters, and processes relevant to both the internship clinical education and the clinical reasoning conjoined processes. After following the preceptors' steps to develop their own reasoning style, the nurse interns became able to undertake independent clinical judgments regarding the routine components and to analyse and recommend to (or seek assistance from) either their preceptor or CRN at the time of uncertainty. These findings will be discussed in the following chapter.

CHAPTER 5 DISCUSSION

This chapter presents a discussion of the quantitative and qualitative results of this study as two subsections and then melds them into a whole set for full understanding of the nature of the development of clinical reasoning in a cohort of Saudi Arabian female nursing interns while undertaking their medical or surgical clinical rotations. The general discussion will focus on the major findings relevant to the interns' thought processes and the factors affecting these processes extracted from both the quantitative and the qualitative data sources. Throughout these discussions, the study findings will be compared and contrasted with the theoretical and empirical literature as part of the continuous checking to ensure the rigor and trustworthiness of these findings (Burns & Grove 2009; Polit & Beck 2010).

5.1 Discussion of the quantitative results

This discussion incorporates areas relevant to the major study outcomes pertinent to the hypotheses testing and the various correlation procedures. The discussion starts with describing the impact of the medical or surgical internship experience on the interns' general clinical reasoning behavior. Their independence in clinical judgment and clinical reasoning at the time of uncertainty, and their intuitive-rational tendencies are also discussed. The relationships between various variables of the quantitative part of this study will be thoroughly examined and compared to those in the literature to highlight their significance in the development of the interns' clinical reasoning.

The major quantitative outcomes revealed by this study are the significant improvements in both the interns' rational, analytical thinking and their general reasoning behavior. This is a result of their consolidated internship experience in the general medical or surgical units of a tertiary health care facility in Saudi Arabia. This improvement is coupled with an increased independence in their clinical reasoning in both the assessment and the intervention components of patient care, as well as independence in undertaking non routine clinical judgments when interpreting data to identify patients' nursing problems. The finding related to the use

of the rational thought processes is congruent with the findings of Benner (2001) who highlighted the use of the hypothetical deductive reasoning pattern by students and inexperienced nurses that allow for a conscious rational calculation when making a clinical judgment. The other significant and non-significant findings relevant to further hypotheses will be discussed when applicable throughout this discussion.

The unique nature of the interns rationality addressed by this study arises from the way it is structured throughout the internship experience to meet certain needs. These needs, in turn, became factors facilitating its development. For example, the presentation of the variables of the CRACS in the two episodes around the rational, analytical reasoning style is restructured according to the changing needs of the interns from the beginning of the internship rotation (see figure 4.1a) until the end (see figure 4.2a). These variables are triggered by being part of the new environment and interacted to meet certain desires, feelings and needs of both the intern and the nursing unit environment. At this early stage, the interns needed to feel part of the team; to have full control over daily activities; and to be able to verify their clinical judgments at all times. As a natural consequence, these needs (that become factors) start bonding themselves around rationality that calls for improvements in these factors in order to function effectively. As a result, 'feeling part of the team' called for more control over daily activities, for increased knowledge about the next step in patient care, and for increased independence in all aspects of patient care that, in turn, have contributed positively to this feeling.

In addition to the previous factors linked with the interns' need to feel part of the team at the beginning of their internship, the need to have full control over daily activities has called for more ability to verify their clinical judgments and to exhibit more accuracy in these judgments. Interestingly, despite its indirect link with the analytical style, the need for more accurate clinical judgments, coupled with the need for more verification linked with rationality, has triggered the insight mode that, in turn, energised the intuitive style of the interns. Meanwhile, the interns' rationality remained the central milestone linking these factors (or needs) together at the beginning of the internship. Also, the need to know the next step in order to feel part of the team and to have more control over daily activities has triggered the reflective thought of these novice nurses. At the end of the rotation the need to know the next

step became directly linked with both the rational thinking and the accuracy of their clinical judgments. Additionally, the need to verify clinical judgments maintained its direct links with both rationality and the insight mode and initiated another with the reflective thought. This indicates that rationality and the ability to verify clinical judgments are inseparable thought components.

The previous set of relationships between the various concepts, styles and factors shows that the interns perceived the culture of the training units as one that accepts only those who have full control over daily activities and who can verify their clinical judgments at all times. While remaining under the 'student hat' that may 'support' some of the students' irresponsible behaviors like lack of interest, low accountability, and not feeling part of the team, the interns exhibited professional maturity that energised their analytical thought processes. They realized the need to be part of the team called for constantly knowing the next step in patient care. These conclusions are supported by the results that show improvements (at the end of the medical and surgical rotations) in the interns' feeling part of the team and their ability of knowing the next step in patient care.

Other improvements were evident in their ability to have full control over daily activities and in their ability to verify their clinical judgments at all times. Additionally, their analyticity and overall reasoning behavior (measured by the CRACS) has improved at the end of the clinical rotations. These findings are consistent with those in the literature that highlighted the impact of the unit culture over the thought processes of those who are new to the unit (Benner, Tanner & Chesla 2009; Hammond 2007; Oliver & Butler 2004; Tanner 2006). Further discussion related to the contextual components and their impact on interns' thought processes will follow.

At the end of the clinical rotation, the ties around the analytical style start taking an 'elegant' shape that kept the interns' analyticity bonded with only five important links for maintenance and enhancement purposes (see figure 4.2a). In these links, interns' analyticity is connected with confidence, knowing the next step, planning mode, ability to verify, and the reflective style. The confidence component that was not evident at the beginning of their internship became an important link between

rationality and the 'feeling part of the team' factor. A possible explanation for these links is the need to maintain and give more support to both 'being part of the team' and the developed rationality. The 'being' is used here as a synonym for the 'feeling' to reflect the significant positive change in this variable that represents a need for both the individual intern and the unit culture.

In this study, the interns exhibited a sustainable level of confidence throughout the internship rotation evident by the non-significant t-test value for the mean difference of interns' perceptions of their confidence in the two stages. The importance of this factor in clinical judgment is clearly documented in the literature (Blanzola, Lindeman & King 2004; Standing 2007; Zinsmeister & Schafer 2009). Oliver and Butler (2004) indicated that the experienced nurses tend to strive for confidence and the novices focus on time management. It was stated previously that the internship targeted by this study is leveled between studentship and professional practice. The interns possessed a combination of behaviors that assist in meeting a mixture of needs for both studentship and professional practice. This might be the reason for witnessing a significant association between the interns' confidence and the increased rationality to meet a cultural requirement of the unit and a self-desire to become part of the unit team. Or, as stated earlier, the confidence is used here for maintenance purposes to support both the analyticity and 'being part of the team' of the interns.

While contributing positively to the interns' confidence by meeting the requirements of the unit team, possessing an analytical style and being part of the team can both contribute to enhancing the interns' time management as a unit requirement. The positive links between rationality and both the interns' ability to know the next step and their planning tendency (as time management components) support the previous argument. Another noteworthy set of significant relationships that became more solidified at the completion of the internship clinical rotations is the one linking both the interns' confidence and their feeling part of the team with the clinical reasoning components of independently figuring out significant cues, patients' problems, and the actions needed for patients care. This is congruent with Hoffman and Elwin's (2004) view of confidence as both trusting and using one's own reasoning to support decision making.

Similar to the confidence component, the accuracy of the interns clinical judgment did not significantly improve as a result of time, but was found to be significant in many relationships in both stages of the questionnaire administration. In both stages, clinical judgment accuracy did not have a direct relationship with the interns' rationality but, rather, a supportive indirect connection. In stage one, both abilities of verifying clinical judgments and having full control over daily activities, have called for more clinical judgment accuracy. These relationships have impacted on the interns' rationality from both the social-cultural and the intuitive- personal sides. At the social-cultural end, the clinical judgment accuracy impacted the triangles of (verify-control-rational) and (control-rational-feeling part of the team) that eventually supported both rationality and feeling part of the team (see figure 4.1a).

The accuracy component has a stronger relationship with the (verify-control-rational) triangle because of their links from both the 'verify' and the 'control' sides. While this link strongly impacted the interns' rationality, the other (control-rational-feeling part of the team) triangle indirectly affected both the interns' independence in clinical judgment in all aspects of nursing care (see figure 4.1b) and their rationality. At the intuitive-personal side, another two links with two triangles are initiated. The initial (verify-insight-rational) triangle, that has the stronger link with the accuracy component connects the insight tendency with the entwined components, verification and rationality. This finding contrasts with Taggart and Valenzi's (1990) views that indicated that insight, as one of the modes comprising the intuitive tendency, is isolated from the rational dimension of thought. This is contrasted by many authors who indicated that nurses use a combination of both analytical and intuitive components at the time of clinical reasoning (Lee, Chan & Phillips 2006; Tanner 2006; Taylor 2006). The other (insight-intuitive-rational) triangular is linked with the accuracy component from only the insight side. This link is intuitively stronger than the other with the (verify-insight-rational) triangle and is directly connected with the independence in clinical reasoning chain from the side of the interventional component (see figure 4.1a).

The link between the intuitive style and the insight mode is asserted by Pritchard (2009) who stated that students' intuition relies on insight. A possible explanation for this reliance on the intuitive thought in patient care interventions is the persistent need for rationality (analyticity) and verification of clinical judgments, coupled with both the need to have full control over daily activities and the need to feel part of the team at the beginning of the internship. With this in mind, the intern is eager at this early stage to convey full control over her daily activities not by 'showing how', but by 'knowing how' and 'knowing why' that will be verified by her preceptor before having the opportunity for a supervised practice. To answer to this, the interns tried to make the best use of their background information gained throughout their formal undergraduate training, to support their analyticity/rationality and verification and to complete the 'verification' gaps by means of 'a complementary' intuitive thought based on pattern and similarity recognition. This explanation is based on both the presentation of the relevant results of the current study and the definition of the intuitive style incorporated into the CRACS.

This definition relates intuition to the ability to anticipate before sufficient data is available. This anticipation is based on a sudden realization or comprehension of a pattern (Tanner 2006), or an understanding of the situation as a whole (Banning 2008). These views are similar to those conceptualized by the current study and incorporated into the literature review chapter that elaborated on the previous definition of intuition and relating the 'anticipation' to the sudden recognition of either the whole display (routine intuition) of a mental presentation of an idea or a gap in this 'whole' display (absolute intuition) which induces a level of uncertainty that will persuade a calculative-rational or a narrative-reflective thought process. This conceptualisation summated both Hammond's (2007) robust flexibility and Benner, Tanner and Chesla's (2009) calculative and deliberative rationalities to comprehensively conceptualize intuition and its relationships with rational or reflective thought. This conceptualisation is supported by the empirical data of this study (see figure 4.2a) and Rovithis and Parissopou's (2005) views that assert that intuition precipitates an analytical process and is a trigger for a nursing action or reflection.

This discussion parallels Hammond's (2007) major conclusion that views the brain as an 'analog' device concerned with similarities and takes the results of this study to a deeper point where intuition is viewed as an innate ability 'nourished by' rather than 'acquired through' experience. This argument opposes the views of Benner, Tanner and Chesla (2009) about the development of intuitive thought as the defining attribute of expertise. Hammond (2007) added that rationality (as a hard analytical cognitive function) is not a natural function of the human brain and people need to be taught how to use it. In the current study, the interns' need for more rationality and accuracy in clinical judgments, as personal and cultural requirements for both nursing units and the interns themselves, has called for more 'innate' intuitive behavior, supported by the insight tendency, to utilise the fragmented pieces of information gained through studentship experiences to independently figure out the needed patient care actions or intervention. This behavior assisted and supported the interns when requested to verify their ideas (knowing how and why) before the actual implementation for their preceptors.

The role of the background information in decision making is well documented in relevant research that targeted either students' or nurses' thought processes (Chartier 2001; Croke 2004; Simmons et al. 2003; Standing 2007). Benner (1984) argued that students use mainly propositional, context free knowledge in their clinical judgment and Kuiper and Pesut (2004) indicated that novice nurses use more cognitive structuring and fewer analytical processing strategies. With the female Saudi Arabian interns in this study and in addition to its benefit in teaching the interns new skills and behaviors, internship represents a chance to consolidate and solidify their previous medical or surgical experiences that have been learned throughout their undergraduate training in the same hospital. Their experiences might be 'fragmented' but are context-specific. The findings of the current study contradict Kuiper and Pesut's (2004) conclusions relevant to the novices' analytical processing because interns' analyticity is the most common thought process used throughout their clinical rotation. The interns developed unique forms of cognitive structuring as part of developing their analyticity. The use of the analytic reasoning style in individual patient care situations will be explored in the discussion of the qualitative results of stage two of this study (section 5.2).

The chain of independence in clinical reasoning has only called for intuitive components (styles and modes) when figuring out relevant problems and actions at the beginning of the internship (see figure 4.1a). This represents a probable reason for the negative correlations between both the control mode and the reflective style with the first item of this chain that represents interns' independence in clinical reasoning when figuring out significant cues in patient care assessment.

Reflection involves evaluating the congruence of the current experience with existing knowledge (Murphy 2004). While feeling overwhelmed at this early stage of internship and unsure of what she already knows (Zinsmeister & Schafer 2009), an intern's reflection supported only the need to know the next step when deciding independently on significant cues in patient assessment (see figure 4.1a and 4.1b). The negative correlation between interns' reflection and their independence in clinical reasoning when figuring out significant cues and the positive correlation between this reflection and the interns' independence in clinical judgment when assessing patients to identify these cues can create great confusion. The reason for what might be perceived as a contradiction in these correlations might be attributed to the difference between the two variables of independence (independence in clinical judgment and clinical reasoning).

Independence in clinical judgment when assessing patients to identify significant cues is the overall umbrella governing the clinical reasoning component. More importantly, the previous findings indicate that clinical reasoning is not a synonym for clinical judgment. This contradicts Alfaro-LeFevre (2004) who used clinical reasoning to define both critical thinking and clinical judgment. Reflective thought (as measured by the CRACS) represents an overall or an averaged reflection rather than an intern's reflection on a particular situation. Therefore, more reflection supports more intern independence in clinical judgment when assessing patients to identify the needed cues. To provide a thorough explanation of these findings, a question area was incorporated into the question list of the qualitative interview for this study to explain the 'know-how' component of clinical reasoning and the 'show-how' component of clinical judgment in relation to the three aspects of nursing care—assessment, problem identification, and nursing actions.

The role of the intuitive components of thought in supporting the interns' rationality is evident in stage two of the data. The planning tendency called for more intuitive thought and the continued verification need called for more insight tendency. The planning tendency and the need to verify clinical judgments are directly linked with the interns' rationality. Another possible reason for the appearance of the planning tendency in stage two was that it can be added to the time management requirement discussed previously. Possibly it is that most of the nursing actions need effective planning and the interns need to verify their plans and ideas with their preceptor before implementation. This is part of the responsibility-accountability agreement addressed by both the interns' scope of practice and the collaborative model between the hospital and the college of nursing.

The previous inferences about the links of the insight mode and the intuitive style in phase two are supported by the non-significant t-test results for the differences in the means of the two stages for the intuitive style (as part of the CRACS) and the intuitive tendency and its related modes (insight, sharing and vision). These non-significant results indicate that the intuitive style, tendency, and its related modes are relatively stable features that did not change significantly as a result of experience but restructured and relocated to support the rational thought. The interns' rationality is the only style that developed throughout their internship.

The general internship medical or surgical experience sharpened the interns reflective ability by replacing its primary determinant from the 'need to know the next step in patient care' with the need to have a solid, rational and acceptable verification of their clinical judgments. The results of the second stage indicated that the interns with high intuitive tendencies exhibited a more reflective ability. Taggart and Valenzi (1990) indicated that those with a low intuitive tendency are lacking momentum. The interns have directed their reflection (supported by their intuitive tendency) to support and keep the momentum of their rationality. Because both have not changed as a result of their experience and (more importantly) because of how they are connected to rationality, the intuitive tendency and the reflection ability are considered as maintenance variables that support the interns' rationality. This inference is supported by Murphy's (2004) conclusion that asserts that reflection will enhance the development of clinical reasoning. Murphy (2004) added that reflection

involves mapping new experiences onto existing memory structures. When the set of relationships in stage two (see figure 4.2a) is mirrored against Murphy's (2004) notions, the resulting image supports the previously inferred statement about the supportive, maintenance role of the reflective-intuitive effort in rational thinking. Additionally, this provides a possible explanation for the development of the IP heuristics and their nurturing role in clinical judgment.

The links between the intuitive tendency and the reflective style, coupled with both the 'rational-verify-reflect' and the 'verify-insight' relationships, meld the reflective and the intuitive efforts together to support rationality and to create a new mental image or refine an existing one, for future use in clinical judgment situations. This view of the combined effort between the previously interlinked factors to formulate these mental images is supported by Hammond's (2007) assertion that contrasted the idea that heuristics equal intuition. This indicates that heuristic formulation requires more than an intuitive idea. Information Processing (IP) theory indicates that symbols are grouped into patterns in the brain called chunks (Jefford, Fahy & Sundin 2011). These patterned chunks or heuristics, structured throughout a practitioner's clinical experiences according to a set of criteria, or according to what Benner, Tanner and Chesla (2009) called 'rules and principles', are personal components of thought developed by the individual practitioner to analyze or judge future encounters accordingly. The same criteria are needed for the three sides of the (reflect-verify-rational) triangle to function.

While reflection involves evaluating the congruence of the experience with an existing meaning (Murphy 2004), the analytical process requires a systematic, rational weighing of alternatives (Tanner 2006). Evaluation and weighing alternatives, as cognitive functions, are both needed for mental criteria to judge the likelihood or the congruence of an action or a judgment. Similarly, the verification process requires authentic evidence or criteria to prove 'why' an action or judgment is relevant (Blanzola, Lindeman & King 2004). This might be the reason for the reflective style attaching to both the rational thinking and clinical judgment verification (see figure 4.2a). These links between the 'melded' sides of the (reflect-verify-rational) triangle call for more intuitive and insight tendencies (see figure 4.2a) to enhance interns' rationality and to develop better substantiated chunks for

more effective and efficient subsequent reasoned judgments. This has resulted in greater confidence and enhanced ability in knowing the next step in patient care. The use of heuristics by the interns is validated in the qualitative interview in stage two of this study. The major role played by reflection in this study contrasts Benner's (2001) finding that novices (within their reasoning processes) do not reflect on past experiences and use propositional knowledge learnt in context-free situations. Contrary to these views, many studies have indicated the use of intuition and reflection by nursing students (Garrett 2005; Standing 2007; Wong & Chung 2002).

Another significant area which appeared when testing the change in certain factors as a result of time is the relationship with patients. Two of the CRACS statements that tested a relationship component showed improvements in the interns' perceptions at the end of the medical and surgical internship rotations. These components are the general relationship and the need for prompting to initiate a therapeutic relationship with patients. While the interns' relationships with their patients improved by the end of the clinical rotation, their need for prompting decreased. These variables that belong to the same area have neither been correlated with each other in the two stages of questionnaire administration nor with other variables of the CRACS. The general relationship component was found to be positively correlated with the interns' GPA (in both stages) and with the theoretical component of their academic success in stage one. The interns with higher GPAs perceived that they experienced better relationships with their patients throughout the clinical rotation than those with lower GPAs. Despite its restricted relationship with only the general relationship component, the interns with higher GPAs could have been encouraged to talk, chat or advise their patients—which may have impacted on their relationships with the patients.

It is evident that good relationships with patients has a positive impact on clinical judgment or decision making (Kennedy 2002; Tanner 2006; Taylor 2006). The literature documented no relationship between students' academic success and their learning styles as cognitive components relevant to learning (Suliman 2010). A limited relationship between a student's academic ability and diagnostic accuracy restricted to low complex cases is documented (Botti & Reeve 2003). The 'need for no prompting to initiate a therapeutic relationship with patients resulted in a single

negative relationship at the end of the rotation with one of the clinical judgments components, namely, the interns' independence in their non-routine clinical judgments when interpreting data to identify patients' problems. The 'no prompting' variable exhibits no other relationships with any other variable that might help in explaining this unexpected finding. A possible explanation might be directed to the second variable (independence in non-routine clinical judgments when interpreting data to identify patients' problems) in the relationship that has another two negative relationships with the rational tendency and its control mode.

These relationships cannot be statistically verified since this statement is the only statement in part three that showed significant improvement at the completion of the clinical rotation. Nevertheless, the relationship with the patients is thoroughly examined in stage two of this study. One reason supporting this thorough examination of the relationship with patients is the conservative nature of the Saudi Arabian culture, especially when female interns are taking care of male patients.

The impact on the interns' intuitive-rational tendencies became most evident at the end of the clinical rotation. The rational and the intuitive tendencies and their related modes became closer to each other with more links between their components (see figure 4.2c). This supports the collaborative role of the thought processes for effective and accurate clinical judgment. It is evident that both the intuitive and the control tendencies are linked with the interns' age at the completion of the internship rotation. Due to the relationship with the interns' age and another relationship noted at the beginning of the internship with the clinical judgment independence component when deciding on nursing actions, the interns' age was considered when selecting the intern samples for phase two of this study.

The role of the preceptors and the CRNs overseeing the interns' clinical experiences in the development of the interns' clinical reasoning or clinical judgment at the time of uncertainty, was tested via two parts of the questionnaire. These examined the interns' independence in clinical judgment (part three) and clinical reasoning (part four). The degree of the interns' independence in clinical judgment at the time of uncertainty when away from their preceptors or CRNs showed a significant improvement in one aspect relevant to problem identification and other significant

relationships with other variables in the two stages of the questionnaire administration. Some of these relationships have been discussed earlier. At the beginning of internship, the three components (cues, problem identification and deciding on actions) were interrelated and bonded to both the interns' need for 'full control over daily activities' and their need to 'feel part of the team'.

Two possible explanations for these results need to be discussed. One relates to the nursing unit and the other is linked with the interns themselves. While being aware of the interns' previous experience and background information and while recognising their feelings of being overwhelmed at this early stage in the unit, the unit clinical judgment and rationality requirements of those beginners focused only on the interns' independence in identifying significant cues during patient assessment. The preceptor/CRN started with this basic component in order not to overwhelm these beginners and to allow them to gain the confidence and control over daily activities that became evident by the end of the rotation. While confidence is linked with rationality and 'feeling part of the team' (see figure 4.2a), the 'control over daily activities' continued its links with independence in clinical judgment chain (see figure 4.2b). These relationships in stage two support this interpretation. The findings at the end of the rotation indicated a significant improvement in the interns' independence in their clinical reasoning to figure out cues and the related interventions and a complementary improvement in their independence in clinical judgment problem identification ability. This shows that the initial efforts of the preceptors/CRNs had resulted in the desired improvements.

The other possible explanation is directed towards the interns' desire to have the needed confidence, independence, rationality and control over daily activities in order to be accepted as a team member in the unit. The main reason for this interpretation is the placement of the independence components in stage one in two different zones. While the independence in clinical judgment to identify cues is part of the cultural zone of (control-rational-feel part of the team), the chain of independence in clinical reasoning is linked, from one side, to the intuitive, personal innate zone, and from the other to reflective thought. This separation might mean (as discussed earlier in this chapter) that the interns were personally targeting a group of needs (within the unit culture and personal zones) that were interlinked around

rationality as the major thought component. Due to the pressures of the many needs at this early stage, the interns used a mixture of approaches to attain the needed independence in both clinical judgment and clinical reasoning. Most of their efforts were directed towards the three components of independence in clinical judgment because the interns felt that these components are the bridges to rationality, 'feeling part of the team', and 'having full control over daily activities' (see figure 4.1b). The adopted efforts formed most of the CRACS components. This is evident by the positive relationships between the general reasoning behavior, as measured by the CRACS, and all aspects of the independence in the clinical judgment area. This has resulted in closer links between the independence components (in clinical judgment and in clinical reasoning).

Another component that contrasts the initial explanation linked to the nursing unit is the negative correlation between the reflective style and the interns' independence in clinical reasoning when figuring out significant cues. If the nursing unit (typically the preceptor and the CRN) was working to improve the interns' independence in clinical judgment and clinical reasoning by way of various strategies including reflection, this correlation sign could have reverted. The absence of direct links in stage two between the independence in clinical judgment or clinical reasoning and the thought processes of rationality, reflection, intuition and verification support the second explanation. If the preceptor or the CRN is targeting these mental processes, they could have continued challenging their mental processes by, for example, assigning them more complex cases or providing them with structured feedback (Baxter & Rideout 2006; Hammond 2007; Kennedy 2002). Incorporating the unit requirements of confidence and full control over daily activities into the set of personal needs and desires to facilitate executing the daily nursing duties is the most probable explanation for the previous dynamics between the contextual factors and the personal thought components of the interns throughout the medical or surgical internship rotations.

The contextual impact in improving practitioners' clinical judgment is fully documented in the related literature (Benner, Tanner & Chesla. 2009; Hammond 2007; Tanner 2006). The findings of this current study show superiority for personal desires and needs triggered by 'being in the context' above the contextual

components represented by the role of the people involved in the training process. The interns' needs and desires became part of their general reasoning behavior that impacted their thought processes, primarily rationality, and, partially, their independence in clinical reasoning and clinical judgment. These outcomes highlight the need for a structured effort to fully attain all entry level expectations for professional practice (Blanzola, Lindeman & King 2004).

The major findings of this study support half of Hammond's (2007) notion asserting rationality as the ultimate goal for decision making; and provide evidence to refine the second part indicating the need to teach it because it is not a natural function of human brain. The refinement to the second part of the previous notion indicates that stress, a concept recognized by Hammond (2007) and induced by the uncertainty and the contextual demands, has created a personal desire towards rationality and towards manipulating certain factors to become drivers and maintenance components for both the developed rationality and the general reasoning behavior. This requires proper guidance and structuring or changing certain contextual conditions to attain the desired independence, confidence and control. The guidance should recognise the two inseparable links between, firstly, the thought processes of rationality, intuition and reflection and, secondly, between the independence in clinical reasoning and the independence in clinical judgment at the time of cue recognition, problem identification, and deciding on interventions. This guidance and contextual arrangements can save some of the precious time that could be invested more wisely in achieving the entry level expectations. The specific role of both the preceptor and the CRN in the development of the interns' clinical reasoning abilities is validated in phase two of this study by interviewing interns, nurse preceptors, and unit CRNs.

In summary, this section of the discussion chapter highlights significant quantitative results relevant to the various research hypotheses and significant relationships revealed by this study. The areas that received attention throughout this part are the interns' overall reasoning behavior; their independence in clinical judgment and clinical reasoning; and their intuitive-rational tendencies. The general overall reasoning behavior, measured by the CRACS, represented interns' averaged perceptions and reactions to the antecedents, thought processes and styles, and the consequences of their clinical reasoning. Results show a significant improvement in

this behavior that remained in a continuous, dynamic interaction with the internal (personal) and the external (contextual) forces that sharpened its features throughout the medical or surgical internship rotations. The reaction to these forces constituted the interns' clinical reasoning behavior. A core component of this behavior that showed major impact and superiority above all internal and external forces is the interns' rationality.

While intuition and reflection played a major maintenance and supportive role, rationality is the only thought process that showed significant improvement by the end of the rotation. Throughout the medical or surgical internship rotation, the interns' behavior was directed to sharpen the features of the rationality milestone to attain the desired thought stability. This stability is featured by increased levels of control over daily activities and independence in some of the clinical judgment and clinical reasoning components. The solidarity in thought processes is evident by the significant links between rationality, reflection, rational and intuitive tendencies, and the intuitive style. The improvement in the interns' rationality triggered more confidence by the end of the clinical rotation. The results also indicate that the intuitive thought process is an innate component that can change its supportive links for more rationality. This quantitative part indicated that the role of the CRN/preceptor in the interns' clinical judgment was directed towards meeting the unit requirements of having full control over daily activities and possessing the related competence. The findings related to the nature of the intuitive thought and the specific role of both the CRNs and the preceptors in the development of the interns' clinical reasoning when undertaking non routine clinical judgments or at the time of uncertainty will be validated in phase two of this study.

5.2 Discussion of the qualitative results

This section will discuss the qualitative results of this study. The discussion includes four subsections that analyse the results obtained from the three informant groups (the interns, the CRNs and the nurse preceptors). The four subsections will each include the internship clinical educational context described by the informants themselves and bracketed from other data sets. The second section will discuss the results relevant to the nature of interns' clinical reasoning at the time of uncertainty.

The factors affecting the clinical reasoning and the internship experiences are then analysed and are followed by a summary section compiling the essence of these qualitative subsections.

5.2.1 The internship clinical education context

The internship clinical education context is presented in this study as the environment or the perspective within which the clinical reasoning experience at the time of uncertainty of the interns took place. This clinical reasoning experience cannot be completely understood outside this context. The internship context is perceived through two stages describing its constituents that became the defining attributes of the two stages, the elusive and the professional. The selection of the interpreted meanings and the relevant themes (plus their essential structures) is based on the discussion carried out on a weekly basis between the researcher and his primary supervisor. While the researcher was trying to separate the descriptive meaning units constituting the themes of the elusive and the professional clusters of the internship clinical education context from those relevant to the nature of the interns' clinical reasoning experience (section 5.2.2), traces of the interns' mental processes (example, decision making, clinical judgment and reasoning) are scattered within the meaning units of the internship clinical education context. This reflects the interrelationships between the interns' clinical reasoning experience and its context. This supports the subsequent recommendations stressing the importance of the inclusion of the clinical reasoning concept and its relevant outcomes (clinical judgments or decisions) into nursing program design or evaluation relevant to clinical nursing internship.

