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# Assessing Naturalistic Decision Making By Experienced And Inexperienced Interrogators In High Stakes Interviews

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INEXPERIENCED INTERROGATORS IN HIGH STAKES INTERVIEWS

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## **Dedications**

To my father Angus Ross. The only father I know who will read this document from beginning to end.

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INEXPERIENCED INTERROGATORS IN HIGH STAKES INTERVIEWS

by

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THESIS

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## **Abstract**

The current thesis aimed to improve the ecological validity of human intelligence interrogation research. Although field practitioners and researchers have worked together to improve the scientific validity and practical execution of interrogation techniques, research has yet to understand how, when and why interrogators implement such techniques. This thesis investigated the active decision making processes of interrogators that occur during high value interrogations. The theory of Naturalistic Decision Making was used to capture the naturalistic characteristics of high value interrogations- ambiguity, time pressure and high stakes. To capture the decision-making processes that are associated with skilled performance, this research conducted in-depth interviews with seventeen interrogators, and compared experienced ( $n = 9$ ) to inexperienced interrogators ( $n = 8$ ). Methods of cognitive task analysis and protocol analysis were used to enhance participants' verbalizations. Finally, the criteria used to determine participants' experience level (i.e. experienced or inexperienced) was validated using the five-stage theory of skill acquisition. It was found that experienced interrogators had a more flexible interrogation approach compared to inexperienced interrogators. This flexibility allowed experienced interrogators to better handle the naturalistic elements of the interrogation environment. All interrogators were found to have adequate skills pertaining to rapport building; however experienced interrogators further developed rapport in line with anecdotal evidence from past interrogators and investigators. Future field research should replicate these findings with additional interrogation simulations.

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## **Chapter 1: Introduction**

Since the Abu Ghraib scandal in 2004, national security agencies have identified a need for scientific research on the validity of interrogation techniques. Recent research in the field of legal psychology has investigated the area of high value intelligence interrogations, comparing and contrasting them to past research conducted on law enforcement interrogations (Evans, Meissner, Brandon, Russano, & Kleinman, 2010), leading to the conduct of surveys and structured interviews of interrogators regarding a variety of key issues (Redlich, Kelly, & Miller, 2012; Russano, Narchet, Meissner, & Kleinman, 2011), as well as the development of laboratory paradigms to support experimental research on intelligence interrogations (Evans, Meissner, Ross, Houston, Russano, & Horgan, 2013). Each of these approaches has improved our understanding of the potential effectiveness of certain interrogation techniques.

In contrast, research has yet to fully explore interrogators' decision-making processes during high-stakes interviews, particularly when considering expert vs. novice-level performance. Such research could be important – if those decision-making processes that lead to the extraction of successful information can be identified, this knowledge could serve as a basis for improving interrogator training. While useful as a first step into understanding the realm of HUMINT interrogations, the surveys conducted to-date have focused on which interrogation techniques operatives' use and view as effective for extracting information (Redlich et al., 2012). Less is known regarding how and when interrogators decide to use certain techniques in the conduct of an interrogation, and the reasoning behind their decisions.

Conducting research on the decision-making processes of interrogators poses special challenges. The interrogations of primary interest involve questioning “high-value” detainees, and thus are called high-value interrogations. High value detainees are those “identified as

having information regarding terrorist attacks against the United States and its allies,” (FBI, 2012, p. 3). The goal of interrogating high value detainees is to gather “actionable information” – information that is deemed reliable and leads to an action plan, such as identifying another target to pursue and detain (Evans et al., 2010). Most aspects of interrogators’ work involve sensitive information that is protected by the government, and national security interrogations are generally classified to protect information such as methods and sources associated with intelligence collection processes. Researchers and interrogators alike recognize the need for interrogation research; however, security issues often limit communication between researchers and practitioners.

The current thesis will draw from various areas of research and methodology to assess naturalistic decision making by expert and novice interrogators. First, interrogation research in law enforcement, including studies conducted in local police units and federal agencies will be explored with a focus on the interrogation processes, techniques, and commonalities seen across studies. Research on theories of expertise and expert decision-making, and studies of the characteristics of expertise will then be explored, followed by a review of methods that have been used to assess naturalistic decision making across a number of fields.

## **1.1 Previous Research on Interrogations**

Interrogation research has largely focused on the law enforcement context. In conducting these interrogations, the interrogator seeks to attribute responsibility of the criminal event to the suspect being interrogated (Evans et al., 2010). To achieve this goal, interrogators focus on gaining a confession from the suspect; however, research has shown that there are dangers with such a confession-focus. Through a series of studies, Meissner and Kassin (2004; see also, Kassin, Meissner, & Norwick, 2005; Meissner & Kassin, 2002) demonstrated that over time

police interrogators develop a bias towards perceiving guilt on the part of suspects. Meissner and Kassin (2004 and elsewhere) have also shown that rather than maintaining an open mind to the possibility that the suspect may not be responsible for the crime, interrogators tend to believe that most suspects are guilty. As a result, interrogators tend to use interrogation techniques to manipulate the suspect into confessing, leading to the elicitation of false confessions when applied against an innocent suspect (Narchet, Meissner, & Russano, 2011).

Researchers have identified two primary approaches to interrogation, namely the accusatorial method and the information-gathering method (Meissner, Redlich, Bhatt, & Brandon, 2012). In the accusatorial method, the interrogator accuses the interviewee of guilt, develops themes that maximize and minimize the suspect's perceptions of the evidence and consequences, respectively, with the goal of obtaining a confession. In contrast, the information-gathering method focuses on collecting information from the suspect about what happened. Rather than accusing the suspect of guilt, this method is open to the idea that the suspect could be innocent and thus seeks to gain any information the suspect has that could assist with the investigation (Shawyer, Milne & Bull, 2009). To motivate the suspect into reporting information, this approach focuses on developing a relationship of mutual cooperation between the interrogator and the suspect, using positive confrontation and the presentation of available evidence to encourage responding (Evans et al., 2010). The accusatorial and information-gathering methods have been compared in both the field and in the laboratory. Meissner et al. (2012) conducted a meta-analysis of this literature and found that information-gathering approaches were of greater guilt diagnostic value than the accusatorial method. Specifically, information gathering methods yielded more true confessions and fewer false confessions than accusatorial methods.

The interrogations of interest in this study are likely more dynamic in nature than the police interrogations that the literature has focused on to date. In high-value interrogations, interrogators will focus on prior activities, social networks, and subject motivations, as well as on events that may not have occurred yet, such as an impending terrorist act. These interrogations likely involve exploration of where, when, and how the act will occur. Thus, high value interrogations are geared towards gaining information more so than gaining a confession.

Recently, research has examined the potential for interrogation methods used in law enforcement to be applied to an intelligence domain. Given the relative effectiveness of information-gathering methods, it is logical to investigate such approaches for intelligence interrogations. Evans et al. (2013) created a laboratory paradigm that attempts to model the intelligence interrogation context. Using this paradigm, the authors compared the value of accusatorial and information-gathering methods for collecting information. The paradigm was unique in that it focused on the amount of information an interviewee revealed rather than a confession from the interviewee. Evans et al. found that participants interrogated with the information-gathering method made more admissions of information than participants interrogated with the accusatorial method. Evans et al. also recorded the amount of time the participants spent talking during their interrogation. Participants interrogated with the information gathering method were found to talk more than those interrogated with the accusatorial method. Therefore, evidence-based methods applied to law enforcement interrogations may also prove valuable when applied to intelligence interviewing.

Although research assessing the effectiveness of interrogation strategies has developed over the past few years, fewer studies have investigated interviewers' naturalistic decision-

making in the context of an interrogation. Three methodological strategies have been used to assess the interrogators' perspective – these approaches, and their limitations, are discussed here.

### **1.1.1 Surveys and Questionnaires**

One of the most popular methods of collecting data is creating a survey or questionnaire. These methods are popular in field research because they are quick and easy to administer. Kassin, Leo, Meissner, Richman, Colwell, Leach, and La Fon (2007) conducted the first national survey on American police investigators asking them about their interrogation beliefs and practices. Kassin et al. (2007) identified four primary clusters of interrogation techniques that together offer a portrait of the typical police interrogation. For example, isolating the suspect from friends/family, and building rapport was one cluster of techniques that police investigators commonly used. Kassin et al. (2007) found that the experience level of the investigator influenced the extent to which certain clusters of techniques were used. For instance, police investigators who had more years of experience tended to use threatening techniques and presentation of evidence (actual or fake) more so than those with less years on the job (Kassin et al., 2007).

Redlich, Kelly, and Miller (2012) surveyed American interrogators to explore the interrogation approaches most often used and those viewed as most effective. Redlich et al. (2012) conceptually clustered 71 individual techniques into six interrogative domains (see Kelly, Miller, Redlich, & Kleinman, 2013). These six domains represented the avenues of control that an interrogator has over the detainee. For example, *context manipulation* involves the interrogator's ability to control the detainee's environment. A technique within this domain might include changing the time of day that the interrogation is conducted. Redlich et al. compared the perceived effectiveness of these approaches on four general outcomes of

interrogations: 1) gathering intelligence, 2) gaining a confession, 3) gathering tactical information, and 4) gathering strategic information. Redlich et al. found that the *rapport and relationship building* approach was perceived to be most effective in achieving any of the four outcomes. This approach involves the interrogator establishing a high level of trust with the detainee. Examples of rapport building techniques included showing the detainee kindness, and meeting their basic needs (Redlich et al., 2012).

### **1.1.2 Structured Interviews**

Another less frequently used method involves structured interviews of highly experienced interrogators. Such interviews typically involve a defined questioning protocol that is applied consistently across participants. The protocol guides the interviewer in relevant themes they will cover and questions they should ask. Although flexibility on behalf of the interviewer is sometimes allowed, this protocol permits a more systematic analysis of responses across participants. Hence, it is anticipated that themes across the interviews will emerge, and commonalities and differences between participants can be examined. In interrogation research, these interviews have been used to explore more in-depth aspects of the interrogation process with highly experienced interrogators. As opposed to surveys, interviews require much more of the participants' time and effort.

Russano, Narchet, Meissner, and Kleinman (2011, 2012) conducted structured interviews on 39 experienced interrogators assessing various aspects of the interrogation process, such as rapport building. Thirteen of these interrogators had experience with high-value detainees. Russano and colleagues (2011, 2012) found that interrogations of high-value detainees were perceived as more pressure-filled and lengthier sessions than those involving lower-level detainees, therein requiring that interrogators spend more time preparing for each session. All

interrogators felt that the training they had received was inadequate to ultimately prepare them for dealing with a high value detainee (Russano et al., 2011; 2012).

### **1.1.3 Observational Studies**

Finally, another method used to understand interrogations from the interrogator's perspective involves conducting observational studies. In interrogation research this is typically done by listening to audiotapes or watching videotapes of past interrogations. Alison, Alison, Noone, Elntib, and Christiansen (in press) systematically coded videotapes of prior interrogations with high-value Irish Republican Army detainees. Alison et al. assessed the interrogators' ability to engage and develop rapport with the detainee. The extent to which the detainee engaged with the interrogator (i.e., the level of responding to questions) was also examined. It was found that the more experienced the interrogators were the more adaptive behaviors they used to facilitate this engagement (Alison et al., in press). Zimmerman (2012) analyzed videotapes of five prior U.S. law enforcement interrogations involving murder investigations, assessing the interrogation approach and question type interrogators most often used, as well as common suspect behaviors. It was found that police interrogators typically took a cooperative approach and asked mostly close-ended questions. The suspects themselves were also viewed as largely cooperative (Zimmerman, 2012).

### **1.1.4 Challenges to a Scientific Understanding of Interrogations**

Research investigating the role of the interrogator and their perceptions of the interrogation context is beginning to accumulate; however, the methods used to-date involve assessing factors outside of the interrogative process. As such, these methods are unable to extract the decision making processes that occur for interrogators during the interrogation. Researchers must either make inferences about the decisions that interrogators made, or they

must request that interrogators attempt to recollect the myriad of decisions they have made. The current research will remedy this void in the literature by investigating the active, naturalistic decision-making processes that occur during an interrogation.

There are several challenges to scientifically exploring high-value interrogations. First, interrogations of high-value detainees are, by nature, classified, placing them out of reach for the research community. Second, these interrogations often involve detainees that are from different cultures than the interrogators (Evans et al., 2010). In order to conduct an interrogation that results in the elicitation of actionable information, a cultural understanding of the detainee and their affiliated group is necessary (Russano et al., 2011). It would be quite challenging for a laboratory paradigm to successfully incorporate such cultural differences.

A third challenge to scientifically studying high-value interrogations involves the complexity of the interrogative process. For example, Kleinman (2006) writes: “The selection of an approach for dealing with newly detained sources remains not unlike the artist’s selection of paint from a palette filled with an array of attractive hues” (p. 135). There are some aspects of the interrogative process that can be assessed rather directly via experimental methods, such as evaluating the diagnostic value of one interrogation technique over another; however, an interrogator’s selection of one technique over another in response to a detainee’s resistance (and counter-interrogation strategies) is more difficult to explore in a laboratory setting.

#### **1.1.5 Distinguishing Expert and Novice Performance in the Interrogation Booth**

One question that frequently emerges when studying the role of interrogators is: “What makes some interrogators more successful than others?” Both researchers and field investigators have subjectively considered the personality traits that are valuable in the interrogation room. After thirty years of experience, retired police Lieutenant C. H. Van Meter (1973) summarized

the two main traits most important in an interrogator: believing in oneself and having good control over oneself. Van Meter (1973) recognized that believing in one's abilities and preparedness allowed an interrogator to become interpersonally involved in the interrogation. Van Meter (1973) argued that the suspect should see the interrogator communicating an idea such that the suspect's motivations become compatible with the interrogator's motivations. Successful presentation of this idea requires the interrogator to remain in strict control of their behavior (Van Meter, 1973).

Gudjonsson, a professor of forensic psychology, has had decades of experience working with police investigators. Also believing in the interpersonal nature of an interrogation, Gudjonsson (2003) argued that an effective interrogator is someone who has a good understanding of human nature, who remains in control of their emotions, and who has good communication skills. In their structured interviews of highly experienced interrogators, Russano et al. (2011) asked: "What qualities make a good interrogator?" The top six responses included being a "people" person, flexible/adaptive, mature, intelligent, a good communicator, and having the ability to empathize.

These observations suggest that interrogators believe interrogations to be highly interpersonal in nature, and that a good interrogator becomes interpersonally involved in a controlled manner. Thus, interrogators must show emotional investment while at the same time remaining in control of their own emotions. These seemingly conflicting tasks demonstrate the difficulty of the interrogator's undertaking. While such observations may prove to be valuable insights from the field, how might these insights be used to scientifically investigate what it means to be an expert interrogator? The next section explores the literature and theory behind expertise.

## 1.2 What Makes an Expert?

Through years of systematically observing skill acquisition, Dreyfus and Dreyfus (1986) noted a common pattern – namely, the *five stages of skill acquisition*, which include *novice*, *advanced beginner*, *competent*, *proficient*, and *expert*. This theory of skill acquisition posits that novices initially learn the boundaries of their field environment and the basic rules and requirements necessary to work within it. Upon initiating a new task, novices are generally unable to see or understand the surrounding context. In tackling the task, novices use procedural knowledge or the basic rules and requirements taught to them (Dreyfus, 2004). As a decision maker progresses through the next three stages (advanced beginner, competent, and proficient), they become better able at instinctively recognizing meaningful elements from the surrounding context – particularly those critical to the situation (Dreyfus & Dreyfus, 1986). As they progress toward the proficient stage, decision-makers will begin to deliberate over the application of meaningful elements into an appropriate action plan (Dreyfus & Dreyfus, 1986). According to the theory, expertise will ultimately involve the ability to intuitively assess a situation, and to a shift in the deliberative process that involves critical reflection of the expert's own intuitions and declarative knowledge rather than weighing alternatives based on decomposed meaningful elements (Dreyfus & Dreyfus, 1986; Ericsson, 2006). Here reasoning and decision making is holistic. Research comparing expert to novice performance has shown that experts are more intuitive with their reasoning and use more declarative knowledge than novices (Ericsson, 2006).

One of the more robust findings of expert performance comes from perception and memory research. This research explains how experts organize the wealth of knowledge they accumulate over time. Simon and Chase (1973) investigated how expert chess players consistently chose a superior move over novice players in the absence of any other differential

indicators in their game performance (i.e., the number of moves experts and novices made were the same). By having chess players of varying skill level study chessboards containing meaningful vs. random arrangements of pieces, Simon and Chase (1973) learned that expert players had organized these arrangements into patterns in memory. The ability to organize a wealth of knowledge into patterns, also known as *chunking*, is a well-known psychological phenomenon. The findings of Simon and Chase (1973) have been replicated (Gobet & Simon, 1998), and also applied to other domains such as understanding crossword puzzle proficiency (Hambrick, Salthouse, & Meinz, 1999).

Chunking allows experts to enact a plan of action. The principle of “spreading activation” demonstrates that when an information node is activated, features associated with this concept will also be activated (Fazio, 2007). When experts recognize salient features in a situation, they not only activate these features in memory but also past plans of action associated with these features. For example, skilled chess players readily recognize familiar chessboard patterns. They can then connect these patterns with moves that have proved effective in the past (Feltovich, Prietula, & Ericsson, 2006). The theory of skill acquisition suggests that experts engage in such complex pattern matching efficiently and intuitively.

In summary, expertise involves the complex organization of knowledge into patterns (or chunks) that can be retrieved rather efficiently based upon a situational assessment. Further, the theory of skill acquisition suggests that experienced decision makers are likely to generate and have available to them more than one action plan associated with a given situation (Dreyfus & Dreyfus, 1986). How do decision-makers decide which action plan is best for the situation? The next section will explore the theories and methods for assessing naturalistic decision-making.

### **1.3 Assessing Naturalistic Decision Making**

Traditional theories of decision-making use analytical models to explain how people choose the right decision. In these models, a decision maker is said to consider of a variety of possible decision alternatives that they could apply to a given situation (Yates & Tschirhart, 2006). The decision maker will then consider the positive and negative attributes of each option, as well as any contingency plans that may become necessary. The resulting positive and negative weights are then used to rank the available options and identify the best decision (see Yates & Tschirhart, 2006). Such generalized analytical models were created largely based upon decision-making behavior observed in laboratory settings.

Klein, Calderwood, and Clinton-Cirocco (1986) were interested in examining decision-making processes that occur in naturalistic environments – or those situations that occur outside the laboratory. Specifically, Klein et al. (1986) investigated the decisions that fire ground commanders' made during response calls. Based upon the analytical models of decision-making, it was predicted that the commanders would select two options of action to consider, their preferred option and an option for comparison. In contrast, results showed that the commanders rarely considered more than one option before enacting a plan of action (Klein et al., 1986). In fact, the commanders reported that they instinctively knew which plan of action to use and they acted upon this plan immediately. These results suggested that expert decision-making in naturalistic environments may qualitatively differ from that observed in the laboratory (see also Calderwood, Crandall, & Klein, 1987; Pennington & Hastie, 1986).

Studies such as Klein et al. (1986) prompted much interest in examining the decision-making processes that occur in naturalistic environments. This line of research, termed Naturalistic Decision Making (NDM), has identified several characteristics that are common

across naturalistic environments. First, the environments often contain ill-structured tasks involving high stakes, time-pressured situations that include substantial risk. The environments are dynamic in nature, requiring decision makers to shift their goals when a sudden change occurs. The changing nature of naturalistic environments also requires decision makers to handle uncertainty. Finally, due to the complexity of these situations, decision makers are often more experienced or even considered experts in their field (Klein & Klinger, 1991).

These characteristics of NDM environments apply to the current domain of interest. High-value interrogations involve dealing with information regarding impending terrorist attacks (FBI, 2012) and thus are inherently high stakes. Often these interrogations involve some level of time pressure - tactical and timely information must be collected and interrogators may only have a limited amount of time to interact with the individual (particularly if they are held by a foreign government). Even in situations that do not involve a “ticking time bomb scenario,” interrogators may be told that the detainee cannot remain in custody without a further charge to hold them. Thus, the interrogator is under pressure to elicit information that would justify continued detainment of the source.

Skilled interrogators are said to be those who have an “exceptional aptitude for dealing with ambiguity” (Kleinman, 2006, p. 102). The interrogators may gather background information to prepare for the interrogation, but ultimately their task is to elicit missing information. Thus, the information that the interrogators use to prepare for the interview is incomplete.

The goal of a high value interrogation is to extract actionable information (i.e., targeted information or a confession) from the detainee. The reliability of information collected is one factor in determining whether or not this information is actionable (Evans et al., 2010). Prior

research on police interrogations suggests that suspects are on average compliant and cooperative (Zimmerman, 2012). In contrast, informal discussion with high-value interrogators suggests that detainees are routinely deceptive and non-compliant. These behavioral characteristics of the detainee make situational assessment more uncertain and thus more difficult.

The gaps in background knowledge, as well as uncertainty about the quality and quantity of information the detainee can reveal, often results in ill-structured intelligence requirements. Requests for information are typically too broad or too narrow in scope, (Roth et al., 2010). These features of intelligence requirements could potentially leave the interrogator unable to fully structure the goals that they will attempt to meet in the interrogation, and are likely to produce uncertainty for the interrogators.

A defining feature of interrogations is that they are dynamic in nature (Kleinman, 2006). Changing the progression of the interrogation is often necessary (Evans et al., 2010). For example, if the detainee is refusing to cooperate, the interrogator may attempt to interrupt how the interrogation is developing. To do this interrogators must decide how and when to switch to a different tactic or approach. Decision-makers must therein remain flexible in shifting their goals and action plans according to how the situation is unfolding (Klein, 1998). The dynamic nature of interrogations requires that interrogators constantly assess the situation and the source, therein expending a great deal of cognitive effort (Evans et al., 2010).

