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Intuitive Abilities:
A Comparison between
Police and Non-Police Individuals

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Abstract

Some people believe that intuition adds to effective decision-making, however there is little applied research to substantiate such a belief. Apart from popularized treatments, there are only a few scholarly works in the literature on the subject of intuition. The purpose of this quantitative study was to determine whether or not police officers are more intuitive than non-police persons. The groups were police officer cadets, experienced uniform officers, detectives, and a control group consisting of individuals who had no policing experience. Altogether, there were four groups totaling 234 subjects tested with a minimum of 40 subjects per group. All participants were volunteers, from a variety of police departments and community colleges. Each participant was assigned a control number to insure his or her confidentiality. Demographic data were gathered on each subject (i.e., gender, age, years of education, and years of experience in law enforcement). All subjects were administered Archer's Social Intelligence Quotient (S.I.Q.) test, which was used as an intuition instrument. The Watson Glaser Critical Thinking Appraisal was administered (not timed to all subjects in order) to determine whether there is a correlation between critical thinking and intuition. Statistical measures consisted of one-way classifications (ANOVA), two-way classifications (ANOVA), multivariate analysis of variance and covariance (MANOVA), and item analysis. Findings suggest that each of the three groups consisting of police officer cadets, experienced uniform officers, and detective were significantly more intuitive than the control group and the combination of the three groups was also. Other findings indicate that police cadets performed as well as the experienced officers (e.g., uniforms and detectives) on the S.I.Q. test. There was no statistical significance among any of the other variables: gender, age, years of experience, and Watson Glaser Critical Thinking Appraisal scores.

Inspiration

Recently, I listened to a song entitled, “I Hope You Dance” by Lee Ann Womack. The subject of dance is related to a philosophical view of life - - a metaphor. I would like to pass along this fearless spirit of dance. It emphasizes the importance of taking necessary risks, to seize life’s opportunities, the need for active participation in coping with and solving life’s problems and compels us to let love transform who we are and all we do. For with love comes freedom.

I Hope You Dance

I hope you never lose your sense of wonder
 You get your fill to eat
 But always keep that hunger
 May you never take one single breath for granted
 God forbid love ever leave you empty handed
 I hope you still feel small
 When you stand beside the ocean
 Whenever one door closes, I hope one more opens
 Promise me that you’ll give faith a fighting chance

 And when you get the chance to sit it out or dance

I hope you dance
 I hope you dance

I hope you never fear those mountains in the distance
 Never settle for the path of least resistance
 Living might mean taking chances
 But they’re worth taking
 Lovin’ might be a mistake

But it's worth making
 Don't let some hell bent heart
 Leave you bitter
 When you come close to selling out
 Reconsider
 Give the heavens above
 More than just a passing glance

And when you get the choice to sit it out or dance
 I hope you dance
 (Time is a wheel in constant motion)
 I hope you dance
 (Always rolling us along. Tell me who)
 I hope you dance
 (Wants to look back on their years and)
 I hope you dance
 (Wonder where those years have gone)

I hope you still feel small
 When you stand beside the ocean
 Whenever one door closes, I hope one more opens
 Promise me that you'll give faith a fighting chance

And when you get the chance to sit it out or dance
 Dance
 I hope you dance
 I hope you dance

Note. From Sanders, M. & Sillers, T. (2000) I hope you dance. On I hope you dance compact disk., Nashville TN. MCA Music Publishing. Copyright 2000 by Universal Studios, Inc. Reprinted with permission granted by Paul Brooks.

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Dedication

With love and affection to my children; Joshua, Jacob and Jessi Feck. From you I have learned the greatest lessons in life. May you continue to grow and develop physically, emotionally, intellectually, spiritually and intuitively. Also, it is my hope that you will chose the path of love; trusting your intuitive self.

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Chapter One: Orientation to the Study

Consulting psychologists can assist police agencies in important ways: They can help ensure that an agency places individuals in positions that are good matches for their abilities. They can assist police departments in the selection of new employees.

Psychologists can assist in promotional evaluations, and choosing the right personnel for special assignments within a police agency. My dissertation addresses a special part of this range of services. When a law enforcement agency needs to choose a detective from among its personnel, a psychologist might assist in finding the best candidate for the job. I am interested in improving the process of selecting the right person to perform the function of criminal investigator, or detective, by focusing on one important personality trait, that of intuition. Hypothetically, intuition might assist in criminal case investigation because it increases the potential for discerning a relationship between what might otherwise appear to be unrelated case factors.

As a matter of clarification, persons in this position may be titled detective, criminal investigator, or Investigator. Detectives often hold a supervisor's position, while criminal investigators or investigators usually are not supervisors. For the purposes of this study, I considered only those persons who actually perform criminal investigative tasks; therefore, I will use the term "detective" as a standard means of referring to detectives, criminal investigators, and investigators.

Related Professional and/or Personal Experience

I have had the privilege of having Ph.D. Internship at Management and Behavior Consultants, PC, an agency that specializes in criminal justice issues in Traverse City, Michigan. During my internship, I assisted in many psychological evaluations of police personnel who were being considered for the position of Detective because law enforcement administrators were concerned about choosing the most qualified personnel. Unfortunately while detective is a critical position to fill, placing the right person in such a key assignment is not easy. Historically, administrators have relied on traditional means of selection such as seniority or interest posting. There have been few other, more accurate, means of selection. Typically, executive administrators have only a hunch about who will best serve their respective agencies as a detective or criminal investigator. Many make their selections on the basis of an educated guess, which is only slightly better than an assessment with a wet thumb held in the air to determine wind direction. Such decisions are based principally upon an officer's past work record in conjunction with his or her interests, motivation, and level of enthusiasm. Detectives or criminal investigators play a key role for a number of reasons. First, detectives facilitate in keeping the community safe. Secondly, they help define the crime statistics picture by determining how many offenses of particular types are committed; they alert the chief administrator about crime trends. Thirdly, effective detectives are important political assets for there are constant community pressures on police agencies to follow up investigations and solve cases.

Therefore, since criminal investigation is such an important function, one might well ask, “How does the chief administrator make the right choice of personnel to fulfill that function?” Does one select the employee who seems to have an interest and has been a hard worker? If so, consider that being a highly motivated, productive street cop in no way guarantees success as a detective. Does one choose a favored employee? It is easy to see the fallacy of such a decision. And then there is the problem of avoiding those officers inspired by television detective heroes and/or some other media images.

Most administrators who want to use a more objective means of making their decisions have to be content with the following criteria: the candidate who appears deserving on the basis of current job performance, he/she expresses an interest in investigations, and performs acceptably on a paper/pencil examination. Admittedly, this process of interviewing and psychological pre-employment testing is not perfect, but it is far better than no testing. Passing the job skills or basic knowledge test is certainly indicative of interest, intellectual capacity, and ability to retain information. However, such instruments do not test *intuition*, a personality trait that might enhance the criminal investigations process and is regarded by investigators as an important element in the solution of crime (Roberg & Kuykendall, 1997, p.320). I began my research by interviewing fifteen Detectives to list factors necessary for effective investigative work. Most have agreed on a few factors, which I have come to regard as core to this issue. They are listed below, though not necessarily in the order of importance:

- Intuition
- Intelligence

- Tenacity
- Motivation
- Desire to solve a puzzling question
- Interest in a mystery and
- Interest in justice.

Whether intuition is an innate talent or learned skill, one might legitimately ask what intuition is, and how does one test it or test for it?

Definition of Terms

Webster's Dictionary (McKechnie, 1978) gives three definitions for intuition.

They are as follows:

1. the immediate knowing or learning of something without conscious use of reasoning; instantaneous apprehension.
2. something known or learned in this way.
3. a looking on; a sight or view; hence, a regard to; an aim. (p .964)

The Oxford English Dictionary (Simpson & Weiner, 1998) provides five definitions of intuition. They are as follows:

1. the action of looking upon or into; contemplation; inspection; a sight or view.
2. the action of mentally looking at; contemplation, consideration; perception, recognition; mental view.

3. the action of mentally looking to or regarding as a motive of action; ulterior view; regard, respect, reference.
4. the spiritual perception or immediate knowledge, ascribed to angelic and spiritual beings, with whom vision and knowledge are identical.
5. the immediate apprehension of any reasoning process; a particular act of such apprehension. (p. 29-30)

Cassell's Latin Dictionary (1968) defined intuition as:

Cognitio, perceptio, comprehensio; as a quality = keen perception, *ingenii* or *mentis acumen* or *acies*; = perception, *□nticipation*. (Simpson p. 744)

Some people define intuition as an educated guess, insight, a hunch, speculation, a gut feeling, sixth sense, a feeling in the bones, a good guess, or a sense of knowing without knowing how they know. In a review of the literature, Shirley and Langan-Fox (1996) came to the conclusion that "it is a topic with which almost everyone has had experience or some knowledge of, [but] it is one that has not as yet been investigated extensively. It is evident from this review that there are many avenues for further research" (p. 582).