This educational context is the summation of the interactions of both the learners (nursing interns) and the clinical facilitators (nurse preceptors and CRNs) with various needs or difficulties occurring at the same time. Some of these needs are related to the educational experience itself and others are linked with the workload of the preceptors. Both parties are at ease by the end of the clinical rotation because most of the needs have been achieved and the major difficulties or problems have been bridged or resolved. The beginning is elusive because it is 'cloudy'; the interns

and their preceptors are looking for the parameters; the answers are there; the interns want to complete their assignments; and the preceptors are busy. They are really busy as their CRNs indicated, but the interns are feeling lonely and neglected as, at times, no one is answering their questions. They doubt both their decisions and their rationales, including those interns with a high GPA, because the clinical context is totally different. They struggle with the procedures, with total care, and with any encounter with the patients, especially the males, despite the advantage of being part of the same Saudi Arabian culture. It is also elusive because sometimes the different preceptors are sending contradictory messages about both the interns' scope of practice and the accountability component of the professional relationship between an intern and her preceptor who is the one accountable for intern's actions. This is why some interns felt controlled. It is elusive because the interns' parameter of feedback is 'fragility' and some of the CRN's welcoming behavior is a challenge to the interns.

The level of congruency between the descriptive statements of the interns and those of the clinical facilitators is at a level where the statements parallel and sometimes complement each other by providing the needed explanations. For example, all of the cautious interns indicated that they were asking questions because they were afraid of either encountering an error or causing harm to their patients. This might be the possible explanation for the interns' keenness to know-why as revealed by one of the CRNs. Another example is related to the non-answered of interns' questions about the 'why' and the 'how' of certain abilities, especially when searching for the answers themselves. Searching for their own answers is time consuming during the periods when they are busy with their many assignments. One CRN revealed that some preceptors are not forthcoming because they are not confident about their answers and sometimes they ask the intern to search for the answer themselves. Interns doubting patient assessment; identification of patient needs; and relevant interventions is a third example that might be answered by a CRN's statement indicating a gap between college-based knowledge and the real clinical situation. Such CRN responses mirror the statements of the interns with high GPA scores as discussed previously. Additionally, the task and routine oriented intern behavior revealed by the CRNs is a logical response for interns who are doubtful about their decisions and that about knowing-why consumed most of their confidence. Such

interns are unable to multitask while focusing on the many assignments they need to complete in this rotation. This might also be attributed to the lack of involvement by the intern in total care during their college preparation as highlighted by a CRN.

The doubts, emotions and low confidence levels of the intern group at the beginning of their internship rotation are similar to those encountered by new staff at the beginning of their employment (Zinsmeister & Schafer 2009). These authors added that new employees have reported a need to be independent which is congruent with the findings of this study. As one intern stated at the end of her rotation:

I don't want to go back to the dependent state.

Within this elusive stage and while the interns are feeling doubtful, shy and emotional, lonely and sometimes neglected, they are exhibiting a sense of responsibility towards their patients by being afraid of causing harm to them. This finding contradicts Benner, Tanner and Chesla's (2009) notion indicating that in novel situations, the novices and beginners feel non-responsible for the outcomes of their actions. Some interns in this study reported their reluctance to talk to the physicians or even to answer the phones in the unit because they doubted their knowledge or ability. This reluctance or fear could be attributed to their low self-confidence, but also might be related to them being afraid of providing incorrect information or being cautious because they are unable to provide the needed information—which shows a sense of responsibility. This cautious behavior could be one of the driving forces for them developing their professional habits. An intern reported a non-responsible behavior of not informing the primary nurse about the vital signs that she measured and documented at the beginning of her internship. Fortunately, by the end of her three months rotation the same intern revealed:

Now I will figure out solutions and will deal with it and let my preceptor know. I will keep considering my scope of practice.

The informants indicated that the first two to four weeks are the defining timeframe of this elusive stage that represents, as one CRN stated, a sad time in the internship. Therefore, the elusive stage of the internship experience is describing a combination

of behaviors experienced by the intern in the initial two to four weeks of internship as a result of indefinable educational parameters for both the intern and the facilitators (the CRN or the nurse preceptor). The behaviors include doubtful as not knowing why and how, being cautious, shy and emotional, feeling lonely and neglected, and irresponsible learning behavior. Within these behaviors is a driving force promising the development of the professional habits needed for professional practice.

The entry level expectations to professional practice at the end of any Bachelor of Nursing Science program include the graduate's ability to identify essential data indicative of acute changes in a patient's health status; initiate independent and collaborative actions to correct or minimize risk to patient health; know why these actions are relevant; and differentiate between problems needing immediate or subsequent action (Blanzola, Lendeman & King 2004).

When reflecting on the informants' meaning and their relevant themes about the professional development stage of internship to the previous set of entry level expectations, it is possible that the interns can fit one or more of these expectations. When listening to the informants, including the clinical facilitators and the interns themselves, one feels that he or she is no longer dealing with a student—that is, they have grown. Their sense of responsibility has grown; they are trusted; they reflect habitually; they ask if they do not know; they possess the required confidence; and their time management ability has improved. There is a high level of congruency between the interns' statements and those of the clinical facilitators. In certain situations, the CRNs' statements indicated a higher level of the interns' professional maturity and commitment than the interns themselves. Typical examples of this are the statements indicating a growing sense of responsibility which are relevant to the interns proposing practical solutions as active unit members. A single discrepancy, not related to the meaning units of the two groups but to the pervasive nature of the responses of the intern group, is observed in relation to the third theme indicative of a reflective habit. While most of the interns contributed to this theme, only two of the facilitators group (a CRN and a preceptor) added to it. This may be because the interns are involved in self-reflection and checking on this is not part of the CRNs' or the preceptors' clinical teaching strategies. As a CRN revealed:

I don't actually assess if they reflect on their actions.

The reflective habit is a cornerstone of the interns' professional stage where learning replaced blaming self and the interns' patient care assessments and interventions improved as a result of their reflections. This major outcome contrasts Benner's (1984) notion that novices do not reflect on their actions. Standing (2007) highlighted that students' clinical decision making involves reflection and critical thinking and Kuiper and Pesut (2004) indicated that these mental functions are desirable characteristics of professional practice in the United States and the United Kingdom. In this study the Saudi Arabian interns indicated that self-reflection aided in developing them personally, with one intern indicating its effect on anger control. This finding is supported by Kuiper and Pesut (2004) who indicated that reflection helps in developing understanding of values and beliefs which will have a subsequent effect on personal and professional practice.

The main theme of the professional cluster is the 'growing sense of responsibility' that contains developmental components related to the individual intern and to patient care. Both the interns and their clinical facilitators contributed to these areas of development. The statements show that the interns grew in their communication and time management, as well as in their reactions to patient care needs and interventions—especially in relation to weak performance areas. They also became able to fill the gaps in the unit nurses' care planning. In relation to their growing responsibility to their patients and their needs, the interns indicated that they have the rationales for all of their actions and they are complying totally with their scope of practice, hospital protocols, and professional code of conduct. The interns and their facilitators revealed that the interns are acknowledging their patients' needs and becoming accountable in responding to these needs. One intern provided a reason for this stating that they are doing it because they are dealing with real patients now. This sense of accountability is pervasive among most of the respondents' statements including the interns who, at the beginning of the rotation, felt controlled and even challenged by their preceptors or CRNs. This finding is particularly significant because, as per their scope of practice, the interns are only accountable for their learning as students and their preceptors are accountable for the patient care actions

undertaken by the interns. This is the reason why some of the preceptors were so conservative at the beginning and insisted continuously on the supervised practice of interns until they were deemed competent by the CRN in relation to the particular competency. Subsequently, part of the interns' confidence is linked with their competency level.

With their growing sense of responsibility and their ability and related rationality witnessed by the nursing unit, and after the patients are convinced of their ability to care for them, the interns felt that they were trusted and this trust was also conveyed by their clinical facilitators. They were trusted as they were able to determine patient problems following a comprehensive assessment and they were able to intervene and apply what they have learned in the clinical area. They were able to influence Saudi Arabian male patients and family members; and they acquired the needed confidence. The facilitators start testing while trusting. Eventually, they possessed the required passion and confidence that enabled them to perform spontaneously and safely and to convince others of what they were doing, including the physicians. They felt safe to ask; they started asking the right questions to the right people; and they knew how to find solutions and support as they verified their care plans with their preceptors.

This discussion indicates that the entry level expectations are scattered across the previous themes of the professional stage or cluster. The themes indicate that the interns are highly committed to their patients, profession, and practice organisation. This level of commitment is identified as one of the distinct criteria of professional practice (Taylor, Kermode & Roberts 2006). Rogers and Bailantyne (2010) identified the relationship and respect for patients, responsibility, self awareness and capacity for reflection, and collaboration and team work as essential domains of professional behavior. Therefore, the professional stage of the internship experience is a developmental stage of the intern that includes a growing sense of responsibility, being trusted, a reflective habit, asking when not knowing, being confident, and time management aware.

5.2.2 The nature of interns' clinical reasoning experience at the time of uncertainty

This section discusses the results relevant to interns' clinical reasoning experiences at the time of uncertainty as described by the interns themselves and their facilitators, the Clinical Resource Nurses and the nurse preceptors. The discussion will conclude by defining this experience and its relevant components (themes) after comparing the study findings with extracts from the clinical reasoning literature. The section starts with a reflective commentary documenting the researcher's reflexivity undertaken at the time of data collection and analysis. It highlights the researcher's personal development (Smith 2006) throughout these processes, as well as his preconceived beliefs and opinions about the phenomena under study (Polit & Beck 2010).

As stated earlier in the methodology section, the interns' clinical reasoning experience was the initial qualitative component examined when the qualitative data analysis was carried out to avoid possible contamination from other qualitative data. The two major sources that could impact on certain meanings relevant to the clinical reasoning phenomenon are the internship clinical teaching experience and the factors that impacted on these experiences. As indicated earlier when describing the internship clinical education experience as the context for the interns' clinical reasoning experiences, it was important that the researcher did not impact on the natural flow of the informants' ideas during the interviews but kept reflexive journals to document significant encounters throughout data collection and analysis. Some of these were incorporated into the text of section (4.3.2). Certain statements from the context and factors sections were imported into the audit trail of the results section of the interns' clinical reasoning experience to clarify certain informant statements. These segments are not incorporated into the interpreted meanings of the significant statements to avoid duplication of meanings.

The second area in this reflective commentary is relevant to the clinical reasoning and clinical judgment interview questions. The researcher started the initial interview with the pre-planned question that requested the informant to describe her clinical reasoning when undertaking non-routine clinical judgments. The researcher felt that the intern had difficulty understanding the question which may have been related to

her lack of proficiency in the English language as English was her second language. However, despite her good command of English she asked for the question to be rephrased. The intern responded to the question following clarification. The researcher reflected on this interview immediately after its conclusion and decided to start the second interview by requesting the informant to provide a description of her clinical judgment or decision making (the two terms are used interchangeably in this study). The alternative would have been to consult the researcher's supervisor for an opinion. Fortunately, the subsequent interviews went smoothly, including those with the clinical facilitators. It is worth mentioning that all the informants felt at ease throughout the interviews, especially during the second half where they started talking openly, freely, and neutrally. Meanwhile, the researcher constantly referred to the list of questions as a reminder of their content and sequencing.

The third area of this discussion is related to the questions that were added to provide further explanations regarding specific areas. These are the questions about an intern's clinical judgment and reasoning when assessing patients to identify significant cues and problems at the time of interventions and about their relationships with their patients. Asking these questions was of great help not only to clarify and explain the target areas, but also to provide further clarification, support and validation for other aspects targeted by the interview—especially the factors affecting the interns' clinical reasoning. The final area of this discussion is related to the zero impact of the initial results of the initial set of interviews with the interns on the subsequent interviews with the CRNs and nurse preceptors. For example, one of the major themes revealed from the intern interviews was the reasoning leap. Within the subsequent interviews with the CRNs and the preceptors, the researcher maintained neutrality and objectivity by not mentioning or hinting about the previously identified themes and complied with the flow of the pre-planned interview questions.

The qualitative results of this study which contribute to describing the nature of the interns' clinical reasoning at the time of uncertainty when undertaking non-routine clinical judgments were obtained from three different sources relevant to the internship process. This provided a broader view of the interns' clinical reasoning from different angles to allow a complete picture about this phenomenon. Each

perspective complemented and validated the other perspectives as a person triangulation tool (Polit & Beck, 2010). Central to these perspectives are the interns' views that reflect and describe what is happening in their minds when undertaking non-routine clinical judgments at the time of uncertainty. While the CRN undertakes the initial general orientation (usually in the first three days of the rotation) for the interns, officially they assesses their competencies and oversee the whole educational process but it is the nurse preceptor who runs the day-to-day training activities of the interns. This supervisory role is explained by a CRN who conveyed:

These days we are not working with the interns too closely, but we are looking at the overall situation and whenever is necessary we pick it up and we ask questions and then intervene if there is any problem. I don't assess if they reflect or not on their practice, but they incorporate their observations for the nurses in the evaluation form.

Part of the preceptors' role was revealed by another CRN who highlighted that the preceptors rarely challenge interns by asking them *why* and *what if* as they need to finish their work and the interns need to complete their many assignments. These statements and many others that are part of the subsequent factors' section indicated that both the facilitators (the CRN and the preceptor) perceived the interns clinical reasoning through the intern decisions that were communicated to them or carried out in front of them. Their contributions to the current study however are invaluable as they added another two dimensions to the data quality and they solidified the views regarding both the factors contributing to the development of the interns' clinical reasoning and the previous description of the internship clinical teaching experience as the context for the interns' clinical reasoning experience.

When comparing the essential structure of the interns' clinical reasoning experiences while undertaking non-routine clinical judgment described by the interns themselves with that of the facilitators, two key noteworthy differences are highlighted. The first is related to the reasoning leap and the second is linked with analyticity. While the interns' descriptions acknowledge the leap and consider it part of the reasoning developmental trajectory, the facilitator's description entails only the action impelled reasoning and analyticity. Interestingly, both descriptions view these reasoning stages as deliberative processes that are successive in nature. In other words, they are

forces or factors leading to the generation of the subsequent stage. The absence of the reasoning leap from the facilitators' overt descriptions is attributed to the personalised and internalised nature of this force that is monitored by a guiding rule controlled by the interns themselves. This might also be attributed to the competency-oriented internship training that focuses on a group of competencies as desired outcomes. This approach connects the clinical reasoning experience to the able-unable dichotomies which will eventually lead to the adoption of an outcome-oriented mentality guiding the clinical training.

The outcome focus is evident in the facilitators' descriptions in this section, as well as the descriptions of the three informant groups relevant to the internship clinical teaching experience. Another highlight worth noting and one that needs to be added to this analysis is the inference that might be formulated from certain factors included into the facilitator descriptions and the implicit meaning of a leap. For example, the interns' confidence as linked to their competence is one of the major factors that might give a sense of a reasoning leap because it gives the intern the ability to manipulate as revealed by one of the CRNs. This inference might be true if the study was exploring only the facilitators' descriptions of the interns' clinical reasoning while ignoring interns' perspectives. In this case, the theme would have been labeled and defined differently. However, interpreting the interns' confidence as a major factor contributing to their reasoning analyticity is congruent with the previous analysis linked to the competency-oriented approach to clinical instruction. The inclusion or exclusion of the reasoning leap onto the interns' reasoning processes does not situate the intern group in a better position than their facilitators, but it does show differences in perspectives between different people viewing the same phenomenon which, according to Polit and Beck (2010) and Schneider et al. (2013), validates the results and indicates a more complete and comprehensive research opportunity.

The second difference in the views of the interns and their facilitators is related to the 'analyticity' theme. While both reflect it as the final reasoning process of the interns' clinical reasoning trajectory, the interns refer to analyticity as their reasoning style. The theme states 'developing own style: analyticity' to reflect the intentional and deliberative nature of the interns' development of their reasoning style as reflected in

their statements. These statements and the researcher's associated interpreted meanings of the different decision trails of this section reflect the ownership and meaning identified in overt phrases or by the many 'I' pronouns in the interns statements. From the facilitators' perspectives, the partnership is the pervasive meaning as analyticity is always linked to experience and guidance. These differences imply decisiveness towards analyticity from the interns' side and awareness of its existence and importance from the facilitators' side. These assets could give more direction to the instructional designer when deciding on more workable clinical teaching strategies. This component will be discussed thoroughly at the end of this dissertation.

Finally, the congruency between the interns and their facilitators' descriptions of the interns' action impelled reasoning supports the previous notion that connects the facilitators' descriptions more with the competency based instruction and mentality. While both descriptions indicate a focus on the doing component of the individual skill and directing subsequent questions to grasp the relevant reason or parameter of this skill, the interns considered this as the safest and the most feasible form of reasoning to undertake clinical judgments connected to an action. To the observer or assessor of the skill this reflected the ability to perform the action safely. This beginning ability is perceived by the facilitators as a fragmented act or a decision that lacked comprehensiveness and, consequently, some facilitators labeled the interns' approach as task-oriented. While the facilitators accepted this as a way to attain the needed competence or to become familiar with the big picture, the interns viewed it as a driving force that triggered (or aided in) the generation of the reasoning leap.

Previous descriptions of the interns' clinical reasoning revealed a congruent overall view amongst the three informant groups that was enriched by a particular specific component linked to each group. The general overall perspective describes the interns' clinical reasoning as a developmental mental process within a medical-surgical clinical educational internship context that results in the development of the analytical reasoning style following the initial action impelled reasoning. While the facilitators' specific contribution entails a competency and outcome-oriented processes, the interns' addition to the previous general description and definition

includes a reasoning leap that facilitated the development of the ‘analyticity’ as the interns’ own style.

The clinical reasoning developmental journey that started with the action impelled reasoning required a background of scientific knowledge that demanded the interns to search for the reasons behind clinical decisions at the beginning of the rotation. The backbone scientific contextual knowledge (Benner, Hughes, & Sutphen in Hughes 2011), also referred to procedural knowledge (Petrina 2007), will help students attain a higher level of logical reasoning (Cholowski & Chan 2004) by using the reasons (Cerullo & daCruz 2010) or becoming able to reason as the clinical situation changes (Mahoney et al. 2012). At this initial stage, the interns were focusing on knowing the rationales behind actions and on performing certain tasks, rather than reflection on their actions (Gillespie & Paterson 2009). This ‘primitive’ form of reasoning of the action-oriented novices could not be placed into either of the sequential reasoning patterns (forward or backward) used by the specialists (nurses with more than 5 years of experience) as the novices did not attempt to acquire a comprehensive picture of the case (Andersson, Klang, & Petersson 2012). However, the intern in this stage of clinical reasoning development possessed a resourcing ability that provided her with the procedural knowledge essential for the development of the subsequent reasoning stages. Additionally, the action-impelled reasoning stage was an opportunity for the intern to get involved in patient care activities.

As the interns became more clinically involved and as they developed habits of procedural practice (Petrina 2007) and started to metacognitively monitoring and regulating their own practice (Su, Osisek, & Starnes 2005), they deliberately entered their reasoning leap as the second stage of their clinical reasoning development. The reasoning leap is triggered and guided mostly by the interns’ reflective habit. It is a deliberate form of reasoning energised by a powering source and monitored by a reasoning guiding rule by the intern herself to upgrade her reasoning to a higher level than the action impelled zone. While developing, monitoring and regulating their mental parameters, the interns started utilizing these mental chunks to grasp the wholeness of the case (Andersson, Klang, & Petersson 2012) or to detect a gap in the whole patient care picture. Vito-Thomas (2005) indicated that thinking is clarified

when reasoning skills are used to figure out what is wrong, what is right, and what could have caused the problem. Debourgh and Prion (2012) added that capable practitioners use knowledge in reasoning to function equally well in both familiar and unfamiliar situations. Analyticity is therefore defined as:

‘The deliberative reasoning style through which the intern reflects patient encounters to mental parameters that are developed throughout an experiential learning process that necessitates reflective practice and questioning components to undertake relevant routine and non-routine patient-care clinical judgments under conditions of uncertainty’.

This analyticity, as the interns’ own style, is a reasoning ability developed throughout deliberative, active processes. These processes are monitored by the intern who experiences a reasoning leap following action impelled reasoning, to build the mental parameters they need to undertake routine clinical judgments or to advise or participate in non-routine clinical judgments during their internship. The analyticity was developed by all of the intern learners. This development included those with a high GPA and others who were struggling with the abbreviations and disease processes. Even those who felt challenged by their facilitators, those who followed promptly the steps of their preceptors, and those who were shy and afraid to answer any phone call to the unit or who decided not to follow their scope of practice, experienced this development. It is of interest to note that all of these interns have grown professionally by the end of their rotation. They also developed their analyticity style while preserving the unique nature of their clinical reasoning and clinical learning journey.

Another noteworthy discussion area related to the clinical facilitators’ competency-based contribution is the applicability and feasibility of the action impelled-analyticity dichotomy to oversee the competency-based and outcome-oriented clinical reasoning relevant to individual competencies. This was attained by applying the principles that facilitated the development of the action impelled and the analyticity reasoning styles considering interns’ views as learners regarding the reasoning leap; and the facilitators’ views regarding the attainment of the guiding principles for these competencies. The competency based training and the reasoning developmental trajectory will be discussed at the end of this chapter after the factors that impacted on the succession journey of interns’ clinical reasoning are revealed.

The terms ‘uncertainty’ and ‘non-routine’ were used interchangeably in the literature review chapter as part of the conceptualisation relevant to clinical judgment. It became evident when analyzing the results of this section and the earlier section describing the internship clinical education context that the non-routine clinical judgments were those encountered at a time when the intern had no previous relevant clinical experience in these judgments. These are considered as routine clinical judgments following several successful exposures to the initial experience. A level of uncertainty was also experienced by the interns when attending to a familiar task but one now being performed with another preceptor. This occurred throughout the internship rotation.

Thompson and Dowding (2002) and Alfaro-LeFevre (2004) have commented on this in the literature stating that clinical decisions, including the familiar ones, are accompanied by a level of uncertainty. Therefore, the researcher included the two concepts into the definitions of the reasoning and the judgment processes experienced by the interns or witnessed by the clinical facilitators. Further supportive discussion is included in the next section that discusses the factors affecting the interns’ clinical reasoning, including the facilitation of their preceptorship experience by some of the preceptors.

When reflecting on the clinical reasoning findings of this study and both the major assumptions about the interns and the findings of the literature, the resulting major inferences support the previously stated assumption that asserts that the interns possessed a group of behaviors or characteristics throughout their internship that melded beginners’ behavior with more experienced behavior. The findings are congruent with those of Garrett (2005) which emphasized that students in their final year were connecting their expertise in decision making with their ability to replicate context specific knowledge in concrete experiences.

Academic success did not play a significant role in the interns’ decision making ability development, which reflects Botti and Reeve’s (2003) opinions. These authors assert that academic ability only assisted students with low complex problem solving tasks relevant to medical-surgical content. The findings relevant to the interns

clinical reasoning when coupled with their professional development journey within the internship context parallel those of Standing (2007) that indicated an enhanced knowledge, critical thinking, and mental processes coupled with a perceived sense of accountability among students throughout their undergraduate program. Standing's (2007) approach differs from the neutral non-interventional approach of this study with its utilisation of reflective journaling as a data collection mean which impacted positively on these mental processes. While recognising the interns' growing professional behavior, some of the interns located in patient long term areas found the work static as they were looking for more challenging decision making opportunities. This was reflected in a CRN's contribution:

None of the interns who trained here came back as a staff nurse...the work is static...they like challenging, dynamic units.

This is congruent with the notion of Hoffman, Duffield and Donoghue (2004) who found that nurses who have a professional orientation experienced more decision making participation. The professional behaviors of these interns as beginners could be seen, according to Oliver and Butler (2004), as also shaping their expert behaviors which are directed more to the welfare of patients and families. This is reflected in the many patient advocacy statements of the interns and in certain recommendations of these interns when considering the holistic nursing care. One intern recommended the initiation of spiritual care and another focused on the psychological aspects of nursing care that were not attended to by the unit nurses. The major aspect of experts' practice identified in the interns' behavior was the self-modification of their reasoning rules and processes. This was evident in their engagement in their reasoning leaps which then transferred their reasoning to a higher level. This experts' behavior is documented in the work of Benner, Tanner and Chesla (2009) who noted that experts reflect on the goals they see as evident and the actions that they then see as appropriate to these goals.

Benner, Tanner and Chesla (2009) asserted that the use of calculative rationality by less experienced nurses; and when the previous reflective strategy is considered, these can be seen as a significant attribute of the deliberative rationality. Most of the interns indicated that their reasoning leap was the product of their reflective

processes and the force energising their leap was controlled by a guiding rule monitored by the intern herself. Analyticity is the product of this reasoning leap that resulted in making (or participating in) clinical decisions related to patient assessments and interventions or even managing encounters while performing certain procedures. This deliberative (reflective) and step-by-step (calculative) thought process is similar to Hammond's (2007) robust flexibility. Portion of this thought process reflects what Tanner (2006) described in her integrative review as analytical processes. Tanner's (2006) view stems from the information processing research that asserts the generation of several alternatives and the weighing of these through analytical processes against their likelihood to produce a desired outcome. The nurse might search for further information to eliminate or confirm an alternative (Lin, Hgu & Tasy 2003). This is congruent with the interns' approach of analysing and weighing patient care data against their mental parameters and then consulting their CRN or nurse preceptor to confirm or refine these clinical judgments.

Common to most clinical reasoning definitions are gathering of information, interpreting, deciding on actions and reflection (Hoffman et al. 2011). These steps were maintained by the interns in their analyticity. When reflecting the clinical encounters to their mental pictures while interpreting, a holistic perceptual grasp is witnessed. Evidence of clinical reasoning research (Andersson, Klang, & Petersson 2012; Marcum 2012; Banning 2008) support these notions. Moreover, the analyticity result is explained by the mean of type two heuristic (essential similarity) which asserts an overall holistic perception (Ferrario 2003).

Some of the interns relied on the expertise of clinical mentors to evaluate their rationales and clinical judgments and sometimes referred back to them to confirm their clinical judgments. Alfaro-LeFevre (2004) highlighted that these mentors and role models can help in clarifying thoughts and goals more effectively than any textbook. This was the reason for including this questioning behavior and reflective thought into the components of the intern clinical reasoning processes. These two components (questioning and reflection) were previously considered as part of the interns' developmental process towards professional practice. The dual placement of the questioning and the reflective components into both the internship teaching and the clinical reasoning processes signifies the consideration of the knowing why

(reasoning) aspect as incorporated into the professional entry level expectations (Blanzola, Lindeman & King 2004).

5.2.3 Factors affecting interns' clinical reasoning

Another central feature contributing to this study was added to the previous components of the interns' clinical reasoning in an internship clinical educational context. This occurred when compiling the factors impacting on the interns' clinical reasoning as a developmental process to those affecting their internship clinical educational processes. The interns' clinical reasoning processes at the time of uncertainty interact within the elusive and the professional internship processes to produce a more stable clinical reasoning style called 'analyticity'. The central clinical reasoning processes are affected by the contextual internship processes which may represent the first set of scattered factors impacting on the interns' clinical reasoning as a developmental process or its components. The impact of the internship developmental processes on the clinical reasoning processes of the interns can be viewed within the various themes of both the elusive and the professional stages of this internship contextual milieu. Each preceding micro process of the three micro processes of the interns' clinical reasoning experiences represents a driving force for the subsequent micro-process. For example, the interns act relevant to the action-impelled reasoning and is linked to a reason substantiating this act and to a goal directing its processes. When the intern is experiencing and developing her reasoning leap, she is experiencing an energising force and a guiding rule controlling the processes of this leap and monitoring its outcomes. The reason and the goal of the act relevant to the action impelled reasoning might act as deriving forces for the energising force and the guiding rule of the reasoning leap of each individualised reasoning experience. The latter action impelled reasoning and its energising force and guiding rule constitute a factor impacting on the interns' analyticity.

These factors are relevant to the individualised experiences of the interns that served a particular case throughout their internship clinical learning and teaching processes. What is so crucial about these individualised experiences is the invariant features among their processes that resulted in the formulation of the three clinical reasoning micro-processes (action-impelled, the leap, and analyticity). Within both the inner

clinical reasoning and the contextual internship processes, three groups of more stable and tangible factors are interacting to impact on the development of both processes to produce the targeted outcomes, analyticity and professional practice. The group or factor clusters are the unit attitude towards the learners, the interns' learning behavior, and being accepted by the patients. Interestingly, while the informants of the three groups were contributing to these themes, they provided certain answers to the individual variant features incorporated into other informants' statements which in turn provided a comprehensive picture about the factors contributing to the clinical reasoning and the internship developmental journeys.

Three themes were identified within the unit attitude towards the learners. These are the 'CRN support', the 'preceptor's support', and the 'nurses' and health care team support'. The 'CRN support' as a theme is reflected as an invariant feature within the interns' and the CRN informants' statements. The nurse preceptors did not contribute to this theme. Two of the statements are negatively featured, indicating a detached CRN but indirectly reflecting the importance of CRN support as a factor affecting both the internship and the clinical reasoning experiences. Babbie (2007) referred to these cases that do not fit into the regular pattern as deviant cases. Streubert and Carpenter (2011) urged researchers to ask the informants for negative descriptions of the phenomenon which hold a hypothetical nature but will contribute to data authenticity and trustworthiness after comparing the negative descriptions with the actual ones. The two significant statements of the intern informants can be considered as deviant cases that gives an invariant feature of the 'detached CRN' which conveys, as a theme, the opposite meaning of 'CRN support'. Therefore, these statements can also be considered as a negative description of the 'CRN support' since the intern informants intentionally and neutrally described what the CRN was actually doing to help them develop their clinical reasoning abilities. Nevertheless, it is possible have either one theme with two negative or deviant cases or two themes describing a phenomenon and its antonym.