Interrogation is an environment that NDM researchers have not yet explored. The current research attempts to fill this gap in NDM research. First, NDM domains that show similar characteristics to the interrogation domain will be explored. These domains include intelligence analysis, and medical diagnosis. These two fields have several similarities with interrogations.

For example, medical diagnosticians must be comfortable with ambiguity, often relying upon incomplete and potentially missing information when rendering a diagnosis. They must rely on prior medical records and the patient's description of their health history. Medical diagnosticians must assess how credible and reliable this information is while making a diagnosis (Norman, Eva, Brooks, & Hamstra, 2006). Interrogators also render credibility and reliability judgments in source assessment to assist them in evaluating the progress of an interrogation (Evans et al., 2010).

The area of intelligence analysis involves working with interrogators to extract the information of interest. Analysts are typically involved in the investigation team, as 92% of interviewed intelligence interrogators cited having experience using an analyst (Russano et al., 2012). Analysts will often supply interrogators with knowledge of the "big picture" beyond the specific interrogation, including such aspects as the culture of the detainee, their family, their town, etc. (Russano et al., 2012). Interrogators use analysts frequently to assist in corroborating information that a detainee has provided (Russano et al., 2012). NDM studies have been conducted on intelligence analysts to assess how they approach ill-structured intelligence requests, as well as how they adapt to information overload (Patterson, Roth, & Woods, 2001; Roth et al., 2010). Since intelligence analysts work alongside interrogators, they are likely to experience similar challenges across situations.

### **1.3.1 Recognition Primed Decision Model**

The Recognition Primed Decision (RPD) model, known as the prototypical model of NDM (Lipshitz, Klein, Orasanu, & Salas, 2001), explains how past experiences guide the decision maker in NDM situations. Three levels of the RPD model have been proposed. The first level involves a simple match between the current situation and a prior internal representation of

the decision maker. In the medical diagnosis literature, experienced diagnosticians represent their knowledge in the form of “illness scripts.” These scripts are representations of typical patient histories and their corresponding diagnoses that have come from episodic traces of past-diagnosed patients (Schmidt & Boschuizen, 1993a). When diagnosing a new patient, these “illness scripts” are used to guide the decision making process. Schmidt and Boschuizen (1993a) showed that over time, experienced diagnosticians are more accurate compared to less experienced diagnosticians due in part to their more elaborate and extensive “illness scripts.”

The second level of the RPD model occurs when the current situation is atypical to the decision maker. At this level, decision makers direct most of their attention to assessing the situation and to understanding its novelties (Klein, 1998). The situation typically involves ambiguity and is likely to map onto more than one representation (Klein, 1998). The decision makers often engage in feature matching to assess which representation best fits the given situation (Calderwood et al., 1987). At this level, the situation may be ambiguous and missing information. Such missing information is inferred through the use of causal reasoning, where decision makers represent the situation in story form (Pennington & Hastie, 1986). A plan of action to follow emerges as a result of these complex reasoning strategies (Klein, 1998).

The third level of the RPD model occurs when the situation has been assessed but the choice of action is still unclear. Here decision makers must engage in mental simulation, where they envision what may happen with a particular action plan. Mental simulation assists with the prediction of events, and can help to identify potential problems that might occur with a given action plan or in the identification of alternative action plans (Klein, 1998; Ross, Philips, Klein, & Cohn, 2005). The RPD model has been shown to explain behavior across numerous NDM environmental characteristics such as when decision makers are experienced, when decision

makers are under time pressure, and when ill-defined goals and uncertainty are present in the situation (Klein, 1998).

The experience level of decision makers is a key component of NDM. Highly experienced decision makers develop an instinctive ability to recognize and enact accurate decisions in critical and dynamic situations (Klein, 1998). However, experience alone is insufficient to explain the complex reasoning that occurs in naturalistic situations. Expertise is theorized to occur as a series of complex adaptations that result from experiences over time (Feltovich et al., 2006). These adaptations are the transitioning phases that allow a decision maker to progress through the five stages of expertise (Dreyfus, 2004). Although experience is necessary, Ross et al. (2005) argued that decision makers transition to the next stage through the use of mental models. A mental model is a decision maker's overall representation of a domain that allows them to understand and reason about incoming information, make predictions, and generate action plans (Ross et al., 2005). To progress, decision makers must learn from past experiences that were challenging and required the decision maker to deviate from their original plan of action, and this information must be incorporated into their mental models. The next section of this proposal will examine examples of expert performance occurring in NDM environments.

### **1.3.2 Expertise within Naturalistic Decision Making**

In the field of medicine, making a diagnosis is considered a complex skill that develops with experience (Norman, et al., 2006). Doctors have to make a diagnostic hypothesis often following only a brief interaction with the patient, and with limited or missing information (Norman et al., 2006). Hobus, Schmidt, Boshuizen, and Patel (1987) explored how experienced medical diagnosticians were able to make effective diagnoses in the presence of ambiguity and

missing data. They hypothesized that experienced diagnosticians would render more accurate diagnoses after first time interactions with patients than novices, reasoning that experienced medical diagnosticians would pay more attention to important information surrounding the patient case than novices (Hobus et al., 1987). Their results showed that experts recalled significantly more contextual (and relevant) information than novices, leading them to make more accurate diagnoses than novices (Hobus et al., 1987). In addition, there was a significant correlation found between total recall of information and diagnostic accuracy for experts, while no such correlation was observed for novices. These findings suggest that expert diagnosticians were better able to identify and use information received as compared to less experienced diagnosticians.

The naturalistic environment of police work has also been investigated. Zimmerman (2006) explored how police officers worked through a dynamic, time-pressured and high-stakes scenario involving an interaction with an armed suspect. Subsequently they were interviewed about what decisions they would make to engage the suspect. Zimmerman (2006) looked both at the reasoning strategies that police officers offered and the role of experience level of police officers, on the decision strategies that were identified. Police officers were categorized into one of the five stages of the Dreyfus and Dreyfus' (1986) skill acquisition model using Ross et al.'s (2005) adaptation of the five stage skill acquisition model to fit NDM situational characteristics. Zimmerman (2006) found that those officers categorized at the two highest stages of the five-stage model, proficient and expert, provided more elaborative descriptions of their assessments of the situation and greater information regarding why they attended to various features of the scenario than those less experienced. Those categorized at the two lowest stages, novices and

advanced beginners, on the other hand, provided more procedural descriptions when interviewed about their performance.

Zimmerman (2006) found that more skilled police officers directed their attention to situation assessment - the second level of the RPD model. Situation assessment allows experts to understand certain features of the situation and the underlying connections between them. When the situation shifted or changed, only the highly skilled officers reported adjusting their plans accordingly. This finding supports the five stage skill acquisition model which suggests that expert decision makers are able to engage in sense making to adapt to changing information (Dreyfus, 2004). Novices, on the other hand, lack the experience necessary to engage in plan making. Instead novices follow basic rules and requirements already known. One reason why experienced police officers were able to adjust their plans was that they engaged in forward reasoning to think through possibilities of certain actions (Zimmerman, 2006). Thus, upon receiving new information, experts would incorporate the information into their mental model of the situation, adjusting their hypotheses as necessary. Research has shown that while experts use forward reasoning, novices tend to use backward reasoning in which they attempt to fit the situation to their hypotheses (Norman et al., 2006). Highly skilled police officers were also more likely to engage in mental simulation of envisioned action plans than less skilled police officers (Zimmerman, 2006). This engagement in mental simulation aided them in thinking through the correct plan of action.

Experienced decision makers in high risk operational environments, such as battle field commanders, have also been investigated. Pfautz, Roth, Bisanz, Thomas-Meyers, Llinas, and Fouse (2006) explored the effects of uncertainty in how subject matter experts assessed, reasoned, and made decisions through a relevant situation. Prior literature suggested several

characteristics of uncertainty that decision makers had to recognize and attend to, such as a lack of information (Lipshitz & Strauss, 1997). Pfautz et al. referred to these characteristics of uncertainty as meta-information or qualifiers of information that affect decision-makers' situational assessments and reasoning strategies. Pfautz et al. believed that meta-information was not limited to qualifiers of uncertainty, but represented a broad range of other factors that individuals may attend to such as temporal factors of a situation, and reliability of a source. By analyzing a number of studies involved in exploring the cognition of experienced decision makers, Pfautz et al. identified and categorized several meta-information elements. In assessing experienced decision makers, Pfautz et al. found that skilled performance was associated with recognizing the meta-information.

Overall, prior research has provided robust support of the RPD model as a model to reflect expert NDM. These findings suggest that experienced interrogators may also engage in RPD processes when working through a high-value interrogation scenario. The following section describes the research methods that have been used to study NDM.

#### **1.4 Cognitive Task Analysis**

Expert performance appears to involve greater intuitive reasoning. As processes become automatic to experts they concurrently become more difficult to articulate and explain (Yates & Tschirhart, 2006). How do researchers extract the knowledge and reasoning processes experts use when working through a task? A dominant approach used to assess expert knowledge is called Cognitive Task Analysis (CTA). CTA emerged in the 1980s in the midst of the cognitive revolution (Crandall, Klein, & Hoffman, 2006). In the field of psychology, researchers moved away from explaining decisions in terms of behavior and towards understanding cognition, or the “why” behind the behavior. CTA methods were developed for in-depth laboratory studies

exploring cognition (Crandall et al., 2006). The partial meltdown of the nuclear power plant at Three Mile Island in 1979 spurred the need for cognitive scientists to begin using the CTA approach in naturalistic environments (Crandall, et al., 2006). The purpose of CTA is to capture the cognition of experts and to reveal the knowledge, reasoning, and decision-making strategies employed (Lipshitz, Klein, Orasanu, & Salas, 2001). CTA is also used to identify the decision-making challenges that occur in performing a complex task. These challenges may later be incorporated into training protocols and therein help to improve performance (Ward, Williams, & Hancock, 2006).

Methodologies that have been used to capture cognition include the use of simulations, in-depth interviews, and quasi-experimental manipulations. These methodologies will be explained more fully below. CTA studies are typically used to reinforce current training protocols, with the goal of successfully transferring on-the-job experience to novice trainees. By capturing the cognition of field-experienced practitioners, CTA studies are able to extract field relevant elements and contextualize them into the existing training protocols. CTA studies have been shown to improve the training ability of these protocols (Klein, Kaempf, Wolf, Thorsden, and Miller, 1997; Stanard, Pliske, Armstrong, Green, Zsombok, McDonald, and Crandall, 2002).

#### **1.4.1 Simulations**

Due to the characteristics of NDM environments, studies that develop a simulated task are common in CTA designs. Experts then complete the simulated task while researchers observe and assess performance. Simulations have been used to evaluate the performance of experts in domains such as aviation where real-time assessments of the field environment are improbable (Ward et al., 2006). In designing a simulation, the core characteristics of the task must be represented so that the mechanisms of expert performance are truly assessed (Gray, 2002). It has

been suggested that subject matter experts (i.e., those highly experienced field practitioners) be involved in creating the simulation such that core characteristics of the task are captured (Gray, 2002).

In studying how intelligence analysts handle intelligence requests, Roth et al. (2010) interviewed two highly experienced former officers. The information revealed from these interviews was used to create an unclassified fictitious scenario that had six realistic intelligence requests embedded within (Roth et al., 2010). Analysts went through the scenario, interpreted the six requests, and determined if they could answer these requests in the given amount of time. Roth et al. (2010) found that analysts had to expand and reframe the original request in order to learn what questions needed to be answered. Roth et al. (2010) referred to this process as problem formulation. In determining what collection assets to use, analysts relied on contextual cues and meta-information. Examples of collection assets included databases, digital imagery, as well as intelligence collectors such as interrogators. Analysts preferred to use more than one collection asset in answering an intelligence request. Contextual cues were holistic in nature, such as redundancy and diversity of collection assets. Examples of meta-information included the stability of the information. Roth et al. also found that meta-information and contextual factors interacted with one another, allowing analysts to determine the complexity of the request and the likelihood that it could be answered in time.

A key strength of simulations is that they can be used as training exercises to enhance novice performance (Ward et al., 2006). Staszewski and Davison (2000) were interested in improving soldiers' mine detection capabilities, as prior research showed that mine detection abilities were low. Staszewski and Davison (2000) created a training program of simulated mine detection exercises. The effectiveness of this training program was examined using a pre-test /

post-test experimental design. Staszewski and Davidson (2000) had different groups of soldiers go through this experiment in either plain clothes or with battle armor on. Both groups of soldiers improved their mine detection abilities after training. The third experiment involved testing soldiers with actual mines (that were deactivated). Participants had previously experienced experimental training but there was a sufficient lag in between sessions to control for practice effects. Results showed that again there were significant improvements in mine detection abilities. These findings demonstrate that realistic simulations can be developed and used to enhance performance. The third experiment showed how this training program was able to translate to real-world performance. Operations of high stakes such as mine detection are in need of research studies that can improve field performance.

In a methodological analysis of several CTA methods, studies that included simulations were shown to be instructive for improving training programs, but were also rated as time consuming (Hoffman, Shadbolt, Burton, & Klein, 1995). Roth et al. (2010) conducted studies that ranged from two to four hours in duration. In NDM domains, experts typically do not have this much time to afford to researchers (Crandall et al., 2006). Another weakness of studies that have experts complete a simulated task is that they reveal what the expert does but not necessarily what the expert knows (for example Staszewski & Davidson, 2000). Although gaining insights into the actions made by experts is important, an essential part of CTA is extracting expert knowledge.

#### **1.4.2 Interviews**

Another well-established CTA method involves conducting interviews on subject matter experts. Klein, Calderwood, and MacGregor (1989) created an interview method to apply to NDM environments. This interview, called the Critical Decision Method, has been extensively

used in CTA research over the past thirty years (Crandall et al., 2006). The interview focuses experts on past cases that they found challenging and unusual. Experts are asked to retrospectively recount a case, and an interviewer works with them to develop a timeline of the case. Then through a series of *deepening probe questions*, the interviewer expands their cognitive understanding of the event. These questions are designed to extract large amounts of detailed information and focus on the experts' goals, perceptions, expectations, and confusions (Crandall et al., 2006). Interviewers may also ask hypothetical questions designed to explore the differences between skilled and unskilled performance (Crandall et al., 2006).

This interview method has been used to gain insights into the reasoning and decision making strategies of experienced practitioners in the context of challenging tasks. Burke and Hendry (1997) used this method to explore the decision-making processes of experienced London fire ground commanders. Results showed that experts used coping behaviors and strategies to combat information overload, as well as predictive strategies when assessing a situation (Burke & Hendry, 1997). The vivid imagery that experts engaged in also allowed researchers to gain knowledge about the visual and auditory cues the commanders used in their reasoning strategies (Burke & Hendry, 1997).

The use of visual imagery is common in critical incidents. Blandford and Wong (2004) used this interview method to explore how emergency medical dispatch operators determined the resources required for ambiguous incidents called in over the phone. The interviews revealed that the operators created a visual image of the incident, updating their image every few minutes to account for any critical information received. They referred to this process as having 'control ears,' or attending to those cues that would impact the situation. For example, operators told of

certain cues that allowed them to prepare for potential problems, such as abruptness in a call that might indicate duress.

The key strengths of the Critical Decision Method interview involve an in-depth assessment of a critical incident and the successful extraction of detailed expert knowledge (Hoffman et al., 1995). By focusing on a critical and challenging event, the expert is less likely to engage in automatic processing of the situation and instinctively act, but rather is encouraged to engage in more critical reflection of their reasoning processes (Yates & Tschirhart, 2006). If the decision-making strategies were performed on a challenging incident, these strategies are likely to be associated with skilled performance. This interview method can also identify when challenges arise, and what experts failed to take into consideration. Hoffman, Neville, and Fowlkes, (2008) interviewed systems engineer practitioners and demonstrated that they failed to adequately consider the user when making new technologies. In fact, responses from the interviews suggested that the engineers did not particularly like working with the intended users when developing new technologies. Thus, the technologies that were developed often fell short of being usable, useful, and understandable to the intended users (Hoffman et al., 2008). Identifying such weaknesses can translate to the development of training protocols to improve performance.

There are, of course, weaknesses to using interviews. The Critical Decision Method interview is time consuming - it can take up to four hours per participant (Crandall et al., 2006) and this surely presents a challenge to effectively recruiting and engaging practitioners. Another problem with the interview method is the possibility of introducing interviewer bias. The *deepening probes* are considered essential to gain an understanding of the expert's perspective (Klein et al., 1989). However, these probes are directed questions regarding specific cues that

could introduce speculations that the expert never previously entertained (Ericsson & Simon, 1993). For instance, a sample question might be: *What other courses of action were considered, or available to you?* (Klein et al., 1989). Suppose the experts had never considered more than one option, a reasonable assumption based on findings by Klein et al. (1986). By asking this question, the experts may think of other options that would have been plausible, but were not options they were thinking of at the time. By engaging in this speculative process, experts may report different cognitive processes than those experienced during the actual incident (Ericsson & Simon, 1993). An aspect of these interviews that makes them challenging to use in interrogation research is that they require the participants to disclose and consider personal experiences. Given the security issues surrounding high-value interrogations, this in-depth exploration can be problematic.

### **1.4.3 Quasi-experimental CTA Studies**

A quasi-experimental approach to CTA merges the tools a researcher uses in the laboratory with a task that the practitioner is familiar with (Crandall et al., 2006). This approach involves deliberate modification of the task of interest. There are two techniques commonly used: 1) limiting information and 2) constrained processing (Crandall et al., 2006).

**Limited Information.** In a limited information paradigm, practitioners work through their familiar task in the absence of certain information that might otherwise be available to them (Crandall et al., 2006). Often contextual information is constrained so that practitioners are forced to rely upon their past knowledge and reasoning skills, and hence provide information on this knowledge and reasoning (Crandall et al., 2006). Since information is incomplete, practitioners can form hypotheses and researchers can learn from a practitioner's strategic thinking (Hoffman, 1987).

Tolcott et al. (1987) used a limited information paradigm in assessing decision making of army intelligence analysts. Initially, analysts were given a brief overview of a realistic battlefield scenario and were asked to make predictions regarding where the enemy was likely to attack as well as their confidence in this judgment. They were then updated with 15 pieces of new information and asked to repeat their judgment and confidence ratings. Results showed that analysts tended to hold onto their initial estimate of where they believed the enemy would be attacking from. When new information was received, greater attention was given to the pieces of information that supported their original estimate. The pieces of information that did not support the original estimate were often explained away (i.e., one recurring explanation was that this piece of information was misinformation given by the enemy) or considered trivial. This finding suggests that the analysts engaged in backward reasoning, or attempting to find information, present or predicted, which fit with their hypotheses. In addition, analysts were over-confident in their judgments at each presentation of information (Tolcott et al., 1987).

Tolcott et al (1987) also looked at the effects of years of experience on analysts' reasoning strategies. They found that the both experienced and inexperienced analysts favored a more intuitive and less analytical style of reasoning, while those with mid-level experience favored an analytical style of reasoning. It is a curious finding that the inexperienced analysts also engaged in intuitive reasoning. Perhaps, due to their limited knowledge, as well as their lack of conscious deliberation, their reasoning appeared to be intuitive to the interviewers.

**Constrained Processing.** A constrained processing task restricts a resource typically available to the practitioner while she or he engages in a familiar task. An effective way to achieve this constraint is to reduce the amount of time a practitioner has to process information and complete the task (Crandall et al., 2006). Schmidt and Boshuizen (1993b) used a constrained

processing task to manipulate the amount of time novice, intermediate, and expert medical students had to recall prior relevant knowledge. Participants were given either 30 seconds or three and a half minutes to recall past knowledge about endocarditis, and then all participants were given 30 seconds to review an endocarditic patient case. Results showed that novice and expert students' processing of the current case was unaffected by the constraint on past knowledge recall. In contrast, intermediate students' performance on the current case was significantly diminished with the constraint on past knowledge. These results support the theory of skill acquisition that explains how *competent* performers rely on extensive, detailed knowledge of past experience to help them assess current situations. Experts on the other hand only recall the most important aspects of past experience in helping them assess the current situation (Dreyfus, 2004).

**Combinations of experimental techniques.** Hoffman (1987) combined both constrained processing and limited information tasks into one study examining expert performance on aerial photography interpretation. Participants were given aerial photographs to assess (limited information: usually experts use other information such as topographic maps) and were only allowed two minutes to inspect photos (constrained process: experts usually have hours to make an interpretation). After the two minutes had expired, participants recalled everything they could about the photograph and provided an interpretation. Experts' performance on this task and their interpretations revealed immediate perceptual understanding of the terrain that resulted in in-depth assessments. These results support prior research showing that experts focus on situation assessment when interpreting unfamiliar situations (Zimmerman, 2006).

The key strengths to using quasi-experimental methods are that they take a short amount of time to administer, and they reveal valuable information about expert performance. These

methods take on average 45 minutes to administer compared to an average of 2 hours required for CTA interviews (Crandall et al., 2006). Hoffman et al. (1995) compared the efficiency of several CTA methods. Quasi-experimental tasks were the most efficient, yielding two to three “informative propositions” per total task minute. In contrast, the interview method yielded only one “informative proposition” per total task minute (Hoffman et al., 1995). Therefore these methods may be more practical to use in fields such as HUMINT interrogations, where practitioners’ time is limited. These methods also do not require that participants reveal information about their prior experiences which, for reasons already stated, is beneficial to studying the HUMINT context.