For the purpose of this study, intuition is expressed through "social intelligence." as measured by Dr. Dane Archer's (1980) Social Intelligence Test. Accordingly, it is the ability to pick up subtle, nonverbal cues accurately and to put them together in a meaningful whole without (apparently) using inductive or deductive reasoning. It is, thus, the sense of knowing without knowing how one knows.

Statement of the Research Question

In order to improve their chances of selecting the right person for an assignment to criminal investigations, some administrators ask for assistance from psychological consultants who specialize in human resource evaluation and placement recommendations. Psychologists can assist police agencies in important ways such as selecting new hires and performing promotional evaluations. Psychologists can also improve the selection process, enabling administrators to choose the appropriate person for special assignments within a police agency by better matching individuals to specific assignments based on the individuals' aptitude, skills, and motivation. For example, when a police department needs to choose a detective from among the department personnel, a chief administrator may request the services of a psychologist to help determine the best candidate for the job. It is the responsibility of psychologists to be creative in their efforts to provide these services and to provide precise recommendations. Perhaps, then, one of the most important functions in which a psychologist may engage is in researching methods to improve the accuracy of their recommendations regarding personnel assignment. In this way perhaps a psychologist can make a contribution that others cannot make.

I am interested in helping improve upon the process of selecting the right person to perform the functions of criminal investigator or detective. This dissertation investigates whether or not police officers (an experimental population consisting of cadets, uniformed police officers, and detectives) are more intuitive than non-police persons (a control group population consisting of individuals who have no policing

experience). I chose to research one dimension of intuition by using Dr. Dane Archer's (1980) Social Intelligence Quotient Test. My source of testing material comes directly from Archer's (1980) book entitled How to Expand Your S.I.Q. – Social Intelligence Quotient. Archer, a Social Psychologist, explains his belief that deductive skills are an example of a subtle ability that is totally different from the verbal and mathematical capacities measured by standard I.Q. tests. He calls it "social intelligence," or the knack of picking up nonverbal signals.

Chapter Two: Intellectual Context

The concept of intuition has been investigated by many disciplines and has produced a variety of definitions as well as theories about its etiology. In this chapter, I review the topic of intuition from a historical perspective to summarize important findings within the last decade. I incorporated key findings regarding the definition and etiology of intuition into my research with the intent of developing an interdisciplinary perspective of the definitions, explanations, and scientific work done thus far. It was hoped that a well-rounded knowledge base would provide me with the information I needed to measure an individual's level of intuition. This research study hoped to question whether criminal investigators are more intuitive than non-criminal investigators. It also examined whether or not police officers are more intuitive than non-police officers.

Identification of Search Strategy

Because the concept of intuition seemed vague, I began my search by reviewing various dictionary definitions of the word *intuition* (see in the "Definition" section in Chapter One). Using the key word, *intuition*, I searched the American Psychological Association (APA) on-line search engines (i.e. full text), the internet, college libraries, police libraries, book clubs and bookstores. I searched books, magazines, journal articles, videotapes and cassette recordings. I reviewed studies of intuition from various disciplines (i.e. scientists, neuroscientists, evolutionary psychology researchers, a phenomenological perspective, social psychology, criminal justice, medical and business). While I engaged in historical research regarding intuition, I primarily focused

on current studies and theories. With an interdisciplinary approach, I limited my search to at least one good study per discipline (e.g., psychology, psychiatry, neuroscience, science, social science, business). Also, it should be noted that I was unable to locate any information regarding intuition/decision making in the field of law enforcement. I was granted special access to law enforcement libraries (e.g., Michigan State Police Library), on-line resources, books and magazines. I consulted with many law enforcement individuals and librarians and to my surprise was not able to locate any information. This led me to believe that the topic of intuition/decision making as it pertains to law enforcement is unexplored territory. Therefore, it may be that this study of intuition as it pertains to the field of law enforcement is an original contribution.

Review and Critique of Literature on Intuition

Psychoanalysis, the creation of Sigmund Freud, taught “that the child is extraordinarily intuitive, compared with the adult, and that he recognizes immediately a momentary frown, the slightest sign of displeasure . . .” (Hendrick, 1958, p. 82-83).

Erich Fromm, a student of Freud, believed,

We are all intuitive; if we meet a person, we either like or dislike him on the basis of what we see; either he is honest or he is dishonest. That is intuitive in a sense; actually it is only an awareness of something which does not need to be reflected on intellectually because it is based on previous experience and on a certain capacity to ‘see’ (Evans, 1966, p. 14).

Psychologist Carl Jung, one time heir apparent to Freud, called intuition one of the four basic functions, along with thinking, feeling, and sensation. Jung believed

intuition to be “the natural capacity to perceive the slightest emotional fluctuation in others. It is more highly developed in some people than in others. Intuition becomes more sensitive and more accurate as our familiarity with a person increases” (Hall & Nordby, 1973, p. 64). Jung found imagination and intuition to be necessary for understanding. He stated that even though it is considered more popular for poets and artists to use the skill of imagination and intuition “they are equally vital in all the higher grades of science. Even physics, the strictest of all applied sciences, depends to an astonishing degree upon intuition, which works by way of the unconscious” (Jung, 1964, p.92).

Albert Einstein developed the same belief regarding intuition. According to William Eamon’ in his article, “Inventing the World: Einstein and the Generation of 1905,” “above all, for Einstein the mind must be free to think any thought: only in this way can scientific progress be guaranteed . . . The creation process is not only the most difficult part of science, it is also indescribable, for the creation of scientific concepts is fundamentally an intuitive, almost poetic experience” (Summer 1985, p. 349). According to Eamon, Einstein insisted, “the connection of concepts with empirical facts is not of a logical nature; it is an act for which intuition is the main guide, without which the universe would have no order” (Summer 1985, p.349).

Roy Rowan author of The Intuitive Manger (1986) claims the intuitive spark is often traced to an analogy. For example, he states,

Einstein struck upon his theory of relativity while riding on a train and absently watching another train pull ahead at a faster speed, giving him the sense of

moving backward – relatively. Louis Pasteur concluded that bodily infection was caused by external microorganisms after observing that grapes would ferment only if their skin was broken (p. 121).

Analogies such as these spontaneously create new ideas and concepts intuitively.

Shirley and Langan-Fox (1996) conducted a literature review on intuition and found that “researchers and scholars do not agree on what intuition actually means and bring differing perspectives to its study from many disciplines. A review of the literature yields many common ideas amongst the vast array of definitions offered” (p. 563). After discovering many definitions of intuition from various disciplines, the researchers synthesized the definitions of intuition as “a feeling with certitude on the basis of inadequate information and without conscious awareness of rational thinking” (p. 564).

Neuroscientists Antoine Bechara, Hanna Damasio, Daniel Tranel, and Antonio Damasio (Vogel, 1997), of the University of Iowa College of Medicine in Iowa City, conducted a study on patients with lesions in the ventromedial prefrontal cortex. (This is the area of the brain that is right above the eyes.) The purpose of their study was to explore why patients who performed well on intelligence-quotient and memory tests had difficulty making daily decisions and expressing emotions.

The researchers asked their brain-damaged patients and a “normal,” (i.e., not brain damaged) control group to perform a gambling task. The task was designed to resemble real life situations of risks, rewards, and penalties. Each subject was given four decks of cards (two “bad” decks and two “good” decks) and \$2000. They were told to win as much money as possible. When the control group turned over their cards they soon

discovered that the cards from the bad decks produced \$100 rewards and large penalties, whereas the cards from the good decks produced \$50 rewards and less severe penalties. This control group experienced stress as measured by skin conductance response (SCR) when they turned over a penalty card.

In contrast, the brain-damaged patients did not experience a hunch that some decks were better than others. When they turned over a penalty card they did not experience stress as measured by the SCR. “Antonio Damasio believes the ventromedial prefrontal cortex is part of a system that stores information about past rewards and punishments, and triggers the nonconscious emotional responses that normal people may register as intuition or a ‘hunch’” (Vogel, 1997, p. 1269).