Since this study is describing a factor that might have both deriving and impeding facets, the researcher has opted to have one theme or factor that is detailed within the discussion. The two sets of significant statements by the interns and their CRNs provided various examples for the type of support afforded by different CRNs. The

clinical reasoning support included asking and answering questions, giving assignments and case studies, validating interns' readings, analysing cases and linking various aspects of care together, providing constructive feedback throughout the rotation, a lot of positive feedback at the beginning, and evaluating the preceptors' feedback. The general support for their internship learning experience included examples such as providing them with the initial unit orientation, having regular meetings, working with them to minimize the risk of being rejected by the patients and how to minimize their worries when dealing with male patients or family members, stressing collegiality, and monitoring the overall process.

This list offers a workable means to enhance the interns' clinical reasoning and internship experiences and can serve as a guide for these processes. Unfortunately, the term feedback appeared only twice in the clinical facilitators' statements. According to Hammond (2007) this essential tool should be part of any clinical reasoning offering. Nevertheless, the clinical reasoning picture should be completed to allow for workable prescriptive recommendations.

The critical factor or theme in this cluster is 'preceptor support', but more appropriately called 'preceptor lack of support', since only one intern informant indicated receiving that support at the beginning of the rotation—the most overwhelming time in the rotation. In this study the researcher called it 'preceptor support' because it was a mixture of both, where most of the support needed by the interns occurred at the end of the rotation. Support was limited at the beginning of the rotation because, as the CRN group indicated, both parties are busy. The preceptors have busy schedules of patient assignments and there are many assignments that the interns need to complete. Furthermore, the flawed perceptions the preceptors had about the interns' level made it more difficult for the interns. The preceptors are usually comparing the interns' level to their own level and their support is limited to what the students know. Therefore, the interns followed exactly the preceptors' steps or sometimes they requested a change in their preceptor. Others tried to find another clinical supporter as in the case of the intern who felt challenged at the beginning and then she had the nurse coordinator as a mentor.

Despite contradicting the research descriptive philosophy that governs its qualitative component and the previous CRN interpretations about the limited preceptor support of the interns during their internship training and clinical reasoning, they are incorporated cautiously into this section for more clarification. These interpretations may serve as descriptions of what the CRNs have in mind regarding this area which will add more 'elusivity' to the initial stage of the internship experience which eventually impacted on the interns' clinical judgment and reasoning. The immersion of the nurse in day-to-day patient care will result in a master-apprenticeship relationship (Wotton & Gonda 2004) which gives an explanation for the adopted task-driven facilitation of the nurse preceptors and the action-impelled reasoning of the interns. One preceptor contrasted this contention by describing how she was guiding her intern, evaluating her judgments, and even reflecting with her on certain patient care criteria. On the CRN side, they indicated that they are overseeing the overall picture by meeting with the interns on a daily basis and listening to their feedback.

Another CRN indicated that she used to attend the preceptor's feedback session with her intern to evaluate how the preceptor was providing feedback. ((What the researcher is attempting to do here is to analyse the situation from different angles to provide a full description of the components of the unit attitude towards learners as a major factor cluster impacting either the internship experience or the clinical reasoning experience of the intern)). The reason for these encounters and inconsistencies might be attributed to the broad criteria used to assess preceptor educational offerings as reflection, feedback and experiential learning (Tanda & Denham 2009). The interns' statements describe both the 'no support' at the beginning and the 'support' after the initial month as reflected in the interns' statements or phrases such as 'she brought me up' and 'testing while trusting'. This factor (or theme) describes a preceptor's openness to the presence of the intern and her inclusion in every day practice (Grealish & Smale 2011) to meet entry level requirements for professional practice including an intern's proper substantiation of clinical decisions. This proof (or reason) that reflects the intern's clinical reasoning ability is an individual responsibility as indicated by the entry level criteria, as well as the responsibility of the CRN as the clinical educator responsible for overseeing the entire clinical educational experience.

The third factor of the unit support cluster is the ‘nurses and health team support’ which refers to the team’s support in conveying a welcoming behavior, answering interns’ questions, and inviting them to casual learning opportunities. As indicated in the results section relevant to this theme, the interns highlighted this support as a requirement and as a need when incorporated into their statements about positive and negative support encounters. The physicians who are interested in having more Saudi Arabian nurses in the clinical areas, as conveyed by a CRN, and who were so supportive throughout the rotation might be unaware of the interns’ fear and reluctance during the doctors’ rounds at the beginning of the rotation. A simple orientation session for the medical and other unit staff at the beginning of the rotation or an introductory comment by the preceptor when starting the round would assist these newcomers. A thorough set of recommendations will be presented following this chapter.

Finally, the unit attitude towards learners represents a critical component in supporting the overwhelmed learners who are seeking conducive, and sometimes challenging, learning opportunities to enable them attain their goal of undertaking reasoned clinical judgments and becoming part of the nursing workforce. Wooton and Gonda (2004) describe Dedicated Education Units (DEU) as optimal and flexible learning environments for nursing students. A similar initiative was adopted by the teaching hospital of the intern cohort involved in this study. Nursing Clinical Teaching Units (NCTUs) were implemented where sufficient numbers of trained preceptors are made available to provide needed learning opportunities to the undergraduate nursing students. Those interns who felt lonely and neglected encountered a lack of or little or no educational support from their assigned preceptors—a noteworthy qualitative result that determines the preceptor’s core responsibility in shaping the unit attitude toward learners.

The role of the clinical tutor (Baxter & Rideout 2006) and the nurse clinician (McCarthy & Murphy 2007; Tanda & Denham 2009; Wotton & Gonda 2004) in enhancing students’ clinical decision making is emphasised in the literature. The success story of one intern informant (intern H) whose training unit was particularly supportive is documented in this study. The three support constituents of the CRN,

the unit preceptors and the unit staff, including the physicians and other health workers, were evident in this success story.

The second cluster of factors refers to the ‘intern’s learning behavior’ and includes the themes ‘previous knowledge and experience’, ‘my readings’, and ‘the female Saudi Arabian learner’. The previous knowledge and clinical experience refers to the knowledge and skills components, or what an intern called ‘separated pieces’, attained and retained throughout the four year studentship college period and then retrieved to support a relevant clinical situation in their internship. This meaning or invariant feature within the informant’s statements is considered a factor that impacts on both the interns’ clinical reasoning and the subsequent clinical judgment at the time of uncertainty. These statements highlighted the type of impact these ‘separated pieces’ had on the interns’ clinical reasoning. This provided a comprehensive picture about this factor and enriched the subsequent research recommendations. Despite the majority of the informant statements indicating that these pieces need refinement and are sometimes old or distorted, a statement from a preceptor indicated that their previous studentship knowledge and experience motivated them. While searching through other informants’ statements for supportive statements for this motivation component, two interns’ experiences indicated their focus on patient assessment as a component they are familiar with from college. One of these statements refers to the intern who felt challenged at the beginning of her rotation and, when deciding to prove something to her CRN and her preceptor, she focused on patient assessment and physical examination. When this intern realised that she required something more than these abilities that cannot be attained through readings, she started relying on her Nurse Coordinator’s clinical expertise while also continuing her reading habit.

Another intern who also relied on her assessment abilities discovered that she was skipping important steps in an attempt to save time, and then she followed the preceptor’s steps to improve her assessment and subsequently her intervention decisions. A CRN who used to assess their previous knowledge before starting any case discussion with them indicated that their previous college case scenarios are good for their thought processes. The CRN did not elaborate on the thought processes she was talking about. After referring back to the statements relevant to the interns’ clinical reasoning experiences, a supportive statement from a preceptor and a

refuting statement from an intern were located. While the preceptor's statement indicated that those who commence with the guiding principles will have the required confidence after completing their competency assessment, the intern statement showed that the 'story' is totally different. The intern thought that her good academic background as indicated by her high GPA would give her the needed confidence. This intern added that she was seeing without knowing why and then she decided to 'do it once, put it in mind, and then it will become automatic', which is congruent with what participants in Garrett's (2005) indicated. These students were interested in reproducing the context-specific knowledge in concrete experiences (Garrett 2005).

According to Botti and Reeve (2003), the students' academic ability aided them only in decision making related to low complex tasks. The separated pieces or what Benner and colleagues (2009) called context free knowledge, also refers to declarative knowledge (Petrina 2007); and when added to the procedural knowledge or technical knowledge in practice will then be called socio-technical knowledge (Petrina 2007). The ultimate goal then is to internalise knowledge and develop habits of socio-technical routine practice (Petrina 2007). This is congruent with Garrett's (2005) findings and with the rule of the intern with the high GPA. Interestingly, this intern is the one who indicated that the college knowledge is old, which substantiated her own rule. Nevertheless, this background needs to be assessed before and sometimes after clinical encounters, as indicated by one preceptor when reflecting on that particular encounter.

'My readings' is the second theme of the 'interns' learning behavior' cluster that gives shape and ownership to what they are reading and provides them with the knowledge needed for their reasoning processes. This is indicated by an intern who shared:

To start reasoning, you need to know the reason.

This notion, when coupled with another intern's statement which asserts that reading while experiencing will help develop mental chunks, will help in better understanding the role of these readings in developing an intern's own clinical

reasoning style. The new clinical encounter was analysed and compared to a relevant chunk to undertake a pertinent action, idea or answer. Sometimes the intern needs the clinical facilitator or mentor to put it together by providing a direct answer, a question, or a direction for further reading. This was asserted by all the informants, including the interns and their clinical facilitators. These processes of obtaining declarative knowledge through readings, coupled with the procedural knowledge and relevant discussion with the clinical facilitator, are the essence of Petrina's (2007) socio-technical knowledge.

The final factor of the 'interns' learning behavior' cluster is the 'female Saudi Arabian learner'. As stated earlier in the results chapter, the idea for this question came from a non Saudi Arabian female CRN. This CRN's interpretation was not supported by intern descriptions but rather by other CRNs' interpretive statements or incomplete descriptions. The relevant statements came from the preceptors who indicated the strong personalities of these Saudi Arabian interns who summoned the courage to question the doctors' orders after being unable to read the orders or even respond to telephone calls to the unit. They challenged themselves and presented in-service sessions to nursing audiences about difficult or unfamiliar topics. Their reasoning encounters, especially the deliberate reasoning leap, added further support or significance to the invariant feature or meaning linked to this theme. This conveys a decisive deliberative behavior of a female Saudi Arabian intern who is capable of developing her own reasoning style and professional abilities while encountering the difficulties of an elusive internship stage that are amplified by the Saudi Arabian social male-female constraints.

The third cluster contains only one factor theme that holds the same label, 'being accepted by the patients'. This theme or factor is the result of a clarifying question regarding the interns' relationship with their patients. This was a significant quantitative finding that needed further clarification in this qualitative stage. The need was generated by the absence of significant relationships for this variable with other quantitative variables, except with the interns' GPA. The variable also indicated a significant improvement at the end of the medical-surgical rotations. The other relevant quantitative variable that was amenable for similar encounters was the intern's need for no prompting in initiating a therapeutic relationship with her

patients. This variable had a single significant negative relationship with a clinical judgment independence component. These relationships and their relevant clarifying qualitative components will be discussed in the discussion section that ‘mixes’ the qualitative and the quantitative sets together for a better description and explanation of the interns’ clinical reasoning phenomenon and its relevant associations. The current theme, however, is supported by statements from almost all of the interview informants. Some of the interns were accepted by their patients and gained their trust as a result of their overall professional or clinical reasoning development. Benner, Tanner and Chesla (2009) indicated that the competent practitioner feels responsible and emotionally involved—which results in a difficulty to draw back. An earlier preceptor statement that supports the professional cluster is the following:

With the patient who needed to have his Foley catheter reinserted, she said: I won’t leave the patient like this and go home, and she inserted the Foley...it was the right decision.

While some informants indicated that the patients’ acceptance of the interns as care providers came as a result of them being from the same culture and using the same language, others contrasted that and indicated that showing the patients they were confident was the key. This adds to the previous factor that highlighted their extraordinary efforts as Saudi Arabian females to start their professional practice being focused and having relevant goals, even for dealing with male patients.

A noteworthy set of statements agreed on the feature of this theme that the interns were accepted by their patients as care providers but provided some clarifications for the previously mentioned significant quantitative results. The first significant statement came from a CRN who indicated that they are accepted as Saudi Arabians only to do assessments at the beginning of the rotation. After the competency assessments, they have acquired the confidence to enable them to initiate nursing care interventions. This meaning is extracted from the facilitators’ statements relevant to the analyticity reasoning style. The other two significant statements came from a CRN and a preceptor who indicated that part of the acceptance is attributed to the presence of either the CRN or the preceptor with the intern while performing certain procedures. This set of statements indicates that the interns are partially accepted by the patient but sometimes need the facilitator’s presence to start a

therapeutic relationship with the patient. Nevertheless, these encounters contributed to the interns' confidence; the most pervasive term in the 'being accepted by the patients' theme. Benner, Tanner and Chesla (2009) indicated that, with repetition, the competent practitioner will become familiar with risky decisions as they become more routine.

5.2.4 Summary and reflective commentary

The previous discussion sections of the qualitative results have provided thorough analyses of the three major areas of results relevant to the internship educational experience, the interns' clinical reasoning experience, and the factors impacting on these processes. These analyses were carried out by comparing and contrasting different sets of data collected from the three informant groups with each other and then reflecting and comparing these sets to the literature relevant to each component for further comparison and contrasting. Throughout the analysis processes, including the data transformation processes and the final validation step, a continuous movement between the decision trails, the major summarising sheets, the interview transcripts, and the audiotapes was employed for precision and clarity. This continuous contact and interaction has resulted in the initiation of an intimate relationship with these data sources. The informants' cases became well known to the researcher and their statements were called upon when needed to support relevant descriptions or discussions. This clarity was attained by way of well-controlled processes of data tabulation, transcription and storage by the researcher.

The second set of tools that contributed to the trustworthiness of the study data entails the reflective discussions with the primary academic supervisor and the use of the reflexive notes. While the former has contributed to selecting proper clusters', themes', and essential structures' labels, the reflexive notes have contributed to separate data sets into the internship and the clinical reasoning processes and the factors contributing to these processes. This separation has resulted in describing the internship clinical education experience as the context of the interns' clinical reasoning and clinical judgment process. This process contributed to the bracketing process employed throughout the various steps of this study. It is considered a

bracketing tool because it provided a natural and neutral description of the study context by the three groups of informants without the interference of the researcher who is familiar with some of these aspects but not to the extent of the insiders. Despite being interrelated, this process bracketed the informants' knowledge about this context that could have interfered with their descriptions of the clinical reasoning processes. It was bracketed and described separately from the clinical reasoning processes. This separation that utilised the entry level requirements as criteria (Blanzola, Lindeman & King 2004) has resulted in better understanding of the clinical educational processes when integrated to meet professional development requirements. This approach is similar to Standing's (2007) approach that resulted in what that author called decision characteristics that are similar to certain professional components revealed by this study. These decision characteristics identified by Standing (2007) also include factors and reasoning patterns which may create some confusion for the instructional designer who is striving to achieve the maximum potential for undergraduate nursing programs or similar internship programs.

The findings of this study have resulted in a logical and scientific grouping of the reasoning processes and the components of the internship clinical educational context and the factors affecting these processes and components. Standing (2007) indicated that the student experience has changed to experience and intuition and their decision making involves critical thinking and reflection. Intuition as a reasoning style or pattern that asserts responding with little evidence without calculative rationality (Benner, Tanner & Chesla 2009) was not described by the interns in this study. The approach of this study that recognizes intuition as an innate tendency will be discussed in the next section which details the mixed results of the qualitative and quantitative phases. The third reasoning style or pattern identified in Tanner's (2006) integrative review and modified by this researcher is the narrative-reflective style that was described in one separate statement by an intern who indicated that she used to discuss with her colleagues certain clinical concerns and cases and she used to revise her approach accordingly as she learned from the discussion.

The features of interns' analyticity is congruent with the general features of reasoning processes found in the literature (Hoffman et al. 2011) and also can be

explained by the mean of type two heuristic (essential similarity) which asserts an overall holistic perception (Ferrario 2003). A more detailed explanation of the interns' reasoning processes was not the target of the current study that focused primarily on describing the trajectory of interns' clinical reasoning throughout an internship experience. The detailed clinical reasoning cycle (Hoffman et al. 2011) or the cognitive operators used in reasoning (Banning 2008) might be excellent tools that can be incorporated into future interventions to enhance interns' clinical reasoning. These processes can replace the traditional nursing process to guide interns' clinical practice. Further discussion is incorporated into chapter six (section 6.2).

Throughout data collection and analysis, the researcher maintained methodological congruence of the study data (Burns & Grove 2005) by remaining within the epistemological zone to ensure proper description rather than interpretation of the phenomena by the three informant groups. This adherence to the Husserlian philosophy (Strebert & Carpenter 2011) is employed by referring all the informants' statements to the descriptive-interpretive criteria and including only the descriptive statements when reflecting on the invariant features of the theme, cluster, or essential structure of a phenomenon. Some of the participants' interpretations are included for clarification and comparative purposes where these statements are highlighted within the relevant texts.

The CRNs' interpretations relevant to the theme 'The female Saudi learner' is a major example relevant to this. These interpretations are contrasted by the preceptors' and the interns' descriptions. This resulted in considering the theme a driving force contributing to the development of the interns' clinical reasoning and professional abilities and a major strength in the interns' abilities. These processes strengthened the researcher's confidence in the data and the relevant interpretations which contributed to the credibility of the data and results (Polit & Beck 2010). The governing umbrella for all of these processes is the precise and prompt adherence to Giorgi's (2012) analysis framework.

These processes have resulted in a comprehensive description of the interns' clinical reasoning at the time of uncertainty when undertaking non-routine clinical judgment

for adult medical or surgical patients. This description entails a deliberative process that results in the development of the intern's own style: analyticity that comprises reflective and questioning thought components.

The reflective, questioning behavior is a core component of the internship educational processes that resulted in the interns developing the needed professional behavior as an entry level requirement. These processes were affected by the unit behavior towards the learners, the interns' learning behavior, and being accepted by the patients. In addition to its benefit in triangulation, the presence of the CRNs and nurse preceptors as informants in this study has contributed to the essential structure of the interns' clinical reasoning by diverging from the interns' descriptions to a process that includes only the action impelled reasoning and the analyticity. These differences in both descriptions have been taken into consideration when stating the recommendations and the implications of this study in the concluding chapter. Experience is a major factor revealed by the various sets of clusters, themes and processes of this qualitative part. The interns' experience is the core of the subsequent section that will meld both the qualitative and the quantitative components of this study.

5.3 The essence of mixing

The adoption of the explanatory design, previously called sequential explanatory mixed method design (Richardson-Tench et al. 2011), facilitated a full and comprehensive understanding of the complex nature of the interns' clinical reasoning phenomenon at the time of uncertainty when undertaking routine and non-routine clinical judgments during their medical or surgical internship rotation. This understanding was attained by exploring first the impact of the experience on the interns' overall clinical reasoning behavior, on their independence in clinical reasoning and clinical judgment, and on their rational-intuitive tendencies. Within this initial quantitative stage, certain relationships were established between various variables.

This stage resulted in valid and crucial findings relevant to the interns' clinical reasoning phenomenon that indicated significant improvement in the interns' overall

reasoning behavior and most of its components, including a significant dominance of the rational, analytical style above other reasoning styles incorporated into the CRACS. Additionally, the independence in clinical judgment and reasoning witnessed significant improvements in some of their patient care components by the completion of the rotation. The major question that remained unanswered to complete the picture about the nature of the interns' clinical reasoning at the time of uncertainty is how these improvements occurred. This entailed also exploring the factors that facilitated these improvements. The interns' relationships with their patients also needed further exploration and explanation. These targets were attained through the qualitative part of the study that adopted in-depth, semi-structured interviews to answer these remaining questions.

The quantitative and then the qualitative results were discussed thoroughly in the previous discussion sections (5.1 and 5.2 respectively). This section will now meld the two sets of results to present the complete picture of the nature of the interns' clinical reasoning at the time of uncertainty in a medical or surgical internship clinical educational context. It is not intended in this section to repeat the previous valid and trustworthy results but to take them to a higher level through a deeper analysis of their components. Bazeley (in Andrew & Halcomb 2009, pp. 84-117) and Creswell and Zhang (2009) recommended that the mixing or the integration of quantitative and qualitative results occur in the final discussion after presenting each of these components separately.

Analyticity or the interns' own reasoning style is the central finding confirmed in both sections of this study. This special type of reasoning is developed throughout a series of deliberative reasoning stages within the internship educational context. This resulted in growing professional abilities which impacted on the interns' developed analyticity (figure 5.1).

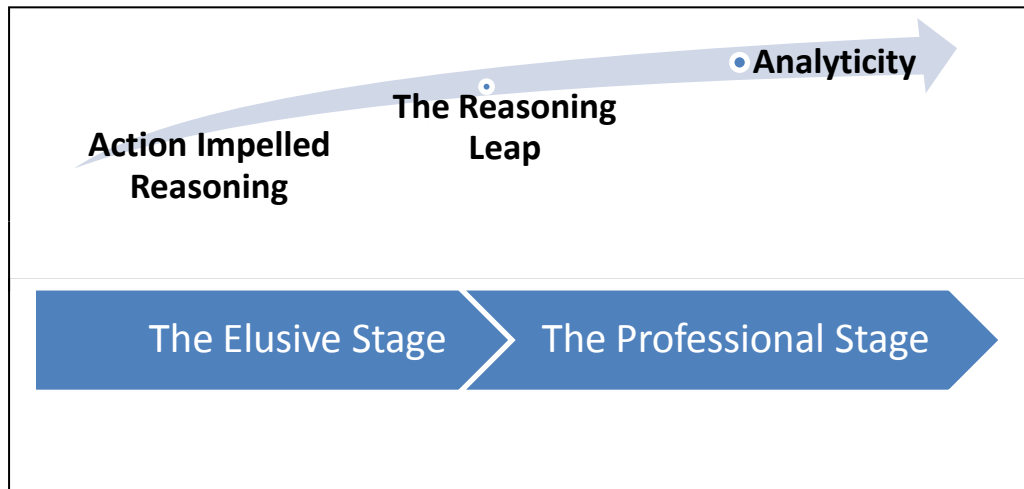


Figure 5.1: Interns' Clinical Reasoning Contextual Model.

In this reasoning style, the learner reflects the encounter to a mental parameter developed through an experiential learning process that necessitates reflective and questioning components to undertake a clinical judgment under conditions of uncertainty. These reflective and questioning habits are also components of the professional stage that developed throughout the internship educational experience. When the decision component does not match the mental parameter, the intern asked a relevant question to the proper source in order to create a relevant mental parameter. These parameters are in continuous interaction with the clinical realities and answer to the uncertainties linked with clinical judgments. This form of reasoning is similar to the analytical processes described by Tanner (2006) based on the information processing views and the step by step defensible, analytical thought highlighted by Hammond (2007).

The important role of 'reflection-on-action' as a vital component of the reasoning processes is also identified in Hoffman's (2007, cited in Levett-Jones et al. 2010) clinical reasoning cycle. At the end of the rotation, the intern becomes faster as a critical component of the developing professional practice. These processes are affected by the unit attitude towards the learners, the learner's attitude towards learning, and being accepted by the patients. With repetition, the intern's actions become timely and more flexible; or more automatic, as reported by the interns. This flexibility is central to both the intuitive and the information processing clinical reasoning and judgment research identified by Benner, Tanner and Chesla (2009) and Thompson and Dowding (2002). Intuitive reasoning or judging without

calculative rationality has not been reported qualitatively as a style utilised by the interns in their non-routine clinical judgments in this study.

Two components relevant to the analytical style are identified within the quantitative part of this study. One is incorporated into the CRACS and labeled as the rational style and the other is incorporated into the Taggart and Valenzi scale (1990) and is called the rational tendency. The rational-intuitive tendency is introduced to this study based on a relevant assumption asserting the individual innate rational-intuitive tendencies. The quantitative results showed that the analytical, rational and intuitive thoughts are inseparable but the analytical, rational tendency more frequently described the interns' self rather than the intuitive components throughout the entire rotation. At the beginning of the rotation, the insight mode triggered the intuitive reasoning style, linked to the analytical, rational style, which impacted on the interns' independence in clinical reasoning when identifying significant cues in patient assessments. The latter was chained to the remaining reasoning components. These supportive, complementary mechanisms were employed by the interns to complete the verification gaps by anticipating or suddenly recognising either the whole display (routine intuition) of a mental presentation of an idea or a gap in this whole display (absolute intuition). The background studentship information and/or the intern's readings or questioning behavior were critical to these processes. This process of conveying the 'knowing why' component of an ability provided the student with the minimal control requirements at this elusive stage.

At the same time the intern targeted familiar fragmented tasks or promptly followed the preceptor's steps to 'show how' her ability regarding a particular clinical component. These minimal gains were retained in the intern's memory as a picture, a chunk, or even a heuristic that served a particular encounter at the time of uncertainty. The intuitive tendency and its relevant modes continue supporting the analytical, rational thought throughout the internship rotation by becoming closer and by having more links with the rational tendency and its modes. At the end of the rotation and while keeping its links with the rational tendency, the intuitive tendency starts to support the reflective thought that is closely linked with the analytical, rational style. The reflective thought that supported the intern earlier in her reasoning leap to know the next step in the patient's care started to become a reflective habit

supported by the intern's intuitive tendency. The other component that was never far from the intern's mental processes was her confidence.

Throughout the internship rotation, the interns' confidence was redirected until conjoined at the end of the rotation to their analyticity and becoming part of the team. This is supported by the pervasive appearance of the interns' confidence in the 'being accepted by the patients' theme. This might be the reason for not having significant quantitative links between the intern-patient relationships and other variables since the intern's prime interest is to become part of the team which will bring her closer to her patients. At the beginning of the rotation, interns' confidence was directed to supporting their goals, forces and the rules that were integral parts of both their action-impelled reasoning and their reason leap. Hammond (2007) indicated that the uncertainty state is accompanied by an amount of stress that will aid in the judgment processes. This additional force assisted the intern to develop her own analytical processes that became 'a generic name' of the intern's reasoning.

The study's conclusions about the learners' intuition contrast previous notions of other research (Benner, Tanner & Chesla 2009) that restricted this mental ability to expert practitioners. This might be attributed to the difference between the utilised measurement approaches in these studies and in this study. By making the best use of these abilities and tendencies, the intern managed to develop her own reasoning style over a period of four months throughout the medical or surgical internship rotation. This style that brought the interns' independence in clinical reasoning more closely to their confidence and to their professional need to become part of the team has also supported the interns' chain of independence in patient-care clinical judgment closer to the rational tendency and its control mode to have full control over daily activities. This rational tendency and relevant modes, as mentioned earlier, became closer to the intuitive tendency that directly supported the reflective style. The quantitative results indicated that the more intuitive tendency, the more reflective ability of the individual learner. The rational and intuitive tendencies are innate abilities that repositioned themselves to support particular mental functions or personal needs or desires at particular times throughout the clinical reasoning journey during the internship. The innate nature and the repositioning ability of these rational and intuitive tendencies of the Taggart and Valenzi scale (1990) is supported by the

insignificant differences between the two measures of these tendencies undertaken at the beginning and at the end of the rotation. The improvement in the interns' analytical, rational style is supported by the significant improvement in this style as a component of the CRACS that measured the interns' general reasoning behavior. These findings clarify and detail the cognitive structuring of novices' reasoning processes as highlighted by Kuiper and Pesut (2004) and provide a thorough explanation for their holistic perceptual ability outlined in Banning's (2008) review of clinical reasoning literature and supported by other researchers (Andersson, Klang, & Petersson 2012; Marcum 2012; Ferrario 2003).

Once these developmental processes and their relevant factors became overt to the instructional designer, he or she could manipulate certain elements at particular times to produce the maximum outcome of the Saudi Arabian internship program. In addition to the clinical reasoning and the internship professional processes as the primary targets, the instructional interventions could include both the intuitive and rational innate modes and tendencies into the manipulation targets. Specific recommendations and further implications will be incorporated into the conclusion chapter.

CHAPTER 6 CONCLUSIONS

This chapter presents the essence of the study summary including major findings linked to the utilised mixed methodology and the researcher's experiences in utilising this approach. Workable recommendations for full utilisation in the Saudi Arabian internship program are incorporated; and implications for the nursing practice and for similar programs are added. A final commentary addressing the study limitations is also included.

6.1 Clinical reasoning and mixed method approach

Trying to move to a more workable approach to understand the complex nature of the clinical reasoning of a Saudi Arabian female nursing cohort resulted in the researcher choosing a mixed method approach. The mixed methods research provided this study with an opportunity to thoroughly explore and explain the targeted phenomenon. In addition to answering the intended research questions, the pragmatic strategy adopted melded both the qualitative and the quantitative findings to describe and possibly prescribe practical strategies that could help the interns utilise their maximum clinical reasoning potential when undertaking non-routine clinical judgments.