The primary weakness of quasi-experimental methods is that they can seem constrained and unrealistic to experts (Hoffman et al., 1995). These methods can also make individuals believe that their performance is being critiqued (Zimmerman, 2006). One way to circumvent such concerns is to have experts think of the study as a game, rather than as a challenge to their expertise. Additionally, after the study, researchers should explain to participants the context and importance of the study and why it was necessary to manipulate certain features (Hoffman, 1987). Analogous to simulation development, consulting with subject matter experts beforehand can prove useful to ensure these methods are designed well.

Examination of these three CTA methods demonstrates that there exists a variety of methods, developed to extract knowledge from experts. Specifically, these methods extract the reasoning processes and decision making strategies experts use to make decisions in critical situations. However, these methods do not provide experts with instruction on how to effectively communicate their valued knowledge. The next section introduces a well-established method created for experts to verbalize their knowledge in a detailed and valid manner.

## 1.5 Protocol Analysis

Protocol Analysis (PA) involves asking experts to “think aloud” while completing a task. Participants are instructed to focus on the task at hand and only vocalize those thoughts that spontaneously occur. The assumption behind PA is that participants can be trained to vocalize their thoughts without interrupting their internal sequence of thoughts (Ericsson & Simon, 1993). Therefore, these vocalizations do not affect participants’ performance on the task and they provide a valid perspective on cognitive performance. The thoughts that emerge from PA, therefore, reflect the participants’ cognitive processes that were required to complete the task (Ericsson, 2006).

There are two primary forms of PA, *concurrent* and *retrospective PA*. In concurrent PA, individuals provide a running commentary of what they are attempting to do while they are going through a task. In *retrospective PA*, individuals work through a task or segment of a task, and verbalize their thought processes immediately thereafter. Conducted in this way, the thought processes are still in the individuals’ working memory and thus individuals are able to offer complete verbalizations (Ericsson & Simon, 1993). Suwa and Tversky (1997) used retrospective PA to explore how architects benefited from drawing sketches and how the experience level of architects affected this process. The results supported prior research on expert versus novice performance in that the experienced architects had a more conceptually interrelated representation of knowledge than did the students (Suwa & Tversky, 1997). These findings show that retrospective PA identified critical differences in the thought processes of novices versus those of more experience.

The main strength of PA is that individuals are not directed toward responding about particular aspects of their cognitive processing (Ericsson & Simon, 1993). Research has shown

that directed questions are vulnerable to interpretation biases which in turn can bias reporting (Ericsson & Simon, 1993). Since elicitation of knowledge is undirected, PA is potentially free from interviewer bias such that verbalizations reflect the individuals' own interpretations of the task (Kuusela & Paul, 2000). Therefore, PA responses have good validity (Ericsson, 2006). PA has been compared to more directed verbal-reporting procedures such as self-explanation, which asks individuals why they did what they did. The problem with these questions is that they are vulnerable to how the interviewer asks the question and in turn how the individual interprets the question. Ericsson and Simon (1993) have found that different interpretations of the same question can lead to valuable information being lost.

Another strength of PA is that multiple analysis procedures can be conducted on the collected data. A coding scheme of the knowledge gained from literature searches, interviews with subject matter experts, and pilot studies is developed beforehand (Kuusela & Paul, 2001; Suwa & Tversky, 1997). The individuals' verbalizations are broken down into task relevant statements that are analyzed and coded according to the coding scheme. The verbalizations add content and meaning to the coding scheme to make it domain specific. The coding scheme can then be analyzed with both qualitative and quantitative methods (Kuusela & Paul, 2000). This combination of analytic procedures further boosts the validity of the findings.

A weakness of PA is that it requires additional training for the individuals. Verbalizing thoughts aloud is a task that is not familiar to individuals and unless instructed, these verbalizations can interfere with their task performance (Ericsson & Simon, 1993). In contrast to concurrent PA, the training involved in retrospective PA is not extensive. A quick warm-up exercise to get the individual comfortable with verbalizing their thoughts aloud is sufficient (Ericsson & Simon, 1993). It has been shown that there are considerable individual differences in

PA. Some individuals are better than others at verbalizing their thoughts and some may need additional practice (Hoffman et al., 1995).

Another weakness of PA is that although undirected probes increase the validity of the responses, they do not typically reveal all of the individuals' knowledge. Think aloud procedures allow individuals to verbalize what they are reasoning but not necessarily why (Hoffman, 1987). Although self-explanation methods can lead to misinterpretations, knowing why experts reasoned through a task can be just as valuable as knowing what they reasoned about. A combination of undirected and directed questions could result in a more complete representation of how experts perform.

### **1.5.1 Protocol Analysis and CTA**

While CTA was developed to access the knowledge experts have available, PA trains experts to verbalize this knowledge. Thus, these two methods are frequently used to supplement each other. Roth et al. (2010) used concurrent PA to reveal how expert intelligence analysts interpreted information requests. Schmidt and Boschuizen (1993b) used retrospective PA to determine how the organization of medical knowledge assisted medical students in making a diagnosis. Hoffman (1987) used retrospective PA to understand how experts in aerial photography make interpretations of a unique terrain. These studies all concurrently used CTA methods to extract experts' knowledge.

Patterson, Roth and Woods (2001) investigated how highly experienced intelligence analysts coped with data overload and tight deadlines in interpreting a scenario outside their area of expertise. Specifically, analysts interpreted the facts behind a satellite accident and assessed the potential impacts of this accident. A prior interview with an expert analyst revealed that this accident would be appropriate to use in the study as it contained both generalities of technical

knowledge, and specific technical knowledge likely to be unknown to the analysts. Therefore analyzing and interpreting this accident would be a challenging yet feasible task for experienced analysts. Patterson et al. (2001) created a simulation exercise in which analysts had access to a database containing 2,000 text documents that had reported on the accident. Participants were given 3-4 hours to go through these documents, thus creating a time-pressured situation, and were instructed to think aloud as they interpreted the documents and pieced together the information. Subsequently, participants provided a verbal briefing of their findings analogous to verbal briefings analysts have to give in the field (Patterson et al., 2001).

The results from Patterson et al. (2001) revealed that analysts spent the majority of their time assessing the situation and gathering information. These results support the RPD model. Indeed, analysts organized their notes into a coherent story, a feature of the second level of the RPD model (Klein, 1998). Consistent with NDM theory, the analysts' decision-making process was not deliberative, but focused on corroborating information and resolving data conflicts. Corroboration of information was revealed to be a cognitively difficult process and failures to corroborate accounted for many of the inaccurate statements analysts made in their verbal briefings. Results further showed that the amount of time analysts spent assessing the situation and gathering information was linked to the number of accurate statements made within their verbal briefings (Patterson et al., 2001).

Patterson et al. (2001) combined methods of PA with several CTA methods within the study. PA was used to capture participants' situation assessments as well as the development of their interpretations. The CTA features were chosen to manipulate NDM characteristics that were the focus of the study. The first feature was the use of a challenging task, a necessary component for expert performance to occur (Hoffman et al., 1995). This challenging task was

manipulated in a simulation exercise, allowing for closer and more controlled observations of expert performance (Ward et al., 2006).

A constrained processing task was used to manipulate the NDM characteristic of time pressure. Intelligence analysts frequently have to answer intelligence requests in a limited amount of time (Roth et al., 2010). Lastly, data overload is a very significant problem for analysts (Patterson et al., 2001) and was manipulated with the use of a reverse limited information paradigm. All information, regardless of its accuracy or relevance, was at the analysts' disposal. Although the text documents were available, the analysts had to search for them. The analysts controlled how many documents they read and how much time they spent on this process. Results showed that analysts inevitably missed critical information in their verbal briefings. However, the vulnerability to missing information was due to the absence of information rather than data overload (Patterson et al., 2001). The absence of information also increased the uncertainty level of the analysts - they did not know all the information in the database and so were unable to check how beneficial their search queries were (Patterson et al., 2001). The methodology used in this thesis demonstrates the value of combining CTA methods, and PA to explore key NDM characteristics of a naturalistic environment.

## **1.6 Synthesis and Overview of the Current Thesis**

Prior research on interrogations has explored well-known interrogative techniques used in police interrogations (Meissner et al., 2012). Interrogators have also been surveyed and interviewed about what interrogative practices they believe to be most effective (Redlich et al., 2012; Russano et al., 2011, 2012). Furthermore, past audio and video-tapes of interrogations have been analyzed to examine the techniques used during interrogations (Alison et al., 2012; 1996; Zimmerman, 2012). However, research has yet to explore the naturalistic decision making

processes that occur for interrogators during an interrogation. The current study will investigate the decision-making processes interrogators use while conducting high-value interrogations. Components of these processes include situational assessments and reasoning strategies. What critical cues or factors do interrogators pay attention to? What approaches do interrogators consider using based upon the demeanor of the detainee?

Based upon prior research on interrogations, key aspects of the interrogation process that are associated with successful performance have been identified. Rather than focus on gaining one specific objective, such as a confession, it is believed that a more open-ended approach geared toward gathering-information can lead to key information being extracted (Evans et al., 2013; Meissner et al., 2012). Thus, this proposal will focus on gathering information as the primary objective in interrogations. The technique that researchers have focused on when studying the information-gathering method is the development of rapport. Surveyed interrogators believed that building rapport is most effective in achieving a successful outcome in a high-value interrogation (Redlich et al., 2012). Hence, this proposal will also explore how interrogators develop rapport and maintain this relationship throughout the interrogation.

A question that is related to successful interrogation performance is what makes a good interrogator? Anecdotal evidence from experienced interrogators suggests that interrogators must become interpersonally involved yet remain in control of their own emotions in order to be successful (Kleinman, 2006; Van Meter, 1973). Theories of expertise suggest that more experienced decision makers have a wealth of knowledge represented in organized chunks (Simon & Chase, 1973). These chunks allow the experienced decision maker to recall relevant information when working through a task. The chunks of knowledge are organized into a cohesive, yet detailed representation of their environment (Ericsson, 2006).

High-value interrogations often require interrogators to conduct time pressured interrogations that involve high stakes in the absence of complete information (Evans et al., 2010). The theory of NDM explores environments with these types of characteristics (Klein, 1998). Models of NDM, such as the Recognition Primed Decision-making model, suggest that the experience level of decision makers is the underlying mechanism driving the types of decisions made (Lipshitz et al., 2001). The current thesis will compare experienced to inexperienced interrogators and explore the effects of naturalistic characteristics on their decision-making processes. How interrogators receive new information in a critical situation will also be explored.

NDM environments are typically unable to be studied in the laboratory. To ensure an effective study design that is practical to the interrogation domain, the proposal will use a combination of CTA and PA methods. Since there are security limitations to directly observing or analyzing high-value interrogations, a simulated interrogation was developed for interrogators to view. Methods of CTA were used to manipulate features of the interrogation scenario and simulation that focused on the NDM characteristics of interest. Specifically, the interrogation scenario involved a high-stakes, time pressured, and ambiguous scenario. When viewing the simulated interrogation, participants underwent an in-depth interview that used a structured question protocol. This protocol included the use of a retrospective PA question to ensure that the responses yielded from the protocol were reflective of the interrogators' cognitive processes occurring during the simulation. Finally, participants began the interview with limited amounts of contextual information available and were constrained in the amount of time they had to process new information. Past research has found that these manipulations are efficient in

revealing expert knowledge about critical situational assessment and reasoning processes in time pressured situations (Hoffman, 1987).

The thesis explored the active decision-making strategies of experienced interrogators as they viewed a simulated high-value interrogation. Inexperienced novice interrogators participated as a comparison group. Participants watched five short video segments of the simulated interrogation that captured the core challenges and complexities of high-value interrogations. Following each segment, participants answered questions regarding their interpretations of the simulated interrogation, and the decision-making strategies they would consider as an interrogator. Following the simulated interrogation, participants completed a post-study questionnaire which assessed for the realism of the simulated interrogation.

#### **1.6.1 Research Questions and Exploratory Hypotheses**

The current thesis explored the naturalistic decision-making processes of interrogators that are associated with skilled performance, including situational assessments, contextual awareness, and reasoning strategies. The interrogation challenges that this thesis focused on were how interrogators: 1) reason and strategize through a challenging and evolving interrogation, 2) decide on interrogation techniques and approaches to use, 3) develop and maintain rapport, and 4) gather relevant information. The simulated interrogation contained NDM characteristics typically present in high value interrogations, such as time pressure, high stakes situation, ambiguity, and considering new information. It was predicted that differences would be found between how experienced and inexperienced interrogators handled the challenges, and that key aspects of skilled performance would be identified.

The first research question explored the effects of experience on participants' situational assessments. The RPD model suggests that experts make assessments based on past experiences

and that they use most of their cognitive resources in assessing and processing the situation (Klein, 1998). In contrast, novices are only able to make assessments based upon procedures that they have been trained upon (Dreyfus & Dreyfus, 1986). It was therefore hypothesized that when processing the situation, experienced participants would verbalize semantic knowledge, or knowledge based on previous experiences, whereas inexperienced participants would verbalize procedural knowledge. Prior research suggests that experts attend to greater amounts of contextual information as compared to novices, which helps experts access components of past experiences that are similar to the contextual factors in the current situation (see Schmidt & Boschuizen, 1993a). Thus, it was also hypothesized that the verbalizations of experienced participants would contain more comprehensive, detailed and nuanced situational assessments as compared to novices' verbalizations.

The second research question investigated the effects of experience on how interrogators decide which interrogation approaches and techniques to use in a dynamic and constantly changing interrogation. The theory of skill acquisition suggests that novices attend to isolated elements, whereas experts are able to attend to and coordinate multiple elements (Dreyfus & Dreyfus, 1986). It was therefore hypothesized that inexperienced participants would report selecting a single interrogation technique that they would consider using at a given time. In contrast, it was hypothesized that experienced participants would report selecting a broad interrogation approach, involving multiple techniques, that they would consider using throughout the interrogation. The selected interrogation approach would thus allow experienced participants to adapt to updated and new information. Thus, it was expected that experienced participants would provide updated and progressively more detailed situational assessments as the simulated

interrogation progresses, and that they would deliberate through the consequences of certain techniques within their selected approach.

The third research question examined the effects of experience on developing rapport. Past research on interrogations suggested that rapport development is perceived as necessary for conducting a successful interrogation (see Redlich et al., 2012). It was hypothesized that experienced participants would attend to multiple contextual factors when characterizing rapport. For example if the detainee starts fidgeting, an experienced interrogator could take into account contextual factors of the interrogation such as the angst of being interrogated, or the comfort of the interrogation room, before interpreting the detainee's non-verbal behavior. In contrast it is expected that inexperienced interrogators would not consider contextual factors when interpreting the detainee's behavior. Thus experienced interrogators would be able to use such contextual factors to help build rapport i.e. make the room more comfortable. Attending to contextual factors would allow experienced participants to adapt to and understand the significance of new cues of rapport that occur as the simulated interrogation progresses. In contrast, inexperienced participants were hypothesized to characterize rapport based on individual behavioral cues. Inexperienced participants were also expected to process these cues separately, leading them to miss important contextual factors of rapport development.

Lastly, the effect of experience on gathering information was investigated. Although prior research suggests that an information-gathering approach is appropriate to the HUMINT domain, this research does not provide insights pertaining to how interrogators decide what pieces of information are relevant. Prior research suggests that meta-information or 'qualifiers of information' affect how decision-makers view the relevance and importance of the information. Findings from Roth et al. (2010) suggested that the level of meta-information that decision

makers attend to increases their situational assessments. An example of meta-information may include assessments of the credibility of information supplied by a detainee. Meta-information could be used by interrogators to determine the veracity of information received, which in turn could assist them in determining what information is most pertinent. It was hypothesized that experienced interrogators would verbalize more meta-information than inexperienced interrogators.

## Chapter 2: Method

### 2.1 Participants

Seventeen interrogators participated in this study. The age of participants ranged from 27 to 50 years old with a mean age of 38.94 ( $SD = 6.23$ ,  $Mdn = 38$ ). There were 14 males and 3 female participants. All participants were recruited from the High-Value Detainee Interrogation Group (HIG), Federal law enforcement agencies, and/or the U.S. military, with assistance provided by the U.S. Government. Individuals volunteered to participate in this research as part of their professional development.

Taken together, the total sample of participants had experience in conducting both law enforcement and intelligence interrogations, with one participant from the HIG, four from the Federal Bureau of Investigations (FBI), four from the US Army, one from the United States Marine Corp (USMC), two from the US Department of Defense, three from Immigration and Customs Enforcement (ICE), and two from HUMINT Training-Joint Center of Excellence (HTJCOE). Supervisors from each location received specific criteria to follow when assessing the expertise of participant interrogators. Specifically, inexperienced participants were defined as interrogators who had received interrogation training but who had no experience in conducting high-value interrogations, while experienced participants should have at least ten years of interrogation experience, including high-value interrogations. Given these constraints, the supervisors assisted in classifying the volunteer participants into one of these two groups.

Out of the 17 participants, nine interrogators were considered experienced with a mean of 12.94 years of interrogation experience ( $SD = 6.47$ ;  $Mdn = 14$ , range from 4 to 24 years). The number of interrogations that the experienced participants reported having conducted in their career ranged from 50 to 2,000 interrogations conducted. The remaining eight participants were

classified as inexperienced interrogators with a mean of five years of interrogation experience ( $SD = 4.75$ ;  $Mdn = 4.5$ , range from 1-15 years). The number of interrogations that the inexperienced participants reported ranged from 0 to 150 interrogations conducted. Although there was some overlap between the two groups, supervisor ratings of expertise are commonly used in the expertise literature (Ericsson, 2006) and in naturalistic environments such as law enforcement (Greene, Heilbrun, Fortune, & Nietzel, 2007). However, such ratings are also known to be influenced by how much contact the supervisor has had with their trainees (Beutler, Storm, Kirkish, Scogin, & Gaines, 1985). Therefore this thesis will perform a validation analysis where performance elements identified from the participant interviews will be used to assess skill level according to the five-stage skill acquisition model (Dreyfus & Dreyfus, 1986). This analysis will be performed to assess how well field heuristics relate to theories of skill acquisition and expertise development.

## **2.2 Materials**

### **2.2.1 Scenario**

The simulated interrogation depicted a high-value detainee interrogation scenario that was designed to challenge all participants. Subject matter experts assisted with the development of the scenario (and the back story of the detainee) to ensure its relevance and realism to the interrogation context. In brief, the scenario involved a detainee who is being questioned in regards to his most recent visit to the United States. Fueled by a primary motive of money, but mixed with feelings of revenge for his wife and two daughters' deaths as well as receiving pressure from external family, the detainee is helping his wife's uncle plot an attack against the United States. The detainee and three other people conducted a surveillance operation in major cities around the US, including New York, Washington D.C., Chicago, and San Francisco. The

uncle is paying each of them \$5,000 to take photographs of their city's subway station and to collect extraneous information such as police and firefighter reaction times to potentially increase the impact of an attack. The four friends were in their respective cities for a total of 5 days. The detainee was in charge of calling the other conspirators every day at 4:00pm to ensure that they carried out their surveillance plans. After five days, the detainee and friends had been instructed by the uncle to meet in Beirut. The detainee decided to conduct some business dealing hashish in Cairo before returning to Beirut and he was captured by Jordanian police during a layover as he showed up on their watch list as a drug smuggler. (for a complete description of the scenario see Appendix A). The detainee was not informed of all the plans surrounding the entire attack, but does have information related to the surveillance operation.

### **2.2.2 Videotaped Simulation**

The simulated interrogation was videotaped and consisted of two interrogators and one detainee in a windowless, sparsely furnished room. The camera focused on the detainee who was depicted in a jumpsuit and handcuffs, and the interrogators' faces were hidden from view of the camera. One of the two interrogators played the role of the lead interrogator, with the other being the secondary interrogator. Three retired, highly experienced, interrogators (with both law enforcement and military backgrounds) played the roles of the interrogators and the detainee to ensure as much realism as possible.

The interrogators were placed in a time-pressured situation, simulating that they would only have a single opportunity to interrogate the detainee. Prior to conducting the simulated interrogation, interrogators were given an information packet with background information, that included the first two sections of the scenario framework (see Appendix A) and a biographical sheet of the detainee. The biographical sheet contained- basic medical information of the

detainee (such as height, weight, physical condition), biographical information (such as date of birth, nationality), employment status, and date and place of capture. Finally, interrogators received a dossier of the detainee that included a few photographs taken from the detainee's camera, a map of the Federal Triangle metro station that had some handwriting on it, and photographs of the detainee and the detainee's uncle with the leader of Hezbollah. These props were created by the SMEs to be representative of the type of intelligence information collected in such investigations. The information packet was similarly consistent with the type of information that interrogators would receive, although it was somewhat limited in information from what the interrogators would typically desire or expect to receive.

After reviewing all relevant information, the interrogators were asked to conduct a simulated interrogation (role played) with the detainee in question. They were provided up to four hours of time to conduct the unscripted interrogation, which was videotaped for purposes of the current thesis. The simulated interrogation lasted approximately 81 minutes.

### **2.2.3 Video Segments**

Five segments of the simulated interrogation were selected to display to participants. These five segments ranged from 4 to 8 minutes in length, with a total duration of 27 minutes. The segments were selected because they identified key elements of the interrogation and involved potential turning points in detainee responsiveness.

The first segment depicted the beginning of the interrogation, and was titled *the detainee's cover story*. Specifically, the interrogation began with the detainee explaining his whereabouts for the last two weeks as well as his reasons for traveling while the lead interrogator questioned him on his motive to sightsee in D.C., a city the detainee was already reasonably familiar with.

The second segment was titled *friends and family tragedy*. In this segment, the interrogators confronted the detainee for not telling them about phone calls he made while in D.C. The detainee explained that he called one friend in New York, an old friend from Beirut that he has known for many years. He called this friend to see if they could meet, as they were both in the U.S. at the same time. The interrogators questioned the plausibility of this story. During questioning, it is revealed that the detainee's wife and two daughters were killed about a year ago in an Israeli bomb attack. The detainee has only one remaining son in his immediate family. This segment was chosen to assess how participants would perceive and use the family tragedy that the detainee had recently suffered.