In a related study, researchers Leda Cosmides and John Tooby of the Center for Evolutionary Psychology at the University of California in Santa Barbara conducted a review of the literature on judgment under uncertainty. Cosmides and Tooby (1996) explored the "frequentist hypothesis" which they defined as “the hypothesis that some of our inductive reasoning mechanisms do embody aspects of a calculus of probability, but they are designed to take frequency information as input and produce frequencies as output” (p. 3).

Cosmides and Tooby (1996) concluded their research findings with the suggestion that human intuition be respected. They found that:

The evolved mechanisms that undergird our intuitions have been subjected to millions of years of field testing against a very rich and complexly structured environment. With only a few years of normative theorizing under our belts,

there may still be aspects of real-world statistical problems that have escaped us. Of course, no system will be completely error-free, even under natural conditions. But when intuition and probability theory appear to clash, it would seem both logical and prudent to at least consider the possibility that there may be a sophisticated logic to the intuition. (p. 69)

Amy Baylor (1997) conducted a comprehensive literature review and presented a model of intuition with three main components: **immediacy**, **sensing relationships**, and **reasoning**. Each is viewed as different, yet each contributes to intuition. **Immediacy** is “the role of timing, . . . mind popping, . . . getting to the truth all at once, without the time-consuming effort of deliberation that is also a source of error” (p. 188). A **sensing relationship** “reflects the formulation of connections, an intrinsic property of intuition” (p. 188). And **reasoning** “ironically incorporates analytical process while functioning in contrast to them” (p. 188).

Figure 1 displays graphically Baylor’s concept of intuition with three overlapping circles, representing the three major components. Intuition is represented in the center of the three overlapping regions. The three subcomponents represent: “**Insight**, which characterizes the overlapping region of immediacy/relationships. **Metaphors and analogy induction** which characterizes the overlapping region of relationships/reason. **Non-metacognitive, action-oriented reasoning**, which represents the overlapping region of reasoning/immediacy” (p. 187-188).

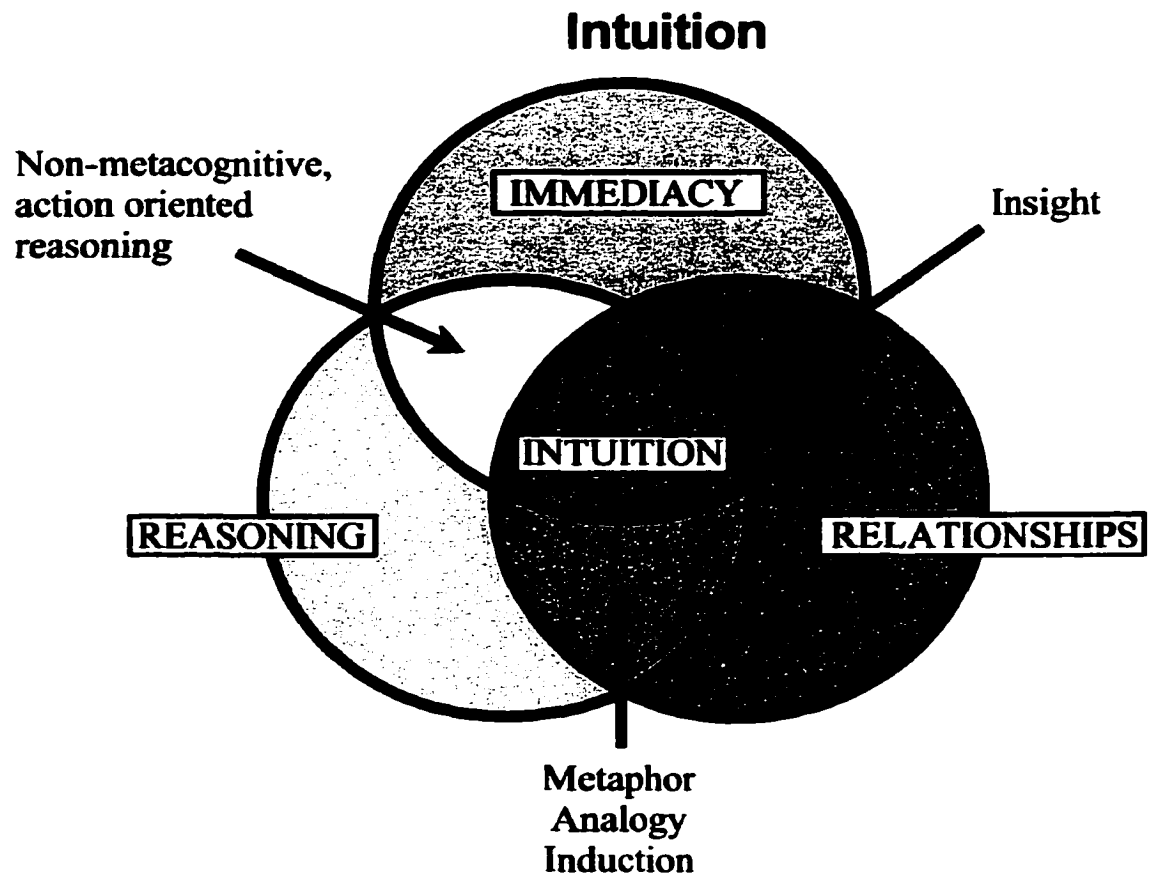


Figure 1. The three components of Intuition: immediacy, sensing relationships, and reasoning.

Subcomponents of Intuition occur as two of the three components overlap.

Insight occurs “in a narrow span of time without conscious control. Both insight and intuition sense and formulate relationships” (Baylor, 1997, p. 189). The area of **Metaphors and Analogy Induction** “requires reasoning from part to whole or from particular to general. Inductive reasoning presents such behaviors as reasoning logically, identifying connections among ideas, seeing all aspects of a problem, and getting to the

heart of a problem” (Baylor, 1997, p. 191). **Non-Metacognitive, Action-Oriented Reasoning** is “the immediate reasoning process of intuition functions in dialectical opposition to the process of metacognition. Whereas metacognition is thinking about action, intuition is the immediate part of thinking” (Baylor, 1997, p. 192.)

All three components and three subcomponents are necessary for intuition. There must be reasoning together with immediacy and sensing of relationships. How many discoveries (i.e., insights) have there been that were not intuitively realized? . . . Note that an erroneous reasoning process cannot be intuitive because an intuition by definition reflects accurate interpretation and meaningfulness. In this way intuition is never an accident but is a complex interaction of thinking processes (e.g., reasoning antithetical to metacognition), time (e.g., immediacy) and knowledge structures (e.g., sensing relationships). (Baylor, 1997, p. 192)

Sheri Eisengart and Christopher Faiver (1996) examined “the unconscious mechanisms and properties of intuition that have been uncovered via research in certain areas of psychology” (p. 42). They summarized key findings in the area of intuition as:

Intuition implies rapid understanding or knowledge without the conscious use of reasoning. Because intuition is generated by a process that occurs outside of conscious awareness, it has traditionally been dismissed in the academic domain as an irrational phenomenon that cannot be included in a scientific model for acquiring knowledge. Yet, research in the fields of cognitive psychology and human information-processing has revealed that intuition exists as a distinct nonconscious cognitive process that operates in a logical, rapid, highly structured

manner and that plays an integral part in learning and judgment. In addition, research has indicated that intuitive judgments frequently outperform, in terms of empirical accuracy, judgments based on conscious analytic cognitive processes. (1996, p. 41)

Whitecotton, Sanders, and Norris (1998) examined the intuitive combination of human judgment and mechanical prediction under varied information conditions. They found “a combination of human judgment and mechanical prediction can result in *better* decisions than either method in isolation” (p. 326). In weighing the strengths and weaknesses of human judgment and mechanical models, the summarized findings were:

The primary advantage of mechanical models is that they are not subject to many of the biases, limitations, and inconsistencies in human judgment. However, humans are also able to evaluate subjective information, or information which is difficult to measure and quantify, while models are typically based on objectively measured information. Humans also have the ability to capitalize on new information and changing conditions in a dynamic decision environment. (p. 327-328)

Whitecotton et al. (1998) also conducted two experiments that “varied the presence/absence of a mechanical prediction model and the availability/relevance of additional contextual information *not* captured by the mechanical model” (p. 334). In both experiments, auditors (subjects) made bond rating predictions based on “five accounting ratios: the debt to asset ratio, return on sales, the price to earnings ratio, the current ratio (current assets divided by current liabilities), and the investment turnover

ratio” (p. 335). “During the experiment, some of the auditors were provided with the prediction of the model for use as a decision aid. . . .An intuitive explanation of the model development process and a general explanation of its accuracy was provided” (p. 335-336). The second experiment “expanded the information asymmetry condition to include both relevant and irrelevant information” (p. 342). The conclusion of the study was that:

Human intuition was useful for incorporating relevant information outside the scope of the model, resulting in improved slope and reduced judgment scatter. The addition of irrelevant information was detrimental to judgment accuracy, causing an increase in bias and a reduction in slope. (p. 325)

Sharon Franquemont, a graduate professor of intuition at the John F. Kennedy University defines intuition as a specific skill in consciousness; apprehension. She believes “the purpose of intuition is a way of life that one’s soul has here on the earth” (Franquemont, 1999). Dr. Franquemont makes a distinction between the Intelligence Quotient (IQ) and the Intuitive Intelligence Quotient (InQ). She defines the IQ as coming from the brain. On her tape, she states:

The IQ is determined by ones ability to provide predetermined correct answers to questions focused on a variety of analytical skills. The InQ, on the other hand, is distributed throughout the body. The InQ reflects ones ability to go inward to seek answers. To tap a variety of intuition skills just like one does with their IQ skills. The InQ allows one to perceive connections and to thrive in the unknown.