The major achievements of this study are the development of the CRACS, the adoption of Taggart and Valenzi's (1990) rational-intuitive scale, the measurement of independence in clinical reasoning and clinical judgment, and the description of the internship context by the informants. The CRACS developed by the researcher to measure the antecedents, styles and consequences of clinical reasoning became a measure for the general clinical reasoning behavior. It became a reference for the general reasoning behavior as its constituents were in continuous interaction to support the reasoning style developed by the interns. Parts of this behavior, like the relationship with the patients, were validated and explained throughout the qualitative component of the study. The CRACS sustained its reliability during the two questionnaire administration processes. The utilisation of the rational-intuitive scale of Taggart and Valenzi (1990) directed attention towards the particular modes that supported certain styles at specific times. The sensitivity of the scale in

measuring these modes has contributed to the credibility of this scale to provide a comprehensive view about these tendencies. The researcher called them tendencies as their existence was proven at the beginning of the internship rotation; and it differentiated between them and the intuitive and the rational styles incorporated into the CRACS. Despite not impacting on their overall measures, the internship experience impacted on these tendencies by changing their placements and relationships with the reasoning styles, the independence components, and the general reasoning behavior. Taggart and Valenzi (1990) also provided workable descriptions and classification of these modes that added a prescriptive component to the many strengths of the scale. For example, while the insight mode supported the intern in her analyticity to explore, pattern and synthesize at the beginning, the planning mode aided her to propose, predict and design at the end of her internship rotation. The study proves that while the interns were working to develop their own reasoning style (explored qualitatively), their general reasoning behavior, rational-intuitive tendencies, and independence in clinical reason and judgment were operating to support this development. These quantitative operations can serve as predictors or indicators of a developing reasoning style.

The major qualitative methodological achievement of this study is the free description of the internship context by the informants. Untying the informants' responses during the interviews aided in obtaining this natural description that contextualised the interns' clinical reasoning experience. This was supported by the skill acquisition and the cognitive continuum models (Benner, Tanner & Chesla 2009; Hammond 2007). The contextual impact revealed by this study calls for a consideration of the context of clinical reasoning not only as a factor but also as a standing component (variable) that has its own variability. This contextual factor is introduced into the CRACS as a personal desire or a feeling under the variable 'constantly feeling part of the team'. This is also emphasised and supported by the factors identified in this study impacting on the development of both the internship and the clinical reasoning experiences, especially the 'unit attitude towards learners' cluster.

In research terminology, the initial quantitative stage answered the first research question exploring the impact of the experience on the three major components,

namely, general clinical reasoning, independence in clinical reasoning and clinical judgment, and the rational-intuitive tendencies. When this experience was proven to have significant positive impacts on these variables or on their interactions, the qualitative phase uncovered the processes indicating the development of interns' clinical reasoning (second research question) and the factors contributing to this development (third research question). As these processes and factors were identified, they were reflected back to the initial quantitative findings as a final validation step to ensure their trustworthiness. This final step assured that the two research phases that complemented each other's shortcomings have also validated each other's findings and provided clarification and explanation of certain areas. Each of these phases had a special contribution to the research approach and to the study of the clinical reasoning processes at the time of uncertainty. While the various scales were invented and adopted quantitatively, the context of the interns' clinical reasoning was identified qualitatively. These collective outcomes have contributed to a comprehensive picture of the contextual nature of female Saudi Arabian interns' clinical reasoning at the time of uncertainty, formulated at the end of this study.

Analyticity or 'my own style' is what came from the interns themselves and is the outcome of the clinical reasoning developmental process. Within a female Saudi Arabian internship educational system, this style was developed through a series of deliberative processes guided by the intern herself and impacted on by the unit style towards learners, the intern's own learning attitude, and the intern being accepted by her patients. Within the elusive stage of internship and while adopting an action impelled reasoning style, the intern was trying to make the best use of her innate intuitive abilities to support this style, especially with reasoning intervention portions learnt during studentship. This 'primitive' form of analyticity was adopted to alleviate the stress linked to the elusive stage. The manageable stress level and the action impelled gains transformed into an inner force labeled as the reasoning leap that facilitated the development of the intern's own style of analyticity. Both the intern's reflection on her actions, supported by her intuitive tendency and her verification ability, supported by the insight mode, collectively supported the intern's analyticity as a well-formulated style. These outcomes, grasped by the adopted research strategy indicate a mixture of interactions between these mental processes with each other, from one side, and with their context from the other. The developed

reasoning style is in constant and continuous interaction with other styles and tendencies for support and maintenance. This is a probable reason for Hammond's (2007) claim of the many cognitive forms that have elements of both intuition and analysis which supports an earlier notion of this study indicating clinical reasoning complexities.

While both the mental clinical reasoning and the internship educational processes—with their relevant factors—are portrayed as obtained from various sources, the instructional designer could introduce new strategies or manipulate existing ones to maximize the outcomes of this Saudi Arabian internship program. The manipulation might target the mental or professional-developmental processes or the factors impacting these processes. Throughout these processes, consideration to different sources (the interns, the CRNs, or the preceptors) should be employed as the facilitators' targets were more competency-based in nature.

6.2 The way forward with the intern's clinical reasoning

The Saudi Arabian internship program is a pre-registration program linked to the undergraduate bachelorette study and divided into two stages. It is designed for consolidation purposes to enhance the socialisation of the intern into the professional nursing role. The interns possess characteristics of various professional development levels (Benner, Tanner & Chesla 2009; Oliver & Butler 2004) that debunk the flawed assumptions made explicit by their CRNs about their decision making potential and capabilities. They possessed the professional commitment of competent practitioners and the reflective style of the more experienced ones by the completion of their medical/surgical internship. Their separated clinical pieces became the clinical evidences and the interns' reasons supporting their verification and reflection. They analysed, compared and questioned while reflecting on clinical encounters to the formulated mental parameters. These parameters were completed pictures that were witnessed or practised by the interns while being supervised either by their CRNs or preceptors.

With repeated successful similar encounters, the interns' practice became automatic. They possessed the needed confidence as 'knowing-how' and 'knowing-why' and,

subsequently, they were accepted by their patients. Despite its limited scope, the female Saudi Arabian interns' experience is similar to what Schaverien (2010) called routine expertise where the practitioner is skilled in executing routine procedures. A similar view, applied to management and leadership training, is presented by Damian, Beckmann and Wood (2012) who labeled this as flexible expertise that will lead to the application of the learnt abilities and the previously acquired knowledge to problem solving and future knowledge acquisition. Hence, the concept of novice-expert needs to be revisited as the novices enter increasingly complex environments (Tanda & Denham 2009).

At the cognitive level, the interns deliberately developed their own reasoning style and shifted away from the action impelled style through their reasoning leap towards their analyticity. Throughout these processes and as discussed earlier, they were utilising their rational-intuitive tendencies to support the development of these processes. The insight mode that supported both the intuitive and the analytical styles at the beginning of the rotation was linked to both the accuracy of their clinical judgments and their ability to verify these judgments. The interns' intuitive style in this link supported their independence in clinical reasoning with nursing interventions. Concurrently, according to Taggart and Valenzi (1990), the various modes are linked to certain functions facilitating the management of the situation (repetition of table 3.1). For example, while the insight mode is linked to the problem solving function, the planning mode that supported the analytical style at the end of the rotation is linked with how the individual prepares for the future. These functions are logically congruent with the clinical reasoning and the internship developmental processes.

(Repetition of Table 3.1: summary of the mode functions)

Rational		Intuitive	
	How do the individual solve problems?		
Analyse	Analyse	Insight	Explore
	Organize		Pattern
	Control		Synthesize
	How do the individual prepare for the future?		
Planning	Propose	Vision	Imagine
	Predict		Foresee
	Design		Invent
	How do the individual approaches work?		
Control	Conform	Sharing	Associate
	Possess		Cooperate
	Prohibit		Share

Adopted with permission from Taggart and Valenzi (1990).

Other modes have proven to be inversely impacting interns' independence in either clinical reasoning or clinical judgment. The impact of the control mode in the two stages is a typical example of this situation. According to Taggart and Valenzi (1990), the control mode represents the rational component of how the individual approaches work. Therefore, adopting a shared approach to work at the beginning and throughout the internship medical or surgical rotations will assist the interns overcome the struggle in the elusive stage. This inference is based on the positive bridging nature of the sharing mode between the rational and the intuitive tendencies at the beginning of the rotation (see figure 4.1c in chapter 4). The negative impact for adopting the control mode is evident in the interns' independence in clinical judgment at the end of the rotation (see figure 4.2b in chapter 4).

For effective implementation of the previous recommendations regarding the rational-intuitive tendencies and their related functions, attention should be paid to the other aspects and factors that were functioning while the interns were developing their enabling clinical reasoning style and undertaking clinical judgments at the time of uncertainty within the internship clinical education context. These aspects include the general clinical reasoning behavior, the clinical reasoning and clinical judgment independence links, and the three factor clusters (unit attitude towards learners, interns' learning behavior, and being accepted by the patients).

Within the interns' general clinical reasoning behavior at the beginning of the rotation, two forces supported the analyticity of relevant personal needs of 'feeling part of the team', 'having full control over daily activities, and 'verifying clinical judgments at all time'. These forces include 'accuracy in clinical judgments' and 'knowing the next step in patient care'. As stated earlier, the intuitive style of the general reasoning behavior and the insight mode supported the interns' independence in clinical reasoning with nursing interventions. The vision mode of the intuitive tendency supported the interns' independence in clinical reasoning when identifying patients' problems. The vision mode also assisted the interns to imagine, foresee, and invent as preparing for future professional practice. While keeping these forces in mind and recognising the positive impact the preceptors' and the CRNs' support had on interns' professional and clinical reasoning development, summaries should be presented to the interns in the form of procedures and patient care briefings. Relevant patient assessment cues could be grouped and incorporated into these briefing stations by the intern's preceptor throughout the day. The intern-preceptor discussions in the five to ten minute stations would focus on the mutual identification of the next step in patient care based on the preceptor's cues groupings and the intern's background information. These briefings relevant to the preceptor's patient care assignments could focus mainly on the significant assessment cues as the interns' reflective style and control mode were inversely impacting on their independence in clinical reasoning when identifying these cues. This sharing rather than the controlling approach to work (see table 3.1) could overcome difficulties similar to those encountered by the intern who felt challenged by her preceptor and CRN at the beginning of the rotation.

The briefing stations would ensure the provision of the guiding principles to those interns as their clinical facilitators are guided by the competency-based, outcome-oriented clinical education thought. Positive feedback relevant to the accuracy of the intern's clinical judgments should accompany both these stations and the subsequent problem identification and intervention judgments at the beginning of the internship rotations. These approaches will ensure that the interns feel part of the team and have full control over daily activities as knowing the next step in patient care and as able to verify their clinical judgments at all times. Despite being supervised or guided by

her preceptor, the intern would feel fully in control by being part of the team and possessing the clinical judgment processes that are relevant to patient care and procedural abilities or competencies. These stations will ensure that the interns are provided with the required sets of cues relevant to patient care encounters without them and their busy preceptors being overwhelmed.

At the end of the first month of the rotation, the cues formation stations could become reflective stations as the interns develop an experiential knowledge base that links the cue sets (pictures) with the repeated successful 'know-how' encounters. In these reflective stations, the intern could utilise the planning mode throughout the remaining period until the end of the rotation to prepare for the future (see table 3.1). The 'clinical stations' approach provides corrective measures to only the interns' clinical reasoning developmental journey. Workable approaches to enhance the facilitation practices linked to the internship clinical education processes are incorporated into the decision trails relevant to the elusive and the professional processes of the internship context and the factors' clusters (see appendices K, L, M, and N).

A proactive set of preparatory measures designed and implemented by the unit CRN could be carried out before the commencement of the clinical rotations. These might include designing a clinical booklet containing unit services, routine, common procedures, terminologies, and cases that reflect the unit's overall picture. These could incorporate case scenarios of real unit cases. The booklets could be disseminated to the students before the rotations and the students requested to complete relevant worksheets that will be the basis for the CRN-intern discussions in the initial three days of the rotation. These worksheets should reflect the sharing intuitive reasoning mode that urges the adoption of a cooperative approach to work, rather than the control rational mode that has been proven to be ineffective as a support mode throughout the medical or surgical internship rotations. Other reasoning modes shift their support zones between the two questionnaire introductions. Therefore, it would be advisable to have a third questionnaire administration to the individual interns immediately after the fourth week of the rotation since the reasoning leap occurred sometime between the second and the fourth week of internship. Once provided with additional information about the

intern’s general reasoning behavior, independence in clinical judgment and reasoning at the time of uncertainty—and reasoning tendencies in addition to the interactions between these elements—the unit CRN could implement corrective clinical educational strategies to attain effective clinical reasoning. To ensure effective implementation of the previous strategies, relevant preparation and training for the clinical facilitators would be needed to parallel these efforts and to evaluate outcomes.

Additional measures would need to be incorporated into the questionnaire administered at the end of the first month of internship to determine the elusive-professional dimensions of internship as identified in the qualitative part of this study. The 15 item 5-point Likert type scale (table 6.1) includes only the aspects relevant to the intern learner that can be addressed when corrective actions are employed at an individual level. The aspects relevant to the unit attitude towards learners as a major factor cluster could be inferred from the interns’ responses to the scale statements and others incorporated into the CRACS. The scale statements in table 6.1 were collected from three different sources which contribute to their authenticity.

Table 6.1: The Elusive-Professional Dimensions of Internship

Statements	SA (5)	A (4)	UD (3)	DA (2)	SD (1)
1. Learning is my responsibility.					
2. I have a professional communication style.					
3. I can question vague doctors’ orders.					
4. The team constantly relies on me.					
5. I am asking the right questions.					
6. I am asking the right people.					
7. I am a habitual reader.					
8. My actions are timely.					
9. Patients are accepting me as a care provider.					
10. I can easily deal with male patients.					
11. I can easily deal with male family members.					
12. I recommend to the NM & CRN corrective actions for unit problems.					
13. I question unwanted behavior of unit staff.					
14. I can answer the phone calls to the unit.					
15. I can respond to doctors’ queries during rounds.					

As indicated in chapter five, a supportive strategy to enhance interns' clinical reasoning might be the inclusion of a more detailed clinical reasoning process to guide interns' management of individual cases. This tool can replace the traditional nursing process with clinical reasoning as its prime focus. The clinical reasoning cycle of Hoffman and colleagues (2011), Lasater (2007) rubric, Tanner (2006) clinical judgment model, or the cognitive operators highlighted by Banning (2008) represent possible tools that can parallel the previous highlights to move forward with the internship program. The adopted model, rubric, or cycle might be cascaded to the bachelor program as well to guide students clinical nursing care to unify the clinical training tools of the two conjoined programs. Further research is needed to test the impact of these strategies on students' and interns' clinical reasoning.

The Saudi Arabian internship program provided an outstanding opportunity to study the clinical reasoning processes that developed throughout the supernumerary clinical learning experiences of a female nursing student group that possessed characteristics of nurses of various levels of expertise. The benefits of the adopted approach of this study could be extended to both the entire Saudi Arabian undergraduate nursing program and the following era of professional practice. These benefits are discussed in the subsequent section addressing the various nursing implications for the study findings.

6.3 Nursing Implications

The bridging nature of the Saudi Arabian nursing internship program between studentship and professional practice supports cascading the study findings retrospectively to the undergraduate program and prospectively to the following internship stages and the subsequent years of professional practice. This section discusses the nursing implications of the study findings and the benefits of the adopted data collection approach for both female undergraduate nursing education and professional practice in Saudi Arabia. The discussion recognises the complexity of patient care clinical reasoning, the unique nature of the nursing units, and the need for transferable knowledge that can be shared among nursing professionals. The complexity of nurses' clinical reasoning when investigated as a developmental journey over a period of time demanded the use of various approaches and data

collection methods to grasp the many facets of this mental process in the specific clinical context. The nursing unit as a special educational context provided the clinical reasoning researcher with a system of a limited number of variables that could be controlled and measured to determine the milieu of clinical reasoning. While progressing throughout a developmental stage or period, the level of uncertainty linked to nursing encounters decreases as the learner grasps the competency guiding principle. The competency list includes those competencies linked to nursing procedures and patient care competencies.

This study highlighted that the interns adopted the analytical reasoning style throughout the medical or surgical internship rotation. This style started with the primitive action impelled form to support the interns while experiencing high levels of uncertainty in particular nursing care contexts. When the uncertainty level decreased, a well-developed form of analyticity took its place until the interns' clinical reasoning and the subsequent clinical decisions and actions became faster. As certain contextual variables changed throughout this clinical reasoning trajectory, the interns' general reasoning behavior, as well as their independence in clinical reasoning and clinical judgment and their rational-intuitive tendencies, changed to compensate for the contextual changes. The contextual and the personal variables or components are controlled primarily by the individual intern learner.

The gains at the completion of this initial medical or surgical rotation need to be transferred to the other internship stations (rotations) as the interns possess valuable professional behaviors that will support their clinical training in these subsequent rotations. These workable measures with their various links could form the baseline for the second rotation and the questionnaire could be administered again at the end of this rotation to measure the impact the additional experience has had on the various clinical reasoning and clinical judgment areas incorporated into the questionnaire. Since the second rotation is a new specialty area, similar strategies such as those proposed earlier to enhance the initial rotation could be implemented and the impact documented into the second questionnaire administration.

When the undergraduate program is developed to include these assumptions into certain training periods, particularly those accommodating the medical-surgical adult

care courses, the questionnaire could be introduced at the beginning and at the end of the semester of the particular medical-surgical course. This would enable the establishment of a baseline for the interventions that could be introduced to a similar group of nursing students undertaking the medical-surgical course. Another option might include introducing the questionnaire at the beginning of the semester to assess students' general reasoning behavior, independence in clinical reasoning and clinical judgment, and their rational-intuitive tendencies. The relationships between different variables would provide the instructional designer with certain parameters needed to facilitate Saudi Arabian nursing student clinical supervision. Similar strategies to those recommended within the internship program could be applied to these courses, but in a more structured format. The case scenarios developed by the CRNs could be integrated into the theoretical or the simulated lab components undertaken before commencing clinical rotations. Additionally, the clinical procedural components might incorporate various emergencies expected with the particular procedures based on clinical surveillances carried out by the unit CRN and based on actual encounters. These emergencies could be included in the laboratory training relevant to these procedural skills. Daily clinical stations similar to those proposed to enhance the internship program might be incorporated into the Saudi Arabian undergraduate clinical practicum.

These strategies could transform actual clinical experiences in specific specialty areas into learning experiences that would serve the classroom, laboratory, or clinical training of the undergraduate nursing students. Numerous benefits could be attained when these facets or pictures of the actual patient conditions or the procedural encounters are taught and discussed with the nursing students prior to their actual clinical exposure. The unification of the parameters that would govern student training and are used by the unit staff is the major benefit that would minimise the elusiveness of the early stages of the training practicum. The base line data obtained from the initial questionnaire administration when coupled with these strategies would provide both the clinical facilitators and the academic staff with directions that could be applied to amend certain strategies to meet emerging student needs. Additionally, the data could inform the instructional designer on how to make the best use of certain reasoning tendencies or factors that aid the general reasoning behavior—factors that show superiority above other factors and tendencies or how to

redirect others to meet the desired training goals. The previous strategies highlight the crucial role of the nursing units in Saudi Arabian undergraduate clinical training and how to change their role from a passive to a collaborative and active partnership in nursing student clinical training.

To complete the previous clinical reasoning picture, the nursing college learner's clinical reasoning might be assessed throughout the briefing stations with constructive feedback similar to those used with the interns. The initial stations could incorporate assessment clusters relevant to the student's assigned case and the student requested to identify relevant problems and possible interventions. The questionnaire needs to be introduced again at the end of the rotation to measure the impact of the experience or the clinical training period on the college students' clinical reasoning behavior, independence in clinical reasoning and clinical judgment, and rational-intuitive tendencies. The students could be interviewed to explore the nature of their clinical reasoning throughout their clinical adult care training in the college which would provide a comprehensive view that would enhance subsequent course offerings.

Another professional period that might be a benefit from the data collection strategies adopted in this research is the first year of employment that represents a continuation of the nursing internship period in Saudi Arabia. The questionnaire administration at the end of the internship program could be the baseline for this period and the mentorship model could replace the preceptorship framework that is utilised throughout the unit orientation at the beginning of the professional practice era. The questionnaire might be administered at the end of the professional year to measure the impact of the experience on the clinical reasoning and clinical judgment aspects of professional practice.

These previous recommendations and implications cascade to both studentship and the professional practice periods and highlight the importance of the collaborative efforts between the academic and the clinical bodies to support and maximise the benefits of the clinical training, especially during the internship program, offered to a female student group at a tertiary health care facility in Saudi Arabia. The proposed strategies stress the importance of the active role of the clinical nursing units in

supporting and developing the analytical reasoning style needed for effective clinical judgments at the time of uncertainty. This expands the unit responsibility beyond its traditional placement role as its collaboration is vital to the development of the reasoning processes of a beginner nursing group called nurse interns.

Finally, the natural development of the analytical style by the intern group as a senior student cohort indicated that this reasoning style is the result of the continuous interaction between innate personal tendencies, individual needs, and contextual components. These milestones and the relevant development are difficult to grasp by means of a single data collection method but require a comprehensive approach that shows different facets of this phenomenon. The female Saudi Arabian internship program provided this study with an excellent opportunity to identify these facets. Many informants who are viewing and recounting different facets contributed by providing descriptions (rather than interpretations) of the internship and the interns' clinical reasoning phenomena and their contributing factors. This comprehensive understanding of the interns' clinical reasoning at the time of uncertainty provided a clear view of corrective strategies that could be proposed to enhance the internship program and cascaded to the undergraduate nursing program for maximum improvement.

This implementation of the strategies recommended in this final section need to be tested in the future in a Saudi Arabian undergraduate nursing program. This will include testing the impact of replacing the traditional nursing process with a convenient clinical reasoning model on the development of interns' or students' clinical reasoning. Testing the convenience of the lengths of the internship rotations should go alongside these future research opportunities to address local Saudi concerns (Almalki, FitzGerald, & Clark 2011) relevant to internship duration. While the data collection methods utilised in this study served a dual purpose of describing and prescribing relevant actions, this mixed approach could be used with other undergraduate nursing or professional components that have a specified timeframe such as undergraduate clinical courses, staff development activities (e.g. staff induction or orientation) or specialised clinical courses. This study revealed the innate roots of the rational-intuitive tendencies. However, more research is needed to

confirm these findings with nurses with varied years of experience developing their clinical reasoning abilities.

The recommendations of this study and its relevant nursing implications emphasize the importance and the uniqueness of contextualizing undergraduate nursing knowledge to defragment nursing education. This parallels Benner and colleagues' (2010) calls for radical transformation of nursing education to teach the nursing student how to be a nurse rather than doing nursing (Vitello-Cicciu 2010). As indicated in chapter one, Benner and colleagues' (2010) recommended a shift from an emphasis on critical thinking to an emphasis on clinical reasoning and suggested a postgraduate year of internship in a clinical setting to help reform nursing education. According to these authors, the recommended reform calls for finding a more effective approach to the teaching knowledge base and assisting students to apply this knowledge. The current study and its unique approach in studying the development of clinical reasoning might be effective tools contributing to this reform.

This calls for accompanying Saudi Arabian legislative reform that demands a shift from critical thinking as the core concept of nursing curriculum to the feasible concept of clinical reasoning. Moreover, revisions to the collaborative frameworks between the academic bodies and clinical settings involved in students and interns clinical training need to recognize the role clinical reasoning plays in effective decision making and the critical contribution of the clinical nursing units in the development of this crucial mental ability. Specific policies addressing the role of various parties in these developmental processes and relevant procedures to transfer these policies into actions need to be mutually articulated by the academic and clinical bodies for effective implementation of the proposed recommendations of this study. Specific orientation and training courses need to be designed with a clinical reasoning focus for the clinical and academic staff to maximize their contributions to students' and interns' clinical reasoning development.

6.4 Limitations of the study

The findings of this study can only be generalized to programs targeting female nursing students with similar clinical learning experiences. However, the study addressed the strengths of this Saudi Arabian female intern group as decision makers who were able to develop their clinical reasoning abilities despite all the difficulties encountered by this group. The findings of this study constitute a driving force supporting the Saudi Arabian female nursing workforce in a society that is developing very quickly. The research approach and methodology adopted in this study supports replicating the experience in other settings that require assessing the development of clinical reasoning of particular groups to facilitate the introduction of effective clinical teaching strategies. Although multiple methodologies and data sources were used to collect study data, but the nature of self-reporting might constitute another limitation of the current study. Future research that is observational in nature may strengthen this work and provide an alternative and complementary perspective.

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APPENDICES

Appendix A1: Phase One Questionnaire (stage 1)

University of Southern Queensland
Faculty of Sciences
PhD Research Study
Phase One Questionnaire (stage one)

Participant's
Number

The contextual nature of interns' clinical reasoning abilities when making non-routine clinical judgments for adult patients at medical or surgical units of a tertiary health care facility in Saudi Arabia.

Introduction:

Dear Participant

Thank you for taking time to complete this questionnaire.

Your contribution will help collecting data to find out the nature of interns' reasoning skills throughout medical or surgical internship experiences and factors might influence this. Kindly be assured that the information you will provide will remain anonymous and confidential and will be used only for research purposes. The researcher is the only person who will get access to the information and your responses will not affect your evaluation throughout Internship.

Instructions for Participants:

Kindly complete the questionnaire only if you are a female Saudi Intern of the September 2011 interns' intake from College of Nursing at King Saud Bin Abdulaziz University for Health Sciences in Riyadh, placed at any hospital unit, and in the first month of your Internship experience.

1. Write down your name. Names will be used only to select participants for stage two of the study.
2. Complete this questionnaire within two days from now.
3. Put it in the brown envelope that has Nursing Education Department mail code(1212) written on it, and
4. Place it into the outgoing mail section allocated outside the Nurse Manager's office.

The questionnaire is composed of five parts:

1. Part one includes background information.
2. Part two requires the participant to indicate her degree of agreement or disagreement with the ten statements of the Clinical Reasoning Antecedents and Consequences Scale.
3. Part three includes three multiple choice questions considering your patient care judgments when assessing patients, interpreting data, and deciding to intervene or take an action.
4. Part four includes three multiple choice questions considering your clinical reasoning skills.
5. Part five requires the participant to indicate how frequently the statements represent your true self to determine how intuitive or rational you are.

This questionnaire will be introduced to you again at the end of the medical or surgical rotations to determine the impact of this experience on your perceptions regarding the previous questionnaire components. You will be contacted through CON Internship Director.

For more information or clarification, kindly contact Imad Alfayoumi on ext. 48411 or page 7858 .

N.B. Enclosed is a sheet that will ask for consent to participate in an interview at the end of medical or surgical rotations (part two of the study)

Participant Name: _____ Badge Number: _____

PART TWO:

Indicate the degree of agreement or disagreement with the following statements:

KEY:

(SA): Strongly Agree

(A): Agree

(UD): Undecided

(DA): Disagree

(SD): Strongly Disagree

Statements	SA	A	<u>UD</u>	DA	SD
1. I constantly feel that I am part of the nursing team					
2. My relationship with patients is below average					
3. I need prompting, help from the preceptor to initiate a therapeutic relationship with patients					
4. I have full control over my daily activities					
5. I lack confidence when making clinical judgments					
6. I constantly know the next step in patient care					
7. All of my clinical judgments are accurate					
8. I am able to verify my clinical judgments at all times.					
9. I am anticipating patient's situation before there is sufficient data about his/her condition.					
10. My mode of thought is analytic and logical.					
11. I am continuously examining & thinking about my patient care actions/judgments after been implemented.					

PART THREE : PATIENT CARE NON-ROUTINE CLINICAL JUDGMENTS

Please select only one answer for each question

1. When assessing patient to identify significant cues

- (a) I am constantly relying on CRN's/preceptor's judgment
- (b) I am occasionally relying on CRN's/preceptor's judgment
- (c) I am rarely relying on CRN's/preceptor's judgment
- (d) I am making all judgments and the CRN/ preceptor always supports them.

2. When interpreting data to identify patient's problems

- (a) I am constantly relying on CRN's/preceptor's judgment
- (b) I am occasionally relying on CRN's/preceptor's judgment
- (c) I am rarely relying on CRN's/preceptor's judgment
- (d) I am making all judgments and the CRN/ preceptor always supports them.

3. When deciding to intervene, respond, or take an action (or not)

- (a) I am constantly relying on CRN's/preceptor's judgment.
- (b) I am occasionally relying on CRN's/preceptor's judgment.
- (c) I am rarely relying on CRN's/preceptor's judgment.
- (d) I am making all judgments and the CRN/ preceptor always supports them.

PART FOUR: PATIENT CARE CLINICAL REASONING

Please select only one answer for each question

1. I am figuring out significant cues during patient assessment

- (a) Alone (independent) at all times
- (b) Alone (independent) most of the time
- (c) Dependent on CRN/Preceptor most of the time
- (d) Dependent on CRN/Preceptor at all times

2. I am figuring out patient's problems

- (a) Alone (independent) at all times
- (b) Alone (independent) most of the time
- (c) Dependent on CRN/Preceptor most of the time
- (d) Dependent on CRN/Preceptor at all times

3. I am figuring out the needed actions or patient care interventions

- (a) Alone (independent) at all times
- (b) Alone (independent) most of the time
- (c) Dependent on CRN/Preceptor most of the time
- (d) Dependent on CRN/Preceptor at all times

PART FIVE:

Read each statement carefully and then choose the phrase that best describes *how frequently* the statement represents your *true self*

Key:

- (1) never
- (2) once in a while
- (3) sometimes
- (4) quite often
- (5) frequently if not always
- (6) always

No	STATEMENTS	1 (Never)	2	3	4	5	6 (Always)
1	I feel that a prescribed, step-by-step method is best for solving problems.						
2	I prefer specific instructions that are explicit about the details, rather than general instructions.						
3	It is important for me to have a place for everything and everything in its place.						
4	When solving problems, I prefer to use accepted approaches rather than using hunches and first impressions.						
5	I prefer specific details more than general ideas.						
6	I look at a problem as a whole, approaching it from all sides.						
7	I prefer general instruction that leave the details up to me, rather than specific instructions.						
8	When solving problems, I rely on hunches and first impressions, rather than accepted approaches						
9	I try to discover things through free exploration						
10	I prefer general ideas more than specific details.						
11	When I have an important activity due in a week, I carefully outline what is required to get the job done.						
12	When I have a special job to do, I like to organize it carefully from the start.						
13	I prefer to arrange events well in advance rather than respond to them as they arise						
14	I make a priority list of what needs to be done, and I stick to it.						
15	When I go somewhere, I plan what I will do and when.						
16	I prefer people who are imaginative to those who are not.						
17	I like to find new and better ways of doing things.						
18	I come up with new ideas.						
19	I believe new ideas should show creativity						
20	I feel that I use imaginative ways of doing things.						
21	I believe my success is determined by how well I carry out procedures .						
22	I rely on rules and procedures in making my decisions						
23	I find individual, personal work to be satisfying						
24	I prefer working on tasks by myself rather than with a group						
25	I will achieve something important for myself even if it makes someone else look bad.						
26	I find group work to be satisfying.						
27	I prefer working on tasks with a group rather than alone.						
28	I prefer those activities that involve cooperation to those that do not.						
29	In group work, I like to make sure that the concerns of others are considered.						
30	I believe my success is determined by how well I get along with people.						