The third segment was titled *inconsistencies*. In this segment, the lead interrogator asks for the name of the New York friend, and the detainee does not give the same name he gave previously. In addition, he is now saying that he has only known this friend for a year, and that the wife's uncle introduced him to this friend after his wife's death.

The fourth segment was titled *bargaining*, as the detainee attempted to bargain with the interrogator at the end of this segment. Specifically, the lead interrogator challenged the believability of the detainee's story and confronted him regarding his alleged involvement in terrorism. The detainee rejected this confrontation and claimed innocence. The interrogator asked for the uncle's address but the detainee resists and indicated that providing such information was too dangerous as the uncle would suspect him if people showed up at his door. The interrogator then suggested that the uncle will know something went wrong if the detainee doesn't get home on time and suggests that the son might be in danger if left alone. The detainee attempts to bargain with the interrogator to secure his son's safety.

The fifth and final segment was titled *broken* as the detainee was cooperative by this point. In this segment, the lead interrogator agrees to help the detainee. The detainee mentions the surveillance plot involving the phone calls and photos, though he does not mention the extraneous information gathered on a subway map. The interrogators focus on getting the detainee to provide the location of the uncle. Although the detainee is fairly cooperative, he is still hesitant in providing detailed information about the whereabouts of the uncle. This segment was created to simulate an interrogation ending. It was shown to participants to assess whether or not they would end the interrogation at this point. In actuality, the simulated interrogation continued for approximately 30 minutes.

The interrogators' role in the interrogation was reduced as much as logically possible and their faces were hidden from view to further increase the cognitive challenge for participants and lessen the potential for bias in their responses.

#### **2.2.4 Summaries**

Short summaries of contextual information revealed between each video segment were created (see Appendix B). These summaries were read aloud to participants at the appropriate time. For example, the contextual summary of information that occurred between segments two and three was read to participants after they had finished responding to segment two. These summaries were created to control for responses that may have been due to a lack of factual information. These summaries did not reveal any decision-making processes, or action plans of the interrogators.

#### **2.2.5 Semi-Structured Interview Protocol**

Participants were asked a series of questions from a semi-structured interview protocol (see Appendix C) following each video segment. The questions were developed to address the

vulnerabilities mentioned in Ericsson and Simon (1993) concerning interviewer bias and participant interpretation, as well as to yield information on the cognitive processes used during the exercise (Crandall et al., 2006). Questions focused on situation assessment, cue relevance, reasoning and decision-making strategies, and any action choices participants would consider as the interrogator. Questions were designed to address the four key interrogation challenges identified in prior research, specifically- paying attention to the complexities of the situation, rapport building and maintenance, adapting to incoming and potentially inconsistent information, and deciding how and when to implement an interrogation approach. The protocol ensured consistency in the questions asked across participants, though it also permitted some flexibility based upon participant responses. For example, if participants' perceptions focused on how they would have conducted the interrogation differently, then question five of the protocol would be considered redundant and therefore not asked (i.e. *What would you do differently from this interrogator at this point, if anything?*). A complete description of the progression of questioning is provided in the procedure section on pages 48-50.

### **2.2.6 Audio-tapes**

All participants were asked to provide consent for audio recording of the simulation and interview session. Participants were informed about the procedures used to safeguard the confidentiality of their responses (see Appendix D). All but two participants consented to their responses being audio recorded, and the responses of the two participants who did not consent to the audio recording device were recorded via detailed notes taken by the second interviewer.

## **2.3 Design**

The study used a single factor, between-subjects design in which participant's level of expertise (experienced vs. inexperienced) was assessed. The study employed a "limited

information” and “constrained processing” task in which a videotaped simulation of an interrogation was presented across five segments. A semi-structured interview protocol was used to assess key interrogation challenges.

## **2.4 Procedure**

### **2.4.1 Interviewers**

For each participant interview, there were two interviewers; one lead interviewer and one secondary interviewer. The lead interviewer was responsible for a) explaining the procedure to participants, including consent and confidentiality procedures, b) giving participants the informational packet that the interrogators had received, c) showing participants segments of the simulated interrogation d) reading out-loud the in between segment summaries to participants e) asking participants questions from the structured interview protocol and f) fully debriefing participants and handing them the post interview questionnaire. The second interviewer was responsible for primarily taking notes of any body language of participants (such as gesturing to evidence) that would not be picked up by the audio recorder, or taking detailed notes in the absence of an audio recording, and asking any follow up questions that the lead interviewer may have missed.

### **2.4.2 Interview**

Interrogators volunteered to participate in a study exploring the decision-making strategies of interrogators. Prior to beginning the study, participants read and signed an informed consent form (see Appendix D). Each session was conducted by two interviewers. Upon obtaining consent, the primary interviewer explained the task, and read aloud the instructions (see Appendix E). Specifically, participants were instructed to assume the perspective of the lead interrogator while viewing each segment, and that although they should use the

interrogator's actions as a foundation from which to offer comments, the purpose of the study was to understand and assess their own perspective and decision making in the interrogation rather than to critique the videotaped interrogator.

Participants were provided the same informational packet that the interrogators were given in the simulated interrogation. After participants reviewed the materials and indicated they were ready to begin, they were shown the first video segment via a laptop computer. Following the first video segment, participants were asked the first question on the interview protocol, which involved a protocol analysis prompt to report their thought processes and perceptions experienced while viewing the segment (see Appendix C). Once participants had finished describing their perceptions of the segment they had just viewed, the interviewers either asked follow-up questions regarding information that was mentioned in the participant's free narrative, or the interview proceeded to the next question in the interview protocol. Once all questions relevant to the participant's responses were asked, participants were shown the next segment of the simulated interrogation followed by further questions from the interview protocol.

Once participants viewed the fifth and final segment and responded to all questions, they were debriefed (see Appendix F). The primary interviewer explained the purpose of the study. Confidentiality and consent protocols again were stressed, and participants signed a post-study audio-consent form indicating that they agreed for their audio recording to be analyzed. Participants then completed a demographic questionnaire that gathered basic biographical information, as well as information regarding participants' current employment, their years of interrogation experience and the number of interrogations conducted (see Appendix G). Participants also completed a post-study questionnaire that assessed the perceived realism of the simulated interrogation, as well as the perceived success of the interrogation (see Appendix G).

Participants were thanked for their time, told of expected project outcomes, and invited to ask any questions about the study.

## **2.5 Qualitative Analysis**

Each audio tape recording was transcribed at *Crystal Clear*-a small business that specializes in transcription of confidential recordings. Qualitative analysis commenced with broad categories so as to avoid the loss of valuable data (Corbin & Strauss, 2008). Since qualitative analysis can begin before data collection has ended, three researchers examined the first 14 interview transcripts to extract broad level categories. After having examined the transcripts twice, the three researchers agreed upon the broad categories of *Situational Assessment*, *Decision Process*, *Action*, *Evaluation* (of the interrogator within the simulation), and *General Knowledge*. Once the primary categories had been agreed upon, the three researchers each coded the same interview transcript, and compared coding processes. This procedure was performed until the three researchers had reached 95% agreement. The 17 interview transcripts were then divided up among the three researchers and coded using *NVivo 8.0 software*- a software program that specializes in qualitative analysis by sorting, categorizing, and organizing information content (see Appendix H).

Out of the five primary categories, this thesis focused on three categories relevant to distinguishing experienced and inexperienced interrogators: *Situational Assessment*, *Decision Process*, and *General Knowledge*. *Situational Assessment* pertained to all statements regarding what participants observed and assessed while reasoning through the interrogation. *Decision Process* pertained to all statements about plans or future actions related to conducting the interrogation. Lastly, *General Knowledge* contained statements that discussed general

interrogation practices and procedures, including those from past experiences. In analyzing the four research questions, these three primary categories were divided into hierarchical structures.

The first research question explored the *General Knowledge* primary category and divided it into two sub-categories: *semantic knowledge* and *procedural knowledge*. The second research question explored two primary categories. *Situational Assessment* was divided into two sub-categories: *Cues* and *Assessment*. *Assessment* was further divided into *hypotheses* and *expectations*. The category *Decision Process* involved a sub-category *goals*, which in turn was broken down into *actions* and *strategies*. The third research question further explored the sub-categories of *goals* and *strategies* and how they were used in the development of rapport. Lastly, the fourth research question again explored the *Situation Assessment* primary category and focused on the sub-category, *Cues*, which was further distinguished by *behavioral-focused* cues and *information-based* cues. The next chapter will define and provide examples of these sub-categories.

## Chapter 3: Results

### 3.1 Validity of the Experimental Approach

Participants were asked how realistic the simulated interrogation was compared to their own experiences. Participants rated their response on a six-point scale with one being *not at all realistic* to six being *extremely realistic*. Sixteen out of 17 participants rated the realism of the simulated interrogation. The mean realism rating was 3.59 ( $SD = 1.38$ ,  $Mdn = 4$ , range = 1-5) suggesting that in general the participants rated the simulated interrogation as being relatively realistic when compared with their own experiences. Inexperienced participants rated the scenario as realistic ( $M = 4.21$ ,  $SD = 0.70$ ,  $Mdn = 4$ , range = 3-5) as experienced participants ( $M = 3.11$ ,  $SD = 1.62$ ,  $Mdn = 4$ , range = 1-5). This suggests that as well as capturing realistic features of field interrogations, the simulated interrogation may have captured components of an interrogation that are currently incorporated into training exercises.

Participants were also asked whether the simulated interrogation reminded them of a past experience. All nine of the experienced participants indicated that the simulated interrogation reminded them of a past experience, whereas only one of the eight inexperienced participants believed the simulated interrogation reminded them of a past experience. Thus, although participants rated the simulated interrogation as relatively consistent with their own experiences, only the experienced participants felt that the interrogation reminded them of their own past experiences. One interpretation of this finding could be that inexperienced participants just rated the relative realism of the simulated interrogation to their expectations of high value interrogations in general.

Quantitative researchers have coined the term *dichotomization* to describe the process of artificially creating and comparing two groups of participants. In quantitative research,

dichotomization reduces the variance accounted for, thus reducing power, and overall reducing the ability to detect statistical effects (Cohen, 1983; MacCallum, Zhang, Preacher, & Rucker, 2002). In qualitative research, dichotomization does not provide these threats, however, justification for such dichotomization should be provided. Dichotomization of experience level into two groups of participants (experienced versus inexperienced) was performed in this thesis due to the small sample size. Studies where access to the population is difficult often results in small samples. It should be noted that the two predictor variables of this thesis - years of interrogation experience, and numbers of interrogations conducted - are continuous variables with a total sample size of 17. Pearson correlations between years of interrogation experience and the outcome variables described below in this chapter were performed (see Appendix K). The numbers of interrogations conducted was found to be a less reliable variable than years of experience, as it was discovered that interrogators may have quantified numbers of interrogations conducted differently based upon agency background. More specifically, law enforcement interrogators count each suspect interrogation as one, regardless of how many sessions are involved with that suspect. On the other hand, military interrogators appear to count each session as an interrogation, even if they are all with the same detainee.

The following sections explore each research question in-depth and explain how the hypotheses were tested. Table 1 summarizes the results, providing the reader with each hypothesis, whether or not the hypothesis was supported, and the effect sizes observed (if applicable). Figure 1 provides a histogram of all effect sizes.

### **3.2 Situational Assessment and General Knowledge**

The first research question explored the participants' situational assessments including the complexity of thought and the type of knowledge that would be verbalized. It was

hypothesized that experienced participants would have more comprehensive situational assessments as compared to inexperienced participants. It was also hypothesized that inexperienced participants would verbalize more procedural knowledge, while experienced participants would verbalize more semantic knowledge.

### **3.2.1 Approach to Qualitative Coding**

In determining how to code for participants' complexity of thought, the categories *Situational Assessment* and *Decision Process* were examined. A complex statement had to include relevant cues of the interrogation (i.e. assessments of cues were not included if the cue was an element that the participants believed they heard but in actuality did not occur), the interpretation of these cues had to be tailored toward the detainee, and there had to be a gradation mentioned in this interpretation, indicating subtle degrees of either an assessment or decision process. These criteria were made based upon relevant theory suggesting that experts will follow a more complex general pattern whereas novices will follow a simple pattern of single assessments (Ericsson & Simon, 1993). The following is an example of a complex statement, “*I’ll say things like, ‘I’m sorry that happened, I’m sorry that caused you to feel this way.’ Which is different from saying, ‘I’m sorry you feel this way. I’m sorry you feel that way’*” (Participant 12).

The speed with which participants made their situational assessments was also examined. A critical component of naturalistic environments includes how quickly practitioners are able to assess and deliberate through their task environments (Klein, 1998). This analysis focused on how quickly participants were able to interpret and make sense of the scenario plot. The scenario plot was never fully revealed in the simulated interrogation. However there were several relevant cues that could be interpreted correctly to lead an interrogator to this conclusion. To perform this

analysis, the *Situational Assessment* category was examined after the second video segment. It was expected that experienced interrogators would have made more relevant and accurate hypotheses about the scenario plot compared to inexperienced interrogators.

Finally, to assess the type of knowledge that participants used to reason through the interrogation, the category *General Knowledge* was divided into *semantic* and *procedural* knowledge. *Semantic* knowledge was identified as any statement indicating knowledge or rationale based on the participant's previous, relevant experience. Initially, episodic knowledge, or knowledge based on a specific past experience was also to be examined. However, likely due to potential sensitive or classified issues, participants largely withheld mentioning specific past experiences. Thus, the semantic knowledge category included knowledge based on life experiences, such as cultural knowledge, and knowledge based on past work experience that participants used within their assessment and decision making strategies. *Procedural* knowledge was identified as any statement indicating knowledge or rationale based on training, or "text-book" knowledge. This knowledge is the participants' 'how-to' knowledge related to conducting an interrogation.

### **3.2.2 Analysis of the Complexity of Thought**

The data revealed that participants made more complex decision process statements (a total of 25 statements) than complex situational assessment statements (a total of 5 statements). Complex decision process statements were primarily used to inform decision-making strategies. Specifically six of eight inexperienced participants and eight of nine experienced participants articulated a complex strategy. Frequency counts of these complex statements revealed no differences between the inexperienced and experienced participants, with inexperienced participants verbalizing a mean of 1.38 complex statements ( $SD = 1.30$ ,  $Mdn = 1$ , range = 0-4),

and experienced participants verbalizing a mean of 1.56 complex statements ( $SD = 0.88$ ,  $Mdn = 2$ , range = 0-3). The sample effect size for complexity of thought was  $d = 0.16$ , showing relatively no difference between the two groups of participants.

### **3.2.3 Analysis of the Speed of Situational Assessments**

After viewing the second segment, most of the participants had recognized the potential for leveraging the detainee's motivations as critical to yielding information. It was found that at this time, four of nine experienced participants and two of eight inexperienced participants had assessed and interpreted the scenario plot correctly.

In examining the cues that situational assessments focused on, it was found that inexperienced participants tended to match the detainee's verbal statements to the nonverbal behavior of the detainee, for example by identifying portions of the detainee's speech where his behavior suggested deception, nervousness, and/or discomfort. Two inexperienced participants assessed these behavioral cues in-depth, concluding that although these cues suggest the detainee is unwilling to talk to the interrogator in the simulation, he may not be unwilling to talk in general.

Experienced participants focused their situational assessments on reasoning about the detainee motivations or reasons behind his actions. Three experienced participants assessed the emotion of the detainee along with his verbal behavior, concluding that his feelings of sadness toward the family tragedy suffered were genuine. These same participants suggested using a love of family approach on the detainee to further elicit pertinent information. These experienced participants were the first participants to recognize the detainee's son (the sole surviving family member) as the critical bargaining chip in the interrogation scenario.

### 3.2.4 Analysis of Knowledge Type

The data partially supported the general knowledge hypothesis. As predicted, inexperienced participants verbalized greater procedural knowledge with a mean of 5.63 statements ( $SD = 2.33$ ,  $Mdn = 5.50$ , range = 2-9) when compared with experienced participants, who provided a mean of 3.89 statements ( $SD = 3.62$ ,  $Mdn = 2$ , range = 1-11). The sample effect size for procedural knowledge was  $d = 0.57$ , showing that inexperienced participants did verbalize more procedural knowledge than experienced participants.

However, inexperienced participants also provided more semantic knowledge with a mean of 7.63 statements ( $SD = 3.89$ ,  $Mdn = 7.5$ , range = 3-14)<sup>1</sup> when compared with a mean of 5 statements ( $SD = 2.5$ ,  $Mdn = 5$ , range = 1-9) verbalized by experienced participants. The sample effect size for semantic knowledge was  $d = -.80$ , showing that contrary to the hypothesis, inexperienced participants verbalized more semantic knowledge than experienced participants. This finding may be due to the fact that, although less experienced than those classified as “experienced” participants, “inexperienced” participants still ranged from having 1-15 years of interrogation experience. During the interviews, it became clear that four of the eight inexperienced participants had experience in conducting field operations, with three of these four participants having had real world interrogation experience. Additionally, many of the inexperienced interrogators were able to draw from previous experience in related professional domains (e.g., intelligence analyst, law enforcement background), thus giving them the chance to experience components of field environments that are relevant to the interrogation domain.

Evaluation of general knowledge suggested that both experienced and inexperienced participants used procedural knowledge to inform their situational assessments. Specifically,

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<sup>1</sup> The inexperienced participant who had 14 statements of semantic knowledge was re-classified as a proficient performer when looking at the five-stage theory of skill acquisition. See section 3.6 for a more detailed explanation.

both sets of participants grounded their assessments of the detainee, incoming information, and self-monitoring in prior knowledge obtained through training. Frequency counts of these procedural based assessments found comparable numbers between the two groups of participants. Specifically, experienced participants produced a mean of 1.33 procedural based statements ( $SD = 2.18$ ,  $Mdn = 1$ , range of 0-7,) while inexperienced participants verbalized a mean of 1.75 statements ( $SD = 1.39$ ,  $Mdn = 2$ , range = 0-4). The following quote from an inexperienced participant illustrates an assessment of the detainee's thought process, grounded in the rationalization technique that is taught in training: *"And I don't know if anything has been done like on a total negotiation theory but it seems to me like "Why is it in my interest to cooperate with you ever if I'm the bad guy? Really, what's in it for me?" Especially if I'm a true believer. I really liked how it was explained once, it was "you have to provide a fig leaf and, again, that's the rationalization, right? Why should I commit treason? Help me rationalize it"* (Participant 2). Here the participant takes the perspective of the detainee and really attempts to assess what the detainee is likely thinking, and grounds this assessment in procedural knowledge specifically the technique of rationalization. The participant thus uses both his assessment of the detainee thought process and his procedural knowledge to help him begin the decision making process of selecting an appropriate approach.

One use of procedural knowledge was unique to inexperienced participants. Namely, whereas both inexperienced and experienced participants used procedural knowledge to ground their situational assessments, inexperienced participants also used procedural knowledge to dictate their decision making process. Frequency counts of these procedural dictated assessments indicated a difference between the two groups of participants with inexperienced participants verbalizing a mean of 1.38 procedural-dictated statements ( $SD = 0.74$ ,  $Mdn = 1.5$ , range = 0-2),

as compared to 1 verbalized statement from the experienced group of participants. The following quote from an inexperienced participant illustrates the impact that participant's procedural knowledge had on their decision making process: *"I know that what I've been trained to do, and what I've seen senior agents do, is try and establish a little bit more of a rapport"* (Participant 16). Thus, this participant is relying solely upon procedural knowledge to determine future action rather than using both situational assessment and procedural knowledge to guide the decision process.<sup>2</sup>

### **3.2.5 Summary**

Experienced and inexperienced participants were quite comparable in their complex assessments of the interrogation scenario. However, experienced participants assessed and interpreted the scenario plot more quickly than inexperienced participants, and provided more in-depth assessments of the detainee's motivations. Inexperienced participants verbalized greater procedural and semantic knowledge than experienced participants. Inexperienced participants were also more likely to rely upon procedural knowledge to inform future actions, as opposed to using both their situational assessments and procedural knowledge.

## **3.3 Interrogation Plan**

The second research question focused on how interrogators would decide on an approach to use in an evolving interrogation. It was hypothesized that experienced participants would use a broad interrogation approach that allowed for re-assessments and adjustments to incoming

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<sup>2</sup> There was one participant who was driving the frequency counts found for the experienced participants. Participant 13 had the highest amount of procedural knowledge and semantic knowledge statements. This participant also had the highest amount of procedural based statements and was the one experienced participant who verbalized a procedural dictated statement. During the interview, it became clear that this participant had extensive experience on training new recruits in the art of interrogation. Thus, this participant may have become used to explaining concepts in a classroom manner, using rules and procedures to explain his train of thought.

information. In contrast inexperienced participants were expected to select one interrogation approach at a time and be less adaptive to the introduction of new information.

### 3.3.1 Approach to Qualitative Coding

**Hypotheses and Expectations.** To examine the effects of new information on participants' interrogation plans, assessments were broken down into *expectations* (i.e. expectations about future detainee behavior based upon participants' interrogation plan) and *hypotheses* (i.e. 'what-if' scenarios about the scenario plot and detainee motivations).

Since the *hypotheses* included statements about what the participant believed might happen, these statements were believed to reflect the level of uncertainty that participants felt about the scenario plot and the overall direction of the interrogation. Thus, the amount of *hypotheses* participants verbalized after Segments 2 and 4 was examined. In line with expertise theory, it was expected that experienced participants would generate more hypotheses after Segment 2 and fewer hypotheses than inexperienced participants after Segment 4.