Sharon Franquemont has developed steps to make each of the listener’s “seven reservoirs” more than just a personal resource to create a life path of illumination. Dr.

Franquemont takes the listener on a mind-expanding exploration of intuition. This seven-part system consists of the following:

1. **Intuition and knowledge** – simply knowing something without knowing why.
2. **Intuition and your body** – the “gut feelings” and “feelings in the heart” that often guide you in critical decision-making situations.
3. **Intuition and creativity** – the sudden “aha!” that is the essence of all great art, music, and creativity.
4. **Intuition and the big picture** – seeing the larger situation, and knowing how to organize people and projects.
5. **Intuition and vision** – understanding the purpose and proper direction for people and organizations.
6. **Intuition and relationships**- forming intuitive partnerships with others in sports, business, love and friendships.
7. **Intuition and the earth** – tuning in to Mother Earth and the great dance of creation (Franquemont, 1999).

Helen Palmer of John F. Kennedy University developed a short cassette tape program (1 tape), “Intuition Training with Helen Palmer” designed to help listeners cultivate intuition, both for practical purposes and to expand consciousness. Ms. Palmer directs the Center for the Investigation and Training of Intuition in Berkeley, California and teaches a series of exercises involving techniques such as visualization and

concentration to assist the listener to detach attention from the ordinary awareness to centering on scenes and events that are unknown to the conscious mind. One of her key tenants is as follows:

In the ordinary life, we are separated from deeper knowing by the boundaries of our bodies, the limits of our skin, and the boundaries of our thoughts and feelings. In the intuitive state of mind those boundaries dissolve and we find ourselves in a world of impressions in which all information can be shared. Intuition can open an extraordinary range of information. In those moments, we know without knowing how we know. We act effectively without knowing what to do, and we hear ourselves speak the truth before knowing what to say. (Palmer, 1990)

Claire Petitmengin-Peugeot (1999) conducted a phenomenological descriptive study of the intuitive experience. Twenty-four individuals were interviewed:

- Eight psychotherapists belonging to different schools of therapy regarding intuition in their private lives and/or concerning their patients lives.
- Two scientists' personal experience of intuition in their field of work.
- Two artists: a photographer's and a painter's experience of creative intuition.
- Twelve individuals regarding moments of intuition (i.e., long distance perception of a fire, death of a loved one, premonition of an accident, intuitive behavior adopted during a hopeless situation) that occurred in "daily life."

His methodology consisted of three stages: gathering descriptions of intuitive experiences, analysis and modeling of the descriptions, and comparing the established models. The results of the study produced a generic structure of the intuitive experience.

Intuition does correspond to an experience, that is, a set of interior gestures, which involve the entire being. Even if intuition keeps an unpredictable, capricious character, it is possible to encourage its appearing, and to accompany its unfolding, by a very meticulous interior preparation. This preparation does not consist of learning, in progressively accumulating knowledge. It consists of emptying out, in giving up our habits of representation, of categorization, and of abstraction. This casting off enables us to find spontaneity, the real immediacy of our relation to the world. For, astonishingly, our most immediate, most intimate experience is also the most inaccessible for us. A long detour is necessary before we receive awareness of it. (p. 77)

Transforming the view of psychiatry, Dr. Judith Orloff asserts that we are the keepers of an innate intuitive intelligence so perceptive that it can tell us how to heal and prevent illness. As a board-certified psychiatrist and assistant professor of psychiatry at UCLA she is proving that intuition is the bond between physical health, mental health, and spiritual connectedness. In her book, Dr. Judith Orloff's Guide to Intuitive Healing: 5 Steps to Physical, Emotional, and Sexual Wellness (2000a) she explores the impact of her ideas in over fifteen years of psychiatric practice.

In mapping out the healing process Dr. Orloff developed a framework of five intuitive steps to physical, emotional, and sexual wellness. She believes that each of us has the intuitive ability to access healing from within. Briefly the five steps are:

1. Notice your beliefs
2. Be in your body
3. Sense your body's subtle energy
4. Ask for inner guidance
5. Listen to your dreams

Throughout, Dr. Orloff illustrates in detail how the reader can draw on these steps to take an instinctively informed, proactive role in one's health. She divides intuitive healing into three parts; the body, emotions and relationships, and sexual wellness. Dr. Orloff then defines intuitive healing as:

It is listening to your body's signals-your own inner voice and heart, your spiritual connection-to find out how to become more physically, emotionally, and sexually whole. Intuition gives you a head start on preventing illness. By sensing warning signs you can act sooner to restore the integrity of your internal defense system, sometimes before symptoms appear. Human beings are all manifestations of energy. If illness occurs you can learn how to intuitively balance your energy to accelerate regeneration and repair. The knowledge you gain from listening translates positively to all areas of your life. It gives you practical direction to approach every problem. (p.7-8)

Dr. Orloff claims that reliable intuitive dream information stands out in very specific ways. She says one should watch for these clues:

- Statements that simply convey information.
- Neutral segments that evoke or convey no emotion.
- A detached feeling, like you're a witness watching a scene.
- A voice or person counseling you-as if you're taking dictation from an outside source.
- Conversations with people you never met before who give instructions about your health.

Dr. Orloff asserts "intuition is the future" (p.324). She predicts "in fifty years medicine will have graduated to a holistic art and science; intuition, spirit, and technology will be seamlessly integrated" (p.324). Dr. Orloff aspires to the belief that, "We physicians desperately need to restore our sense of the visionary, to fight to keep the spirit of medicine alive. And in the future of that spirit lays the integration of technological advances with intuition, the wedding of heart and mind." (Orloff, 2000b, p.1)

Jerome Groopman, M.D., author of Second Opinions: Stories of Intuition and Choice in the Changing World of Medicine, is the Recanati Professor of Medicine at Harvard Medical School, Chief of Experimental Medicine at Beth Israel Deaconess Medical Center, a leading researcher in cancer and AIDS, and a staff writer in medicine and biology for *The New Yorker*. Dr. Groopman, like the doctors mentioned previously,

seeks to help readers to make the best possible decisions about health and the future by balancing their intuition and information. He does this by sharing eight real-life stories which provide an inside view of the complex and rapidly changing world of medicine. Dr. Groopman hopes that “with greater knowledge and deeper intuition” it will contribute “to the remedy of illness and the enjoyment of health” (p. 8).

Mona Lisa Schulz, M.D., Ph.D. a neuropsychiatrist, scientist, and medical intuitive has an extensive background in clinical medicine and brain research. Also, she teaches health care professionals and others how to acknowledge, trust, and develop their intuitive skills. Dr. Schulz is the author of Awaking Intuition: Using Your Mind-body Network for Insight and Healing and is featured in the videotape, Health and Hunches: Unlocking Your Intuition.

Dr. Schulz claims there is (generally speaking) a biological difference in male and female intuitive ability. She quotes from Charles Darwin’s 1871 book, The Origin of the Species where he wrote that “in women, the powers of intuition . . . are more strongly marked than in man.” Dr. Schulz believes this concept of women’s intuition predated Darwin although he was probably the first to “quantify it scientifically” (Schulz, 1998, p. 317). Dr. Schulz claims “the idea that women have an innate ability to intuit, or sense, things in a manner that seems largely unavailable to men” is common among “folklore and folk wisdom in cultures all over the world” (p. 317).