Reference: Taggart, W. & Valenzi, E. (1990). Assessing Rational and Intuitive Styles: A human Information Processing Metaphor, Journal of Management Studies, Vol. 27, No. 2, 149-172.

Appendix A2: Phase One Questionnaire (stage 2)

University of Southern Queensland

Participant's
Number

Faculty of Sciences
PhD Research Study

Phase One Questionnaire (stage two)

The contextual nature of interns' clinical reasoning abilities when making non-routine clinical judgments for adult patients at medical or surgical units of a tertiary health care facility in Saudi Arabia.

Introduction:

Dear Participant

Thank you for taking time to complete this questionnaire.

Your contribution will help collecting data to find out the nature of interns' reasoning skills throughout medical or surgical internship experiences and factors might influence this.

Kindly be assured that the information you will provide will remain anonymous and confidential and will be used only for research purposes. The researcher is the only person who will get access to the information and your responses will not affect your evaluation throughout Internship.

Instructions for Participants:

Kindly complete the questionnaire only if you are a female Saudi Intern of the September 2011 interns' intake from College of Nursing at King Saud Bin Abdulaziz University for Health Sciences in Riyadh, placed at any hospital unit, and completed at least 9-10 weeks of your medical or surgical internship rotation.

1. Write down your name. Names will be used only to select participants for phase two of the study.
2. Complete this questionnaire within two days from now.
3. Put it in the brown envelope that has Nursing Education Department mail code(1212) written on it, and
4. Place it into the outgoing mail section allocated outside the Nurse Manager's office.

The questionnaire is composed of five parts:

1. Part one includes background information.
2. Part two requires the participant to indicate her degree of agreement or disagreement with the ten statements of the Clinical Reasoning Antecedents and Consequences Scale.
3. Part three includes three multiple choice questions considering your patient care judgments when assessing patients, interpreting data, and deciding to intervene or take an action.
4. Part four includes three multiple choice questions considering your clinical reasoning skills.
5. Part five requires the participant to indicate how frequently the statements represent your true self to determine how intuitive or rational you are.

This questionnaire is introduced to you this time to determine the impact of this experience on your perceptions regarding the previous questionnaire components.

For more information or clarification, kindly contact Imad Alfayoumi on ext. 48411 or page 7858 .

N.B. Enclosed is a sheet that will ask for consent to participate in an interview (2 weeks from now) at the end of Medical or Surgical rotations (part two of the study). Kindly ignore this note if you have previously filled this sheet and agreed to participate in the interview.

Participant Name: _____ Badge Number: _____

PART TWO:

Indicate the degree of agreement or disagreement with the following statements:

KEY:

- (SA): Strongly Agree
- (A): Agree
- (UD): Undecided
- (DA): Disagree
- (SD): Strongly Disagree

Statements	SA	A	<u>UD</u>	DA	SD
1. I constantly feel that I am part of the nursing team					
2. My relationship with patients is below average					
3. I need prompting, help from the preceptor to initiate a therapeutic relationship with patients					
4. I have full control over my daily activities					
5. I lack confidence when making clinical judgments					
6. I constantly know the next step in patient care					
7. All of my clinical judgments are accurate					
8. I am able to verify my clinical judgments at all times.					
9. I am anticipating patient's situation before there is sufficient data about his/her condition.					
10. My mode of thought is analytic and logical.					
11. I am continuously examining & thinking about my patient care actions/judgments after been implemented.					

PART THREE : PATIENT CARE NON ROUTINE CLINICAL JUDGMENTS

Please select only one answer for each question

1. When assessing patient to identify significant cues

- (a) I am constantly relying on CRN's/preceptor's judgment
- (b) I am occasionally relying on CRN's/preceptor's judgment
- (c) I am rarely relying on CRN's/preceptor's judgment
- (d) I am making all judgments and the CRN/ preceptor always supports them.

2. When interpreting data to identify patient's problems

- (a) I am constantly relying on CRN's/preceptor's judgment
- (b) I am occasionally relying on CRN's/preceptor's judgment
- (c) I am rarely relying on CRN's/preceptor's judgment
- (d) I am making all judgments and the CRN/ preceptor always supports them.

3. When deciding to intervene, respond, or take an action (or not)

- (a) I am constantly relying on CRN's/preceptor's judgment
- (b) I am occasionally relying on CRN's/preceptor's judgment
- (c) I am rarely relying on CRN's/preceptor's judgment
- (d) I am making all judgments and the CRN/ preceptor always supports them.

PART FOUR: PATIENT CARE CLINICAL REASONING

Please select only one answer for each question

1. I am figuring out significant cues during patient assessment

- (a) Alone (independent) at all times
- (b) Alone (independent) most of the time
- (c) Dependent on CRN/Preceptor most of the time
- (d) Dependent on CRN/Preceptor at all times

2. I am figuring out patient's problems

- (a) Alone (independent) at all times
- (b) Alone (independent) most of the time
- (c) Dependent on CRN/Preceptor most of the time
- (d) Dependent on CRN/Preceptor at all times

3. I am figuring out the needed actions or patient care interventions

- (a) Alone (independent) at all times
- (b) Alone (independent) most of the time
- (c) Dependent on CRN/Preceptor most of the time
- (d) Dependent on CRN/Preceptor at all times

PART FIVE:

Read each statement carefully and then choose the phrase that best describes *how frequently* the statement represents your *true self*

Key:

- (1) never
- (2) once in a while
- (3) sometimes
- (4) quite often
- (5) frequently if not always
- (6) always

No	STATEMENTS	1 (Never)	2	3	4	5	6 (Always)
1	I feel that a prescribed, step-by-step method is best for solving problems.						
2	I prefer specific instructions that are explicit about the details, rather than general instructions.						
3	It is important for me to have a place for everything and everything in its place.						
4	When solving problems, I prefer to use accepted approaches rather than using hunches and first impressions.						
5	I prefer specific details more than general ideas.						
6	I look at a problem as a whole, approaching it from all sides.						
7	I prefer general instruction that leave the details up to me, rather than specific instructions.						
8	When solving problems, I rely on hunches and first impressions, rather than accepted approaches						
9	I try to discover things through free exploration						
10	I prefer general ideas more than specific details.						
11	When I have an important activity due in a week, I carefully outline what is required to get the job done.						
12	When I have a special job to do, I like to organize it carefully from the start.						
13	I prefer to arrange events well in advance rather than respond to them as they arise						
14	I make a priority list of what needs to be done, and I stick to it.						
15	When I go somewhere, I plan what I will do and when.						
16	I prefer people who are imaginative to those who are not.						
17	I like to find new and better ways of doing things.						
18	I come up with new ideas.						
19	I believe new ideas should show creativity						
20	I feel that I use imaginative ways of doing things.						
21	I believe my success is determined by how well I carry out procedures .						
22	I rely on rules and procedures in making my decisions						
23	I find individual, personal work to be satisfying						
24	I prefer working on tasks by myself rather than with a group						
25	I will achieve something important for myself even if it makes someone else look bad.						
26	I find group work to be satisfying.						
27	I prefer working on tasks with a group rather than alone.						
28	I prefer those activities that involve cooperation to those that do not.						
29	In group work, I like to make sure that the concerns of others are considered.						
30	I believe my success is determined by how well I get along with people.						

Reference: Taggart, W. & Valenzi, E. (1990). Assessing Rational and Intuitive Styles: A human Information Processing Metaphor, Journal of Management Studies, Vol. 27, No. 2, 149-172.

Appendix B



University of Southern Queensland

The University of Southern Queensland Proposed Interview Questions (Interns)

Full Project Title: The contextual nature of interns' clinical reasoning abilities when making non-routine clinical judgments for adult patients at medical or surgical units of a tertiary health care facility in Saudi Arabia.

Principal Researcher: Imad H. Alfayoumi (USQ student number: 0050088245)

Principal Supervisor: A/Prof Cheryl Perrin

Associate Supervisor: A/Prof Trudy Yuginovich

No	Proposed Questions
1.	How do you describe your clinical reasoning experience(s) when making non-routine clinical judgments for adult patients at this medical/surgical unit?
2.	Tell me about a non routine incident with a patient where you felt your contribution to the patient care affected the patient's clinical outcome?
3.	What do you think assisted you to make that contribution? What about your relationship with your patients?
4.	When did it happen?
5.	What about the trajectory of your non-routine clinical judgments?
6.	Can you please give examples for these judgments? How you arrived to these judgments? How you figure it out?
7.	Let's take the first example, can you please describe what happened before this event and added in reaching to that clinical judgment?
8.	What happened afterward? Are we talking about an improvement in your clinical judgments? Or the identification of cues?
9.	Why? Can you please provide details?
10.	What about the role of the nursing team in this? What about the people involved in your training?
11.	What about the second example? <u>Repeat questions 8, 9, and 10.</u>

Appendix C



University of Southern Queensland

The University of Southern Queensland Participant Information Sheet

TO: Student Interns

إلى: طالبات الامتياز

Full Project Title: The contextual nature of interns' clinical reasoning abilities when making non-routine clinical judgments for adult patients at medical or surgical units of a tertiary health care facility in Saudi Arabia.

عنوان الدراسة الكامل ' طبيعة الاستنتاج السريري لطالبات الامتياز في التمريض اثناء عملية اتخاذ قرارات غير روتينية من قبل الطالبة للمرضى البالغين في الاقسام الباطنية او الجراحية في مستشفى في المملكة العربية السعودية.

Principal Researcher: Imad H. Alfayoumi (USQ student number: 0050088245)
Principal Supervisor: A/Prof Cheryl Perrin
Associate Supervisor: A/Prof Trudy Yuginovich

الباحث: عماد ح. الفيومي (الرقم الجامعي: 0050088245)
المشرف الرئيسي: الأستاذ المشارك شيريل برين
المشرف المساعد: الأستاذ المشارك ترودي ياجينوفيتش

We would like to invite you to take part in this research project that has been designed to explore the nature of and factors affecting clinical reasoning of student interns and the trajectory of their clinical reasoning throughout internship at adult medical or surgical units.

هذه دعوة للمشاركة في هذه الدراسة البحثية المصممة للتعرف على طبيعة الاستنتاج السريري والعوامل المؤثرة على قدرات طالبات التمريض (الامتياز) على الاستنتاج السريري ومعرفة كيفية تطور هذه القدرات عند الطالبات أثناء فترة الامتياز في أقسام الباطني أو الجراحة للكبار في المستشفى.

Although the study will not benefit you directly, it will provide information that will impact future program development.

بالرغم من عدم تأثير هذه الدراسة مباشرة عليك إلا أنها ستزودنا بمعلومات تؤدي لتطوير البرنامج مستقبلاً.

The study has been approved by the appropriate people and review boards at University of Southern Queensland-Australia and King Abdulla International Medical Research Center-King Abdulaziz Medical City.

لقد تمت الموافقة على هذه الدراسة من قبل الأشخاص والهيئات المعنية في جامعة جنوب كوينزلاند في استراليا ومركز الملك عبد الله العالمي للأبحاث-مدينة الملك عبد العزيز الطبية.

Please read this Plain Language Statement carefully. Its purpose is to explain to you as openly and clearly as possible all the procedures involved so that you can make a fully informed decision as to whether you are going to participate. Feel free to ask questions about any information in the document. You may also wish to discuss the project with a relative or friend or faculty member. Feel free to do this.

الرجاء قراءة العبارات التالية جيداً والتي تهدف لتوضيح الخطوات المتبعة في هذه الدراسة بشفاافية وافتاحية لتمكينك من اتخاذ القرار بالمشاركة في هذه الدراسة. الرجاء الشعور بالارتياح للسؤال عن أي جزئ في هذه الوثيقة. لك حرية الاختيار إذا رغبت بمناقشة الدراسة مع احد أفراد اسرتك أو صديقائك أو أحد مدرساتك.

Once you understand what the project is about and if you agree to take part in it, it is asked that you sign the attached Consent Form. By signing the Consent Form, you indicate that you understand the information and that you give your consent to participate in the research project.

في حال تم الإدراك التام لغرض الدراسة وقررت المشاركة فيها، الرجاء توقيع نموذج الموافقة المرفق. هذا التوقيع يشير لفهمك التام للمعلومات عن الدراسة وأنت موافقة على المشاركة فيها.

1. Purpose of Research

The purpose of this project is to explore and describe the contextual nature of Saudi Arabian female interns' clinical reasoning when making non-routine clinical judgments for adult patients at medical/surgical areas as perceived by interns, CRNs, & Preceptors and to describe & explain the reasoning patterns used by interns in these judgments and factors that facilitate or hinder the development of these patterns throughout internship experiences in these areas including role of CRN & preceptor.

This will provide information for full description of the nature and presentation of clinical reasoning of those interns when assessing patients to identify significant cues, interpreting data to identify patient's problems & deciding to intervene, respond, or take an action (or not) with the aim of developing recommendations for the development of a Saudi Arabian clinical nursing education model.

1. الغرض من الدراسة

تهدف هذه الدراسة للتعرف ووصف طبيعة الاستنتاج السريري لطالبات التمريض (الامتياز) السعوديات عند اتخاذ قرارات غير روتينية للمرضى البالغين في أقسام الباطني أو الجراحة حسب رأي وإدراك الطالبات، مدربة الموارد الاكلينيكية، و المدربة السريرية، بالإضافة لوصف وتبيان أنماط الاستنتاج السريري المستخدم من قبل الطالبات والتعرف على العوامل التي ساعدت على تنمية أو اعاققة تطور هذه الانماط خلال فترة الامتياز بما فيها دور مدربة الموارد الاكلينيكية والمدربة السريرية.

وهذا سوف يوفر معلومات تؤدي لوصف تام لطبيعة وشكل الاستنتاج السريري لطالبات التمريض (الامتياز) عند القيام بتقييم حالات المرضى لاستنباط مؤشرات ذات دلالة. تحليل المعلومات للتعرف على مشاكل المرضى ومن ثم اتخاذ القرار بعمل ما يلزم (أو عدم القيام بأي اجراء) بهدف وضع توصيات لبناء نموذج للتعليم التمريضي السريري في المملكة العربية السعودية.

2. Procedures

This study is carried out in two phases:

- In phase one, Interns will be requested to complete an anonymous questionnaire at the beginning of their clinical rotation and to complete a follow up questionnaire on the completion of their medical or surgical clinical experience. The questionnaire will include an invitation to consent to an interview after completion of a minimum of 12 weeks of their clinical rotation.
- During phase two, consenting interns who participated in phase one will be interviewed using a semi-structured interview technique. Participants will have a choice to be either interviewed by the male researcher or a trained female interviewer. The interview will take place in Word 24 conference room. The interviews will be audio taped and will take 45-60 minutes. A transcript of what is said at these interviews will be transcribed verbatim. Your privacy will be protected and no details of the interviews that might identify you will be included in the final report or when the study or part of it will be published.

3. Confidentiality

Questionnaire data will be collected in a locked closet placed in a designated area within the Administration section of Nursing Education Centre. The questionnaires will be coded by an Administrative Assistant. The contact information sheet will be coded and to be re-identifiable to enable the names of those who consented to be interviewed will be available to the researcher however; the confidentiality of the participants will be protected.

Questionnaire and interview data will only be available to the researcher. All data stored on the researcher's computer will be password protected for confidentiality. Only the researcher will know the used password.

Interview data will be coded as per their questionnaire code to protect the participants' confidentiality.

When the final report is written pseudonyms will be used when describing the participant's stories.

4. Voluntary Participation

Participation is entirely voluntary. If you do not wish to take part you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the study at any stage. As the questionnaires are anonymous it will not be possible to remove an individual student's questionnaire data however, they will be reassured that their anonymity and confidentiality will be protected. The interview data including the audio tapes and the transcripts of the interview will be withdrawn from the study and destroyed.

Participants will at all times be reassured that their identity and confidentiality will be maintained.

Your participation in this study is not part of the course that you are taking as an Intern. Your decision whether to participate or not, or to take part and then withdraw, will not affect your Internship clinical evaluation now or in the future.

2. الإجراءات

تبعاً لمرحلتي الدراسة:

- المرحلة الأولى:
ستقوم الطالبات في هذه المرحلة بتعبئة استبيان الدراسة (مرتين)، أولاهما في بداية التدريب العملي والثانية (للمتابعة) عند انتهاء التدريب العملي في أقسام الباطني أو الجراحة. سوف يرفق مع الاستبيان دعوة للموافقة على المشاركة في المقابلة بعد إتمام 12 أسبوع على الأقل في التدريب العملي.
- المرحلة الثانية:
ستتم مقابلة الطالبات اللواتي وافقن على المقابلة باستخدام طريقة المقابلة شبه محكمة البناء وفيها ستعطى المشاركة حرية الاختيار بأن تتم مقابلتها من قبل الباحث أو من قبل باحثة. سوف تتم المقابلات في قاعة الاجتماعات (جناح 24) وسيتم تسجيل المقابلات بالصوت فقط. مدة المقابلة 45-60 دقيقة. سوف يتم تدوين المقابلة على الورق كلمة بكلمة. سوف تتم مراعاة خصوصيتك على الدوام ولن يتم إدراج أية تفاصيل من المقابلة قد تدل على هويتك بأي شكل من الأشكال من كتابه الرسالة أو عند القيام بنشر البحث أو أجزاء منه في مجلات علمية.

3. سرية المعلومات

سوف يتم حفظ الاستبيانات والمعلومات المأخوذة منها في خزانة محكمة الإغلاق في مكان مخصص في المركز التعليمي للخدمات التمريضية في المستشفى. سيتم تشفير الاستبيانات (إزالة الاسم واعطاء رقم) من قبل سكرتيرة في المركز. وسوف يتم تشفير ورقة المعلومات عن الطالبات المشاركات في الدراسة ليتم استخدامها لاحقاً من قبل الباحث لاختيار من ستتم مقابلتهم عشوائياً ممن وافقن على إجراء المقابلة وسوف تراعى سرية المشاركات على الدوام. الباحث هو الشخص الوحيد الذي سيتطلع على الاستبيانات والمعلومات المأخوذة منها أو من المقابلات وسوف يتم حماية البيانات والمعلومات المخزنة في الكمبيوتر باستخدام كلمة مرور خاصة بحفظها الباحث فقط، ومن أجل سرية المعلومات سوف يتم تشفير البيانات والمعلومات من مقابلة كل طالبة باستخدام نفس رمز تشفير استبيان الطالبة. عند تحضير التقرير النهائي للدراسة فسوف تستخدم أسماء مستعارة للمشاركين عند تضمين ما قالوا في التقرير.

4. اختياريّة المشاركة

المشاركة اختياريّة في كافة أجزاء الدراسة. وإن لم ترغب بالمشاركة في أي جزء من الدراسة فلك حرية الخيار حتى لو كنت قررت المشاركة في البداية.

إذا قررت الانسحاب بعد تعبئة الاستبيان، فيكون من الصعوبة إخراج البيانات والمعلومات لهذا الاستبيان كون البيانات غير مرتبطة بأسماء المشاركات. وسيتم التأكيد للمشاركة في حال الانسحاب على المحافظة على سرية المعلومات وعلى عدم ربط أية معلومة باسم المشاركة. وإذا قررت الانسحاب بعد المقابلة، فسوف يتم سحب وإتلاف المادة المسجلة من على أشرطة التسجيل أو المدونة على الورق أو في الكمبيوتر. وسوف يتم باستمرار التأكيد للمشاركات على المحافظة على عدم كشف هوية المشاركات وعلى سرية المعلومات.

إن مشاركتك في هذه الدراسة ليست جزء من التدريب العملي لفترة الامتياز وأن قرار المشاركة (أو عدم المشاركة) في الدراسة أو أي جزء منها لن يؤثر بأي شكل من الأشكال على تقييمك العملي في الوقت الحالي أو في المستقبل.

Before you make your decision to withdraw, please notify the researcher who will be available to answer any question you have about the research project. You can ask for any information you want. Sign the Consent Form only after you have had a chance to ask your questions and have received satisfactory answers.

5. Queries or Concerns

Should you have any queries regarding the progress or conduct of this research, you can contact the principal researcher:

Imad Alfayoumi, Nurse Educator, Nursing Services Education Center, King Abdulaziz Medical City-Riyadh.
Phone: 48411
Pager: 7858

If you have any ethical concerns with how the research is being conducted or any queries about your rights as a participant please feel free to contact the University of Southern Queensland Ethics Officer on the following details.

Ethics and Research Integrity Officer
Office of Research and Higher Degrees
University of Southern Queensland
West Street, Toowoomba 4350
Ph: +61 7 4631 2690
Email: ethics@usq.edu.au

Thank You

الرجاء التحدث مع الباحث قبل اتخاذ القرار بالانسحاب من الدراسة. الباحث متواجد على الدوام للإجابة على أسئلتك حول الدراسة ويمكنك السؤال عن ما شئت حول الدراسة. الرجاء توقيع نموذج الموافقة على الدراسة فقط إذا تمت الإجابة على كل أسئلتك واستفساراتك بوضوح وبشكل مرضي.

5. المتطلبات أو الاستفسارات

في حال وجود أية أسئلة أو متطلبات أو استفسارات الرجاء الاتصال بالباحث على

عماد الفيومي, مدرس تمريض, المركز التعليمي للخدمات التمريضية, مدينة الملك عبد العزيز الطبية-الرياض.
تحويلة: 48411
بيجر: 7858

إذا وجدت أية استفسارات تتعلق بأخلاقيات البحث العلمي حول كيفية القيام بالدراسة أو في حال وجود استفسارات حول حقوقك كمشاركة في الدراسة الرجاء الاتصال بمكتب أخلاقيات البحث العلمي بجامعة جنوب كوينزلاند على العنوان التالي:

Ethics and Research Integrity Officer
Office of Research and Higher Degrees
University of Southern Queensland
West Street, Toowoomba 4350
Ph: +61 7 4631 2690
Email: ethics@usq.edu.au

وشكرا جزيلاً



The University of Southern Queensland
Consent Form

To: College of Nursing Student Intern

Full Project Title: The contextual nature of interns' clinical reasoning abilities when making non-routine clinical judgments for adult patients at medical or surgical units of a tertiary health care facility in Saudi Arabia.

Principal Researcher: Imad H. Alfayoumi (USQ student number: 0050088245)

Principal Supervisor: A/Prof Cheryl Perrin

Associate Supervisor: A/Prof Trudy Yuginovich

1. I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.
2. I understand the purpose of the research project and my involvement in it.
3. I understand that I may withdraw from the research project at any stage and that this will not affect my status or clinical evaluation now or in the future.
4. I confirm that I am over 18 years of age.
5. I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.
6. I confirm that I was given the chance to choose between a female or male interviewer. I confirm that I have selected my interviewer.
7. I understand that I will be audiotaped during the study.
8. I understand that the tape will be retained and will be secured in a locked closet that will be accessed only by the researcher.

I want to be interviewed by a female interviewer: Yes No

Name of participant.....

Signed.....Date.....

If you have any ethical concerns with how the research is being conducted or any queries about your rights as a participant please feel free to contact the University of Southern Queensland Ethics Officer on the following details.

Ethics and Research Integrity Officer
Office of Research and Higher Degrees
University of Southern Queensland
West Street, Toowoomba 4350
Ph: +61 7 4631 2690
Email: ethics@usq.edu.au

Appendix D



University of Southern Queensland

The University of Southern Queensland Proposed Interview Questions (CRNs/Preceptors)

Full Project Title: The contextual nature of interns' clinical reasoning abilities when making non-routine clinical judgments for adult patients at medical or surgical units of a tertiary health care facility in Saudi Arabia.

Principal Researcher: Imad H. Alfayoumi (USQ student number: 0050088245)

Principal Supervisor: A/Prof Cheryl Perrin

Associate Supervisor: A/Prof Trudy Yuginovich

No	Proposed Questions
1.	How do you describe interns' clinical reasoning experience(s) when making non-routine clinical judgments for adult patients at this medical/surgical unit?"
2.	Tell me about a non-routine incident with a patient where you felt Intern's contribution to the patient care affected the patient's clinical outcome?
3.	What do you think assisted the Intern to make that contribution? What about her relationship with her patients?
4.	When did it happen?
5.	Have you supervised/precepted interns during the period from September-December 2011?
6.	What about the trajectory of intern's non-routine clinical judgments?
7.	Can you please give examples for these judgments? In your opinion, how intern arrived to these judgments? How she figure it out?
8.	Let's take the first example, can you please describe what happened before this event and added in reaching to that clinical judgment?
9.	What happened afterward? Are we talking about an improvement in intern's clinical judgments? Or identification of cues?
10.	Why? Can you please provide details?
11.	What about the role of the nursing team in this? What about the people involved in intern's training?
12.	What about the second example? <u>Repeat questions 8, 9, and 10.</u>

Appendix E



University of Southern Queensland

The University of Southern Queensland Participant Information Sheet

TO: CRNs and Preceptors

Full Project Title: The contextual nature of interns' clinical reasoning abilities when making non-routine clinical judgments for adult patients at medical or surgical units of a tertiary health care facility in Saudi Arabia.

Principal Researcher: Imad H. Alfayoumi (USQ student number: 0050088245)
Principal Supervisor: A/Prof Cheryl Perrin
Associate Supervisor: A/Prof Trudy Yuginovich

We would like to invite you to take part in this research project that has been designed to explore the nature of and factors affecting clinical reasoning of student interns and the trajectory of their clinical reasoning throughout internship at adult medical or surgical units. Although the study will not benefit you directly, it will provide information that will impact future program development. The study has been approved by the appropriate people and review boards at University of Southern Queensland-Australia and King Abdulla International Medical Research Center-King Abdulaziz Medical City.

Please read this Plain Language Statement carefully. Its purpose is to explain to you as openly and clearly as possible all the procedures involved so that you can make a fully informed decision as to whether you are going to participate. Feel free to ask questions about any information in the document. You may also wish to discuss the project with a relative or friend or faculty member. Feel free to do this.

Once you understand what the project is about and if you agree to take part in it, it is asked that you sign the attached Consent Form. By signing the Consent Form, you indicate that you understand the information and that you give your consent to participate in the research project.

الى: ممرضى أو ممرضات الموارد الأكاديمية والمدربين والمدربات

عنوان الدراسة الكامل ' طبيعة الاستنتاج السريري لطالبات الامتياز في التمريض اثناء عملية اتخاذ قرارات غير روتينية من قبل الطالبة الممرضى البالغين في الاقسام الباطنية او الجراحية في مستشفى في المملكة العربية السعودية

الباحث: عماد ح. الفيويمى (الرقم الجامعي:0050088245)
المشرف الرئيسي:الأستاذ المشارك شيريل برين
المشرف المساعد: الأستاذ المشارك ترودى ياجينوفيتش

هذه دعوة للمشاركة في هذه الدراسة البحثية المصممة للتعرف على طبيعة الاستنتاج السريري والعوامل المؤثرة على قدرات طالبات التمريض (الامتياز) على الاستنتاج السريري ومعرفة كيفية تطور هذه القدرات عند الطالبات أثناء فترة الامتياز في أقسام الباطني أو الجراحة للكبار في المستشفى. بالرغم من عدم تأثير هذه الدراسة مباشرة عليك إلا أنها ستزودنا بمعلومات تؤدي لتطوير البرنامج مستقبلا. لقد تمت الموافقة على هذه الدراسة من قبل الأشخاص والهيئات المعنية في جامعة جنوب كوينزلاند في استراليا ومركز الملك عبد الله العالمي للأبحاث-مدينة الملك عبد العزيز الطبية.

الرجاء قراءة العبارات التالية جيدا والتي تهدف لتوضيح الخطوات المتبعة في هذه الدراسة بشفافية وانفتاحية لتمكينك من اتخاذ القرار بالمشاركة في هذه الدراسة. الرجاء الشعور بالارتياح للسؤال عن أي جزء في هذه الوثيقة. لك حرية الاختيار إذا رغبت بمناقشة الدراسة مع احد أفراد اسرتك أو صديقائك أو أحد مدرساتك.

في حال تم الإدراك التام لغرض الدراسة وقررت المشاركة فيها، الرجاء توقيع نموذج الموافقة المرفق. هذا التوقيع يشير لفهمك التام للمعلومات عن الدراسة وأنت موافقة على المشاركة فيها.