*Expectation* assessments were examined for continuity of thought. Specifically final assessments made at the end of one segment were compared to initial assessments made at the beginning of the next segment. Given that experienced participants were expected to have a more encompassing and broad interrogation plan, it was hypothesized that experienced participants' *expectations* would show more continuity between video segments than inexperienced participants. Segment assessments were considered continuous if the sequence of thought from the later segment followed directly from the earlier segment. For example, following Segment 1, one participant believed that if questions were asked in a more open-ended manner, then the resulting information elicited would be different: "*Now I've got you talking*" (Participant 13). After Segment 2, this participant again believed open-ended questions would help the

interrogator elicit further information from the detainee: *“And he’ll start to tell you a little bit more”* (Participant 13). In contrast, segment expectations were considered discontinuous if the sequence of thought from the later segment contrasted significantly with that of the earlier segment. For example, after Segment 4, one participant was concerned about accepting the bargain that the detainee had proposed: *“But yes, the minute you give a guarantee, that could be a whole big mess”* (Participant 16). After viewing the next segment, in which the detainee was cooperative, the participant immediately revised this expectation: *“They’re going to get lots of good information it seems like”* (Participant 16).

**Goals and Actions.** The Dreyfus and Dreyfus (1986) skill acquisition model suggests that when enacting a decision process, practitioners with greater experience tend to be more goal and action oriented than those with less experience. Thus, the frequency of participants’ goals and actions statements were examined and it was expected that experienced participants would verbalize more goals and actions than inexperienced participants. Goals were statements of purpose that focused on getting the detainee to a desired end state: *“My goal at this point, would be to get him to just relax and realize that whatever he was planning on doing isn’t going to happen”* (Participant 14). Actions were questions or statements that participants would verbalize to the detainee: *“and I’d start the conversation that way, “How much did you get to sleep last night? How are they treating you? Is there anything that you need? Is there anybody that you want to talk to? Is there anything I can do to make your situation a little bit better right now?”* (Participant 14). To examine how comprehensive and flexible the participants’ interrogation approaches were, the compatibility between stated goals and actions was examined. The above example shows a stated goal and action that are compatible with one another.

### 3.3.2 Analysis of Adjusting to New Information

After viewing Segment 2, both groups of participants verbalized similar frequencies of hypotheses. Inexperienced participants articulated a mean of 1.62 hypotheses ( $SD = 1.30$ ,  $Mdn = 1.5$ , range = 0-3), while experienced participants articulated a mean of 2.11 hypotheses ( $SD = 2.32$ ,  $Mdn = 1$ , range = 0-6). With the exception of one participant, hypotheses focused on characteristics of the detainee that participants were uncertain about such as his role in the terrorist plot: *“I mean if he’s not a bad guy he knows too many bad guys. He may be a bad guy and not know it, an unwilling participant in this”* (Participant 1). In addition, it was found that three experienced participants articulated forward reasoning, or the ability to adjust their hypotheses according to future information: *“If the guy comes out with something later on and is just like, ‘Oh yeah, you know my mom was a real estate agent, I loved it, I got to go in all these houses and check it out. You know my dad died and I inherited his business and it sucked, and I hated every day.’ Well, you know, I can kind of gravitate to that point of view”* (Participant 5).

After Segment 4, six of the eight inexperienced participants articulated hypotheses ( $M = 1.38$ ,  $SD = 1.30$ ,  $Mdn = 1$ , range = 0-4) whereas only two of nine experienced participants articulated hypotheses (total of 3 statements). The inexperienced participants were still hypothesizing about characteristics of the detainee they were uncertain about such as the motivation of the detainee: *“For all I know he could hate his son, he could want nothing to do with his son. Or, he feels that his son is well taken care of and that regardless of what happens to him, his son is going to be totally fine”* (Participant 4). However, in Segment 4 it was revealed that the detainee wanted his son to be safe and thus brought over to America. Thus, the participant was hypothesizing about information already revealed. In contrast, by this segment, the experienced participants had already made conclusions about the detainee and the plot. The

two experienced participants who made hypotheses after viewing Segment 4 did not hypothesize about information already known. Instead, they progressed beyond what was known and hypothesized about additional factors that could come into play. The majority of participants (and from both groups) assessed the potential bargaining situation revealed in Segment 4 from the detainee's perspective, although one experienced participant hypothesized about the potential consequences of bringing the son over, from the detainee's son's perspective: *"All right, because the son might be upset also about the loss of mom and his sister, which could have been the same motivation that got dad in the situation"* (Participant 13). Information about the motivations of the detainee's son was not revealed within the scenario framework or the simulated interrogation.

Evaluations of the expectations made across the five video segments suggested an experiential trend related to continuity of situational assessments. Whereas five experienced participants verbalized continuous expectations across all video segments, only two inexperienced participants verbalized continuous expectations across the video segments. Specifically, inexperienced participants were more likely to demonstrate discontinuity in assessments between video segments. For example, after Segment 1, participant 1 expected the detainee to shut down if the interrogator carried on with the current style of questioning: *"I just think the guy would just shut down; I just think he would."* Participant 1 continued with this expectation for the next couple of segments, thus at this point, the participant had continuity. After viewing Segment 4, participant 1 suddenly revised this expectation: *"And if he thinks there's a remote chance that his son is going to be okay, he's going to start telling you everything."* Overall, it was found that the main reason for discontinuity in assessment was due to new information being received. Five of the inexperienced participants, and two experienced participants made changes in assessment between segments due to a novel piece of information

being revealed. To use the example from above, the change in expectation for participant 1 was due to information related to the attempted bargain.

### 3.3.3 Analysis of Interrogation Approach

Frequency counts of goals and actions found that experienced participants verbalized more goals, with a mean of 10.33 goals ( $SD = 4.74$ ,  $Mdn = 11$ , range = 4-18) and more actions- a mean of 31.89 actions ( $SD = 12.92$ ,  $Mdn = 33$ , range = 16-59) than inexperienced participants-a mean of 7.13 goals ( $SD = 3.87$ ,  $Mdn = 7$ , range = 1-13) and a mean of 23.63 actions, ( $SD = 15.13$ ,  $Mdn = 17$ , range = 11-49). The sample effect size for goals was  $d = 0.74$ , and for actions was  $d = 0.59$ , supporting that experienced participants verbalized more goals and actions on average than inexperienced participants.

Both experienced and inexperienced participants had similar primary goals of the interrogation – namely, gathering information about any immediate attack to the U.S. with the goal of eliminating the potential for attack. In addition, participants identified several sub-goals (i.e. specific topics of interest that participants wanted to elicit more information about). For example: *“But did he care? That’s what I want to see. So that’s where I’m going with it. So I’m headed down that route so I’m not just here to confirm that he took a test, I want him to show me that genuine emotion that should exist with taking a test about something you care about”* (Participant 12). Once sub-goals had been identified, participants would verbalize potential actions they would enact in order to achieve these sub-goals.

Actions that were consistent with the sub-goals of seeking out more information were those questions asked by participants that had two key functions- to get the detainee talking and/or to give the detainee a chance to explain. Consistent questions were also asked in a non-confrontational manner so as to maintain a comfortable interrogation environment. The

following quote illustrates the function and manner of a consistent action: *“I’m going to say something later like, ‘Ali, I’m a little confused because as you know we do have these phone records and for some reason, maybe you could help me understand it, but these phone records seem to show you called your friend in New York every day. Could you explain that to me?’ That’s his chance to redeem himself, without feeling threatened”* (Participant 11). Experienced participants verbalized a mean of 5.33 consistent actions ( $SD = 4.03$ ,  $Mdn = 4$ , range = 2-13). Inexperienced participants verbalized a mean of 2 consistent actions ( $SD = 2.07$ ,  $Mdn = 2$ , range = 0-5). The sample effect size for consistent actions was  $d = 1.04$ , supporting that experienced participants verbalized more consistent actions than inexperienced participants.

Inconsistent actions ran counter to the participants’ information-seeking sub goals. These questions demanded an explanation from the detainee rather than request clarification. These questions tended to have a combative tone, thus not providing a comfortable interrogation environment, and likely lessening the detainee’s desire to provide information. The following is an example of an inconsistent action: *“Well how knowledgeable are you with electronics? Oh you... So how do you take a picture on accident then if you’re such...? If you’re all that? And if you take a picture on accident, why go to the trouble of having the print developed?”* (Participant 2). Whereas inexperienced participants verbalized a mean of 2.25 inconsistent actions ( $SD = 2.19$ ,  $Mdn = 1.5$ , range = 0-7), experienced participants verbalized only five total inconsistent actions (from four participants, range = 0-2).

All participants verbalized sub-goals or topics of interest that they wanted to elicit more information about. The actions taken by the experienced participants to achieve these goals were largely consistent with the purpose of the goal. In contrast the actions taken by inexperienced participants were equally as consistent as they were inconsistent with the goal of seeking further

information from the detainee. As a result, the inexperienced participant's actions seemed disconnected from the interrogation plan.

### **3.3.4 Summary**

Experienced participants hypothesized about information not yet revealed, whereas inexperienced participants hypothesized about information already known. Experienced participants had expectations that showed more continuous assessment of their interrogation plan than inexperienced participants. Lastly, experienced participants had actions that were more consistent with their goals than inexperienced participants. In summary, these results show that experienced participants had a broader interrogation plan that allowed for greater flexibility and adaptations of new information than inexperienced participants.

## **3.4 Rapport**

The third research question explored how interrogators developed rapport. It was hypothesized that experienced participants would have more detailed and complex responses pertaining to the development of rapport as compared to inexperienced participants.

### **3.4.1 Approach to Qualitative Coding**

To code a statement as rapport based, it had to fall under one of the techniques of the *rapport and relationship building* interrogation domain (see Kelly et al., 2013). Specifically, these techniques included, *meeting basic needs, showing kindness, building a bond, being patient, establishing common ground, and confronting without insulting*. For example, the following quote was coded as rapport building as it exemplified the technique 'establishing common ground': "*I would've shared with him how I know what it's like to lose someone close to me, even if I didn't, I could make it up, so he can understand that I'm a human being like him*" (Participant 11). Given that statements regarding rapport were verbalized throughout the majority

of participants' transcripts, it was decided that conducting frequency counts of rapport would likely produce ceiling effects. The *Decision Process* category contained the majority of the rapport-based statements and became the focus of this analysis. The *Decision Process* category was divided into two sub-categories, goals and strategies. *Goals*, as described previously, were statements of purpose designed to bring the detainee to a desired end state. *Strategies* were statements that manipulated the detainee's emotional and/or cognitive state: "*I'm actually going to be a little peeved/pissed off maybe in front of him that he's still handcuffed*" (Participant 12). Thus participants used strategies to achieve their goals.

### **3.4.2 Analysis of Rapport Development**

Nearly all participants (16 out of 17) viewed rapport building as an integral part of the interviewing process and discussed rapport building as an ongoing goal throughout the interview. Three main goals of rapport development were mentioned in participants' transcripts: *developing the interrogator's character*, *developing the detainee's character*, and *developing the relationship between the two* (detainee and interrogator). The strategies that participants verbalized to develop rapport also fell under the three main goals of rapport. Table 1 provides a complete listing of the strategies reported under each goal. Overall, participants demonstrated a comprehensive understanding of the goals and strategies that underlie rapport development.

Seven experienced participants and six inexperienced participants reported on the goal *developing the interrogator's character*. Specifically, this goal focused on convincing the detainee that the interrogator is here to help and that they (the detainee) can trust them: "*So I have to be the one he trusts because he has to think that I'm the only person who is going to help him get out of this situation*" (Participant 1). By conveying a message of assistance, concern, and trust, the participants believed that this persona would increase the likelihood that the detainee

will be more comfortable with providing information. Two additional inexperienced participants verbalized strategies that other participants had used to develop the interrogator's character. Thus these participants verbalized strategies in line with the first rapport development goal, but the participants did not articulate the goal itself. In summary, seven experienced participants, and eight inexperienced participants focused on developing the interrogator's character within the interrogation.

Four experienced participants and two inexperienced participants reported the goal of *developing the detainee's character*. This goal focused on instilling a sense of responsibility for the interrogation outcome into the detainee: *"And in a situation like this, I'm not leaving this conversation, and I'm not going to create an environment that makes this guy want to leave the conversation. You make them want to stay there just as much as you"* (Participant 12). Thus, with goals one and two together, the interrogator and the detainee both feel responsible for the situation and work at achieving a desired interrogation outcome. In addition, it was found that three other experienced participants and one additional inexperienced participant articulated strategies that had been used to develop the detainee's character, but without articulating the goal itself. In summary, seven experienced participants and three inexperienced participants focused on developing the detainee's character.

Only four experienced participants reported the goal, *developing the relationship between the interrogator and detainee*. This goal focused on building an interrogation environment where the detainee and the interrogator are working together as a team: *"I want the detainee to be looking at me and have that eye-to-eye contact where we're discussing and you're shaking your head and I'm shaking my head and we both have that"* (Participant 6). In addition, three other experienced participants and four inexperienced participants mentioned strategies that

manipulated the detainee into developing this relationship, but without mentioning the relationship as a desired interrogation goal. In summary, seven experienced participants, and four inexperienced participants focused on developing a relationship between the two parties.

The entire process of developing rapport included three steps- having the interrogator motivated to help the detainee, having the detainee motivated to go through the interrogation, and having the two individuals motivated to work together as a team. Only two experienced participants articulated in detail, these three goals of rapport development. Four experienced and two inexperienced participants articulated two of the three goals of rapport development. Lastly, it was found that four inexperienced participants and one experienced participant mentioned only one of the three goals of rapport development.

### **3.4.3 Summary**

Although the vast majority of participants mentioned developing rapport as part of their interrogation plan, experienced participants were more likely than inexperienced participants to verbalize more than one goal of rapport development. Therefore, experienced participants tended to have a more complex characterization of rapport building than inexperienced participants.

## **3.5 Relevant Information**

The fourth research question focused on how participants would gather and incorporate incoming relevant information into their decision process. It was hypothesized that experienced participants would verbalize more meta-information, or qualifiers of information (see Pfautz et al., 2006) in their situational assessments than inexperienced participants.

### **3.5.1 Approach to Qualitative Coding**

After all interview characteristics had been coded in line with the primary coding scheme, the number of *Cues* and *Assessments* was analyzed with descriptive statistics. To contextualize

the meta-information table of Pfautz et al (2006; see Appendix H), all primary characteristics of meta-information (the left column of the table) that were found within participant transcripts were kept, and the sub-characteristics for each primary category were made relevant to the interrogation scenario (see Appendix H). The three meta-information characteristics that participants most often described were *characteristics of the detainee*, *reliability of the detainee*, and *uncertainty*.

**Characteristics of the detainee.** Characteristics of the detainee largely focused on the *extent of detainee's knowledge*. Segment 5 of the interrogation focused on questioning the detainee about specific details of the scenario plot, since the detainee was deemed cooperative. Thus, participants' responses following this segment were examined to assess participants' perceptions of detainee knowledge. Two types of responses were assessed. First, those responses where participants' believed that the detainee had more information to provide were coded: "*The biggest thing in this clip, well one of the two biggest things was the fact that he volunteered, 'I don't know any details.' Why would you do that?...I think he does know details*" (Participant 5). Second, participant statements that recognized a limitation in the detainee's knowledge were coded: "*Now, when he said, 'I don't know this,' I'm starting to believe he probably doesn't know that aspect of the story*" (Participant 14). A caveat related to assessment of this final segment should be noted here. The interviews with participants tended to exceed the 2-hour time limit imposed on the research group, so the time spent on questions following this segment was considerably shorter than the time spent on other segments. In addition, 3 of the 17 participants were unable to view the last segment, and one other participant was unable to answer any questions after viewing the last segment. This limitation resulted in a total sample of seven experienced participants and six inexperienced participants.

**Reliability.** The meta-information characteristic of *reliability* included two sub-characteristics focusing on a) *behavioral characteristics*, and b) the *information context*. To examine how participants' assessed reliability, all cues that focused on how the detainee presented either himself or the information were examined. An example of a cue that focused on how the detainee presented himself (behavioral): "*'He comes and picks me up in a car.' I notice with something that [is] easy to answer, he looks straight ahead versus some of the other questions. 'I was just sightseeing,' he was kind of looking down*" (Participant 17). An example of a cue that focused on the information the detainee presented: "*Well he's saying that he went there and he's not mentioned the fact that, or he's not acknowledging the fact that we have his camera. I think a detainee that acknowledges that fact, he'd probably be injecting a cover for that, already, and he hasn't mentioned that*" (Participant 7). Since reliability is often used to render truth or lie judgments (see DePaulo, Lindsay, Malone, Charlton, Cooper, & Muhlenbruck, 2003), all cues that were judged as either truthful or deceptive such as the following were also examined: "*he answered quick, he probably did stay at The Embassy in the city. However, he looked harder to the left on a couple of issues and I think that was his lie*" (Participant 15).

**Uncertainty.** The meta-information characteristic of *uncertainty* included two key sub-characteristics involving *confidence in one's abilities as an interrogator* and the *likelihood of a successful outcome*. To code for *confidence*, participants had to mention a constraint or potential obstacle, and then express a confident attitude about tackling the obstacle. Participants were coded as not confident if they expressed an anxious attitude: "*You have potentially damning evidence, and you have only four hours – that's not a lot of time*" (Participant 10). To code for *likelihood of a successful outcome* participants had to mention how they would have achieved

success: *“By now, I know without a doubt, he isn’t leaving in four hours. So that’s victory achieved”* (Participant 8).

### **3.5.2 Analysis of Meta-Information**

Overall, experienced participants mentioned fewer cues with a mean of 19 cues ( $SD = 9.71$ ,  $Mdn = 24$ , range = 1-30) and fewer assessments with a mean of 53.22 assessments ( $SD = 26.62$ ,  $Mdn = 51$ , range = 15-91) than did inexperienced participants with a mean of 31 cues ( $SD = 6.35$ ,  $Mdn = 29.5$ , range = 21-41) and a mean of 68.75 assessments ( $SD = 6.76$ ,  $Mdn = 66.5$ , range = 62-81). The sample effect sizes for cues was  $d = -1.46$ , and for assessments was  $d = -0.80$ , demonstrating that contrary to the hypothesis, inexperienced participants verbalized more cues and assessments than experienced participants.

**Extent of detainee knowledge.** After watching the final segment, all participants expressed an interest in continuing to question the detainee for pertinent information that they believed the detainee had further knowledge about. Nine out of thirteen participants would have continued to ask for pertinent information that was analogous to the information asked within the simulation. Specifically, this information included targeting information or details on the location of the uncle, more specific details about the surveillance operation completed, and more specific details about the overall attack plans. Out of these nine participants, four were inexperienced and five were experienced participants.

However, experienced participants also recognized that there may be a limitation in the detainee’s knowledge that could prevent them from collecting the desired information. Five out of seven experienced participants recognized such a limitation, whereas only two out of the six inexperienced participants verbalized such a limitation. Recognizing a limitation in the detainee’s knowledge was accurate to the scenario plot. Indeed, the detainee did not know all the

details behind the planned attack. Limitations of the detainee's knowledge were expressed in two different ways. First, participants believed that the detainee had not been informed about all of the relevant details: *"But you could probably go, 'Okay, I really need you to just try for it, I really need to know where these guys are located right now. It's critically important.' But, more than likely, he probably doesn't know"* (Participant 8). Second, participants recognized that the detainee may not realize the details that were most important to provide: *"What else has his uncle said about the attack? I might use the Cognitive Interview to get at details that the detainee may not realize is important"* (Participant 9). This last quote demonstrates that as well as recognizing a limitation in detainee knowledge, the participant also tried to correct for this limitation by employing a well-known investigative procedure, the Cognitive Interview (see Fisher, Brennan, & McCauley, 2002; Memon, Meissner, & Fraser, 2010). Three experienced participants mentioned using the Cognitive Interview to elicit more information from the detainee. In conclusion, experienced participants made more accurate assessments of the extent of the detainee's knowledge than inexperienced participants, and expressed ways to work with the detainee's knowledge to help them achieve a successful interrogation outcome.

**Reliability of the detainee.** Fifteen out of 17 participants verbalized cues that assessed the detainee's reliability. The two participants that did not verbalize any cues assessing for reliability were the participants who disallowed the audio-tape procedure. Thus their transcripts contained only notes made by the second interviewer and it is possible that their reliability cues were missed. These two participants were both experienced interrogators, thus reducing the sample size of experienced participants to seven.

Overall, both groups of participants verbalized equal amounts of reliability cues. Inexperienced participants produced a mean of 5.5 reliability cues ( $SD = 2.51$ ,  $Mdn = 4$ , range =

3-10), and experienced participants verbalized a mean of 4.43 reliability cues ( $SD = 2.44$ ,  $Mdn = 4$ , range = 1-8). The sample effect size for reliability cues was  $d = -0.43$ , showing that inexperienced participants may have verbalized more reliability cues on average as compared to experienced participants. Inexperienced participants verbalized equivalent frequencies for behavioral and informational cues, with a mean of 2.38 behavioral focused cues ( $SD = 1.99$ ,  $Mdn = 1.5$ , range = 1-6), and a mean of 2.38 informational cues ( $SD = 0.74$ ,  $Mdn = 2.5$ , range = 1-3). In contrast, experienced participants used information-based cues the most when assessing for detainee reliability with a mean of 3.57 information-based cues reported ( $SD = 2.37$ ,  $Mdn = 3$ , range = 1-8) whereas only three behavioral focused cues were verbalized by two participants.<sup>3</sup> The sample effect size for information-based cues was  $d = 0.68$ , showing that experienced participants verbalized more information-based cues when assessing detainee reliability compared to inexperienced participants. The sample effect size for behavioral focused cues was not calculated due to low frequencies found in experienced participants.