One of the reasons women tend to be more intuitive than men is the difference between the right hemisphere (the emotional, visual, and intuitive part of the brain) and the left hemisphere (the intellectual, verbal, and logical part of the brain). Dr. Schulz

claims that women have a wider corpus callosum than men. This is the pathway between the two hemispheres. Apparently “women have denser connections between all the functional areas of their brains, even within one hemisphere. In scientific terms, women’s brains have more connectivity and are less compartmentalized than men’s brains, so that there is a lot of overlap in activity among the various areas” (p. 318). Dr. Schulz also states that

neuroanatomy shows that the way hormones affect certain areas of the brain, including the frontal lobe and the amygdala in the temporal lobe, tends to make women superior in tasks that require rapid shifts between the hemispheres, while men are superior at tasks that require the use of one hemisphere at a time. (p. 319).

Dr. Schulz claims left-handers of both sexes have been shown to have a wider corpus callosum (again, generally speaking). She states that they have more connections to their right hemisphere, and thus to their body and emotions. Therefore, left-handers have more parts of their intuitive network (p. 320).

In spite of the differences between the sexes Dr. Schulz postulates that: “If you have a brain and a body, if you have memories, if you sleep at night (or any other time), then, by definition, you have to be - you are – intuitive” (p.2). The purpose of her book is to help readers to use their intuition to make their body healthier and their life more pleasurable (p. 2).

Mary Hayes-Grieco author of the dual cassette recording, “Women’s spirituality/Develop your intuition,” weaves a tapestry of traditional religious beliefs, common sense, wisdom, humor, compassion, and hope regarding the topic of intuition. In her first cassette recording, “Women’s Spirituality” (1998) she states that

in ancient times God was perceived and worshiped as female; the divine mother.

Women were valued as leaders and contributors in society because of their close connection with the creator through intuition, their connection with nature, and their creative and pro-creative abilities. (Hayes-Grieco).

Hayes-Grieco claims women today are leading a movement in modern society that will benefit men and women alike. She believes the rebirth of respect for the feminine in today’s society will include a source of greater self-love and empowerment for women.

In the second cassette recording, “Develop Your Intuition” (1998) Hayes-Grieco encourages us to recognize and trust our intuition, inspires us to activate our intuition, and outlines a step-by-step approach to use our intuition to solve real life problems. She explains four ways in which we use our intuition which are:

1. Visual (Clairvoyance) – These individuals tend to make plans, have vivid dreams, see auras or energy fields, and have a picture that comes to mind.
2. Auditory (Clairaudience) – Audio intuitives hear a small voice within; the voice of the soul. They tend to talk to themselves, are more scientific, and can hear between the words.

3. **Sensing/Feeling (Clairsentience)** – These individuals tend to feel a sense of comfort or discomfort in the gut. They are sensitive to the feelings of others and can become overwhelmed by the emotions of others.
4. **Pure Knowing – “Flash Intuitive”** have all of the above. These individuals tend to be creative, artistic and view life as movement. (Hayes-Grieco, 1998)

She identifies the following four blocks to intuition:

1. **Ignorance** – The individual operates as though half asleep.
2. **Fear of being discovered** – This is a historical problem of the collective unconscious psyche due to the years of persecuting individuals for being witches, evil, etc.
3. **Doubt** – The voice within that tells us we can’t prove what we cannot see, measure, quantify, etc.
4. **Glamour** – The individuals who adores intuition for they believe it makes them special, more spiritual; an exaggerated sense of self. (Hayes-Grieco, 1998)

Paul A. Willax, professor of Entrepreneurship and chairman of the Center for Business Ownership wrote an article entitled, “Intuition Payoffs Can be Enormous in Business” in LI Business News, September 1, 2000 issue. Willax gives many examples of entrepreneurs who received enormous payoffs when they used their power of intuition. Willax stated:

Ted Turner attributes the creation of his revolutionary 24-hour news format to gut feeling. Similar acknowledgements have been made by Steve Jobs, creator of the Apple Computer, John Reed, CEO of Citicorp, and Fred Smith, founder of Federal Express. The engineers of Chrysler credited their intuition with decisions that helped them develop and introduce the successful minivan concept before General Motors and Ford. Appreciating the importance of intuition, companies like General Foods, Shell Oil, Phillips Petroleum, Proctor & Gamble and Digital Equipment Corp. have supported the development of intuitive skills among their managers. (p. 3)

Also, the use of one's intuitive abilities is more acceptable in some cultures than others (e.g., Native American). Denise Linn, a Native American author of several Native American books records teachings that were passed down verbally through the generations. She claims that Native American heritage and other ancient cultures view intuition as a sense of "knowing," where one's personal power can reopen the source of abundant and continual supply of ancestral wisdom within. The use one's intuitive skills is considered to be an act of wisdom and instinctive in nature. In Sacred Legacies – Healing Your Past and Creating a Positive Future (1998), Linn provides exercises and meditations to teach the reader to:

- Get in touch with the strength and spirit of their ancestors
- Explore their personal myth
- Restructure their past

- Heal the family tree
- Speak to their descendants through the art of giving
- Revive rituals and create traditions for the twenty-first century.

Linn warns the reader to not be concerned about whether or not the information gained from the exercises is factual and historical in nature for:

The need for everything you experience to be historical fact can block your intuition. If you are constantly acting as your own censor, you block your ability to perceive and receive information. During this exercise, you are attempting to tap into the “ancestral soul,” which is the culmination of all the experiences and voices of your ancestors that resound within you. . Even if the data you receive is not factually accurate, this exercise is a valuable tool for accessing your intuition, and the information you gain can contain powerful symbols of your inner life and your heritage. (p. 41-42)

Linn claims, “each of the answers you receive assists the activation of your intuition and offers metaphors for further understanding your heritage” (p. 53). This includes all heritages. We all have roots, be it biological or adoptive, ethnic, cultural, mythological, and spiritual. Each of us has a place as both a descendant and an ancestor.

Daniel Goleman, Ph.D., chairman of the department of psychology at Harvard University, wrote a book entitled, Emotional Intelligence, (1995) in which he claims that

“the intuitive signals that guide us . . . come in the form of limbic-driven surges from the viscera . . . literally, gut feeling” (p.53). His basic definition of emotional intelligence has five main domains, which are as follows:

1. *Knowing one's emotions*: Self-awareness – recognizing a feeling *as it happens* is the keystone of emotional intelligence.
2. *Managing emotions*: the capacity to soothe oneself, to shake off rampant anxiety, gloom, or irritability.
3. *Motivating oneself*: the ability to control emotions to reach a goal.
4. *Recognizing emotions in others*: Empathy is a fundamental people skill.
5. *Handling relationships*: managing the emotions in others. (p. 43)

Dr. Goleman (1995) states on his cassette recording Emotional Intelligence, that he found emotions know or have intelligence and believes that they should not be dismissed. He conducted a study on the neuro-peptides in the stomach and found that “they look similar in design and work similar to the neuro-peptides in the brain. The physical chemical qualities of the stomach or gut are similar to that of the brain. The implications of this study are the gut has intelligence. Therefore, intelligence is not limited to the brain.

Another form of intelligence is “social intelligence,” which is “the ability to form accurate interpretations about people – their experiences, their individual characteristics, their relationships, their concerns, and their emotions by observing the clues contained in non-verbal signals” (Archer, 1980, p. 4). Dr. Archer described the Social Intelligence

Quotient (S.I.Q.) as unlike intelligence measured in other I.Q. tests. Instead, he says, S.I.Q. is untaught and principally unconscious, but capable of being refined or improved upon. Archer found that some individuals were more capable than others of accurately determining the relationship of the individuals. He used a series of photographs paired with a specific social intelligence question.

Archer's book, entitled How to Expand Your S.I.Q. - Social Intelligence Quotient (1980), is based upon photographs that show an individual or a group of people together. Each picture was paired with a question attempting to measure an individual's social intelligence in the areas of recognizing intimacy, lovers and strangers, kinship clues, and signs of power and competition. The correct answer is provided in the page following each photograph, along with clues. Twenty-four anonymous judges who viewed the photographs provided the clues. The accuracy percentage scores of the judges on each question were provided in order to assess the level of difficulty. Also, a brief summary of the judges' comments was provided for readers to "expand their own social intelligence by sharing in the perceptions and insights of this large group of judges" (Archer, 1980, p. 1).

Archer has said that most I.Q. tests include questions about the definition of words, analogies, and the meaning of phrases. These tests contain an extraordinary verbal bias. These tests measure how well a person can comprehend words. Even when drawings are included in I.Q. tests, these drawings tend to be mathematical shapes or abstract figures. The ability measured by I.Q. tests is, therefore, limited to verbal intelligence (p. 4).