1. Purpose of Research

The purpose of this project is to explore and describe the contextual nature of Saudi Arabian female interns' clinical reasoning when making non-routine clinical judgments for adult patients at medical/surgical areas as perceived by interns, CRNs, & Preceptors and to describe & explain the reasoning patterns used by interns in these judgments and factors that facilitate or hinder the development of these patterns throughout internship experiences in these areas including role of CRN & preceptor. This will provide information for full description of the nature and presentation of clinical reasoning of those interns when assessing patients to identify significant cues, interpreting data to identify patient's problems & deciding to intervene, respond, or take an action (or not) with the aim of developing recommendations for the development of a Saudi Arabian clinical nursing education model.

2. Procedures

Your involvement in this project will require:

- The participation in a semi-structured interview. Participants will have a choice to be either interviewed by the male researcher or a trained female interviewer. The interview will take place in Word 24 conference room. The interviews will be audio taped and will take 45-60 minutes. A transcript of what is said at these interviews will be transcribed verbatim. Your privacy will be protected and no details of the interviews that might identify you will be included.

3. Confidentiality

All data collected will be stored in a locked closet housed at the Nursing Education centre and in the researcher's home. Data will only be available to the researcher. All data stored on the researcher's computer will be password protected for confidentiality. Only the researcher will know the used password. Interview data will be coded to protect the participants' confidentiality and anonymity.

When the final report is written or data is prepared for publication, pseudonyms will be used when describing the participant's stories.

1. الغرض من الدراسة

تهدف هذه الدراسة للتعرف ووصف طبيعة الاستنتاج السريري لطالبات التمريض (الامتياز) السعوديات عند اتخاذ قرارات غير روتينية للمرضى البالغين في أقسام الباطني أو الجراحة حسب رأي وادراك الطالبات، مدربة الموارد الاكلينيكية، و المدربة السريرية، بالإضافة لوصف وتبيان أنماط الاستنتاج السريري المستخدم من قبل الطالبات والتعرف على العوامل التي ساعدت على تنمية أو اعاقه تطور هذه الانماط خلال فترة الامتياز بما فيها دور مدربة الموارد الاكلينيكية والمدربة السريرية.

وهذا سوف يوفر معلومات تؤدي لوصف تام لطبيعة وشكل الاستنتاج السريري لطالبات التمريض (الامتياز) عند القيام بتقييم حالات المرضى لاستنباط مؤشرات ذات دلالة، تحليل المعلومات للتعرف على مشاكل المرضى ومن ثم اتخاذ القرار بعمل ما يلزم (أو عدم القيام بأي اجراء) بهدف وضع توصيات لبناء نموذج للتعليم التمريضي السريري في المملكة العربية السعودية.

2. الإجراءات

مشاركك في هذه الدراسة تتطلب:

- حضور مقابلة شبه محكمة البناء وفيها ستعطي المشاركة (الأنثى) حرية الاختيار بأن تتم مقابلتها من قبل الباحث أو من قبل باحثة. سوف تتم المقابلات في قاعة الاجتماعات (جناح 24) وسيتم تسجيل المقابلات بالصوت فقط. مدة المقابلة 45-60 دقيقة. سوف يتم تدوين المقابلة على الورق كلمة بكلمة. سوف تتم مراعاة خصوصيتك على الدوام ولن يتم ادراج أية تفاصيل من المقابلة قد تدل على هويتك بأي شكل من الأشكال.

3. سرية المعلومات

سوف يتم حفظ معلومات وبيانات الدراسة في خزانة محكمة الأغلاق في مكان مخصص في المركز التعليمي للخدمات التمريضية في المستشفى أو في منزل الباحث. الباحث هو الوحيد الذي سيتطلع على معلومات وبيانات الدراسة وسوف يتم حماية البيانات والمعلومات المخزنة في الكمبيوتر باستخدام كلمة مرور خاصة يحفظها الباحث فقط. ومن أجل سرية المعلومات ولعدم ربط أية معلومة بمشارك معين أو مشاركة فسوف يتم تشفير بيانات ومعلومات كل مقابلة. وعند تحضير التقرير النهائي للدراسة أو تحضيرها للنشر فسوف تستخدم أسماء مستعارة للمشاركين عند تضمين ما قالوا في التقرير

4. اختياريّة المشاركة

4. Voluntary Participation

Participation is entirely voluntary. You can withdraw from the study at any stage. If you decide to be interviewed and later change your mind, you are free to do so. The interview data including the audio tapes and the transcripts of the interview will be withdrawn from the study and destroyed. Participants will at all times be reassured that their identity and confidentiality will be maintained.

Your decision whether to participate or not, or to take part and then withdraw, will not affect your administrative obligations, your status or evaluation as a Preceptor or Clinical Resource Nurse now or in the future.

Before you make your decision to withdraw, please notify the researcher who will be available to answer any question you have about the research project. You can ask for any information you want. Sign the Consent Form only after you have had a chance to ask your questions and have received satisfactory answers.

5. Queries or Concerns

Should you have any queries regarding the progress or conduct of this research, you can contact the principal researcher:

Imad Alfayoumi, Nurse Educator, Nursing Education Center, King Abdulaziz Medical City-Riyadh.
Phone: 48411
Pager: 7858

If you have any ethical concerns with how the research is being conducted or any queries about your rights as a participant please feel free to contact the University of Southern Queensland Ethics Officer on the following details.

Ethics and Research Integrity Officer
Office of Research and Higher Degrees
University of Southern Queensland
West Street, Toowoomba 4350
Ph: +61 7 4631 2690
Email: ethics@usq.edu.au

Thank you

المشاركة اختياريّة في كافة اجزاء الدراسة. وان لم ترغب/ ترغبين بالمشاركة في أي جزء من الدراسة فلك حرية الخيار حتى لو كنت قررت المشاركة في البداية.

اذا قررت الانسحاب بعد المقابلة، فسوف يتم سحب واتلاف المادة المسجلة من على أشرطة التسجيل أو المدونة على الورق أو في الكمبيوتر.

وسوف يتم باستمرار التأكيد للمشاركات على المحافظة على عدم كشف هوية المشاركين أو المشاركات وعلى سرية المعلومات.

ان قرار المشاركة (أو عدم المشاركة) في الدراسة أو أي جزء منها لن يؤثر بأي شكل من الأشكال على التزاماتك الإدارية أو على وضعك في قسمك أو على تقييمك العملي في الوقت الحالي أو في المستقبل.

الرجاء التحدث مع الباحث قبل اتخاذ القرار بالانسحاب من الدراسة. الباحث متواجد على الدوام للاستجابة على أسئلتك حول الدراسة ويمكنك السؤال عن أي شيء حول الدراسة.

الرجاء توقيع نموذج الموافقة على الدراسة فقط اذا تمت الإجابة على كل أسئلتك واستفساراتك بوضوح وبشكل مرضي.

5. المتطلبات أو الاستفسارات

في حال وجود أية أسئلة أو متطلبات أو استفسارات الرجاء الاتصال بالباحث على:

عماد الفيومي، مدرس تمريض، المركز التعليمي للخدمات التمريضية، مدينة الملك عبد العزيز الطبية-الرياض.
تحويلة: 48411
بيجر: 7858

أذا وجدت أية استفسارات تتعلق بأخلاقيات البحث العلمي حول كيفية القيام بالدراسة أو في حال وجود استفسارات حول حقوقك كمشاركة في الدراسة الرجاء الاتصال بمكتب أخلاقيات البحث العلمي بجامعة جنوب كوينزلاند على العنوان التالي:

Ethics and Research Integrity Officer
Office of Research and Higher Degrees
University of Southern Queensland
West Street, Toowoomba 4350
Ph: +61 7 4631 2690
Email: ethics@usq.edu.au

وشكراً جزيلاً



The University of Southern Queensland
Consent Form

TO: Clinical Resource Nurse or Preceptor

Full Project Title: The contextual nature of interns' clinical reasoning abilities when making non-routine clinical judgments for adult patients at medical or surgical units of a tertiary health care facility in Saudi Arabia.

Principal Researcher: Imad H. Alfayoumi (USQ student number: 0050088245)

Principal Supervisor: A/Prof Cheryl Perrin

Associate Supervisor: A/Prof Trudy Yuginovich

1. I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.
2. I understand the purpose of the research project and my involvement in it.
3. I understand that I may withdraw from the research project at any stage and that this will not affect my status or clinical evaluation now or in the future.
4. I confirm that I am over 18 years of age.
5. I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.
6. I confirm that I was given the chance to choose between a female or male interviewer. I confirm that I have selected my interviewer.
7. I understand that I will be audio taped during the study.
8. I understand that the tape will be retained and will be secured in a locked closet that will be accessed only by the researcher.

I want to be interviewed by a female interviewer: Yes No

Name of participant.....

Signed.....Date.....

If you have any ethical concerns with how the research is being conducted or any queries about your rights as a participant please feel free to contact the University of Southern Queensland Ethics Officer on the following details.

Ethics and Research Integrity Officer
Office of Research and Higher Degrees
University of Southern Queensland
West Street, Toowoomba 4350
Ph: +61 7 4631 2690
Email: ethics@usq.edu.au

Appendix F

University of Southern Queensland
Faculty of Science
PhD Research Study
Confidentiality Agreement

Study Title: The contextual nature of interns' clinical reasoning abilities when making non-routine clinical judgments for adult patients at medical or surgical units of a tertiary health care facility in Saudi Arabia.

Investigator: Imad Alfayoumi, Nurse Educator, NEC

I, _____ (print full name), commit to confidentiality relating to this study that will be conducted at King Abdulaziz Medical City-Riyadh. The data collection will take place during the months of October through December 2011 and January 2012.

This commitment concerns:

1. Information provided by the participants verbally, in writing, or any other mean to the investigator, the female interviewer, or to you.
2. Matters relating to meetings and telecommunication concerning the study.
3. All documents or files concerning the study.

I fully understand that a proven break in confidentiality will lead directly to the cancelation of your contract with the Investigator.

Signature

Date

Witness

Date

Imad Alfayoumi (the Investigator)

Date

THE FEMALE INTERVIEWER RESPONSIBILITIES IN DATA COLLECTION AND ANALYSIS INCLUDE:

1. Conducting the interviews for those interns requesting to be interviewed by a female interviewer as per the interview schedule prepared by the Administrative assistant (AA).
2. Keep a record of her notes during the interview. This record will be handed to the researcher on daily basis as word documents.
3. Keep a reflexive record that will be communicated to the researcher on weekly basis as word document.
4. Participate in daily briefings and debriefings with the researcher.
5. Participate in reviewing memos considering dialogue between herself and the researcher when needed. These discussions will take place in the debriefings at the end of the day.

RESPONSIBILITIES OF THE “AA” THROUGHOUT THE COURSE OF STUDY:

1. Collect the questionnaires (in the two occasions) received via hospital interdepartmental mail system
2. Take out participants' names from questionnaires and assign them numbers placed in the box at the upper right side of the front bage of the questionnaire.
3. Develop a contact sheet that links participants' names with their assigned numbers.
4. Secure the questionnaires in a locked closet till been requested by the researcher for analysis.
5. Develop a table of dates for the second administration of questionnaires that contains names and dates.
6. Develop a table of interns requesting to be interviewed by a female interviewer. Receive names of CRNs and preceptors requesting to be interviewed by a female interviewer.
7. Remind interns of the date of the second administration of the questionnaires.
8. Develop interviews schadule (according to researcher's directives) and communicate it to the researcher and the female interviewer
9. Liaise with ward 24 to book the conference for the interviews according to the interview schadule
10. Receive any interview material, cassettes, recorders, participants' consent forms received from the researcher and the female interviewer and secure them in the allocated closet that will be locked at all times.

Appendix G

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Page 1 of 1



Title: ASSESSING RATIONAL AND INTUITIVE STYLES: A HUMAN INFORMATION PROCESSING METAPHOR
Author: William Taggart, Enzo Valenzi
Publication: Journal of Management Studies
Publisher: John Wiley and Sons
Date: Mar 1, 1990
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Appendix H



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OFFICE OF RESEARCH AND HIGHER DEGREES

Helen Phillips

Ethics Officer

PHONE (07) 4631 2690 | FAX (07) 4631 1995

EMAIL ethics@usq.edu.au

Wednesday, 4 May 2011

Mr Imad Hasan Alfayoumi
Faculty of Sciences
Department of Nursing and Midwifery
USQ Toowoomba Campus

Dear Mr Alfayoumi,

The USQ Fast Track Human Research Ethics Committee (FTHREC) assessed your application and agreed that your proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research (2007)*. Your project has been endorsed and full ethics approval granted.

Project Title	How do students learn? Understanding how female Saudi Arabian nursing interns develop their clinical reasoning skills.
Approval no.	H11REA047
Expiry date	31/04/2013
FTHREC Decision	Approved conditional on the applicant receiving written consent from the Saudi Arabian authorities.

The standard conditions of this approval are:

- conduct the project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments made to the proposal required by the HREC
- advise (email: ethics@usq.edu.au) immediately of any complaints or other issues in relation to the project which may warrant review of the ethical approval of the project
- make submission for approval of amendments to the approved project before implementing such changes
- provide a 'progress report' for every year of approval
- provide a 'final report' when the project is complete
- advise in writing if the project has been discontinued.

For (c) to (e) proformas are available on the USQ ethics website: <http://www.usq.edu.au/research/ethicsbio/human>

Please note that failure to comply with the conditions of approval and the *National Statement* may result in withdrawal of approval for the project.

You may now commence your project. I wish you all the best for the conduct of the project.

A handwritten signature in black ink, appearing to read 'Helen Phillips'.

Helen Phillips
Ethics Officer
Office of Research and Higher Degrees

Appendix I

Health Affairs Executive Office Kingdom of Saudi Arabia 07/09/2011 15:03 1/7815/2011	File # 7815/2011
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National Guard-Health Affairs
King Abdulaziz Medical City
Institutional Review Board

16586/16669 1515 16567 CLNResearch1@ngha.med.sa

المملكة العربية السعودية
الحرس الوطني - الشؤون الصحية
مدينة الملك عبدالعزيز الطبية

MEMORANDUM
Ref. #: IRBC/162/11

Date: (G) 03 SEPTEMBER 2011
(H) 05 Shawwal 1432

To: MR. IMAD HASSAN AL FAYOUMI
Nurse Educator
Nursing Education Department
National Guard Health Affairs


Subject: Protocol RC11/032- "The Contextual Nature of Interns Clinical Reasoning Abilities when Making Non-Routine Clinical Judgments for Adult Patients at Medical or Surgical Units of a Tertiary Health Care Facility in Saudi Arabia"


This is in reference to your subject proposal, which has been expedited reviewed by the IRB on 24th of August 2011. Upon recommendation of the Research Committee, and following the review of the IRB on the ethical aspects of the proposal, you are granted permission to conduct your study.


Your research proposal is approved for one year commencing from the above date with the following conditions:

TERMS OF APPROVAL:

- Annual Reports:** Continued approval of this project is dependent on the submission of an Annual Report. Please provide KAIMRC with an Annual Report determined by the date of your letter of approval.
- Amendments to the approved project:** Changes to any aspect of the project require the submission of a Request for Amendment to KAIMRC and must not begin without an approval from KAIMRC. Substantial variations may require a new application.
- Future correspondence:** Please quote the project number and project title above in any further correspondence.
- Monitoring:** Projects may be subject to an audit or any other form of monitoring by KAIMRC at any time.
- Retention and storage of data:** The PI is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.


Prof. Amin Kashmeery
Head, Biomedical Ethics Section
National Guard Health Affairs


Dr. Mohammed Al Jumah
Executive Director, KAIMRC
National Guard Health Affairs


Dr. Bandar Al Knawy
Chief Executive Officer
National Guard Health Affairs

AK/ls
P. O. Box 22496, Riyadh 11426
Tel. 2520088
Telex : 403450 NGRMED SJ
KFH-MATERIALS 14574 (05/96) (ORACLE 29795)

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Appendix J

Internship clinical educational context

The internship clinical education context is presented in this study as the environment or the perspective within which the clinical reasoning experience at the time of uncertainty of student interns is taking place. The essential structure of this context states 'within a supervised educational perspective and following an initial elusive stage, the student interns experienced a professional stage of clinical practice'

The elusive stage of the internship experience is describing a combination of behaviors experienced by the nurse intern in the initial two to four weeks of internship as a result of indefinable educational parameters for both the learner (student intern) and the facilitators (the CRN or the nurse preceptor). The behaviors include, doubtful as not knowing why and how, being cautious, shy and emotional, feeling lonely and neglected, and irresponsible learning behavior. Within these behaviors is a driving force promising of the development of professional habits needed for professional practice.

The professional stage of internship represents the terminal of the internship clinical education experience. It is a developmental stage of the student intern that includes a growing sense of responsibility, being trusted, reflective habit, asking when not knowing, being confident, and becoming faster.

Clusters	Themes	Definition
INTERNSHIP CLINICAL EDUCATIONAL CONTEXT: The Elusive stage	Doubtful or not knowing why or how	All of the intern respondents doubted one or more of the nursing care aspects at the beginning of their internship. These doubts were linked with their inability to know why or how these aspects are operating.
	Being cautious	Were considering patient safety as the main source of their cautious behavior. Asking in order not to encounter a mistake. CRN: Student interns are eager to know not only how to do things but also why these things are done and they are good in resourcing. This indicates that in addition to them being cautious, they are keen to know the reason behind actions
	Shy and emotional	It represents a group of strong feelings that were either putting the intern down or forcing her to undertake a corrective action or behavior. These strong feelings are presented as either antecedents or consequences in a cause and effect chain of relationships. For example, blaming herself for her negative encounters.
	Feeling lonely and neglected	This feeling refers to their perceptions of being neglected, ignored, dumped, unsupported or controlled by their preceptors or the nursing team One CRN indicated that intern's eagerness to know and to complete their assignments is faced with a malingering response of the busy preceptor.
	Irresponsible learning behavior	A description of only one intern who was being detached from the team by performing tasks without even notifying her preceptor. A CRN who highlighted that some of the interns won't bother themselves searching other resources when they get no answer for an assigned question or query from their CRN
INTERNSHIP CLINICAL EDUCATIONAL CONTEXT: The professional stage	A growing sense of responsibility	A sense of responsibility towards their learning and knowing-why ability; patient safety; and improving in their competence, care planning, reactions to patient care needs and interventions, clinical judgment, time management, and communication that grow throughout their medical or surgical internship rotations. This sense of responsibility is evident as they questioned doctors' orders; having increased compliance; admitting mistakes; growing socially; having the rationale; considering their scope of practice; and striving for excellence. The significant statements of the student interns in this stage contain meanings that are directed towards the interns themselves, to their patients, and to the professional code of conduct. CRN: interns proposed practical solutions as active unit members.
	Being trusted	Trusted by their patients, their CRNs or preceptors, the nursing team, or by a combination of these. CRN: when assessing patients to identify their problems and at the time of nursing interventions. Also they knew the rationale behind these nursing actions
	A reflective habit	Intern informants reflected on their actions because they tested the benefits of reflection in improving their practices and on them personally. Their stories contained terms as learning, improving, and making things better.
	If I don't know, I will ask	In case of new encounters, procedures, or disease processes they will ask.
	Having the needed confidence	Interns' confidence is linked mostly to the "know-how" and the "know-why" component of their competence. A preceptor related their high confidence to the completion of their mandatory competencies
	Becoming faster	Describes how the interns have realised the importance of the time factor in their internship journey while dealing with their patients. They became faster and their actions are taking less time.

Interns' Clinical Reasoning Experience

The essential structure	Themes	Definition
<p>THE CLINICAL REASONING EXPERIENCE “within an internship clinical teaching perspective and following the adoption of an action impelled reasoning style, the student interns experienced a reasoning leap that facilitated the development of their own reasoning style, analyticity, to enable them undertake non-routine clinical judgments at the time of uncertainty during a medical or a surgical rotation”</p>	<p>Action-Impelled Reasoning</p>	<p>A form of reasoning that provides the intern with the minimal but the safest and the most definite parameters needed to undertake an action impelled clinical judgment that requires her to focus only on the know-how component of the individual task and to grasp the reason behind it by asking her preceptor. This reasoning style is adopted while all student interns are experiencing an indefinable stage of internship called the elusive stage.</p>
	<p>The reasoning Leap</p>	<p>A deliberative form of reasoning that energized by a powering source and monitored by a reasoning guiding rule by the intern herself to upgrade her reasoning to a higher level than the action impelled zone.</p>
	<p>Developing own style: Analyticity</p>	<p>The deliberative reasoning style through which the nurse intern is reflecting patient encounters to mental parameters that are developed throughout an experiential learning process that necessitates reflective practice and questioning components to undertake relevant patient-care routine and non routine clinical judgments under conditions of uncertainty.</p> <p>This analyticity, as the interns' own style, is a reasoning ability developed throughout a deliberative, active processe monitored by the nurse intern who went through a reasoning leap following an action impelled reasoning to build the mental parameters needed to undertake routine clinical judgments or to advice or participate in non-routine clinical judgments in a medical-surgical internship context.</p>

Non-routine clinical judgments are those encountered while the intern is having no previous relevant clinical experience to these judgments. These will be considered as **routine** clinical judgments following several successful exposures. A level of **uncertainty** was accompanying any new experience of a familiar task but with another preceptor throughout the internship rotation.

Assumption: student interns possessed a group of behaviors or characteristics throughout their medical-surgical supernumerary journey that melded beginners' behavior with more experienced behavior.

Factors Affecting interns' Clinical Reasoning

Clusters	Themes	Definition
<p>Unit Attitude Towards Learners</p> <p>represents a critical component in supporting the overwhelmed learners who are seeking conducive, and sometimes challenging, learning opportunities to enable them to attain their goal of undertaking reasoned clinical judgments and becoming part of the nursing workforce.</p> <p>Indicates how conducive this unit attitude is in enriching both the internship and the clinical reasoning experiences of student interns.</p>	<p>CRN Support</p>	<p>Represents how supportive the CRN for the nurse intern in relation to their internship experience that includes the clinical reasoning experience</p> <p>The clinical reasoning support included asking and answering questions, giving assignments and case studies, validating interns' readings, analysing cases and linking various aspects of care together, providing constructive feedback throughout the rotation and a lot of positive feedback at the beginning, and evaluating the preceptors' feedback. The general support for their internship learning experience includes examples as providing them with the initial unit orientation, having regular meetings, working with them to minimize the risk of being rejected by the patients and how to minimize their worries when dealing with male patients of family members, stressing the collegueship, and monitoring the overall process.</p>
	<p>Preceptor Support</p>	<p>Describes preceptor's openness to the presence of the student intern and inclusion of her in every day practice to meet entry level requirements to professional practice including intern's proper substantiation of clinical decisions. The latter proof (reason) possession, that reflects the intern's clinical reasoning ability, is an individual responsibility as indicated by the entry level criteria as well as the responsibility of the CRN as the clinical educator responsible to oversee the entire clinical educational experience.</p>
	<p>Nurses & Healthcare Team Support</p>	<p>Refers to the team's support in conveying a welcoming behavior, answering interns' questions, and inviting them to casual learning opportunities.</p>
<p>Intern's Learning Behavior</p>	<p>Previous Knowledge and Experience.</p>	<p>The knowledge and skills' components, or what an intern called "separated pieces", attained and retained throughout the four year studentship period and then retrieved to support a relevant clinical situation in internship.</p> <p>Considered a factor impacting both the interns' clinical reasoning and the subsequent clinical judgment at the time of uncertainty.</p> <p>This background needs to be assessed before and sometimes after clinical encounters</p>
	<p>My Readings</p>	<p>Gives a shape and ownership to what they are reading as providing them with the declarative knowledge needed for their reasoning processes. obtaining declarative knowledge through intern's readings coupled with the procedural knowledge and relevant discussion with the clinical facilitator is the essence of Petrina's (2007) socio-technical knowledge.</p>
	<p>The female Saudi Arabian learner</p>	<p>A decisive deliberative behavior of a female Saudi learner who is capable of developing her own reasoning style and professional abilities while encountering the difficulties of an elusive internship phase that are amplified by the social male-female constraints.</p>
<p>Being accepted by the patients</p>	<p>Being accepted by the patients</p>	<p>Being accepted by their patients and gained their trust as a result of their overall professional or clinical reasoning development. This acceptance is a major contributing factor to the interns' confidence as revealed by most of the informants.</p>

Appendix K

Audit Trail for the Elusive Stage (interns' descriptions)	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
1. Doubtful or not knowing why or how:	
A. "At the beginning there were a lot of doubts and I was not sure if it is the correct decision or not.. I needed to ask continuously ...now I feel more confident than at the beginning, there is a big difference between that time and now ...I was shy ... no, I was not sure."	Doubting own decisions consumed most of intern's <u>confidence</u> and left her asking constantly.
B. "At the beginning I could not use the Quadramed, I was watching and seeing certain decisions without knowing why...they are increase the drug dose ... or decrease it ... I don't know why." "I thought I had the needed confidence because of my high GPA, but the story is totally different."	Seeing without knowing why and lacking the electronic documentation ability consumed most of the intern's <u>confidence</u> .
C. "At the beginning I could not understand the abbreviations I was asking the preceptor about everything, even the assessment.... I did not have the ability to talk to the doctors because if he asked for something I was afraid that I won't be able to provide the answer"	Asking about everything as the intern was facing difficulty with the abbreviations and even the assessment. Not talking to the doctors as the intern doubted her ability to respond to his or her queries.
D. "The why was so hard for me; sometimes you will find no one answering your why and sometimes you will get a wrong answer, so you will start relying on self- teaching ... it is time consuming."	Facing difficulty in knowing why as sometimes not finding an answer to her questions.
E. "At the beginning I faced difficulty with decision making....I used to ask the preceptor but she asked me continuously to search for it"	Facing difficulty with decision making that is aggravated by lack of preceptor's response to intern's questions.
F. "The unit was new to us; I was even unaware of patients' needs.....but now I know"	Feeling doubtful even with the identification of patients' needs.
G. "At the beginning I was seeing things that I could not reason, and I was focusing on my competencies how am I going to finish my competencies and to become familiar with the new environment Then after having a <u>clear view about the patients</u> and the cases you can make certain judgments."	Seeing without knowing why and how, coupled with intern's worries about how to complete her competencies and how to become familiar with the new environment.
H. "Deciding on the interventions was not that good with me ...I used to go back to my preceptor."	Going back to her preceptor as the intern was facing difficulty with decisions relevant to interventions.
2. Being Cautious:	
D. "I kept asking my preceptor questions because I was afraid to encounter a mistake."	Asking in order not to encounter a mistake.
E. "I don't want to harm the patient ... the Nurse Coordinator (NC) and the physicians are very good, they answered all of my questions."	In the absence of preceptor's response (see her response above), asking the NC and the physicians in order not to harm the patient.
G. "I was asking about everything in order not to harm the patients."	Asking in order not to harm the patient.
3. Shy and Emotional:	
A. "With negative encounters I was blaming myself I used to give up."	Giving up after blaming self as a response to negative encounters.
C. "I was afraid and shy at the beginning.... I did not answer any phone call to the unit."	Not answering the phone calls to the unit as being afraid and shy.
D. "It was a bit difficult dealing with male patients."	Finding difficulty dealing with male patients.
E. "I felt frustrated, so I said to my preceptor you need to teach me."	Urging the preceptor to teach her to alleviate her frustration.

- F. "I was so emotional but I learned to control myself afterwards."
- H. "I was shy to handle male patients."

Unable to control her emotions at the beginning of internship.
Finding difficulty dealing with male patients as intern felt shy.

4. Feeling Lonely and Neglected:

- A. "Some of the preceptors at the beginning reacted as if I am not there, she would do the procedures without telling me."
- B. "Some of the preceptors at the beginning tried to control me. They were saying you are a student and you are not allowed to be with the patient ...just follow me. Others are saying this patient is not mine anymore my, he is yours."
- C. "When the doctors' rounds come, my preceptor used to ignore me."
- D. "Sometimes no one is answering your WHY, it is time consuming searching yourself.... the nurses were not cooperative the first two weeks."
- E. "I requested to change my preceptor because she was not teaching me."
- F. "After the CRN challenged me at the beginning, my reading became a habit ... I wanted to prove something for them." "the physicians are supporting us more than the nursing staff."
- G. "The preceptor won't allow me to do it (the interventions) before being deemed competent I mean before the competency assessment."

Feeling neglected as her preceptor was doing the procedures without telling her.

Feeling controlled and sometimes lonely as the intern is receiving contradictory messages from different preceptors.

Feeling ignored by her preceptor at the time of doctors' round.

Feeling dumped by nurses when wanting to know-why; searching herself consumes much of the precious time.

Feeling neglected as the preceptor is not attending to her learning needs.

Feeling unsupported by the nursing staff after being challenged at the beginning by her CRN.

Feeling unsupported as the preceptor is not offering the preliminary learning opportunities.

5. Irresponsible learning behavior:

- H. At the beginning and with similar cases, I could have taken the temperature and document it and that's it ... may be I won't inform my preceptor But now, I will figure out solutions and will deal with it and let my preceptor know I will keep considering my scope of practice."

Being detached from the patient care process as not complying with the professional obligations of interns' scope of practice.