The primary purpose of reliability cues was to determine the detainee's truthfulness. These findings are supported by deception detection research which demonstrates that there are more reliable differences seen between truth-tellers and liars in verbal behavior (e.g. information-based) than there are seen in nonverbal behavior (e.g. behavioral; De Paulo et al., 2003; Vrij, 2008). In conclusion, experienced participants provided more valid assessments of detainee reliability than inexperienced participants.

**Uncertainty of time pressure.** It was found that the time limit placed on the interrogation was the major obstacle that participants verbalized. Twelve of 17 participants mentioned the four-hour deadline and regarded this time constraint as something that affected

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<sup>3</sup> There are discrepancies between the total number of reliability cues and the break-down of these cues into information-based and behavioral-focused. In addition-six reliability cues from the inexperienced participants, and three from the experienced participants were classified to be both information-based and behavioral focused.

their interrogation abilities and also affected the likelihood of the intelligence requirement being met. Interestingly, four of the five participants that did not mention the time constraint were inexperienced participants, suggesting that these individuals may not have perceived the time constraint to play a pivotal role in their assessment and decision-making.

Upon assessing how participants handled the obstacle of time pressure, it was found that five experienced participants and one inexperienced participant expressed a confident attitude in handling the time pressure: *“No I don’t get stressed real easy...four hours is a lifetime. You could make somebody fall in love with you in four hours”* (Participant 12). In contrast, three inexperienced participants and two experienced participants expressed an anxious attitude when talking about the time constraint: *“The time crunch is killing me”* (Participant 1). Three experienced participants believed that the time constraint was manageable and a successful outcome could still be achieved: *“Four hours may not seem like much but if it’s done well enough, he can fold pretty easy”* (Participant 8). In contrast, four inexperienced participants and one experienced participant believed that the time constraint was too big of an obstacle to allow them to achieve interrogation success: *“We just don’t have enough time. Four hours isn’t enough time for him to develop a hatred for somebody and a like for somebody else and to give them information. You just don’t have time”* (Participant 3). In conclusion, experienced participants were more likely than inexperienced participants to express greater confidence in their interrogation abilities and greater likelihood of success when facing obstacles.

### **3.5.3 Summary**

Although inexperienced participants verbalized more cues and assessments than experienced participants, it was found that experienced participants capitalized on meta-information cues and assessments to a greater extent than inexperienced participants.

Specifically, experienced participants were more inclined to recognize potential limitations in the detainee's knowledge of the planned attack, and expressed strategies to work within these limitations. Experienced participants also provided more accurate assessments of detainee reliability, and expressed greater confidence in their own interrogation abilities and likelihood of success when facing interrogation obstacles.

### **3.6 Assessing the Validity of Experience based on the Dreyfus and Dreyfus Model**

Participants were classified as experienced or inexperienced based on years of interrogation experience and the number of interrogations conducted. Although the experienced participants had on average more years of interrogation experience than the inexperienced participants, and also had conducted greater numbers of interrogations, there was a wide range of years of experience and numbers of interrogations conducted seen within both groups of participants. In addition, there was a considerable range across these estimates seen within both groups of participants leading to overlap in the distributions. Thus it is possible that some experienced participants had greater levels of expertise than other experienced participants, and some inexperienced participants were less knowledgeable on conducting interrogations than other inexperienced participants.

To ensure that the participants truly represented the categories they were assigned to (i.e., those categorized as experts are truly considered expert), participant interview transcripts were coded and analyzed using Dreyfus and Dreyfus' (1986) *five-stage model of skill acquisition*. This analysis was performed to assess how well expertise heuristics relate with the five-stage theory of skill acquisition and expertise development. The analysis focused on 15 of the 17 interview transcripts for whom audio recording was available (8 inexperienced, and 7 experienced participants).

### 3.6.1 Approach to Qualitative Coding

Ross et al. (2005) adapted the five-stage model to those working in naturalistic environments and identified several performance elements that are characteristic of each of the five stages. These characteristics were contextualized to the interrogation scenario and involved the three primary coding categories: *Situational Assessments*, *Decision Process*, and *General Knowledge*. Each category contained performance characteristics that were associated with each of the five stages of skill acquisition: *novice*, *advanced beginner*, *competent*, *proficient*, and *expert* (see Appendix I).

Since this analysis focused on the performance elements of participants, the paragraphs surrounding participants' decisions were examined in-depth. Each paragraph contained the entire thought process surrounding a decision, thus elements of participants' situational assessments and general knowledge within their decision process were captured and coded. Assessment of skill level (i.e., one of the five stages) was coded for each paragraph. To assess for inter-rater reliability, two coders initially coded one transcript. Once the coders reached agreement on this transcript, the two coders then independently coded three additional interview transcripts. Inter-rater reliability was above adequate reliability ( $\alpha = .93$ ) and therefore the primary coder completed coding of the remaining transcripts. At the end of the transcript, assessments for each paragraph were tallied and participants' skill level was determined based upon the majority of skill level counts. Thus, if a participant had seven paragraphs coded as *competent* and three paragraphs coded as *advanced beginner*, the participant was classified as a *competent* performer. If the same frequency of skill level responses were obtained across two concurrent stages, determination of skill level was based upon the balance of stage responses at the upper and lower skill levels. For example, if a participant had three paragraphs coded as *advanced beginner*, three

paragraphs coded as *competent*, two paragraphs coded as *novice*, and no paragraphs coded as either *proficient* or *expert*-the participant would be classified as an *advanced beginner* performer. In the event that a count could not determine a tie, the participant's transcript was examined for decision process elements only. In this case, the situational assessment and general knowledge elements were weighted less than the decision process elements.

### **3.6.2 Skill Level Classifications**

Of the 15 transcripts examined, three were coded as *advanced beginner* performers, five as *competent* performers, six as *proficient* performers, and one as an *expert* performer. The majority of inexperienced participants were classified as *competent*, whereas the majority of experienced participants were classified as *proficient* (see Table 4). Thus it appears that performance differences observed between experienced and inexperienced participants are supported by the Dreyfus and Dreyfus (1986) five-stage theory of skill acquisition. Since the majority of participants were classified as either *competent* or *proficient*, these two skill levels were examined with regard to participants' years of experience and number of interrogations conducted. The five *competent* performers demonstrated a mean of 3.80 years of experience ( $SD = 2.95$ ,  $Mdn = 4$ , range = 1-8 years), and had conducted between 0 and 150 interrogations. The six *proficient* performers had a mean of 10.17 years of interrogation experience ( $SD = 6.62$ ,  $Mdn = 11.5$ , range = 1-17 years), and had conducted between 0 and 2,000 interrogations. While both years of interrogation experience and number of interrogations conducted was found to be related to expertise development, the range of skill development across the two groups of interrogators was more truncated than anticipated. It had been hoped that the inexperienced participants would represent *novice* interrogation performers and that the experienced participants would represent *expert* interrogation performers.

By the end of the validity of experience analysis, a description of interrogation performance was made for each of the five stages (see Table 3). The competent performer describes an interrogator who quickly devises an analytical plan to help guide decision making. At this stage the interrogator does not express any decision making deviations away from this organized plan. In contrast the proficient performer is described as having a more in-depth interrogation plan that has several open avenues from which the interrogator can explore. Here the interrogator can change and/or modify the plan based on what avenues are necessary to be explored. Thus this plan is much more flexible.

### **3.6.3 Summary**

It was found that experienced participants represented *proficient* interrogators whereas inexperienced participants represented *competent* interrogators. Although the range in experience level was narrower than had been expected, differences found between experienced and inexperienced participants were supported by the five-stage model of skill acquisition. Specifically, experienced interrogators demonstrated a more in-depth interrogation plan that allowed for greater flexibility and consideration of more than one relevant option as compared to inexperienced interrogators.

## **Chapter 4: Discussion**

The four research questions of this thesis examined the complex nature of participant's assessments of the interrogation, the style of interrogation approach that participants would use, the rapport building that participants would engage in, and the amount of relevant information participants would attend to. It was found that differences between experienced and inexperienced interrogators centered on the flexibility of the interrogation approach verbalized by participants. In particular, experienced participants made faster and more accurate interpretations of the scenario plot compared to inexperienced participants. Experienced participants were also more adept at working with naturalistic elements of the interrogation environment including dealing with time pressure, and receiving ambiguous and/or missing information as compared to inexperienced participants. Inexperienced participants used procedural knowledge to dictate their decision-making, and verbalized interrogation actions that were counterintuitive toward their interrogation goals. In addition to interrogation approach differences, experienced participants verbalized rapport-building plans of greater depth compared to inexperienced participants. The time constraint manipulation proved to be important for most participants, and experienced interrogators were much more adept at coping with time pressure than inexperienced interrogators. The summation of findings was supported by the Dreyfus and Dreyfus (1986) five-stage model of skill acquisition and expertise development. Finally limitations and areas for future directions are discussed.

### **4.1 Flexibility of Interrogation Approach**

Experienced participants articulated a broad interrogation approach that allowed for greater adaptation to new information, and greater flexibility in decision-making as compared to inexperienced participants. These findings are supported by anecdotal evidence. Upon asking

experienced interrogators what qualities make a good interrogator, Russano et al. (2011) found that flexibility and adaptability were rated as two of the top qualities that a good interrogator must possess. Thus, interrogators who demonstrate flexibility and are able to adapt in the interrogation booth are considered more successful. Kleinman (2006) believed that interrogation success is attributed to the dynamic nature of the interrogator's plan. Thus, plans that leave more room for potential avenues to explore will be more successful than more rigid interrogation plans. These findings were also further validated when participants' performance was categorized according to the Dreyfus and Dreyfus (1986) five-stage model of skill acquisition. Key findings with regard to participants' *Situational Assessments*, *General Knowledge*, and *Decision Process* will be considered here.

#### **4.1.1 Situational Assessment and the Interrogation Environment**

Experienced interrogators were faster at offering valid interpretations regarding the detainee's motivations. The speed and accuracy of experienced interrogators appeared to be driven by the cues used to assess detainee reliability, the type of hypothesis testing interrogators engaged in, and the continuous expectations made about future detainee actions.

Experienced interrogators used more reliable cues to assess deception when compared to inexperienced interrogators. The information cues used by experienced interrogators allowed them to hypothesize about what the detainee had actually done. In contrast, the nonverbal cues used by inexperienced interrogators distracted them from successfully determining the detainee's actions and motivations.

Whereas experienced participants hypothesized about information not yet revealed, inexperienced participants focused on information already known. This type of hypothesis by experienced participants is supported by the second level of the RPD model, where practitioners

engage in feature matching and causal reasoning to assess an atypical situation. When there is missing information, experienced practitioners use causal reasoning to fill in the gaps, and represent the missing information in story form (Pennington & Hastie, 1986). Furthermore, three experienced participants engaged in forward reasoning, in which they inferred present consequences according to future information. This type of reasoning is typically seen in more advanced stages of decision-making (Ericsson, 2006; Norman et al., 2006). The form of hypothesis testing allowed experienced interrogators the time and flexibility to search for additional information about the scenario plot.

Since experienced interrogators hypothesized correctly about unknown information, their expectations of future detainee actions were largely consistent throughout the interrogation. When new information was revealed, inexperienced interrogators in contrast, were more likely to maintain conflicting expectations of the detainee. At this point, inexperienced interrogators would have to re-assess and revise their earlier interpretations of the detainee motivations.

In line with the five-stage theory of acquisition by Dreyfus and Dreyfus (1986), it was found that interrogators at different skill levels made interpretations of the scenario plot and detainee motivations at different speeds. The experienced interrogators performed on average at the *proficient* stage of skill acquisition. At the *proficient* stage, practitioners make holistic assessments of the situation which allows them to render fast and seemingly automatic situational assessments (Dreyfus & Dreyfus, 1986; Ross et al., 2005). The inexperienced interrogators performed on average at the *competent* stage of skill acquisition. In contrast to proficient performers, *competent* practitioners tend to assess the situation analytically, thus decomposing the situation into individual elements and assessing them at the individual level

(Dreyfus & Dreyfus, 1986). Thus the speed with which experienced and inexperienced interrogators assessed the simulated interrogation is in support of theoretical models of expertise.

#### **4.1.2 General Knowledge**

Interrogators used their general knowledge to assess the scenario plot and make inferences regarding the detainee motivations. It was found that both experienced and inexperienced interrogators verbalized semantic knowledge, or knowledge based on past life experience and previous work-relevant experience. Although inexperienced interrogators had on average fewer years of interrogation experience compared to experienced interrogators, three of the eight inexperienced interrogators had conducted between twenty-five and one hundred and fifty interrogations. The majority of the inexperienced interrogators (six out of eight) used their background from other areas to help them make sense of the scenario plot and detainee's motivations. For example, two inexperienced participants had prior professional experience as intelligence analysts. Intelligence analysts are trained to read large amounts of incomplete written material and analyze this material with the intent to provide their supervisors and interrogators intelligence requirements to answer (Roth et al., 2010). These two participants were sharp at matching up the evidence they had been given with the story the detainee was providing. Thus, they used their intelligence analysis skills to help them assess the credibility of the story the detainee was providing. Both experienced and inexperienced interrogators also verbalized procedural knowledge, or knowledge about training rules and procedures. Whereas experienced interrogators used procedural knowledge only to bolster the strength of their situational assessments, inexperienced interrogators used procedural knowledge to dictate their decision-making. This finding supports prior research by Zimmerman (2006) who found that less

experienced law enforcement officers provided more procedural knowledge in their decision-making process.

Novices progress to the advanced beginner stage by forming a mental model of their task domain environment (Dreyfus, 2004; Ross et al., 2005). In order to keep progressing within their domain, practitioners must adapt their mental models to what they have learned in the field (Ross et al., 2005). However, these mental models take years of experience to perfect (Ross et al., 2005). Inexperienced interrogators had more years of interrogation experience on average than was expected, and thus they likely had developed a mental model of interrogation. However, the difference in years between the average number of years of interrogation experience between experienced and inexperienced interrogators was eight years. When the interrogators' experience level was validated with the five stage theory of expertise, the *competent* and *proficient* performers were separated by an average of six years of interrogation experience. Thus, to advance from *competent* performance to the next skill level- *proficient*, practitioners require several years of additional work experience. These findings suggest that although the inexperienced interrogators verbalized comparable amounts of semantic knowledge to experienced interrogators and thus had formed a mental model of interrogation- their mental models were not as in-depth compared to experienced interrogators. As such, when inexperienced interrogators received information that went beyond their mental model, they reverted back to what they knew best, namely-their training knowledge- to help them progress through the interrogation.

#### **4.1.3 Decision Process**

All interrogators articulated goals pertaining to information seeking throughout the interrogation. Whereas experienced interrogators performed actions that focused on seeking

information in line with their goals, inexperienced interrogators sometimes proposed actions that were counter to their information-seeking goals. These counter-actions were combative and accusing therefore likely to reduce cooperation and information provision from the detainee. Thus there was discontinuity found between inexperienced interrogators' goals of the interrogation and the actions they took to achieve these goals.

The expertise literature has rather consistently observed that the speed with which experienced practitioners are able to assess the situation allows them more time to deliberate through possible (alternative) decision plans (Dreyfus and Dreyfus, 1986; Klein, 1998). This deliberation process in turn allows experienced practitioners to mentally simulate the potential courses of action (Dreyfus, 2004). Ross et al. (2005) found that with experience, practitioners are able to expand their mental representations, which allows for greater flexibility in decision making. This flexibility allows experienced practitioners to process unaccounted for elements, and manage to incorporate these elements into their overarching decision plan. At the *proficiency* stage of performance, practitioners are characterized as having a much more flexible approach as compared to *competent* performers (Ross et al., 2005). However, *proficient* performers fall short of expertise in that they deliberate over two or more options before selecting a course of action. At the *expert* level, the decision process becomes just as automatic as the situational assessment.

#### **4.1.4 Diagnosticity of Interrogators Assessment and Decision Making**

It was found that inexperienced interrogators had comparable numbers of information-based cues as behavioral based cues when assessing detainee reliability. It was also found that inexperienced interrogators had equal amounts of actions consistent with goals focused on information seeking, and actions inconsistent with these information-seeking goals. Information-based cues and consistent actions were paths that led to greater accuracy in judgments made

about the detainee, and improved consistency with information that was subsequently revealed in the scenario. Thus it appears that inexperienced interrogators recognized the appropriate assessment plan and courses of action to take. However, inexperienced interrogators also selected inappropriate plans and courses of action to take. Inexperienced interrogators were just as likely to make an appropriate choice as they were an inappropriate choice, suggesting that their judgments were not as diagnostic in terms of accuracy of the scenario plot. In contrast, experienced interrogators focused on very few behavioral based cues when assessing detainee reliability and made very few inconsistent actions with information-seeking goals. Therefore, experienced interrogators were found to be more diagnostic in their judgments, and consistent with new information revealed in the scenario, as compared to inexperienced interrogators.

## **4.2 Rapport**

Overall, this sample of interrogators demonstrated a strong mental representation of rapport building. All but one interrogator verbalized assessments and decisions pertaining to rapport building throughout the simulated interrogation. It is likely that all interrogators had received training courses on rapport building, as recent field research has found that experienced interrogators view rapport building as highly effective (Redlich et al., 2012; Russano et al., 2011, 2012).

Interrogators described rapport building both as a strategy and as a goal. They believed one of the key goals of the interrogation was to build rapport with the detainee, and that such strategies could achieve the intelligence requirements of the interrogation. These findings are supported by Kelly et al.'s (2013) domain conceptualization of interrogation. Here, *relationship and rapport building* is considered a key domain, or an avenue in which the interrogator has

control over the detainee. Within this domain, there are also several *rapport and relationship building* techniques that an interrogator can use to strengthen their interrogation control.

The findings of this thesis found that interrogators verbalized three components of rapport building- building the interrogator's character, building the detainee's character, and building the relationship between the interrogator and the detainee. It was found that experienced interrogators focused on more components of rapport building as compared to inexperienced interrogators. Experienced interrogators were more likely than inexperienced interrogators to frame rapport as a way to foster cooperation from the detainee and to achieve a more reciprocal relationship. While inexperienced interrogators focused their rapport building aims on achieving a one-sided relationship (e.g., "I'm here to help you"), the experienced interrogators recognized the value in instilling a sense of responsibility and camaraderie. While gaining the detainee's trust, these interrogators also focused on creating an environment where the detainee felt inclined to 'help' the interrogator. Thus, experienced interrogators appeared to view rapport building as a means to foster positive affect and trust in a reciprocal manner, while inexperienced interrogators tended to solely focus on creating a one-way trust where the detainee essentially relies on the interrogator.

Research examining the effectiveness of rapport has largely focused on one of the three components of rapport building that were found in this thesis. On examining the effects of 'softer' interrogation approaches, laboratory research has typically focused on how the subject perceived the interrogator (Evans et al., 2013; Houston, Meissner, Kleinman, LaBianca, Ross, & Woestehoff, under revision). In these laboratory paradigms, rapport building is considered a strategy that is built into an interrogation script. Recent laboratory research has manipulated whether or not the interrogator attempts to build rapport with the subject (Houston, Meissner,

LaBianca, Woestehoff, Ross & Kleinman, in preparation). In this paradigm, rapport building is considered a main goal. However, future research should attempt to focus on more than one component of rapport building. For example, researchers could measure rapport building from the extent to how both the interrogator and the subject perceived each other to better simulate how it is used in field interrogations.

Finally, the rapport building findings from this thesis support anecdotal evidence from field practitioners. A retired police lieutenant, Van Meter (1973) argued that the suspect should see the interrogator communicating an idea, such that the suspect's motivations become compatible with the interrogator's motivations. The majority of interrogators attempted to communicate with the detainee the idea that they were here as the detainee's advocate. The experienced interrogators then proceeded to incorporate this idea with the detainee, by fostering a sense of mutual respect. The mutual respect that occurred between the two individuals allowed the advocacy to translate from the interrogator to the detainee. Thus both the detainee and the interrogator saw each other as advocates, and the idea had successfully become compatible with both the detainee's and the interrogator's motivations.

#### **4.3 Experience and NDM**

The simulated interrogation was developed to capture elements present in naturalistic environments. Interrogators were given an ill-structured requirement of gathering as much intelligence as possible about the detainee and any terrorist plots against the United States. Information surrounding the detainee's true intentions for being in the U.S. was purposely designed to be ambiguous and required participants to think critically about their approaches for obtaining relevant information. Interrogators were also prompted to consider their own

performance capabilities by informing them that there was a four-hour deadline to capture the information.

Experienced interrogators handled the naturalistic elements present within the simulated interrogation better than inexperienced interrogators. In particular, it became apparent that the time constraint was a major factor for most interrogators; however, experienced interrogators expressed more confidence in their ability to successfully reach their interrogation goals in spite of the time constraint. They also viewed time pressure as less of a barrier, and more as a factor that they could actively use to their advantage by tactically shifting that pressure onto the detainee. Thus, rather than believe the time constraint was a variable unable to be changed, experienced interrogators adapted the time constraint to become compatible with their interrogation goals. In contrast, inexperienced interrogators appeared to perceive the time constraint as a variable that was fixed and beyond their control.

The approach that experienced interrogators used when assessing and making decisions within the interrogation also helped in handling the naturalistic elements of uncertainty. Experienced interrogators used an approach that allowed for more avenues to remain open and be explored. Thus as the interrogation progressed, the experienced interrogators would adapt parts of their approach to the incoming information. However, in making these adaptations, avenues were still kept open to allow for re-adjustments to be made. Thus, interrogators responded to incomplete information by allowing the information to be successfully incorporated or discredited in one fluid interrogation approach. In turn the uncertainty typically associated with incompleteness of information was not verbalized by experienced interrogators. These interrogators were confident about the general direction the interrogation was heading. Even when uncertain about an individual assessment, experienced interrogators allowed themselves a

fall back plan if a judgment was later found to be inaccurate. In contrast, inexperienced interrogators tended to have fewer directions to explore with their interrogation approach making adjustments to incoming information more challenging. As a result, the inexperienced interrogators tended to express extreme attitudes towards incomplete information in that they were either certain or uncertain about aspects of information. These extreme viewpoints made their interrogation approach more disjointed and less fluid than the interrogation approach verbalized by experienced participants.