Arlene Burney and Rick Bener [produced] the photographs used in Archer's (1980) book. At the time, Arlene Burney was a student attending Archer's course on nonverbal communication at the University of California. Rick Bener was a former student and a current friend of Archer. All photographs were taken in the "field" rather than staged in a studio. As a result, Archer describes the photographs as "spontaneous and splendidly candid." (p. 4)

Out of all the literature reviewed, Dr. Dane Archer's definition of social intelligence was most helpful. I have chosen to replicate Archer's Social Intelligence Quotient Test in part as an experimental design for this research. The following five sources of information were also important for this study:

1. Shirley and Langan-Fox (1996) synthesize a definition of intuition as "a feeling with certitude on the basis of inadequate information and without conscious awareness of rational thinking" (p.564).
2. Amy Baylor model (1997) showed a complex interaction of thinking processes involved where "all three components and three subcomponents are necessary for intuition. There must be reasoning together with immediacy and sensing of relationships (p. 192).
3. Helen Palmer (1990) claims "Intuition can open an extraordinary range of information" (cassette).
4. Dr. Judith Orloff (2000) asserts that we are the keepers of an innate intuitive intelligence. And in the future of that spirit lies the integration of

technological advances with intuition, the wedding of the heart and mind.

She optimistically predicts, “intuition is the future ”(p. 324).

5. Dr. Daniel Goleman (1995) finds that intelligence is not limited to the brain. He found emotions have intelligence and developed a basic definition of emotional intelligence with five main domains (p. 43).

Each of the five sources provided key information toward developing an interdisciplinary view of intuition. From all the literature reviewed a rich tapestry of new learning was woven. With this understanding I was able to move toward my next task of developing my methodology.

Chapter Three: Methodology

The methodology of this research began with searching for a reliable psychological testing instrument that would measure intuition. To my dismay, I was not able to locate one that had been assessed for reliability and validity. The closest I could come to measuring intuition as defined earlier was to use Dr. Dane Archer's S.I.Q. test. Unfortunately, this test was never been assessed for reliability and validity. I consulted several psychologists, particularly those on my committee and it was agreed that since a better instrument was not available to measure intuition it would be acceptable to use Dr. Archer's S.I.Q. test. Considered was the possibility that if there were significant differences found in the study among various groups, that this study might aid in assessing the reliability and validity of Dr. Archer's test. It is important to note that this test falls short of what is ideal for research however, as a preliminary study it may prove to be helpful in paving the way for further research when a valid instrument is available to test for intuition.

The focus of my research about intuitive abilities was in an area exemplified by social intelligence. I used Dr. Dane Archer's S.I.Q. test as a means of determining whether or not detectives and uniform officers are more accurate in making intuitive judgments about people than a demographically comparable population of non-police individuals (see Appendix A, Social Intelligence Quotient (S.I.Q.) Test for a sample of testing instrument). The null hypothesis was: "There is no difference in intuitive abilities between the detective and uniform groups compared to a demographically comparable population of non-police individuals." I also wanted to determine whether or not cadets,

individuals who [are in training to become police officers] tend to be more intuitive than non-police individuals. The null hypothesis was: “There is no difference in intuitive abilities between the cadet group (defined as individuals who are in training to become police officers) compared to a demographically comparable population of non-police individuals.” I conducted the same set of tests with the experimental groups as the control group. I compared test results from the four study groups, each totaling a minimum of 40 individuals:

1. Police detectives or criminal investigators.
2. Uniform officers, who are not and had never been detectives or criminal investigators.
3. Cadets: Police academy students. In the early stage of training – new recruits.
4. Control group: non-police officers, people who never have been police officers nor have they been family members of police officers. No member of this group has ever engaged in any law enforcement activity as a profession.

An item analysis was conducted on each individual S.I.Q. question per group. Percentages were calculated for the number of correct and incorrect responses as well as total scores per group. The chi-square was calculated with degrees of freedom which is a frequency distribution. The chi-square compares the actual values. Small values of chi-square indicate little or no association is likely. A frequency distribution determines the range of values for each variable.

I also administered the Watson-Glaser Critical Thinking Appraisal test (WGCTA) to each member of the four study groups. I used the WGCTA to determine whether or not intuition is linked to critical thinking, a measurable intellectual skill, or whether intuitive skills are a separate ability. The WGCTA test (Watson & Glaser, 1980a) is an 80-item, self-report, paper and pencil inventory, which provides five subtest scores that estimate “critical thinking as a composite of attitudes, knowledge, and skills” (p. 1). The WGCTA has been designed to appraise a variety of groups and may be used with high school and college students. The exercises include problems, statements, arguments, and interpretations of material similar to those encountered daily at work, in the classroom, and in newspaper and magazine articles. Watson and Glaser (1980b) defined the five subtests as follows:

Test 1. **Inference:** Discriminating among degrees of truth or falsity of inferences drawn from given data.

Test 2. **Recognition of Assumptions:** Recognizing unstated assumptions or presuppositions in given statements or assertions.

Test 3. **Deduction:** Determining whether certain conclusions necessarily follow from information in given statements or premises.

Test 4. **Interpretation:** Weighing evidence and deciding if generalizations or conclusions based on the given data are warranted.

Test 5. **Evaluation of Arguments:** Distinguishing between arguments that are strong and relevant and those that are weak or irrelevant to a particular question at issue. (p. 2)

There are 16 questions in each of the five above-listed subtests. Watson and Glaser (1980b) identify three frequent uses of the WGCTA:

- 1) to measure gains in critical thinking in schools, colleges, and business and industrial settings; (2) to predict success in certain types of occupations or instructional programs in which critical thinking is known to play an important role; (3) to determine, for research purposes, the relationship between critical thinking abilities and other abilities or traits” (p. 9).

The WGCTA was assessed for reliability, validity, correlations with other tests and norms. The reliability of the WGCTA “was assessed in several ways. Estimates were made of the tests internal consistency, the stability of test scores over time, and the correlation between scores on alternate forms.” The validity of the test “was examined in a number of different settings, with test users who had a variety of needs and purposes in mind.” The WGCTA “has been shown to relate to various measures of academic achievement, including the Stanford Achievement Tests, overall grade point averages, and individual course grades.” It has “also related to traditional measures of general intelligence. . . High correlations (were) found between scores on the WGCTA and scores on the Otis and Otis-Lennon Mental Ability Tests, the California Test of Mental Maturity, and the Wechsler Adult Intelligence Scale, Verbal Scale. High correlations (were) found with other ability measures, such as the Miller Analogies Test, the College Entrance Examination Board, the Scholastic Aptitude Test; and the American College Test (p. 10-13). Norms were calculated for high school students by grade level, college students by program, grade level, and location (e.g., nursing program, MBA, Community

College, University, Northeast, South). “Separate norms were not calculated for by ethnic group or sex” (p.4-7). Detailed validity and reliability studies of the WGCTA are presented in the test manual, found in Appendix B – “Watson-Glaser Critical Thinking Appraisal Manual’s: Other Statistical Information.”

Demographic data were compiled on the following ten items (see Appendix C, for a sample Participant Data Form):

- Assigned subject number
- Group (e.g., cadet, uniform, detective, control)
- Gender (male or female)
- Age
- Number of years in law enforcement
- Type of agency (e.g., Sheriff’s Department, City Police Department, Township Police Department, State Police Department, Federal Agency, Military Agency, Other)
- Agency State (e.g., Michigan, Pennsylvania, Connecticut)
- Agency size (Determined by number of law enforcement officers)
- Assignment information (e.g., How long in current assignment? Are you a Uniform Law Enforcement Officer? Have you ever been a detective or criminal investigator? Number of years as a detective/criminal investigator. Have you ever requested or applied for investigative

assignment? Were you ever selected for investigative assignment but did not want the assignment? Supervisor (type rank). Other assignment.)

- Jurisdiction size (determined by estimated # of residents)

The demographic data enabled me to identify specific groups and compare WGCTA and S.I.Q. test scores. For example, the largest population to compare was gender. The second largest population to compare was police (cadet, uniform and detective group) with non-police (control group).

Participants were volunteers gathered from three states (e.g., Connecticut, Michigan, and Pennsylvania). Police detectives and police officers (uniforms) came from a variety of police departments (e.g., Sheriff's Department, City Police Department, Township Police Department, State Police Department, Federal Agency, Military Agency, and Other). Police academy students (cadets) came from a variety of community colleges in the early phase of their training; and the control group from Northwestern Michigan Community College's credit and non-credit classes. The credit classes tended to be a younger group, which was equivalent to the cadet group in regards to age and education level. The non-credit, business management classes tended to be an older population that provided a relatively equivalent population in age and education level to the police officer population (e.g., uniform and detective groups) (see Appendix C, Participant Data Form for details).