Appendix L

Audit Trail for the Elusive Stage (CRNs' and preceptors' descriptions)	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
1. Doubtful or not knowing why or how:	
I. "At the beginning they are worried because they still struggle with the procedures They don't know how ... You can see that their confidence is low.	Being worried replaced the interns' confidence as they still struggle with the procedures.
J. "At the beginning they don't voice up they will just observe and they tell me that what they have learned at the college is different there is a gap ... when they start working they try to bridge between the two ... sometimes what they have learnt cannot be applied clinically, I mean based on the treatment of the patient and the case itself..... sometimes you need to change a little bit."	Consumed with silence and sharp sights as they detected a gap between what they have learned and the current clinical performance.
K. "Their major dilemma is to know the routine and to complete their assignments."	Struggling with unit routine and their many assignments.
L. "When they first come they are quite and hesitant.... they are more task and routine oriented ... when to do QCPR documentation when to give medications which doctor is coming when this is a bit of a sad time in the internship I think they need good 4-5 weeks to settle down into the routine ... also they can't multi task."	Unable to settle down as they struggle with unit routine and nursing tasks.
N. "if you were asking WHY at the beginning they cannot answer ... I don't know is it because they are shy or they are not sure of the answer ... at the beginning my current intern was just observing She was hesitant talking to the doctors."	Unable to know-why precipitated their silence and hesitation to talk to the doctors.
P. "At first they will be hesitant."	Consumed with hesitance.
2. Being Cautious:	
J. "Sometimes they observe how the nurses do things and if it happens again the intern will follow exactly what the nurses have done and in case of a case that has never happened previously they will ask the CRN."	Following exactly preceptor's steps and asking the CRN when encountering new cases.
K. "They look at the thing from student perspective and because they always follow the preceptor in what they are doing they have limited judgment in what they can do."	Following exactly preceptor's style has limited their judgment ability.
L. "The interns are keen to know why they are doing things and they are very good in resources."	Searching to know-why.
M. "Actually they were informed that they cannot do anything without the preceptor's presence and we ask them to ask their preceptor first....as per their scope of practice."	Asking the preceptor before doing as a legal, professional obligation.
N. "Everything they do they will ask permission from the preceptor to do....they will be always beside their preceptor and in stage two you can trust them already ..for interns in stage one you have to check if they are right."	Following exactly preceptor's style and instructions as intern's actions need continuous checking at the beginning of internship.
3. Shy and Emotional:	
I. "with the procedures they will panic...even with an encounter with the patient's family they will panic....they need experience.....They face difficulty with total nursing care at the beginning...when they were students they used to come only for one day...but now she needs to	Panicking with procedures or with an encounter with a patient family and running away when requested to clean the patient as part of the total care because they didn't used to it.

do everything for the patient.....she needs to clean the patient....they are not used to do it...culturally...and sometimes because the patient is having a sitter....when we were asking them to do any of these procedures they used to run away...

L. "At the beginning they are fragile when you are giving them feedback."

M. "Usually at the beginning they are shy ...the environment new colleagues are major factors affecting them."

Low tolerance for feedback.

Shy because of the new environment and colleagues.

4. Feeling Lonely and Neglected:

I. "...the preceptors need to finish their work....and interns need to complete the many assignments they have...some of the preceptors will take a short cut and say ask your CRN, others don't answer because they don't feel confident of their answer ... they may ask the intern to go and look for the answer."

Interns' eagerness to know and to complete their many assignments is faced with a malingering response from the side of the busy preceptor.

J. "The interns like challenging work ... unfortunately, our unit is a long term unit and the work is static I cannot blame the preceptors because they are working like robots they just do, do, do, and they are not initiating an interesting learning environment."

Interns strive for a challenging work is contained as her busy preceptor is unable to initiate additional interesting learning opportunities in a static work environment.

5. Irresponsible learning Behavior:

I. "I noticed from my observation that when you give them an assignment..... some are only interested in the short cut She will just go and ask someone for an easy answer and if she will not find the answer she won't bother herself to look for the resources, she won't go through a policy or a procedure manual."

Not bothering self to search other resources when getting no answer.

Appendix M

Audit Trail for the Professional Stage: developing professional habits (interns' descriptions)	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
<p>1. A growing sense of responsibility:</p> <p>A. "Really I want to learn ...I am doing things to develop myself...."</p> <p>B. "I feel that I am the patient advocate....it is the patient's life...if it is wrong just say it ...It is all about safe practice."</p> <p>C. "I got the courage to question the doctors' orders." "I am learning from my mistakes ... now I am following strictly the medication protocol, I am taking the medication sheet inside the patient's room."</p> <p>D. "I belief that anything done for the patient is significant." "The real development is in your communication and becoming good in the weak portions.... really I want to excel but the nurses are doing only the basics."</p> <p>E. "We are dealing now with real patients ... it is not like when we were students. One day I asked my preceptor to call the CCRT for one of our patients ... she kept telling me it is too early ... then I insisted based on the CCRT criteria ... when the team came they did not question our decision."</p> <p>F. "I became more professional, we are the patient advocates ...our CRN keeps relating to the social matter with the male patients because he is male and Saudi, he is trying to protect us, but I won't stop ... I know the limits and Nursing means caring." "I am strictly following the protocols I am discussing the plan with the NC because I don't want to harm the patient or violate our scope of practice."</p> <p>G. "The nurses don't care about the psychological aspects when providing nursing care, they should care ... I used to inform them but they do care about the medical issues only." "My arguments with the physicians are for the sake of the patients."</p> <p>H. "But now, I will figure out solutions and will deal with it or let my preceptor know I will keep considering my scope of practice.... I will become a nurse with my licence, I am taking things seriously."</p>	<p>Sensing the need for learning as a self-development tool.</p> <p>Feeling responsible for patient's safety.</p> <p>Possessing the needed practical knowledge to question the doctors' orders. <u>Complying</u> strictly with the hospital protocols.</p> <p>Admitting mistakes.</p> <p>Acknowledging the significance of any action done for the patient.</p> <p>Recognizing the improvement in communication and in the weak portions of her work as the real development. Striving for excellence but restricted by nurses' low practice ceiling.</p> <p>Feeling responsible and accountable to attend to patient's needs as she is dealing with real patients.</p> <p>Growing socially and professionally as having the rational of being the patient advocate who doesn't want to harm the patient or violate the scope of practice.</p> <p>Considering the psychological aspect when providing nursing care and advocating it to the disease oriented nurses. Becoming a <u>patient advocate</u> when discussing things with the physicians.</p> <p>Considering interns' scope of practice and terms of professional conduct when figuring out and when implementing solutions for patient problems.</p>
<p>2. Being <u>trusted</u>:</p> <p>A. "The preceptor and the CRN trusted me which gave me the needed trust in self and confidence...one of the patients who had a low O₂ saturation refused the nasal cannula...I brought the oximetre and showed her how it works and told her let's put the cannula on and see if it will change and if you are still not convinced we will remove it, then she agreed and after seeing the improvement she kept the nasal cannula. The primary nurse tried to convince this patient since morning and the patient continuously rejected but after my intervention the patient accepted the cannula, sometimes they need to see an improvement."</p>	<p>The preceptor and the CRN as well as the patients trusted the intern.</p>

<p>B. "The patients know that you are caring for them, they are appreciating and respecting what I am doing for them. I used to group things together allowing the patient more time to rest."</p> <p>C. "Some preceptors are asking me if I want to present the case to the doctors."</p> <p>D. "It took me two months when all of my decisions are supported by the preceptor."</p> <p>E. "Today, one of my patients who refused to take her medications over the weekend refused everyone who got into her room ... I talked to her, I gave her coffee and water and then she accepted everything, it is about the way you are talking to the old people..... I am part of all of this.... the nurses are saying: how you will leave us, really you became part of the team."</p> <p>F. "I became effective especially after completing my mandatory competencies I have developed socially and my patient teaching abilities improved..... I feel now at ease and feel trusted.... the patients trust me My NC relies on me.... the CRN knew our capabilities, he trusted us. "</p> <p>G. "I am having a clear view about the patients and their cases ... I don't want to go back to the dependent state."</p> <p>H. "The team who have dealt with me are continuously testing me and trusting me ... they handle things to me. "My language and knowledge about the culture is helping the preceptor."</p>	<p>Being appreciated and respected by the patients as they realised that the intern care for them.</p> <p>Being trusted by her preceptors to present the cases to the doctors. Grasping the needed decision making ability that is supported by the preceptor after two months of work in the unit. Gaining patients' trust as being familiar with the Saudi traditions and as becoming part of the nursing team.</p> <p>Being trusted and feeling on ease after completing the mandatory competencies and having developed socially.</p> <p>Trusting own capabilities as having clear view about the patients and as becoming independent.</p> <p>Being trusted as the team delegate responsibilities to her; her Arabic language and knowledge about the culture assisted the nurses.</p>
<p>3. A reflective habit:</p> <p>A. "I reflect on things quite often, it is my style rather than following mechanistic steps, and I used to correct my future actions....my reflection became more comprehensive, serious, and ethical with negative encounters at the beginning I was blaming myself, but now I am learning."</p> <p>B. "I used to reflect from the beginning until it became automatic."</p> <p>C. "I am learning from my mistakes .. now I am following strictly the medication protocol, I am taking the medication sheet inside the patient's room."</p> <p>D. "I used to reflect I realised how important it is in improving patient assessment because when you improve in the assessment you will improve in the intervention."</p> <p>F. "I am reflecting often because if you don't revise yourself no change will happen in your life.... I learned that when I am angry I need to control myself..... this unit made me change, now I have different strategies.... now I need to know the person with whom I am talking then I will react."</p> <p>G. "I am reflecting in order not to have the same mistakes to make it better. "</p> <p>H. "I do reflect but not at the beginning .. in the last two months When I go home I used to set with myself and ask: did that patient improve? What happened with him? I feel that I am improving."</p>	<p>Learning from negative encounters replaced blaming self as the intern reflect on her actions and her reflection became comprehensive, serious and ethical.</p> <p>Reflecting habitually.</p> <p>Learning from mistakes.</p> <p>Realizing the importance of improving in the assessment to improve in patient interventions as the intern reflects on her actions.</p> <p>Developing self and developing new strategies to control her anger and to deal with people as the intern is reflecting frequently.</p> <p>Reflecting to make things better.</p> <p>Realising the benefits of reflection.</p>
<p>4. If I don't know I will ask:</p> <p>A. "I have to ask when there is something new. I can check if I don't know....I can ask for help from my preceptor or other staff....now I can find solutions for these problems."</p> <p>B. "With routine things I used to do it myself ... but</p>	<p>Asking with new encounters and knowing how to find solutions.</p> <p>Asking with new encounters.</p>

- if something new happened I have to ask.”
- C. “With the new cases I am asking but not about the details.”
 - D. “In order to start reasoning you need to know the reason ... the rationale and the information ...the doctors are so cooperative, so I start asking them and asking my CRN...but I am discussing everything with my preceptor.”
 - E. “In case of a new disease ... I will ask my preceptor or my CRN or I will read about it I will search.”
 - F. “Now, I set the plan and discuss it with the Nurse Coordinator.”
 - G. “I will ask if I don’t know.”
 - H. “When encountering things the first time I will go to my preceptor ... I will let her know, and if I cannot deal with it she will start.”

Asking the right questions with new cases.

Asking the right people to know the reasons so as to start reasoning.

Asking, reading, or searching with new cases.

Verifying the care plan with the NC.

Asking to know.

Asking my preceptor when I don’t know-how.

5. Having the needed confidence:

- A. “Much of my decisions were related at the beginning to patients’ assessments but now they are related to health assessments and interventions, I know now what to do...I became more aware.” “one day I noticed something with the patient but I didn’t say, I was afraid to be blamed or my point to look silly, but when the doctor came he said why did nobody to tell me about this thing, I swear to God I knew it...right now I don’t hesitate to say things.”
- B. “I can say that my confidence now is 100%, I am doing things spontaneously I am so broad that I am saving lives....safe patient at the end of the day.”
- C. “I got the courage to question doctors’ orders.”
- D. “I needed to know the reason because knowing the reason will improve your confidence.”
- E. “Being part of the team increased my confidence.”
- F. “I am continuously relating to a reference because having the rational is having the confidence.”
- G. “My confidence is linked with not to cause harm to the patient Linked with knowing the patients and the disease process and at the end I am accepted by the patients because I am showing that I have the confidence.”
- H. “I got the needed confidence; even with the male patients ... I can do any nursing care for them Even the male sitters, they know my name.” “I got the confidence because I take things seriously.”

Possessing the needed confidence as the intern is able to decide on patient care assessments and interventions as well as knowing-why.

Having the needed confidence to contribute to patient safety.

Having the courage (and clinical knowledge) to question the doctors’ orders.

Possessing the needed confidence as the intern knows-why.

Possessing more confidence as being part of the team.

Possessing the needed confidence as the intern knows-way.

Having the needed confidence to contribute to patient safety and to be accepted by her patients as the intern knows the patient and the disease process.

Having the needed confidence to deal with male patients and sitters as the intern is taking things seriously.

6. Becoming faster:

- A. “Now I am taking decisions with regular things automatically.”
- B. “You don’t think with familiar cases, it will become like the vitals... care without hesitation.”
- C. “now the things are taking less time.”
- D. “I realised how important the time factor is.
- F. “I became more independent and faster and more aware of the patients’ needs.”
- H. My CRN aided me a lot with time management.”

Undertaking decisions with regular things automatically without delaying.

Undertaking decisions with familiar things without hesitation.

Taking less time while doing things.

Realising the importance of time.

Becoming faster as the intern is more independent and more familiar with patients’ needs.

Improving in time management as her CRN aided her a lot with it.

Appendix N

Audit Trail for the Professional Stage: developing professional habits (CRN & Preceptor descriptions)	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
1. A growing sense of responsibility:	
I. "A simple thing related to the crash cart happened with an intern who asked: why we don't put a label on the wall that the cart is in this room when the cart is moved to a patient's room."	Proposing practical solutions as an active unit member.
J. "At mid rotation, one intern who is very good and demonstrated a high level of initiative took a patient and she reviewed the nursing care plan and she said: the care plan is not written in the right way, some of the nursing problems are not mentioned here."	Figuring out gaps in others care plans and correcting them.
K. "one of the interns suggested to change the shift handover procedure based on comparisons between units... we took it as a recommendation for study."	Proposing practical solutions as an active unit member.
L. "Their ability to react to certain clinical situations is growing when they are here...their time management grow as well... One intern who felt at the beginning that we are so strict when implementing the electrolyte protocol missed a prompt in step... I informed her that there will be a delay because of her act ...she learnt a lesson and she developed her own notes where she checks on certain things in the morning."	Growing in their reactions to certain clinical situations and in their time management.
M. "I think with time they are improving even their communication become more professional."	Growing professionally as improving in their time management and in their communication.
N. "With a patient who was in need to have his folly catheter reinserted, she said I won't leave the patient like this and go home and she inserted the folly ... it was the right decision."	Feeling her patient's needs.
P. "May be because I told her today is Wednesday and tomorrow is the weekend where will be no offices may be because of that she followed up the task promptly."	Acting with a sense of responsibility and accountability.
2. Being trusted:	
I. "At the end of the rotation you feel that their decisions are based on more complete assessment whatever the situation is....and based on that they are doing their interventions... their improvement in decision making is something between 80-100%."	Trusting interns' decisions with all cases as their interventions are based on complete assessments.
J. "But at the end the situation is different, they know the staff and they know everythingsome students are coming to me after observing what is happening in the unit and they suggest and sometimes they even criticise the nurses."	Having the ability to evaluate nurses' actions and suggest recommendations.
K. "They are able to apply what they learnt in practice and they know why they are doing things. At the end they used to discover patients' problems alone."	Being trusted by the CRN as able to discover patients' problems and to apply what they have learned.
L. "I can rely on them at the end of the rotation....they grasped the why and they are no longer task oriented."	Being trusted by their CRN as they grasped the "know-why" and they are no longer task oriented.
M. "An intern suggested to start spiritual care for	Trusting interns' decisions as unit leadership

<p>our patients ... we have contacted the religious affairs department asking them to start providing the service to our patients ... even our staff are in need to improve their spiritual knowledge.”</p> <p>“the patients do trust them and this gives them more confidence.”</p> <p>N. “She is the one referring and I was beside her and she was doing everything ... there is really a lot of improvement since the beginning..... they know the routine.”</p> <p>“the interns are the ones who convince the male family members of our patients with things I can see that.”</p> <p>O. “They can make independent judgments but they tell you what is your additional but they have their own.”</p> <p>P. “We trust them and we guide them their clinical judgment is really good for the situation.”</p>	<p>implemented their recommendations.</p> <p>Being trusted by their patients as they have the needed confidence.</p> <p>Trusting intern’s abilities as she carries out all patient care activities,; as knowing the routine; and as she is able to convince the male family members with things.</p> <p>Trusting interns’ independent judgments and appreciating their compliance with the lines of authority.</p> <p>Trusting interns’ clinical judgments.</p>
<p>3. A reflective habit:</p> <p>L. “At the end of the rotation they are more reflective.”</p> <p>O. “They reflect on their actions and I think it is a good sign that they are learning and they admit also if they encounter a mistake.”</p>	<p>Recognising interns’ reflective ability at the end of the rotation.</p> <p>Appreciating interns’ reflective style as reflection is impacting their learning and their openness to admit mistakes.</p>
<p>4. If I don’t know I will ask:</p> <p>I. “With new encounters she will be in need for the preceptor ... they still need guidance with non-routine things.”</p> <p>K. “They will come to me when faced with something that they don’t know.”</p> <p>P. “If they don’t know they will come for what I will suggest but some also will suggest and if is not convenient we will make it better.”</p>	<p>Needing preceptors’ guidance with new encounters.</p> <p>Needing preceptors’ guidance with things they don’t know.</p> <p>Needing preceptors’ guidance with things they don’t know.</p>
<p>5. Having the needed confidence:</p> <p>I. “You feel their confidence at the end of the rotation.”</p> <p>J. “At the end of their rotation the confidence is there; the more senior they are, the more passion they will have they will grow.”</p> <p>M. “With time they are improving; they are not asking the same questions they used to ask in the past.”</p> <p>N. “and at the end they are <u>very confident</u>”</p> <p>O. “They are more confident after the competency assessment.”</p>	<p>Having the needed confidence at the end of the rotation as felt by their CRN.</p> <p>Having the needed confidence at the end of the rotation as possessing more experience and having the needed passion.</p> <p>Having the confidence in their practical knowledge as the interns are not asking the same questions they asked in the past.</p> <p>Having the needed confidence at the end of the rotation.</p> <p>Possessing the needed confidence as interns complete their competencies.</p>
<p>6. Becoming faster:</p> <p>L.their time management grow as well</p>	<p>Growing in time management.</p>

Appendix O

Audit Trail for the theme Action Impelled Clinical Reasoning as described by student interns	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
1. Action Impelled Reasoning:	
A. "A the beginning I followed mechanistic steps because I was not sure. I wanted to get exposed to more experience to figure it out promptly."	Following mechanistic steps as unsure while targeting more experience to reason promptly.
B. "I was seeing without knowing why, so my rule became to do it once, then put it in mind, then it will become automatic."	As seeing without knowing why, the student intern is implementing her rule of doing the thing once, put it in mind, and then it will become automatic.
C. "I needed to become familiar with abbreviations and signs and symptoms, and then compare them with what the patient has. I followed strictly the medication protocol to avoid mistakes."	Following strict rules to avoid mistakes while learning the abbreviations and the signs and symptoms to relate patients' conditions in the specialty area to these parameters.
D. "I followed the preceptor at the beginning, and then I am discussing everything with her. In order to start reasoning, you need to know the reasons that include the rationale and the information."	Following promptly preceptor's steps and discussing everything with her to know the rationales and the information needed for reasoning.
E. I learned not to do things alone and now the staff nurses are saying: you became part of the team."	Practicing while being supervised and asking to know the reason.
F. "I relied at the beginning on my thinking; my previous knowledge and readings and my good communication skills after being challenged by the CRN and the preceptor, I wanted to prove something for them Our college is the best ... Even our CRN was surprised when I was doing the palpation; I recalled everything. I wanted to do everything regardless of the scope of practice. "	Showing her studentship abilities and knowledge as feeling challenged by her CRN and preceptor and filling the gaps by her readings.
G. "At the beginning I was seeing things that I could not reason.....so I focused of my competencies.	Focusing on individual competencies as the intern is unable to reason while seeing things.
H. "I followed mechanistic separated actions...I focused on the assessment ... deciding on the interventions was not that good with me, I used to go back to preceptor. The separated pieces from the college case studies and the clinical practicum did help...now I am extracting the cues with usual things directly."	Focusing on separated familiar actions and relying on her preceptors with the unfamiliar to extract cues directly.

Appendix P

Audit Trail for the theme The Reasoning Leap as described by student interns	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
<p>2. The Leap (an energizing force that has a guiding rule developed by the intern):</p> <p>A. "I want to get exposed to more experience to figure it out promptly. I feel happy as a consequence for making good decisions and it will encourage me more. Learning replaced blaming self as my reflection became comprehensive, serious, ethical, and patient related."</p> <p>B. "They taught me how, and then I start linking; building a reason for this action after having the experience.... I used to reflect till it became automatic. I am the patient advocate; I was challenging the routine....I used to group things together allowing my patient more time to rest."</p> <p>C. "I had the courage to talk. The knowledge about the daily routine has contributed to my courage and confidence."</p> <p>D. "The development is in knowing how and knowing the common things. Realizing how important the time factor and believing that everything done for the patient is important and believing in self were the keys."</p> <p>E. ".... I requested to change my preceptor because she was not teaching me....I felt frustrated, so I said to my new preceptor you need to teach me, and then she start teaching me."</p> <p>F. ".....I am practicing as per the protocols....I set the plan and discuss it with my NC; I don't want to harm the patient; sometimes some parts are missing, I don't know them. My NC is focusing on the patient as a nurse.... on patient care....bathing.....considering the reaction of the patient....emotional relieve....she supported us in this from the beginning. I am referring my improvement to her. She used not to agree with my decisions and problem identification because I was not aware of the patients' needs."</p> <p>G. "....I had clear view about the patients and the cases and became able to take certain decisions...then I said I don't want to go back to the dependent state."</p> <p>H. "The things changed when I start reflecting and taking things seriously. I said I will not imitate preceptor's style; I will have my own.... because I am a staff nurse and will have my career."</p>	<p>Desiring more experience to figure it out promptly as guided by her reflection and the happy feelings linked with good decisions.</p> <p>Building the experiential rationales as reflecting continuously while believing in her role as a patient advocate.</p> <p>Having the courage to talk while focusing on the daily routine to enhance this courage and self confidence.</p> <p>While believing in self, focusing on timely actions and to know the common things as everything done for the patient is important.</p> <p>Feeling frustrated as not being taught.</p> <p>For patient safety, the intern is relating to unit protocols and the expertise of her mentor; the NC.</p> <p>Decisively deciding not to go back to the dependent state as feeling the joy of being able to undertake decisions.</p> <p>Deciding to develop own style and career as taking things seriously after reflecting on my actions.</p>

Appendix Q

Audit Trail for the theme Developing Own Style: Analyticity as described by student interns.	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
3. Developing own style: Analyticity	
A. "I was working to develop own style....to figure it out promptly. At the end I am undertaking clinical judgments that I am sure about.....considering our scope. In new situations, I will.... check.... and suggest interventions based on my background knowledge and clinical practice."	Reasoning promptly with what I am sure about and verify with novel situations.
B. "I will analyse while having the rational and a goal, then I will do and reflect to learn more....the clinical judgment is based on criteria. it became automatic...care without hesitation.... but with new things, I will ask for patient safety. I start recognizing patients more... I became so proud that I am saving lives."	While having the rational, the criteria, and the patient care goal, analysing patients' conditions and reflecting on actions to undertake future decisions automatically. IF NOT HAVING THE RATIONAL OR THE CRITERIA, THE INTERN WILL ASK.
C. "I start developing general rules to guide practice....for example, any bed ridden patient will be put on bowel protocol. The accumulative knowledge...my assessment...and the action that is validated by the preceptor or the CRN. With new cases, I am not asking about the details."	Utilizing her experiential knowledge to analyse situations and implementing the general rules developed by her to guide practice supported by her preceptor. Utilizing preceptor's expertise to fill the gaps at the time of uncertainty.
D. "After watching for two weeks, I start analysing.... comparing with college theory...filtering and discussing with my preceptor.... and then deciding."	Discussing with her preceptor her analysis and evaluation of the situation based on background theory.
E. "I am now comparing, analysing and using criteria when making decisions recently, my preceptor kept telling me it is too early to call the CCRT (Critical Care response Team) and I said: we have to activate it now because of the patient's parameters, then we activate it, the CCRT team did not question our decision. With new things I ask and read."	Analysing as having the criteria, and if not, I will ask and read.
F. "Now I am relating everything to a reference or a parameter...or to a clinical judgment I got from experience or the expertise of others....thinking more deeply and having the clinical evidence....and my effective communication skills helped a lot. Now I need to know the person with whom I am talking, and then I will react....I will convince the CRN, the doctors and the team. The knowledge in this unit is very importanthow important are the antibiotics for the patient... this is why we have to convince him to take it... but the nurses don't explain to the patient the consequences of not taking the medications. Having the rationale is having the confidence to a clinical evidence."	Analysing thoroughly and relating to a reference or a parameter from clinical evidence. SHE WILL CONTINUE UTILIZING THE PREVIOUS TOOLS/AIDS/FORCES FROM THE LEAP
G. "Clinical reasoning means having an image or a picture inside my brain....I developed these through experience and my readings...I am not doing anything without having a picture....and I will ask if I don't know" "I learnt to catch things during assessment and while talking with patient."	After developing her own definition of clinical reasoning, practicing as relating to her mental pictures or to the clinical facilitator's answers.
H. "Always comparing sets of data, always comparing things with my scope of practice, I start analysing and linking information together....If what I have in mind clashes with unit traditions, I will start my own routine, I know it is safe.... I will talk to my preceptor if the problem happened suddenly telling her that there is a new problem ... what do you think? I think I need to do this; what do you want me to do?"	Analysing and evaluating to have mental links as the basis for her safe routine (that includes going back to the preceptor, with solutions, at the time of uncertainty).