In comparing expert performance to those with less experience, Eccles (2006) found that experts adapted to their environment by modifying the tools they were given to reduce cognitive load. Thus, experts were able to expend more cognitive resources on the task at hand than those with less experience (Eccles, 2006). In the current thesis, experienced interrogators modified components of the interrogation environment (i.e. time pressure) so that they could better focus on their interrogation goals.

#### **4.4 Theory of Skill Acquisition**

Findings from the assessment of skill acquisition demonstrated that although experienced interrogators had achieved a higher level of expertise than inexperienced interrogators, the two groups of participants were actually more comparable in skill level than had been expected. Inexperienced interrogators had substantially less years of interrogation experience on average than experienced interrogators. However, many inexperienced interrogators used experiences from professional domains to help them assess the interrogation scenario. For example, one inexperienced interrogator rated was as *proficient* – despite having only one year of interrogation experience and not having conducted any interrogations. However, this interrogator had several

years of experience as an intelligence analyst, and through this professional status had previously observed more than one hundred interrogations.

Using numbers to measure expertise (e.g. years of experience) has led to debate within the expertise literature (Ericsson, 2006). The results of this thesis show that although years of experience and frequency of interrogations conducted were related to the five-stage theory of skill acquisition and expertise development, other factors were notably missed using these criteria. Specifically, other relevant professional experience appeared to assist inexperienced interrogators in working through the interrogation scenario. Future research in the expertise literature should consider related professional experience as a criterion in determining a practitioner's skill level.

#### **4.5 Limitations and Future Directions**

The purpose of this Cognitive Task Analysis was to assess expert knowledge on conducting interrogations from experienced and inexperienced interrogators. In order to extract expert knowledge, the experimental task must be sufficiently challenging for experienced practitioners to perform (Crandall et al., 2006). To ensure experimental tasks are sufficiently challenging, CTA researchers often manipulate naturalistic elements such as time pressure, high stakes, and ambiguity (Crandall et al., 2006; see Hoffman, 1987). Although these elements were manipulated within the current thesis, participants were able to accurately assess the scenario plot, suggesting that our simulated interrogation may not have been challenging enough. The terrorism investigation may have been, in retrospect, a scenario that is readily incorporated into current training paradigms. If that is the case then all participants had interviewing experience with this type of scenario. However, given the classified nature of interrogations, researchers are largely unaware of the literal content within the training protocols used. Instead researchers can

advise on incorporating various theoretical components into training protocols. Thus, it is difficult to argue how this could have been accommodated within the current thesis.

Future research in investigative cognitive decision making could consider including additional questionnaires to ensure the cognitively challenging nature of the experimental material. In addition to gathering data about the realism and relevance of the simulation, Zimmerman (2006) also asked law enforcement officers to rate the extent to which the simulation was challenging and stressful, the difficulty of the questions asked, and how useful they felt the experimental material was in communicating their thought processes and decision making strategies. It is suggested that replications of this work include these types of questionnaires.

The inexperienced interrogators in this thesis demonstrated some characteristics of more advanced decision-making, and the majority of these interrogators were classified as *competent* performers. These results were in part due to the classification of inexperienced interrogators, many of whom had professional domain-relevant experience even if they had never conducted an investigative or intelligence interrogation. Future research might consider selecting inexperienced interrogators using different selection criteria, such as new military and law enforcement recruits. However, to provide a contextually rich description of decision processes, even at a novice level, interrogators should have some understanding of the domain and training in basic techniques. In addition, some of the experienced participants were currently working as interrogator trainers. These participants tended to explain their thought processes using procedural language, as they might do so in a classroom setting. It is suggested that future studies assessing interrogator decision-making focus on active interrogators as participants, rather than include those interrogators who train others.

The current findings could also be due to a volunteer bias in our sample of interrogators. Participants in this study did not receive any monetary compensation but instead volunteered as part of their professional development. Therefore, these participants may not adequately represent the general population of interrogators. Volunteer recruitment of participants can lead to positively skewed results as the sample of participants are more motivated on average than the population of interest (Shadish, Cook, & Campbell, 2002). It is possible that our sample of interrogators were more motivated than the average interrogator as well.

This thesis is the first to assess interrogator decision-making using CTA methodology. Although the simulated interrogation was carefully created to represent a high value interrogation that practitioners from several agencies could relate to, it is expected that minor findings may have occurred because of the simulation. For example, since the simulated interrogation depicted a surveillance operation, participants with surveillance operations experience may have had an advantage over participants without surveillance operations experience. In order to get a comprehensive understanding of the interrogation task environment, decision-making should be assessed using other challenging scenarios. By exploring interrogator decision-making across varying scenarios, researchers will expand the wealth of knowledge representative of the interrogation environment. In addition, researchers could explore how interrogators handle unfamiliar aspects of their environment. However, the main findings of this thesis represent core cognitive challenges of decision making and are thus expected to remain relatively stable across varying simulations. In addition, future comparisons between interrogators with different levels of experience might include the use of live scenarios, rather than videos. Using live stimuli allows researchers to observe and compare behaviors to the gathered interview data. A live stimulus also presents a contextually richer environment for

which the practitioners can immerse themselves in, thus adding to the realism of the experiment (Crandall et al., 2006).

Lastly, this research could be explored using quantitative statistical measures. The current thesis had four research questions and five hypotheses. To explore each research question, multiple qualitative analyses were performed, resulting in a wealth of findings being displayed. Given the amount of information explored, it is possible that certain relationships may have been evidenced among the various outcome measures - a principal components analysis could be used in this context to explore such relationships (see Abdi & Williams, 2010). Unfortunately, principal components analysis requires a more robust sample size than that offered by the present study. Future research could build on this study, using CTA methodology to assess interrogator decision-making, and seek a more appropriate sample size amenable to principal components analysis. Such an analysis may offer further insights into key themes and related decision making constructs.

#### **4.6 Practical Applications**

This thesis explored how interrogators make decisions in real-time. Experienced interrogators were more effective at incorporating new information into their interrogation plan, judging relevant information regarding the detainee's reliability, and building rapport with the detainee. These differences appear due to experienced interrogators' ability to adapt to the interrogation environment, including the time constraints of the interrogation scenario.

The findings from this thesis might be used to guide future interrogation training protocols. Training protocols could isolate naturalistic characteristics such as time pressure and require novice interrogators to engage in a simulated interrogation task. In handling time pressure, novice interrogators could be trained to see time pressure as a variable that they can

control and manipulate. A direction for future research would be to focus on building interrogation scenarios that manipulate core NDM characteristics (e.g. working with a team, see Klein 1998), and assess how experienced interrogators manage these manipulated characteristics. This information could then be adapted to new training protocols.

Practitioners could use the results found in this thesis to add onto their current rapport building training programs. Research on rapport-building within an investigative interview setting first developed because of the problematic ways interviewers/interrogators were presenting themselves to the suspect/detainee (see Shawyer et al., 2009). Since then, empirical research on rapport building, has demonstrated support for interview techniques that focus on how interviewers present themselves, and are perceived by detainees (e.g. Evans et al., 2010; Houston et al., under revision). Field research also suggests that interrogators believe rapport building to be important, particularly in how the interrogator is perceived by the detainee (e.g. Redlich et al., 2012). The empirical and field support for rapport building, as well as the results from this thesis demonstrating that all but one participant verbalized rapport building plans, suggests that rapport building is currently incorporated into interrogation training protocols.

In this thesis, it was found that experienced interrogators viewed rapport building as a reciprocal relationship, where both the interrogator and the detainee become invested in the interrogation outcome. In contrast, inexperienced interrogators focused on portraying themselves as the honest person that the detainee could trust. Whereas current training protocols likely focus on how the interrogator presents him/herself to the detainee, future training protocols could take these findings and further expand training to include shaping the detainee's thinking and behavior, and working with the detainee as a team.

Finally, practitioners could incorporate the findings from this thesis regarding assessing detainee reliability into current interrogation training protocols. All interrogators focused on reliable cues of the detainee to assess for deception detection. Inexperienced interrogators used both behavioral and information-based cues to make reliability judgments of the detainee. In contrast, experienced interrogators focused on information based cues to make reliability judgments of the detainee. These findings are consistent with the deception detection literature that demonstrates information-based cues as being more reliable indicators of deception detection than behavioral cues (see Vrij, 2008).

Behavioral cues were verbalized by experienced interrogators. Experienced interrogators used behavioral cues primarily to determine the detainee's current emotional state which in turn helped them modify their next actions toward the detainee. Thus behavioral cues were used to help the interrogator make decisions regarding their interrogation approach, and rapport building plans. These findings suggest that behavioral cues should not be completely discounted. Training protocols could use these findings to teach novice interrogators how to interpret and use non-verbal behavior of the detainee.

#### **4.7 Conclusion**

It was found that experienced interrogators maintained a more flexible interrogation approach compared to inexperienced interrogators. The flexibility that experienced interrogators demonstrated, allowed them to better adapt to the naturalistic elements of the interrogation environment. Specifically, experienced interrogators were more comfortable with time pressure and ambiguous or missing information than inexperienced interrogators. All interrogators were found to have adequate skills pertaining to rapport building; however experienced interrogators further developed rapport in line with anecdotal evidence from past interrogators and

investigators. Specifically, experienced interrogators focused on a reciprocal relationship of rapport building, where both the interrogator and detainee are motivated to help each other. In contrast, inexperienced interrogators focused on a one-sided relationship of rapport building, where the detainee relies on the interrogator's motivation.

When examining performance based on the five-stage model of skill acquisition, experienced interrogators achieved on average a higher level of skill than inexperienced interrogators. Thus the results yielded from the qualitative analysis, pertaining to flexibility of interrogation approach and depth of rapport building, were supported by theories of expertise. The results also showed that the CTA methodology aimed at capturing this knowledge was successful, but that a more challenging scenario may have led to further differences between experienced and inexperienced interrogators. Future research should replicate this research using different scenario frameworks and simulated interrogations. Future research should also consider using professional work-related experience as a criterion to include in determining practitioners' level of expertise.

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Table 1

*Summary of Differences between Experienced and Inexperienced Interrogators*

<b>Hypothesis</b>	<b>Page #</b>	<b>Result</b>	<b>Page #</b>	<b>Effect Size (<i>d</i>)</b>
General knowledge: semantic v. procedural	38	Partially supported	57	Procedural = .57 Semantic = -.80
Complexity of thought	38	Not supported	55-56	Complexity = .16
Depth of interrogation approach	38	Supported	61-65	Goals = .74 Actions = .59 Consistency = 1.04
Depth of rapport development	39	Supported	67-69	N/A
Frequency of meta-information	40	Count-not supported	71-75	Cues = -1.46 SA = -.80 Reliable cues = -.43 Info-based = .68
		Content-supported		

*Note.* Effect sizes are positively valenced if the sample means are in the direction of the hypothesis, and negatively valenced if the sample means are counter to the predicted direction.

Table 2

*Rapport Goals and Strategies*

<b>Goals</b>	<b>Strategies</b>
<i>Develop Interrogator's Character</i>	Sympathize with the detainee Express Confidentiality Be a source of hope for the detainee Look out for the detainee's best interests Have a conversation Act as if you genuinely care Do what the detainee does not expect Share personal information Be patient Alleviate the detainee's fears Make no specific promises Use detainee's perceptions of your power
<i>Develop Detainee's Character</i>	Make detainee emotional Express confidentiality Paint a bright future for detainee Minimize detainee's actions Inform detainee when he is being disrespectful Express confusion, allow detainee to help you understand Express logical reasons for cooperation Use detainee's perceptions of your power
<i>Develop the Relationship</i>	Sympathize with the detainee Express confidentiality Have a conversation Make a personal connection Invest in the detainee's personal interest Express an understanding of the detainee Share stories analogous to events in detainee's life Make detainee feel on your level Relate to detainee emotionally Don't let detainee know what you truly think

Table 3

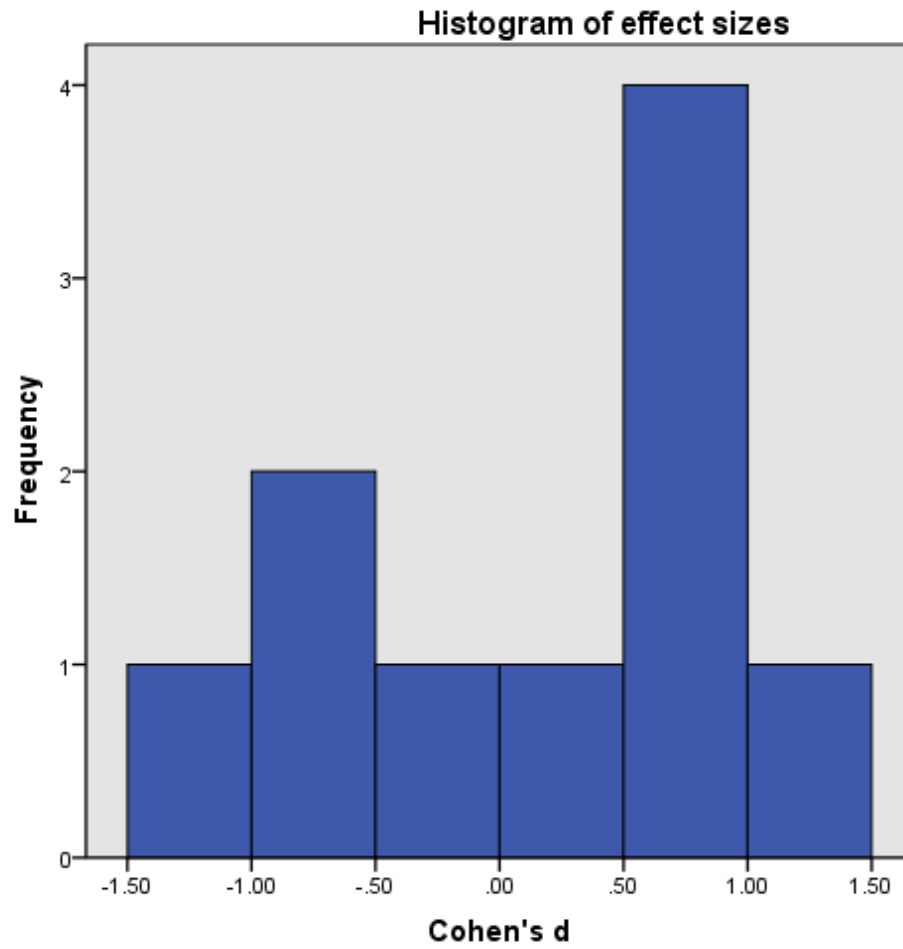
*Skill Classification of Participants*

	Adv. Beg	Competent	Proficient	Expert	Total
Inexperienced	2	<b>5</b>	1	0	8
Experienced	1	0	<b>5</b>	1	7
Total	3	5	6	1	15

Table 4

*The 5 Stages of Skill Acquisition applied to the Interrogation Domain*

	<b>General Knowledge</b>	<b>Situational Assessment</b>	<b>Decision Process</b>
<b>Novice</b>	Can only apply basic rules	Misses obvious information	Inability to decide
<b>Advanced Beginner</b>	Uses self-generate guidelines-procedures that they may have used one time before, or seen an experienced interrogator do	Beginning to perceive patterns of cues	Follows along with the decisions made in simulation without declaring which ones are important
<b>Competent</b>	Uses standardized procedures-i.e. those procedures that many interrogators agree on as effective	Makes expectations based on patterns of cues	Quickly devises an analytical and organized plan to guide decision making. Follows decisions made in simulation-only the ones that are in line with their organized plan.
<b>Proficient</b>	Uses maxims-or those standardized procedures that have been updated to fit personal style	Provides synthesis of cues and assessments Makes whole interrogation assumptions Assesses based on “typical scripts”	Has some components of organization but organizing plan has several open avenues that could be explored-allowing for greater flexibility Deliberates before deciding on strategies-a little hesitant due to uncertainty
<b>Expert</b>	Has a wide range of routine tactics or approaches to “get things done”	Fills in missing cues with rational assumptions Assesses based on intuition and mental simulation	Quick and creative strategies Guided by intuition Comfortable with uncertainty-makes decision without worries



*Figure 1.* Histogram of the distribution of hypothesis-driven effect sizes with positive values supporting the hypothesis and negative values running counter to the hypothesis.

## **Appendix A: Simulated Interrogation Scenario**

### **Interrogator Briefing**

#### **Ali Hussein al-Lebani's Arrest**

While on a layover in Amman on his way to Beirut, Ali Hussein al-Lebani was picked up by the Jordanian police during a meeting with a known drug smuggler. After his arrest, the Jordanian police searched his hotel room. The search of the hotel room did not reveal any evidence of drugs. However, the police did recover his hotel telephone logs and personal belongings, which included a camera that contained 98 photos taken in and around what looked to be a U.S. subway station. Several of the photos showed air in-take ducts, exit doors, and attendant stations. The police also found a cell phone containing several U.S. phone numbers, and several maps.

The police turned over the hotel phone records, cell phone, and camera to the Jordanian General Intelligence Division (GID). GID discovered that one of the calls made from his hotel room was to a number linked to an individual on their watch list known as "Al Jabra." GID questioned Ali-Hussein about this phone call. He explained that he called his uncle, Muhammad Hussani, to discuss plans for his arrival in Beirut. The GID passed the photos and the information about Ali-Hussein to the local FBI legal attaché'.

The FBI determined that the photos were of a Washington D.C. metro station (Federal Triangle). They also determined that Ali-Hussein had left Washington D.C. four days prior to his arrest. He was in Washington D.C. for five days. The FBI linked one of the phone numbers listed in Ali-Hussein's cell phone to an ongoing FBI counterterrorism investigation in New York City. The FBI notified the HIG and HIG interrogators arrived today. Because they did not find any drug evidence on Ali-Hussein, the Jordanians have decided to deport Ali-Hussein as soon as possible Beirut.

#### **Intelligence on Ali Hussein**

U.S. Intelligence sources have confirmed that Ali-Hussein is Lebanese and currently lives in West Beirut, Lebanon. The FBI has determined that Ali-Hussein once had a U.S. student visa, which is now expired. He attended George Washington University for three years, graduating with a Master's Degree in mechanical engineering in 2010.

His property includes:

- A Cannon Power Shot SX110 digital camera with an 8GB SD card. o The camera contained 98 photos of the interior and exterior of Washington D.C.'s Federal Triangle Metro station
- Various photos of people entering and exiting subway cars
- Photos of all entrances and exits to the platform
- A street map of downtown Washington DC marked with circles and numbers located close to the Federal Triangle Metro. Also written on the map are four digit numbers next to each police and fire station.
- A disposable cell phone that shows five calls made from the phone to one phone number in each of three area codes; 415 (San Francisco), 213 (Chicago), and 212 (New York City). These calls occurred once a day at the same time every day for five days before Ali-Hussein left Washington D.C.
  - o The New York phone number is linked to an ongoing FBI counterterrorism investigation. The FBI unit in New York City had noticed increase chatter about an attack but thought it was the chatter was isolated to New York City.

**You have four hours to interrogate him before the GID will take him to the airport and escort him out of the country.**

**Information Ali-Hussein may reveal during the interrogation.**

At the start of the interrogation, Ali-Hussein will vacillate between resistance and cooperation, which is motivated by a fear of the GID related to his drug involvement rather than detainment by the U.S. He shows indignation during the interrogation about being held by the U.S. when he was in the U.S. to conduct legitimate business. His rationale for the U.S. trip, and for taking the pictures, was the pursuit of an international real estate license. He aims to use this as a cover for his drug operations.

His willingness to engage in the surveillance operation was motivated primarily by financial gain – he was paid \$5,000 to collect the pictures, and his travel was also paid by his wife's uncle.

He is ambivalent about the potential terrorism-related use of the intelligence he has collected. His ambivalence stems from the fact his wife and two daughters were killed in an Israeli airstrike and he blames the U.S. for supporting Israel and providing them with military aid. He does not want to be considered a terrorist, but recognizes his role in the operation. He is just beginning to feel the gravity of the situation.

He will admit that his uncle, Muhammad Hussani, hired him to take these photos, but will claim he did not know the reason for taking the photos. He will admit that he was in the U.S. for 5 days, but insist initially this was in pursuit of legitimate business (i.e., real estate licensing).

Once a day, he made a phone call to each number found in his phone. The first four calls were to check in with the other surveillance teams and the final call was to confirm that each team had completed their surveillance. He will also reveal that:

- He is supposed to be in Beirut in two days, which is when he is meeting with Muhammad Hussani to deliver the photos.
- Muhammad Hussani is his dead wife's uncle
- He will freely speak about his uncle-in-law and state that Muhammad Hussani is a freedom fighter
- He will mention that his uncle's nickname is Al-Jabra.
- He arranged the layover in Amman to pursue the drug deal using the travel funds his uncle provided. His uncle does not know that he has taken the diversion. He is very concerned that his uncle will be angry that he misappropriated his time and funds, and that he was engaging in drug deals.
- The other surveillance cells were investigating subways in each of the three other locations
  - All surveillance cells were taking pictures of subways in the four cities within the US.

At times, Ali-Hussein will act as if he is an important person with important information. Other times, he will downplay his involvement.