This research was conducted in compliance with the ethical standards as mandated by the American Psychological Association (APA) (see Appendix D, APA Ethical Principles of Psychologists and Code of Conduct for details). At the beginning of

the testing process all subjects signed an Informed Consent Form indicating their willingness to participate (see Appendix E, Consent to Participate in Research Project Form for details). All subjects were assigned a control number and remained anonymous. Individuals who wanted to know their personal scores were instructed to write their phone number on the cover of the S.I.Q. Questionnaire. All individual information gleaned from the project is considered confidential. After all, group information is right here in the dissertation. Only this researcher and her statistical consultant(s) viewed the research data. Completed forms are stored at Management & Behavior Consultants, PC in the locked file room ensuring the same security as client records.

Slides were shown from a portable projector at the same distance for each testing situation. A zoom lens was used to adjust the image on the screen to be consistently the same size regardless of the size of the testing room. Since I tested at various settings for the convenience of subjects (e.g., Police Departments and Colleges), provisions were made for adequate lighting, ventilation, desk space, ample sharpened soft-lead (No. 2) pencils, and quiet to ensure that all subjects experienced minimal external distractions while taking the tests. Once the 37 slides were shown (taking an approximate total of 15 minutes), the lights were turned on. Each subject was instructed to complete the Watson-Glaser Critical Thinking Appraisal test according to the directions provided in the Manual. This test was **not** timed. When subjects completed the test, they were instructed to turn in the testing material quietly to the researcher and leave the testing room.

Tests were hand scored by this researcher and re-checked for accuracy. To assure confidentiality of subjects, a number was assigned to each test packet. Demographic data, raw scores of WGCTA, and S.I.Q. were compiled and placed on a SPSS grid and transferred to Data Desk 6.1 Version for statistical analysis.

The measure I used is an analysis of covariance that Snedecor and Cochran (1989) define as

a technique that combines the features of analysis and regression. The analysis of covariance has numerous uses: (1) to increase precision in randomized experiments; (2) to adjust for sources of bias in observational studies; (3) to throw light on the nature of treatment effects in randomized experiments; (4) to study regressions in multiple classifications. (p. 374-375)

The four groups consisted of: police detectives or criminal investigators, police officers (uniforms) not holding criminal investigator positions, police academy students (cadets), and non-police individuals-the control group. Since I.Q. really wasn't a factor ANOVA was used to look for any signify groups. This allowed me to test my hypothesis as if all of the people in all four groups had the same I.Q.'s. Therefore, I.Q. scores would not affect S.I.Q. scores. There were, of course many other variables that could be used, such as age, gender, and years of experience as an officer or detective.

Specifically, Analysis of covariance (ANCOVA), analysis of variance (ANOVA), multivariate analysis of variance and covariance (MANOVA) and an item analysis of each S.I.Q. score were conducted. Briefly, the idea of ANCOVA is to control for factors

and how the inclusion of additional factors can reduce the error of the sums of (deviation) squares (SS), and increase the statistical power (sensitivity) of the design. The variable measured (e.g., S.I.Q. test score) is called a *dependent* variable. [The variables that were manipulated (e.g., WGCTA test score, age) are called *factors* or *independent* variables.] This technique of ANCOVA combined the feature of analysis and regression. In essence, in ANCOVA we performed a regression analysis within each cell to partition out the variance component due to covariates.

One-way classifications (ANOVA), two-way classifications (ANCOVA) and multivariate analysis of variance and covariance (MANOVA) were utilized. In a one-way (ANOVA) classification there was no consideration of an interaction. This procedure was intended for single independent variables with only two levels. In a two-way classification (ANCOVA), two sources of variation were recognized in an interaction. The multivariate analysis of variance and co-variance used two or more independent variables. This was suitable for both statistical control of non-experimental variables and analysis of experiment-generated variables at the same time. In ANCOVA we could test each factor while controlling for all others. Since the world is complex and multivariate in nature, and instances when a single variable completely explains a phenomenon are rare, this feature is necessary.

Analysis of groupings consisted of the following:

- WGCTA vs. distribution of each group (e.g., cadet, uniform, detective, control).

- S.I.Q. scores vs. age of each distribution (e.g., cadet, uniform, detective, control).
- Gender by distribution vs. S.I.Q. scores vs. age of each distribution (e.g., cadet, uniform, detective, control).
- S.I.Q. scores vs. age of each distribution (e.g., cadet, uniform, detective, control).
- An analysis of variance for age.

The statistical procedure of multiple regression analysis was used to estimate the effect of multiple independent variables. For example, I was interested in determining if a person's S.I.Q. score was influenced by gender, age, group (e.g., cadet, uniform, detective, control), and how much each of these variables affects a person's S.I.Q. score. Simple correlation will indicate whether or not two variables are associated, but multiple regression allows the researcher to estimate how much change in the dependent variable is produced by a given change in an independent variable. Multiple regression is especially useful in that it can handle a large number of independent variables simultaneously, thus permitting the researcher to estimate the effects of one variable while controlling for others. We know, for example, that S.I.Q. score is correlated with gender, age, and group (e.g., cadet, uniform, detective, control), among many other variables. Regression allows the researcher to estimate the contribution of each independent variable to S.I.Q. score. Multiple regression produces coefficients that indicate the direction and amount of change in the dependent variable to be expected from a unit change in the independent variables. Thus, if the dependent variable is S.I.Q.

score, a regression coefficient of age *may* indicate that all groups, and both genders exhibited higher S.I.Q. scores as they became older meaning we become more intuitive as we mature.

Lastly, an item analysis was conducted on each of the 37 S.I.Q. questions to see if any patterns emerged (see Appendix F, Item Analysis Data Spreadsheet). All research data was recorded in the form of a spreadsheet regarding each subject to be analyzed. Each row recorded data on one individual, which is called a case. Each column contains the values of one variable for all the subjects. In addition to the person's name (which was deleted for confidentially reasons and replaced with a number) there were many other variables. Quantitative variables include group, gender, agency type, State of residence and so on are category my Clinical Supervisor variables; age in years, years of experience, agency size and so on are quantitative variables.

In practice, users of statistics use software to automate their calculations and graphics. The Data Desk statistics software is a modern menu-driven statistics software package. Data Desk is widely used for statistical analyses.

Jack Berman, Statistics Professor at Northwestern Michigan College assisted this researcher in the statistical process. Dr. William Tedford, Professor Emeritus of Psychology Department at Southern Methodist University in Dallas, Texas reviewed the statistical analyses and findings. And Dr. Wayne Hill supervised the entire research process.

Chapter Four: Findings

There were a total of 233 subjects for whom complete data was available. Data was recorded into a statistical program as follows: The factors to be analyzed were the sources (e.g., WGCTA scores, groups, gender, and age). Each source was assigned a code or abbreviation (e.g., WTS, GRP, SEX, AGE), a value (e.g., random; uses chance to reduce the variation between experimental and control groups or fixed; meaning a value that does not change), and a probability variable (e.g., continuous with an infinite number of values, discrete with a finite of distinct and separate values).

All of the 233 subjects were volunteers. Police detectives and police officers (uniforms) came from a variety of police departments (e.g., Sheriff's Department, City Police Department, Township Police Department, State Police Department, Federal Agency, Military Agency, and Other) gathered from three states (e.g., Connecticut, Michigan, and Pennsylvania). Police academy students (cadets) came from a variety of community colleges in the early phase of their training; and the control group from Northwestern Michigan Community College's credit and non-credit classes. The credit classes tended to be a younger group, which was equivalent to the cadet group in regards to age and education level. The non-credit, business management classes tended to be an older population that provided a relatively equivalent population in age and education level to the police officer population (e.g., uniform and detective groups).

Table 1, was the foundation to setting up analysis of variance factors. The name of each variable was given a code consisting of three letters for further abbreviation and

an assignment as a continuous random or fixed discrete variable. Once factors were named, coded, and assigned the statistical process for analysis of variance could begin.