Appendix R

Audit Trail for the two themes, Action Impelled Clinical Reasoning, and Analyticity as described by the CRNs facilitating interns' clinical experiences	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
<p>1. Action Impelled Reasoning:</p> <p>I. "They face difficulty with total nursing care at the beginning... with the procedures they will panic. The preceptors will let interns observe then they will ask them to do this with the next patient.... the interns are asking questions. They are making decisions but not based on a comprehensive assessment. They need experience to react in emergencies</p> <p>J. "sometimes what they have learned cannot be applied clinically (THIS HAS CREATED THE DOUBTS IN THE ELUSIVE STAGE)...there is a gap ... they observe how the nurses have done it...then they follow exactly what the nurses have done</p> <p>K. "At the beginning they used to discover patients' problems alone without prompting based on what they saw with the preceptors and what they had in the college. All of their clinical judgments are linked with their preceptors. They will be able to apply what they learnt in the practice and they know why they are doing things.</p> <p>L. "At the beginning they are more task and routine oriented ... they were concerned for example with giving Lasix at 0900 ... not with if I will give Lasix what will happen to the electrolyte balance....At this stage they are focusing on tasks and competencies ... if a CCRT is called they will think of it as an overload.....they cannot multi-task. At the end they are not task oriented anymore; I can rely on them. I can say with the patient assessment, it is something they can grasp ... but with interventions, this is something they need support to know. I think they need the preceptor or the CRN to put it together at the time of uncertaintythe patient history and situation and the background and the assessment and the recommendations. I think the clinical judgment component comes while they are here not from what they have gained in the college ... the ability to REACT to certain clinical situations is growing when they are here....their time management grow as well.</p> <p>M. "The focus at the beginning on the assessment decisions, they already had their physical assessment in the college and they have dealt with patients before. And with experience they are making certain decisions related to the interventions. Actually they are informed not to do anything without their preceptor being there....also because of their scope of practice We ask them to ask their preceptor first</p>	<p>Following preceptors' steps and asking questions as panicking with the procedures and as unable to do comprehensive assessments and to provide total nursing care.</p> <p>Following exactly what the nurses are doing as there is a gap in what they have learned at the COLLEGE.</p> <p>Following exactly preceptor's clinical judgments and actions to be able to discover patient's problems without propping and to apply what she learnt in clinical practice and at the COLLEGE.</p> <p>Focusing on individual tasks and competencies to become able to multitask and to be dependable.</p> <p>While being supervised by her preceptor, deciding on the assessment component of patient care in the specialty area as the basis for interventions' decisions by applying the physical assessment principles undertaken at the college.</p>
<p>2. Analyticity :</p> <p>I. "At the end of the rotation you feel that their decisions are based on more complete assessment whatever the situation is....and based on that they are doing their interventions. They only need guidance with non routine things.</p> <p>J. They are growing in their questions. They sometimes criticise the nurses after having the experience with different preceptors. They do their competencies many times before the three assessments. When they become competent they can manipulate... one of them who inserted the NGT and it is in the mouth....so she removed it</p>	<p>Intervening effectively with routine cases as their decisions are based on more complete assessments and need guidance with non routine things. IT IS MENTIONED IN THE INTERNSHIP UNDER BEING TRUSTED</p> <p>Having the ability to manipulate and to criticise nursing actions after completing their competency assessments and having experience with many preceptors.</p> <p>THEY FEEL SAFE TO CRITICISE (TO CONVEY OPINIONS). <i>Evaluate as having the criteria and</i></p>

<p>without being told to remove it...she knows the proper procedure.</p> <p>At the time of uncertainty, for example during a dressing, they will decide on what is comfortable for the patient, sometimes they use their own judgment...based on their own experience...and based on their feeling...they ask the CRN, then they do it.</p> <p>K. "They gained their clinical reasoning ability at the end of the rotation with more experience with more exposure to the things. At the time of uncertainty, they come to me to ask... to ask about why nurses did that ... or tell me about this... they never came to me saying I think this patient is having this and I need to do this, but they may question something based on previous experience at other units and their ANALYSIS ... for example, an intern's patient was on Heparine and the doctor ordered to hold the Heparine because the INR is high ... she came to me asking why the INR and not the PTT since the patient is on Heparine infusion? ...then I explained to her why the INR not the PTT.</p> <p>L. "Most of them do reflective practice ... then they ANALYSE and then they come to me asking WHY... I provide them with feedback..at the beginning they are logical and at the end they are more reflective ... to be reflective you have to have a base of knowledge." They are looking at the work here as if they are having more puzzles towards the whole picture ...</p> <p>M. "And with experience they are making certain decisions related to the interventions.....They are not asking the same questions they used to ask in the past..."</p>	<p><i>able to manipulate as having tested many approaches with many patients (clinical experiences or knowing exactly the procedure).</i></p> <p>In novel situations they are analysing (based on their CR with certainty) to have the reason and then validate it by asking.</p> <p>Asking (looking for the why or seeking more information) or questioning as analysing the non-routine clinical situations based on previous experiences.</p> <p>Analysing and asking for the reason as they reflect on clinical situations as parts of a bigger picture.</p> <p>Growing in their questioning as advancing in patient care supervised interventions.</p>
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Appendix S

Audit trail for the two themes, Action Impelled Clinical Reasoning, and Analyticity as described by the nurse preceptors facilitating interns' clinical experiences	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
1. Action Impelled Reasoning:	
N. "at the beginning my current intern was just observing She was hesitant talking to the doctors ... and at the end they are very confident, she is the one referring and I was beside her and she was doing everything.... she really did not know the basics and was unable to read the doctor's order because she did not know the abbreviations was relying completely on me even with the oral care and body hygiene, and I needed to tell her to do this and that and finally at the end she is the one doing everything ... really you have to push her to do things. Some of them are very smart even though you will not teach them, they know the principles ... after the competency assessment they will have confidence."	Observing and following preceptor's steps (as hesitant and unable) to formulate the guiding principles for her clinical skills. (Once deemed competent, those who are coming with the guiding principles will have the needed confidence).
O. Their clinical judgments were more with the assessment at the beginning. They are approaching the physicians and they are asking the Nurse Coordinators (NC). Not all of them are well prepared...I mean their knowledge base. their confidence increases after the competency assessments because somebody is questioning (during the assessments): what is the reason for that?... the competency assessment is more important to their confidence than knowing the daily routine."	Asking as not having the knowledge base to complete their competencies (showing-how).
P. "At first they will be hesitant but you will explain to themthey will ask questions and then they will tell you what to do.	Seeing and asking as hesitant and does not know.
2. Developing own style:	
N.with non routine things I can say experience is the best teacher.. their background information and readings will help ... they are suggesting with a particular problem ... and sometimes they come to ask. When they are familiar with the routine, it will make them feel comfortable ... then they will initiate things	Suggesting or asking about the unknown as comfortable with the routine and the guiding principles.
O."Now they can make independent judgments and then they ask for your additions. One intern said: I think the breathing of the patient is not good, he is tachypnic she asked me to inform the doctor about it I said lets reposition the patient and if it does not work, we will inform the doctor. Another intern asked me after giving medications to her patient if there is an antihypertensive medication that causes coughing because her patient starts coughing after taking antihypertensive medications...we searched and found one of her medications caused coughing, it is Explore."	Analysing and then asking to fill the gap or to confirm a reasoned judgment.
P. It is because of both their previous knowledge and what they see...the more they see, the more they are able to correlate things from the school to the clinical area their clinical judgment is really good for the situation. One intern said: I must recheck the Bp again...I said why? she said: because of the medication the patient is taking, they are correlating and linking. if she does not know or is unsure of the answer,	Undertaking good clinical judgments as correlating and linking with previous knowledge. Their good clinical judgment includes approaching the preceptor suggesting at the time of uncertainty to make it more convenient. THEY (THE PRECEPTOR AND THE INTERN) USED TO REFLECT TOGETHER (WITH) FOLLOWING EMERGENCIES REQUIRING

she will listen for what I will suggest but some of them will suggest and if it is not convenient we will make it better...I don't think they have the confidence to deal with non-routine things....we discuss it, for example after calling the CCRT I used to ask: why do you think we called the CCRT? And then we discuss the criteria."

MULTITASKING *this is a factor*

Appendix T

Audit Trail for the theme CRN Support under the cluster Unit attitude towards learners	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
<p>1. UNIT ATTITUDE TOWARDS LEARNERS:</p> <p>1.1. CRN SUPPORT:</p> <p>A. "She used to ask me WHY WE ARE DOING THIS?"</p> <p>B. "She supported me when I came and gave me the chance to do everything ... without hesitation made me work like SN1." "Despite this she was not observing but she was there all the time." "with competency assessment, she used to give us a schedule ahead of time to help us to think."</p> <p>C. "He was so supportive at the beginning he acknowledge the interns' supernumerary status." "with competency assessment sometimes I was afraid of the many questions he asked ... just the first time only." "He asked me to answer the phone" "he used to validate my readings"</p> <p>D. "In order not to get wrong answers from the nurses I started asking the CRN ... it is me who was asking but the CRN was unaware of my assignments or abilities." "sometimes it is so time consuming to rely on self teaching."</p> <p>E. "My CRN is answering our questions and she kept asking why? ... she focused on my communication ... she helped me to have the courage to perform tracheostomy care."</p> <p>F. "After the CRN challenged me at the beginning, my reading became a habit ... regarding the social matter, he is against us ... he is male and Saudi." "my CRN is not much involved."</p> <p>G. "They used to explain things for us like the preceptors, but because they are responsible for us they are giving us a homework or a question.... They listen to us. When I was questioning their (the nurses) style, they used to say this is our routine ... they don't even care, and the CRN won't say anything."</p> <p>H. "They are the shadow for us, they are helping us indirectly and they used to correct any deviation in our performance by telling us about it They helped us a lot with TIME MANAGEMENT." "their prompt feedback did help. The CRN is asking to help me analyse and they were looking for the outcomes."</p> <p>I. "I will try to match preceptors with students as per personalities ... I need to be flexible because they are adults you need to look at their communication...I don't change the preceptor unless there is something affecting the clinical teaching situation.... I used to connect information with different aspects of patient's care ..for example, when teaching them about medications' side effects I used to connect it with patient teaching . I used to show them the common procedures at the unit in the first three days and I used to ask them: what type of emergency could you expect with this procedure? I emphasize the colleagueship between us and them ... I used to say you are our colleagues. I used to tell them communicate for few minutes with the patient or the family member and they will accept you as a care provider ... don't go directly saying I am a student and I want to do this or that for you. If they find a male family member with the patient they get worried and won't do it alone. At the beginning they will panic. I used to face difficulty with them regarding this, I used to change their assignments many times till she get used to the thingI think it is a cultural thing and this is a usual thing to happen, I do understand."</p> <p>J. "These days we are not working with the interns too closely but we are looking at the overall situation</p>	<p>Asking why to stimulate intern's thinking.</p> <p>Supporting the intern by allowing her to practice as a Staff Nurse, employing indirect supervision, and providing her with enough time to think before the competency assessment.</p> <p>Supporting by acknowledging interns' supernumerary status, validating her readings and by encouraging her to answer the phone.</p> <p>Answering interns' questions while remaining detached.</p> <p>Supporting interns by answering their questions, asking reason stimulating questions, focusing on their communication, and encouraging the intern with procedures she finds difficulty to do.</p> <p>Non-supporting as the intern felt challenged by him at the beginning and as being not involved.</p> <p>Supporting as explaining and giving the interns homework and questions to answer and as listening to them.</p> <p>Supporting and energizing as providing the interns with prompt feedback, helping them with time management, and asking to help them analyse.</p> <p>Supporting as considering the type of personality and their communication when assigning preceptors to interns and emphasising the colleagueship.</p> <p>Supporting as linking the information to different aspects of patient care and asking about the type of emergencies expected with common procedures as shown to the interns in the initial three days of internship.</p> <p>Supporting as showing how to approach the Saudi patients and as showing understanding and tolerance for interns' reluctance to deal with male family members.</p> <p>Supporting as following indirectly the training situation and as listening to interns'</p>

<p>and whenever necessary we pick it up & we ask questions and then intervene if there is any problem....we listen to their comments " "I don't assess if they REFLECT or not on their practice...but they incorporate their observations for the nurses into the evaluation form."</p> <p>K. "I used to give them assignments and case studies that aided to improve their clinical judgment."</p> <p>L. "Working on their clinical judgment is one of my biggest challenges." "Their judgments are more with the assessment....They need support with interventions and re-evaluation. while we are developing them we are developing the PRECEPTORS to be assessors...and how she is providing constructive feedback....to do two things at the same time and how to think three forward steps together....for me it is a challenge from both sides. At the beginning they are fragile when you are giving them feedback....they need to receive a lot of positive feedback first."</p> <p>M. "In the first three days I usually introduce them to the staff and to the environment to decrease their anxiety....I introduce them to their preceptors and explain the scope of practice and what the preceptor can do for them.....the ENVIRONMENT is the major factor affecting them...all depends on the type of PERSONALITY of the intern." "we meet the student on daily basis....we ask about the teaching style of the preceptor."</p>	<p>comments.</p> <p>Supporting as giving them clinical judgment assignments and case studies.</p> <p>Supporting interns with the patient care interventions & re-evaluation.</p> <p>Supporting the interns and the preceptors when providing constructive feedback. Supporting the interns by providing a lot of positive feedback at the beginning of the rotation.</p> <p>Supporting as orienting the interns to the staff and to the environment and emphasising the aspects of their scope of practice in the initial three days. Supporting as meeting with the intern daily.</p>
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Appendix U

Audit Trail for the theme Preceptor's Support under the cluster Unit attitude towards learners	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
1. UNIT ATTITUDE TOWARDS LEARNERS:	
1.2. PRECEPTOR'S SUPPORT:	
A. "at the beginning some have neglected me ... and at the end they trusted me...I am telling my preceptor I will do this and that ...even those who have neglected me. There was a preceptor who brought me up."	Supporting the intern by bringing her up after been neglected at the beginning.
B. "some have tried to control me and others said that this patient is not my patient anymore ... A good preceptor suited my style and she brought me up...I like listening to her rather than reading my old books. They taught me how and then I start linking ... building reason for my action after having the experience....I start challenging the routine."	Supporting the intern by bringing her up as providing her with needed explanations and as teaching her how to do things then she start linking and building reasons for these actions.
C. "When the doctors' round come she used to ignore the intern .." "I had the courage to talk (may be because of CRN support).... in the second month I changed my preceptor because I am not learning with her." "Some are asking me if I want to present the case to the doctor." "I got the courage to question a doctor's order regarding patient's restraints." "Knowledge regarding the daily routine has contributed to improve my courage and confidence." "I think I am having the ability but had no chance to show it."	Supporting the intern by teaching her which became the base for her to present the cases to the doctors and even challenging doctors' orders.
D. "she supported me with the things that I am familiar with ... as a matter of accountability." "I followed the preceptor's steps because it is time consuming if you search for yourself."	Supporting the intern with the things that the intern knows and teaching her as the intern decided to follow the preceptor's steps to save time.
E. "I used to ask her and she used to ask me to search for it I changed her because she wasn't teaching me ... the many preceptors are good because you learn different ways." after feeling frustrated for the first two weeks, I said to my preceptor: you need to teach me....then she start teaching me everything." "Being part of the team increased my CONFIDENCE....the SN are saying you became part of the tem."	Supporting the intern by teaching her as the intern felt frustrated of not being taught at the beginning.
F. "They keep relating to the routine ... the routine sometimes restricts things... After being challenged by the CRN and the preceptor, I wanted to prove something for them....my NC relies on me."	Not supporting as challenging her intern.
G. "Sometimes say: it is like this, linking things to the routine ... sometimes they don't allow me because unsure of my abilities even if I have the confidence. ... all depends on the preceptor ... I need to have the chance to be independent ... I don't want to go back to the dependent state ... sometimes they forget that they are having a student."	Not supporting as neglecting the student and not giving her the chance. Being supported at the end as becoming independent.
H. "When there is something new or a procedure they used to call us to see ... even with abnormal lab results they used to show us how to deal with it." They gave us the chance and pushed us to do it.	Supporting as involving, explaining, and pushing the interns forward.
I. "Some preceptors will guide them at the beginning and then let them work independently some are having a way in explaining and involving the intern ... for example they will tell the intern we need to do the dressing for the patient but before that we need to clean the patient." "It is a rare situation to see the preceptor asking them the WHY and WHAT IF...I think also due to the many assignments they have ... and the preceptor need to finish his work." "some preceptors don't answer because they don't know, they may ask the intern to go and look for the answer" "the many preceptors is better...they will learn many right approaches, but some interns will face difficulty because they liked the communication style of the previous preceptor." "most of the time the attitude of the preceptor is based on the attitude of the intern."	Supporting with tasks as having a way to involve the interns in total nursing care. Not supporting with reasoning as being busy and the intern need to complete her assignments.
J. "Most of the preceptors are usually thinking that the interns are novice learners, they know nothing and their experience is at the beginning, usually their comments are not positive it is very	The many preceptors are supporting more as the intern is seeing different approaches. Not supporting as having many faulty perceptions about the interns; as comparing interns'

difficult to make the preceptor think that interns' level cannot be compared to our level." "the preceptors are working like robots...they are not initiating an interesting learning environment."

"I think some of the preceptors are asking challenging questions in order to stimulate the students to think....I know this from the preceptors' comments in the evaluation form ...some of them are good in stimulating questions." "The CONSTRUCTIVE FEEDBACK from the preceptor can help.....some interns told me that some preceptors are not giving them any feedback and others are giving them feedback in a very negative way....it demotivated one intern who was told that you are too slow."

"the Arabic speaking preceptors can help when interns are rejected by the patient's family..... but those who don't know we don't say anything."

- K. "The preceptor is the one convincing the patient to allow the intern to intervene."
- N. "You have to push her to do things ... if they are familiar with the routine of the unit they feel comfortable and then they will initiate things. At the end they are very confident; if you will ask them why they will answer."
- O. "if they are asking what is the action of this medication, I will brief them about it and then ask them to read about it from the drug book, also we have a book for the diseases...they can access the internet, the medical library or the manuals."
- P. "Some will come for what I will suggest but some will suggest and if it is not convenient will make it better...when they are taking the V/S they will say I will check the BP again ... I said WHY? She said because of the medication the patient undertaking.....they are correlating and linking things together. With something they never experienced, they will automatically come to me....I don't think they have the confidence to initiate a CCRT call if they didn't experience it beforeI used to ask her why we have called the CCRT then we discuss the criteria. With guidance their decisions will be accurate 100% it depends on the intern. Some will be motivated because of the good decisions they have made and will come tomorrow more enthusiastic and more energetic and will try to improve.

performance to their level; and as not initiating interesting learning environments as being busy.

Supporting as asking challenging questions to stimulate interns' thinking and as providing constructive feedback.

Supporting as an Arabic speaking preceptor by convincing patients' family to accept the intern.

Supporting by convincing the patient to allow the intern to intervene.

Supporting as pushing the intern to do things to become familiar with the unit routine to initiate things and know the reason.

Supporting as briefing the interns about medications and asking the intern to read more about it.

Supporting as guiding them and evaluating their recommended patient care decisions and as reflecting with them on uncertain or complex decisions and situations.

Appendix V

Audit Trail for the theme Nurses' & Health Team Support under the cluster Unit attitude towards learners	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
<p>1. UNIT ATTITUDE TOWARDS LEARNERS:</p> <p>1.3. NURSES' AND HEALTH TEAM SUPPORT:</p> <p>A. "I was afraid that the doctors will ask and can't answer....now I can answer their questions"</p> <p>B. "I used to ask the doctors because I like to knowthe doctors are cooperative."</p> <p>C. "The nurses are so nice ..."</p> <p>D. "In the first two weeks nurses were not cooperative The doctors are cooperative, I used to ask them."</p> <p>E. "The doctors, the respiratory therapists, and the physiotherapists are answering our questions."</p> <p>F. "The NC and the physicians are very good, they answer ... they are supporting us more than the nursing staff. ...now my NC relies on me"</p> <p>G. "They keep saying this is the routine ... this is our way, they don't care."</p> <p>H. "The nursing team told us about the resources and the references, and some doctors are helping us. The nursing team are testing us while trusting us."</p> <p>J. "Sometimes we encourage them to ask questions and the team are answering and the doctors are helping. There are some nurses who used to say I don't know...the interns have incorporated that into the evaluation form....I will do something about it"</p> <p>K. "I think the physicians are accepting them more than the other staff because they are Saudis....and the interns are asking relevant questions."</p> <p>M. "We used to tell them if they did not get the needed help from the preceptor they can approach any other nurse, the NC, or the CRN."</p> <p>N. "All depends on the intern, if the staff perceive the intern as preserved, quite, and not interacting, they will stay away but if the intern is enthusiastic with good rapport with others then there won't be a problem...that's what I observed."</p>	<p>Being afraid to be asked by the doctors as unable to answer.</p> <p>Being supported by the doctors as they respond to her questions.</p> <p>Being supported by the doctors as they respond to her questions (unlike nurses).</p> <p>Being supported by the health team as they respond to her questions.</p> <p>Being supported by the doctors and the NC as they respond to her questions and as her NC relies on her (unlike nurses).</p> <p>Not being supported by the nurses as relating everything to the routine.</p> <p>The nursing team are supporting interns by showing them the resources and as testing them while trusting them.</p> <p>The nursing team are supporting and the doctors are helping as answering interns' questions. (the non supporting behavior will be contained)</p> <p>Being accepted by the doctors because they are Saudis and because they are asking relevant questions.</p> <p>Being informed to approach any staff member if not being assisted by the preceptors.</p> <p>Supporting the interns as energized by the interns' behaviors.</p>

Appendix W

Audit Trail for the theme Previous Knowledge & Experience under the cluster Interns' learning behavior	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
2. INTERNS' LEARNING BEHAVIOR:	
2.1 ROLE OF THE PREVIOUS KNOWLEDGE & EXPERIENCE:	
A. "With new situations I will suggest interventions based on my background knowledge and clinical practice as a student."	Suggesting with new cases based on studentship knowledge and experience.
B. "The college knowledge is old ... this is why I am unsure. Despite my high GPA, I thought that I was confident but the story is totally different."	Not relying on college knowledge as a high achiever student since outdated and the clinical situation is different.
C. "There is little contribution for the college knowledge and skills but the practical knowledge gained now has more contribution."	Relying on current experiential knowledge as college knowledge & skills have little contribution.
D. "I was practicing as in adult nursing practicum I used to skip important assessment points ... so I followed the preceptor and kept asking her questions to develop my assessment competence because when you improve in the assessment you will then improve in the interventions."	Following promptly preceptors steps as practicing like in adult nursing practicum did not help.
E. "When we were students we were OBSERVING but now we are dealing with real patients."	Relying on current practice as we were just observing while in studentship training.
F. "I relied at the beginning on my previous knowledge and my readings ... I wanted to prove something for them ... our college is the best, I recalled everything ... the assessment ."	Relying at the beginning on college knowledge and my readings as recalling everything to prove something for the staff.
G. "I focused on patient assessment based on my previous knowledge..."	Relying on previous knowledge to develop assessment ability .
H. "the separated pieces from the college case studies and clinical practicum did help, additionally we learned reflection at the college ... I said: I will not imitate the preceptor's style, I will use what I know."	Relying on the separated pieces from the college because they did help.
I. "at the beginning you face difficulty with them related to total patient care ... when they were students they used to come for one day, they are not used to clean the patient, and when you ask them to do it they will try to run away by saying I want to do this or that"	Running away from patient hygiene procedure as not used to do it because of the limited clinical studentship practicum.
J. "When they come to the unit they observe and they tell me that what they learnt is different to what they see....there is a gap.... when they start working they try to bridge between the two actually they have the theory and I am helping them with the real situations ... sometimes what they have learnt cannot be applied clinically, sometimes you need to change it a little bit."	Working to bridge between college knowledge & current practice since what was learnt need modification.
K. "They have other courses that taken them away from the hospital to come back after almost one year to have their internship...they are new to the hospital."	Practicing as new to the hospital as taken away by other courses for about one year.
L. "They are doing case scenarios at the college that will structure the mind..... but the ability to react in certain clinical situations grows when they are here."	Benefiting mentally from college case scenarios and developing clinical reactions during internship.
N. "You have to assess what they had in the college because it is not what we are doing in the clinical area...they focus more on the theory...from your assessment you can make corrections."	Focusing on a different theory at the college based on preceptor's assessment.
O. "Not all of them are well prepared really. Those with A PREVIOUS EXPOSURE to our unit when they were college students are better."	Benefiting from a previous exposure to the unit while student.
P. "Their background is contributing to their motivation.....and also WHAT THEY SEE in the clinical area...I think as they go on and see things every day the more they are able to correlate things from the school to the clinical area...we trust them and we guide them ... their clinical judgment is really good for the situation."	Being motivated as having the background & correlating with previous knowledge with more experience.

Appendix X

Audit Trail for the theme My Readings under the cluster Interns' learning behavior	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
2. INTERNS' LEARNERNING BEHAVIOR:	
2.2 MY READINGS:	
A. "I was working to develop my style ... my readings did help to reach the independence."	Being aided by her readings to reach the independence.
B. "With competency assessment our CRN used to give us a schedule ahead of time to help us think and read."	Reading as preparing for the competency assessment.
C. "The CRN and preceptors used to validate my readings."	Reading and validate it through my CRN and preceptors.
D. "In order to start reasoning you need to know the reason ... the rationale and having the information Sometimes no one is answering the WHY ... it is time consuming searching yourself .."	Searching to have the information and the rationales for the reasoning processes as rarely finding somebody answering.
E. "With new cases I ask and read ... the hospital internet access is excellent."	Reading and asking with new cases as the hospital internet access is excellent.
F. "I kept relying on my previous knowledge and on my book ... my reading became a habit...my readings help me in convincing the patients because if you don't have the trust of the patients, you can do nothing."	Reading to have the information to convince the patients to have their trust.
G. "I am developing the mental chunks by the means of my experience and my readings."	Reading and experiencing to help developing my mental chunks.
H. "My readings did help."	Reading as benefiting.
J. "Sometimes I see them reading."	Reading as witnessed by the CRN
K. "They are reading and accessing the internet ... this contributes positively to their clinical judgment they are growing."	Reading and accessing the internet to contribute to their clinical judgment.
L. "The CON interns are good... they are keen to know WHY they are doing things & they are very good at finding EB resources....I advise them to read at the low volume time after 4 pm. They have to read in order to have the knowledge...they have to have somebody to discuss with them what happened at the end of the day....if I see knowledge deficit I used to tell them you have to go and read before discussing the case...I think stage one interns need the preceptor and the CRN to put it together....the patient history, the background, the assessment, and the recommendations."	Reading and finding evidence based resources to have the knowledge base for discussing the cases.
M. "We give them some reading materials and we do discussions at the end of the day....we request them to do an in-service session at the middle and the end of the rotation."	Reading as given some material to be discussed at the end of the day and as preparing for the in-service sessions they ought to present.
N. "Doing an in-service will enhance their confidence."	Reading to do the in-service session which will contribute to their confidence.

Appendix Y

Audit Trail for the theme The Female Saudi Arabian Learner under the cluster Interns' learning behavior	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
2. INTERNS' LEARNERNING BEHAVIOR:	
2.3 The FEMALE SAUDI ARABIAN LEARNER:	
F. "The CRN is against us regarding the social matter but I kept going ... we are the patient advocate and I know my limits."	Decisively insisting on the female intern's advocacy role for the male patients.
G. "I challenged myself by giving an in-service about what I don't know, the IV and O2 therapy."	Challenging self as giving an in-service session about what she does not know.
H. "My family is helping....they are advising with cultural things."	Receiving the needed support and advice from her family regarding cultural aspects.
I. "I can say I face with the Saudi female more difficulty regarding improving their decision making abilities."	Finding difficulty with decision making as a female Saudi intern.
L. "It is nice to think of their culture and the environment they are living in and how well prepared they are to undertake independent judgments.....it is unfair to compare it with other people from oversees."	Having a special cultural feature regarding their ability to undertake independent judgments that should not be compared to expatriates judgment.
M. "I am 100% with you regarding that as females they were not given the chance to make decisions at home...really it has affected the female decision making....it has affected their confidence.....but from the beginning till the end they are improving."	Improving in decision making throughout the internship rotation as never been given the chance to undertake decisions at home.
N. "Some of them are SMART enough even if you did not teach them they know the principle behind itlike the suctioning... they know the principle behind it maybe with the competency assessment you can correct their performance which will give them the CONFIDENCE." maybe there is a cultural thing related to patient hygiene but related to their decision making ability I don't think that their culture or being a Saudi female have affected that...the interns are the ones who convince the male family members of our patients with things...I can see how they are doing that."	Convincing the male family members of the patients with things more than the male nurses.
O. "They are confident and eager to learn I don't think that being a Saudi female is affecting their courage, confidence, or enthusiasm ...that attitude was evident before but lately we don't see this attitude anymore, they are confident and eager to learn."	Having the needed confidence to practice nursing as a Saudi female.

Appendix Z

Audit Trail for the theme Being Accepted by the Patients	
Significant Statements (Meaning Units)	Expressions (Interpreted Meaning)
<p>3. BEING ACCEPTED BY THE PATIENTS:</p> <p>A. "The language is a barrier ... with our patients I know exactly what they want They will trust you which will impact on your confidence. Gaining PATIENTS' TRUST...it will contribute to your CONFIDENCE."</p> <p>B. "My goal from the beginning was to gain the patients' trust and to be accepted by them. My knowledge about the culture and the language helped me a lot. ... I used to group things together in order to allow him more time to rest...They are appreciating and respecting us. I am a patient advocate."</p> <p>C. "I am having very good relationship with my patients, but some will violate cultural norms."</p> <p>D. "It was a bit difficult dealing with male patients at the beginning but at the end it became Okay for me dealing with them because I believed in myself....I introduced myself to the patients and families as A TRAINEE IN MY INTERNSHIP. When my patient feels comfortable when dealing with me, I feel at ease when dealing with him."</p> <p>E. "It is the way you are talking to old people I learned to weight it up as per the patient's personality ."</p> <p>F. "... I already have patient education ability ... but I needed to develop socially in order to gain their trust ..If you don't have the trust with the patients you can do nothing. Some of our patients are agitated because of their treatment and they want to go home ... I used to convince them to stay."</p> <p>G. "They won't only accept you because you are from the same culture; you need to show them your confidence in order to be accepted. I focused on the psychological aspects when providing nursing care to my patients."</p> <p>H. "I was shy to handle male patient I used to tell my patients you need to trust us. At the end I got the needed confidence"</p> <p>I. "Some families will refuse to allow them do the procedures especially the important ones like tracheostomy care sometimes they are not confident despite that they know the culture and the language ... if they find a male family member with the patient they will get worried and won't do it alone. At the beginning they will panic I used to face difficulty with them regarding this, I used to change their assignments many times till they got used to the thingI think it is a cultural thing and this is a usual thing to happen, I do understand.and after that it depends on the personality of the intern."</p> <p>J. "Some families don't mind allowing the student to do anything for their patient and others do not allow it.....the student will then feel disappointed.....those students who built a good relationship with the family won't find any difficulty."</p> <p>K. "The patients are encouraging Saudi nurses.....they treat them differently.....they allow them to do the assessment and to take their history.....but they are hesitant to allow students to do certain interventions for them. Their CONFIDENCE increases once being accepted by the patient."</p> <p>L. "Most of the patients are happy that they have an Arabic speaking nurse....they thank God that they are having a Muslim nurse....but some patients are suspicious related to the male-female component. We don't leave them alone with the patients....either the preceptor or myself are with them....it is about how you explain it to the patient.....if there is a difficult patient I won't sent the intern to him....also I don't want the student to have a negative experience."</p> <p>M. The patients do trust them and this gives them more CONFIDENCE."</p> <p>O. "Some of the patients are very vocal saying they don't like to have a student, so the student will step back but I don't think</p>	<p>Gaining more confidence as being trusted by the patients as having the language and knowing exactly what they want.</p> <p>Being appreciated and respected by the patients after being accepted by them as a care provider as having a related goal and as having the language and familiar with the culture.</p> <p>Having good relationships with her patients except those violating cultural norms.</p> <p>Being accepted by her patients as believing in self, having a convenient introductory style, and becoming familiar of how to deal with male patients.</p> <p>Being accepted by her patients as analysing and evaluating the situation according to patient's personality</p> <p>Gaining patients' trust as having the needed patient education ability and as developed socially throughout her rotation.</p> <p>Being accepted by the patients by showing that she is confident and by providing holistic care and not because she came from the same culture.</p> <p>Being trusted as possessing the needed confidence to ask for patient trust.</p> <p>Being accepted as the intern developed in her confidence, clinical abilities, and in how to deal with male family members.</p> <p>Being accepted by the patient's family as building a good relationship with the family.</p> <p>Being accepted by the patients to do the assessments as being Saudi.</p> <p>Being accepted by the patients as the preceptor and the CRN are having a way with the patients while remaining with the intern when performing the procedures.</p> <p>Being trusted by their patients which contributes to their confidence.</p> <p>Being accepted by the patients as speaking the language.</p>

that it is the reason that affected their confidence and development, they will try another patient. The patients are more expressive to them because they speak Arabic. THE INTERNS ARE BIG HELP FOR US because they speak the language and they are really good at English and improving their documentation."

- P. "I think because they are Saudis they are accepted by the patients and they are also explaining to their patients why I am used to be with them while they are doing somethingwe are collaborating."

Being tolerant for patients' rejection for them as caregivers.

Being accepted by the patients as being Saudis and as being accompanied by their preceptor.