## **Appendix B: Summaries in-between segments**

### **In between segment 1 and 2**

The interrogators bring forth some photos taken from the detainee's camera that are not of the tourist sites in DC. The photos are of the metro and of a building. The detainee explains that he took some photos of the metro for he finds the architecture very beautiful. He also wanted to show his friends in Beirut how crowded American subway stations are. He also believes that a picture on his camera was taken by mistake, that the camera went off on its own.

Detainee has his own electronics business, has been in the business for many years. He buys electronics cheap in America-iPod, cameras etc. and sells for profit in Beirut. He has no US business consultants, met with some to see if they could perhaps do business in the future. Does not remember their names and he does not know where their business cards went.

### **In between segment 2 and 3**

Detainee mentions calling friends in Chicago and San Francisco. Friend in Chicago is a photographer who is visiting Chicago. Detainee and Chicago friend talk to each other in Beirut a few times a month, talk about electronics and how to make better/enhanced pictures. Friend in San Francisco is a young man who lives in San Francisco. Detainee does not know him, was asked by his wife's uncle to call on the young man and see how he is doing in America. Wife's uncle is a politician with the Hezbollah party.

### **In between segment 3 and 4**

Wife's uncle asked friend in NY to take pictures of subway. Friend in NY took pictures of the Grand Central Station everyday. Wife's uncle asked detainee to take pictures of the Federal Triangle, gives him \$5,000. Friend in Chicago is also taking pictures of subway. The calls everyday were to make sure no one had any trouble with police or immigration.

### **In between segment 4 and 5**

Nothing

## **Appendix C: Structured Interview Protocol**

### **Questions after Each Segment**

- 1) Describe everything you were thinking as you watched this video clip. Describe whatever came to mind, even if your thoughts are incomplete. I am interested in hearing your assessment of the situation as if you were the interrogator.
  - a. What specific factors (or cues) are leading you to this interpretation?
- 2) What information provided by the detainee do you think is important?
  - a. What factors are you considering as you assess the credibility, relevance, and importance of this information?
  - b. What information would you like to gather from the detainee at this point?
- 3) Considering what you know about the detainee and his current demeanor, what techniques would you consider using at this point in the interrogation? Explain why.
- 4) Characterize the relationship between the interrogator and detainee. a. What cues/factors lead you to this interpretation?
- 5) What would you do differently from this interrogator at this point, if anything?
- 6) What errors would inexperienced interrogators be likely to make at this point in the interrogation?
  - a. What cues might they miss?
- 7) Before we continue, describe what your next step would be in this interrogation.

### **Questions after Entire Video**

Free Recall: Please provide an overall evaluation of the interrogation and contribute any comments you may have.

## **Appendix D: Consent Form**

You are invited to participate in a research study titled “Using CTA to Characterize Interrogator Operational Best Practices.” The purpose of this research is to characterize the decision-making strategies of interrogators as they conduct high-value interrogations. We plan to recruit approximately 20 interrogators for this study.

The principal investigator in this research is Dr. Laura Zimmerman (Applied Research Associates, Inc.).

If you decide to participate, you will watch a simulated interrogation that will be stopped at several pre-determined points. At these points, you will answer a series of questions about your perceptions of unfolding events and the ways in which you would continue if you were the interrogator. Your responses will be audio taped for later data analysis. You will receive more information about this, and be debriefed fully at the end of the experiment. Your participation should last approximately one and a half hours.

There are no significant risks involved in this study. The possible benefits of this study are your valuable contribution to an understanding of interrogation processes at a cognitive level. The outcome of this data collection will be an operational guide to help interrogators shape best interrogation practices and to facilitate training development. This information will also guide future research aimed at providing interrogators with effective and field-relevant interrogation techniques. You will not receive any compensation for your participation.

Your participation in this study is voluntary. You have the right to refuse to participate without any consequences. If you decide to participate, you may discontinue participation at any time. You may refuse to answer any specific question or engage in any specific task at any time during the study. Withdrawal or refusing to answer specific questions or engage in specific tasks will not result in any consequences to you and will not affect your standing with your employer.

All audio recordings will be stored in a locked cabinet with the researchers. Your name will not appear on any of the study documents (interview transcripts, questionnaires) and all the data will be stored securely in the research lab, to which only the researchers have access.

Your signature indicates that you have read this consent form and that you consent to participate, that you fully understand the nature and consequences of participation, and that you have had all questions regarding participation in this study answered satisfactorily. If you have further questions about this research please feel free to contact the Principal Investigator, Dr. Laura Zimmerman, Applied Research Associates, Inc., by e-mail ([lzimmerman@ara.com](mailto:lzimmerman@ara.com)) or by phone (703-412-9425).

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Participant's Printed Name

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Signature

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Date

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Experimenter's Printed Name

---

Signature

---

Date

### **Audio Recording Permission**

At a part of this experiment, your responses will be audio recorded for research purposes only. Audiotapes will be stored in a secure location with the principal investigator. No one outside the research staff will listen to the audio recordings. All identifying information (names, locations, etc) will be extracted from transcripts of these recordings. If you choose not to be audio taped during this experiment, please inform the experimenter at this time. Otherwise, please sign below to give consent to be audio taped. You will have opportunity at the end of the interview to provide permission to use this recording in data analysis.

I give consent to be audiotaped during this study:

---

Participant's Printed Name

---

Signature

---

Date

### **Permission to Use Audiotape Data – Post-session consent**

I understand that the interview session I participated in was audio recorded. The experimenter has explained to me why it was necessary to record the interview, and he or she has explained to me that by signing this form, I give permission for the researchers of this study to use my audiotape for data analysis purposes and for further research purposes.

I understand that my audio recording will be stored in a locked file cabinet and only the primary researchers will have access to that cabinet. I have been given an opportunity to review my tape, decline the use of my tape, and erase my tape before anyone else has the opportunity to view it.

I have read the above statement and give my permission for the researchers to use my audiotape data for the research purposes outlined above.

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Print Name

---

Date

---

Signature

## **Appendix E: Instruction to Participants**

The purpose of this task is to gather information about your decision processes as an interrogator. We are going to show you a video recording of a simulated interrogation. At several points, we will stop the video and you will answer a series of questions. At the end of the video segments, you will provide an overall assessment of the interrogation and answer more questions. As you watch this video, take the perspective of the interrogator. Your goal is not to evaluate the performance of the interrogator in the video. Instead, you should use the interrogator actions as a foundation to discuss your perceptions of the interrogation and to describe your possible decisions and actions in such a situation. We will ask you the same questions after each video segment. Although each segment will reveal new information, we are aware that some of your responses might be repetitive. We want to understand the progression of your thoughts decisions given new information, whether they stay the same or change. Although you will only view the video once and will not be allowed to stop it while it is in play, you will have as much time as you like to think about the scene and answer the questions. We will encourage you to respond in as much detail as possible. Do you have any questions before we get started?

## Appendix F: Debriefing

### Debriefing Instructions

The purpose of this study was to explore the decision making processes that interrogators make during interrogations of high-value detainees. We are trying to understand the types of information interrogators use to assess situations, the types of reasoning strategies they consider and why they choose particular courses of action. We are going to use this information to develop guidebooks that we hope will provide useful information concerning interrogation best-practices. If you are interested, we will send you a copy these guidebooks at the end of this research project.

While recalling your previous interrogation experiences, did you experience any negative or distressing feelings? *(If there is a specific discussion topic or moment during the interview that you think might have been distressing, ask the interrogator about this)*. In the event these memories bring up any distressing emotions after you leave here today, here are some names and numbers of mental health specialists you can talk to about these feelings (hand the participant the sheet of numbers). You can also call the principal investigator with any questions or concerns.

*Allow interrogators to ask questions and discuss the interview session. Pay close attention to any comments regarding their emotional/stress level during the scenario. Be sensitive to any comments made about needing feedback on their performance. Remind them that we are not judging their performance, we are just gathering information about their knowledge. Compliment them on providing interesting and useful information. Thank them for their time. Remember they are very busy and they are doing us a huge favor by participating.*

## Appendix G: Post-study Questionnaire

### Demographic Information

**Please circle or write in the response that most applies to you. If the question does not apply to you, please write N/A. Continue on back as needed. Your answers are confidential. If you think any answer or combination of answers will reveal your identity, please let the researcher know. No identifiable information will be reported. You can skip any question.**

1) *Agency or Military Branch:* \_\_\_\_\_

2) *Total years of experience as an interrogator:* \_\_\_\_\_

3) *Age:* \_\_\_\_\_

4) *Gender:*     Male     Female

5) *Civilian Education:*    GED     High School     Trade School     Some College  
                                 Associates Degree     Bachelor's Degree     Advance Degree

6) *Estimate how many interrogations you have conducted during your career:* \_\_\_\_\_

7) *Describe any Interview/Interrogation/Information Elicitation training you have received:*

\_\_\_\_\_  
\_\_\_\_\_

8) *Estimate how frequently you engaged in any type of information elicitation tasks in the last year:*

Never -----I-----I-----I----- Every Day  
                                 Yearly                   Monthly                   Weekly

9) *Please list any education or trained skills you have that are particularly useful when eliciting information (include language skills, cultural training, or technology skills, etc):*

\_\_\_\_\_  
\_\_\_\_\_

**Please answer the following questions in as much detail as possible. Continue on back as needed.**

Did the interrogation you just viewed remind you of any previous experiences? Y N

If yes, how so? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

How did this previous experience help you interpret the interrogation you just viewed?

\_\_\_\_\_  
\_\_\_\_\_

How realistic was the interrogation you just viewed compared to your own experiences?

1	2	3	4	5	6
Not at all					Extremely
Realistic					Realistic

In your opinion, was the interrogation you just viewed a success? Why or why not?

\_\_\_\_\_  
\_\_\_\_\_

What other outcomes would you have liked to see achieved during this interrogation? How would you have attempted to achieve these outcomes?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please provide any additional comments:

## Appendix H: Final Qualitative Analysis Coding Scheme

### Situational Assessment

- **Cue:** Tangible detainee verbal and nonverbal behaviors, or background information about the detainee that influence the participant's assessment of the situation
  - Subcategories include:
    - Verbal cues
    - Nonverbal cues
    - Background information
    - Time constraint
- **Assessment:** Statements that reveal the participant's cognitive processes as they reason about the interrogation. Assessment may include interpreting detainee cues, testing hypotheses to clarify detainee's behaviors, motivations, and actions, expectations about what the detainee might say or do, and assumptions about what the detainee is thinking.
  - Subcategories include:
    - Hypothesis, such as:
      - What if scenarios
      - Questions
      - Cues that could have more than one explanation
      - Information on: detainee's behaviors, motivations, action, (and plot)
    - Expectation-about future actions, such as:
      - If then statements
      - Expectation of consequences of actions "I think he would...", Now he can..., Now you can because...
      - Expectations of what detainee will or will not do, i.e. "You are not going to act like this when..."
    - Assumption about detainee
      - Judgment about detainee
      - Assumptions about detainee's current state-emotional, behavioral and cognitive.
      - Assumptions about plot
      - Perspective taking-use of first person when discussing detainee.
    - Context interpretation
      - Reasoning through how the interrogation is progressing and the significance of the (lack of) progression.
      - What information is most damning
      - Oddities
      - Confirmation-participant says they were right about their prior assessment
    - Misc.-anything that does not fit in the above sub-categories

**Decision Process:** Statements about what the participant would do next if they were conducting the interrogation. These are definitive statements about what actions to take, or deliberation and assessment of various possible actions. Decision process includes strategies that participants would employ, the goals associated with their decisions, the leverage points they allow them to reach a decision, and decisions to seek more information before acting.

- Subcategories include:

- Information seeking-cues and/or missing information that is needed in order to make progress in the interrogation. This is different to situational assessment as the interrogators are using the information-seeking to get themselves into a better position in the interrogation. Thus this category falls under the decision process.
  - To further understand.
  - What is most important to get at next.
  - Gathering information on a timeline.
- Decision-a straightforward statement about an action to employ that does not involve any manipulation or cited interrogation approach
- Strategy
  - Manipulating with the detainee's state
- Goal
  - Purpose/objective/next step/main concerns
  - Desired end state for detainee
- *Leverage point (not many found)*
- *Deliberation (not many found)*-deliberating through one or more decision options. Express uncertainty in how to proceed.
- Misc.(anything that does not fit in the above sub-categories)

**Action:** A description of the explicit action a participant would take based on their decision. Action descriptions also include how a participant would employ a strategy.

Subcategories include

- Question
  - Can include relevant statements surrounding a question(s)-focal point is a question where the interrogator would stop and give time for detainee to respond. They include tell me about this, or I need to know about X... type statements as well as these are indirect questions that focus on gaining the detainee's narrative.
- Statement
  - Statements of how things are looking/will go.
  - May include clarification questions but the focus of these questions isn't really about getting the detainee to answer a question but to get the detainee to understand a point that the interrogator is trying to make.
- Misc. (anything that does not fit in the above sub-categories).

**Evaluation:** Evaluative comments about the interrogator's performance and opinions about the success of various interrogator actions. This includes opinions about the results of interrogator's actions on detainee behavior.

Subcategories include:

- Effectiveness: includes how effective or not effective participant thought the interrogator's actions were. Key words include: I liked that, epic failure, this was good, we are making progress etc.
- Outcomes
  - Detainee end state, now we have/are at.
- Atmosphere-the relationship, the atmosphere in the room, it feels type statements.
- Plan
  - Expectations of what interrogator is doing.

- Statements of what interrogator is doing.
- Suggestion-participant would either do the same thing as the interrogator or would suggest modifying the action somewhat.
- Confusion-participants are unsure of interrogator's plan
- Misc. (anything that doesn't fit into the above sub-categories).

**General Knowledge:** Participant discussion about interrogation practices and procedures in general, rather than specific to the interrogation. Also includes discussion of practices and errors inexperienced interrogators engage in, and previous experiences and lessons learned.

Subcategories include:

- **Inexperienced error:** Inexperienced interrogator practices and errors they might make
- Past experience
  - On the job or training exercises.
- Life experience
  - Cultural knowledge
  - Other areas of life that have helped them learn about the interrogation process.
- Preferred strategies
  - Strategies/actions they say they typically do
  - Strategies/actions they say they like to do
  - Strategies/actions they say they find themselves often doing.
- What if's/analogies
- Detainee thought process
  - Statements focused around what detainees in general are thinking, what they likely know, want and feel.
- General procedures
  - Explicitly takes us through an approach, or goal of interrogation.
  - Includes potentially names of techniques.
  - Includes the use of 'we' to mean interrogators in general.
- Tips
  - What makes a successful interrogator.
  - Anything explained that isn't just a general procedure.
  - To include-it's difficult, or it's hard but you have to do this.
  - To include stuff that would be useful/interesting for practitioners/seasoned interrogators to read.
- Misc. (anything that is not included in the above sub-categories).

## Appendix I: Meta-Information Categories

Meta-Information Type	Sub-types of
Characteristics of the detainee	Behavioral characteristics Extent of detainee knowledge Frequency of giving information Inherent biases
Characteristics of the detainee as a function of other factors	Family characteristics History Time Location in environment Characteristics of interrogation room
Uncertainty	Likelihood (such as of producing information that answers intelligence requirements) Confidence in (one's abilities to handle challenging components of situation, information collected, interrogator's abilities) Accuracy of (such as information-deception detection)
Ambiguity	Level of abstraction of information Specificity of information
Information context (e.g. relationship to other information)	Inconsistencies in information verbalized versus evidence given Inconsistencies in information verbalized across segments Missing information qualifiers History of the information Scarcity of information (i.e. of a certain type) Relevant versus irrelevant information
Reliability of source	With regard to (w.r.t) detainee behavioral characteristics W.r.t. information context (e.g. inconsistencies)
Credibility of content from detainee	W.r.t. reliability of detainee W.r.t. type of content W.r.t. detainee behavioral characteristics W.r.t. information context

Temporal Qualifiers (of information)	Absence of expected information
Relevance or pertinence	W.r.t. specific goals w.r.t. actual/perceived information needs w.r.t. broader operational context W.r.t. current hypotheses about the situation

## Appendix J: Skill levels Coding Scheme

### Situational Assessment

- **Novice**
  - Mentions cues of scenario but doesn't assess them
  - Feels nervous/stressed/overwhelmed by the task
- **Advanced beginner**
  - All assessments are given equal importance
  - Begins to perceive meaningful patterns of cues – focus on one sided assessment-basic assessment
  - Combines outside facts/prior exp with cues-focus on one feature, not enough to substantially help with DP.
  - Detaches self from the interrogation-projects the responsibility of outcome on other players.
- **Competent**
  - Makes patterns of assessments with the patterns of cues-match and more than one assessment-both sides/or two levels
  - Makes particular *pattern* of expectations based on particular pattern of cues -more like match of expectations with cues
  - Provides synthesis of cues-but needs to break them down one by one to explain overall meaning
  - Feels overwhelmingly responsible for outcome of interrogation
- **Proficient**
  - Provides a synthesis of the meaning of cues (after each segment) without breakdown of individual elements/cues
  - Assess based on typical scripts for categories of situations
  - Recognizes what is most relevant/salient (may be easy based on this scenario), or recognizes a lack of relevant (based on past exp)
  - Perceives deviations from norm
  - Makes whole interrogation assumptions
  - Recognizes the need to change approach but not how to change without deliberating
- **Expert**
  - Detects problematic cues and anomalies early (by either segment 1 or S2)
  - Discriminates between similar environmental cues
  - Fills in missing info/cues with rational assumptions
  - Uses intuition to guide assessment
  - Use of mental simulation to predict event before they have unfolded
  - Manages uncertainty well

## Decision Process

- **Novice**
  - Makes an individual decision
  - Makes an awkward decision
  - Inability to decide as do not know how to apply their basic rules to this situation
- **Advanced Beginner**
  - Talks about several decisions-all equally important
  - Seeks guidance from outside sources (such as analysts) rather than rules
- **Competent**
  - Takes an analytical, hierarchical approach
  - Makes an organizing plan after S1 or 2
  - Decisions are based on organizing plan
  - Competent: makes particular pattern of decisions based on particular patterns of cues
  - Importance of sub-goals is dependent on situational demands (i.e. time constraint).
  - Actions are focused on long term goals
- **Proficient**
  - Has quick assessments, and quick decisions-but deliberates over the right decision
  - Uses procedural maxims (see general knowledge) to guide decisions but are not able to rely on these maxims-i.e. feel uncertain, and deliberates over more than one option
  - Sets up decisions with expectancies and knows when they are violated
  - Has a flexible strategy to provide for adjustments
  - Mentions more time managing strategies, mentions more managing information strategies
  - Does not use past experience in decision making, in assessment only
- **Expert**
  - Uses past experience in decision making
  - Seeks information to validate rational assumptions
  - Decisions are guided by intuition
  - Has creative strategies
  - Has quick strategies
  - Self-monitors decision making performance
  - Capitalizes on leverage points
  - Has automatic and unique actions
  - Uses mental simulation to assess courses of action

## General Knowledge

- **Novice**
  - Gives procedural rules about interrogation
  - Mentions lack of experience
  - Mentions lack of rule/guideline for this situation
  - Makes evaluations based on how well interrogation rules were applied
- **Advanced beginner**
  - Uses self-generated guidelines/based on typically important interrogation aspects
    - These guidelines are not contextualized to current situation-
    - only focuses on one feature
  - Critiques the interrogator severely-as detaching themselves from the performance/errors of situation
  - Makes evaluations based on how well self guidelines were adhered to
- **Competent**
  - Standardized and routine procedures- based on success with other interrogations seen or done
  - Has a personalized set of guidelines based on experience
  - Makes evaluations based on these personalized set of guidelines
  - Mentions if certain cues/information should have been found out sooner
- **Proficient**
  - Uses standardized procedures of Competent but contextualizes it to details of relevant situation
  - Uses procedural knowledge, or basic interrogation rules, but the meaning of rules are contextualized to the situation
  - Has a set of personalized maxims to reflect the nuances of the situation-so the maxims take into account several features of situation rather than just one (guidelines).
  - Makes evaluations based on how well interrogator paid attention to nuances of situation.
- **Expert**
  - Discusses how tasks and subtasks are supposed to be performed
  - Discusses how resources function in the domain
  - Has a wide range of routines or tactics for 'getting things done'
  - Have more facts about the domain
  - Makes evaluation based on how well tasks were performed

### Appendix K: Pearson Correlations

Outcome variables	Years of Interrogation Experience
Procedural knowledge	$r(15) = -.004, p = .99$
Semantic knowledge	$r(15) = -.33, p = .20$
Complex statements	$r(15) = -.32, p = .22$
Goals	$r(15) = -.07, p = .81$
Actions	$r(15) = .09, p = .74$
Consistent actions	$r(15) = .29, p = .26$
Inconsistent actions*	$r(15) = -.52, p = .03$
Cues	$r(15) = -.45, p = .07$
SA	$r(15) = -.21, p = .43$
Reliability of detainee	$r(13) = .35, p = .20$
Behavioral-based reliability	$r(13) = .10, p = .72$
Information-focused reliability	$r(13) = .34, p = .22$

\* $p < .05$ . Two-tail significance testing.

## **Curriculum Vita**

Amy Ross was born on July 9, 1988 in Portsmouth, England, and moved to the United States of America at the age of nine. She earned a Bachelor of Arts in Brain, Behavior, and Cognitive Sciences from the University of Michigan in 2009. After doing a brief work study in Germany, Amy joined the Legal Psychology doctoral program at the University of Texas at El Paso in the autumn of 2010. She is being mentored by Dr. Christian Meissner and has worked with him on his investigative interviewing research. While at UTEP, Amy has had the opportunity to present her research at the American Psychology-Law Society conference and the Society for Applied Research in Memory and Cognition conference. Amy's work at UTEP has also resulted in two academic journal publications.