Table 1

Factors Analyzed

<u>Source</u>	<u>Code</u>	<u>Assignment</u>	<u>Probability</u>
WGCTA Score	WTS	Random	Continuous
GROUP	GRP	Fixed	Discrete
GENDER	SEX	Fixed	Discrete
AGE	AGE	Random	Continuous

The findings in an ANCOVA analysis where we considered all pairings between the factors (e.g., WGCTA scores, groupings, gender, and age) showed no strong relationships between any of the factors or their interaction. Most likely this was due to there being too many variables to explain the differences in scores. S.I.Q. scores were considered as a dependent variable (the passive variable in a relationship or the one that is affected by an independent variable) in relationship to WGCTA scores, groupings, gender, or age. Note the level of significance was set at 0.001 alpha level, or less than one in one thousand probability at which the null hypothesis would be rejected. In general, social researchers operate with alpha levels of 0.05, 0.01, or 0.001.

Table 2 shows the results of a two-way analysis of variance on S.I.Q. scores. As can be seen, there were no statistically significant relationships or interactions found between or among variables. Again this could be due to there being too many variables to explain the differences in scores.

Table 2

Summary Table of ANCOVA with Total WTS Scores and Level of Gender, Group, and Age

Source of Variation	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate					
S.I.Q. Score	138457	1	138457		
Main Effects					
WTS	3.06	1	3.06	0.72	0.55
GRP	39.88	3	13.29		
SEX	2.62	1	2.62		
AGE	7.93	1	7.93	1.87	0.40
Interactions					
WTS x GRP	16.09	3	5.36	0.73	0.54
WTS x SEX	0.72	1	0.72	0.10	0.75
GRP x SEX	17.88	1	5.96	0.81	0.49
WTS x AGE	4.23	1	4.23	0.58	0.45
GRP x AGE	5.03	3	1.68	0.23	0.88
SEX x AGE	1.02	1	1.02	0.14	0.71
Within Subjects	1582.25	215	7.35931		

Table 3 shows a one-way ANCOVA with no interactions. There is a statistically significant difference in mean scores on S.I.Q. for the “group” category (see area highlighted in yellow and the asterisks *** on the right hand side of the probability value). That is, there was a significant difference in the “group” category. What that significance is at this point in the statistical process is unknown.

Table 3

Summary Table of ANCOVA with Total S.I.Q. Scores

Source of Variation	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate					
S.I.Q. Score	138457	1	138457		
Main Effects					
WTS	7.59	1	7.59	1.06	.3051
GRP	136.99	3	45.66	6.35	.0004***
SEX	1.05	1	1.05	0.15	.7030
AGE	4.41	1	4.41	0.61	.4343
Within Subjects	1631.22	227	7.19		
Total	1789.32	233			

*** $p < .001$

Consider Figure 1, analysis for variance for S.I.Q. with side-by-side boxplots.

Boxplots are primarily a tool for comparing distributions of the same variable or similar variables in two or more groups. Boxplots will help us to visualize the variations between groups. The upper portion of the boxplot represents the 75th percentile, the mid-line is the median score or 50th percentile, and the lower line of the boxplot is the 25th percentile score. Notice that control group scored significantly lower in all percentiles. This suggests a lower overall distribution for the control group. Tables 4 and 5 that follow provide the statistical data to further explain boxplots.

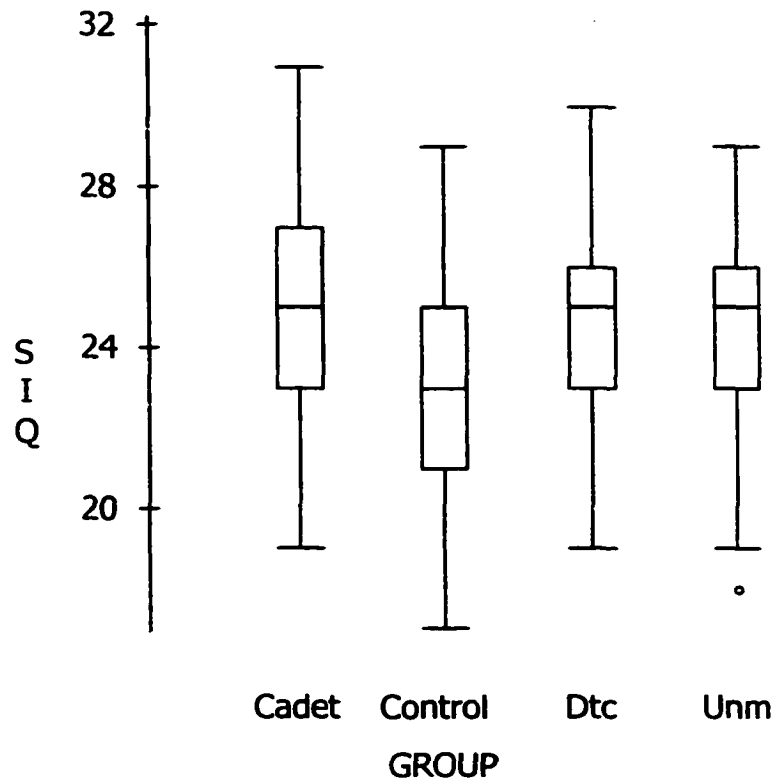


Figure 1. Side-by-side boxplots of four groups with large within group variation.

Table 4

Summary Table of ANCOVA for S.I.Q. Scores Per Group

Source of Variation	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate					
S.I.Q. Score	138457	1	138457	19371	<u><0.0001</u>
Main Effects					
GRP	145.32	3	48.44	6.78	.0002***
Total	1789.32	233			

*** $p < .001$

Note the area highlighted in yellow with asterisks (***) on the right of probability number 0.0002 in the table above shows a significant difference in S.I.Q. means per group.

Table 5 shows an analysis of covariance for S.I.Q. scores. The findings here show no significant difference between means when the control group was omitted. (Note the area high lighted in yellow with asterisks (***) on the right of probability number is less than .001 in the table below.)

Table 5

Summary Table of ANCOVA for S.I.Q. Scores: Non-control Group

Source of Variation	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate					
S.I.Q. Score	104358	1	134358	14511	<u>≤0.0001</u>
Main Effects					
GRP	18.51	2	9.26	1.29	0.2788***
Total	1219.51	169			

*** $p < .001$

In Table 6 analysis of variance for S.I.Q. scores each group was named, the number of subjects in each group was provided, the mean, median, standard of deviation, and the 25th and 75th percentiles were statistically calculated. Note all the numbers appear lower for the control group. This suggests a lower overall distribution for the control group.

Table 6

Analysis of Variance for S.I.Q. Scores per Group

Group	Count	Mean	Median	StvDev	25 th %tile	75 th %tile
Cadet	40	25.23	25	2.93	23.50	27
Control	64	23.13	23	2.65	21	25
Detective	77	24.84	25	2.55	23	26.25
Uniform	53	24.34	25	2.67	23	26

Note: StvDev = Standard of deviation. %tile = percentile.

In Figures 2 and 3 the data are displayed in the form of bar graphs. This quickly compares the number of female and male participants in the study and the number of participants in each of the four groups respectfully. The heights of the bars show the number of participants in each category.

Control Group Sub-distributions:

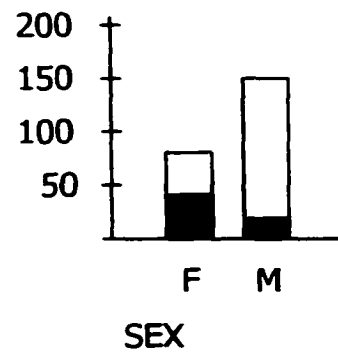


Figure 2. Bar graph of the number of males and females who participated in the study, with the numbers within the control group shown in black. Notice in the control group there are twice as many females as males.

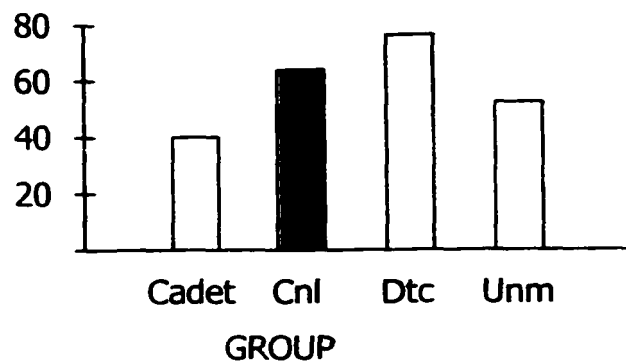


Figure 3. Bar graph of the number of participants in the control group as compared to the cadet, detective and uniform groups. Note that the control group has the second largest number of participants, with the largest group being the detectives.

Quantitative data can sometimes take on so many values that a graph of a distribution is clearer if nearby values are grouped together. The most common graph of the distribution of one quantitative variable is a histogram. In Figures 4-6 are histograms with values from the control group shown in black.

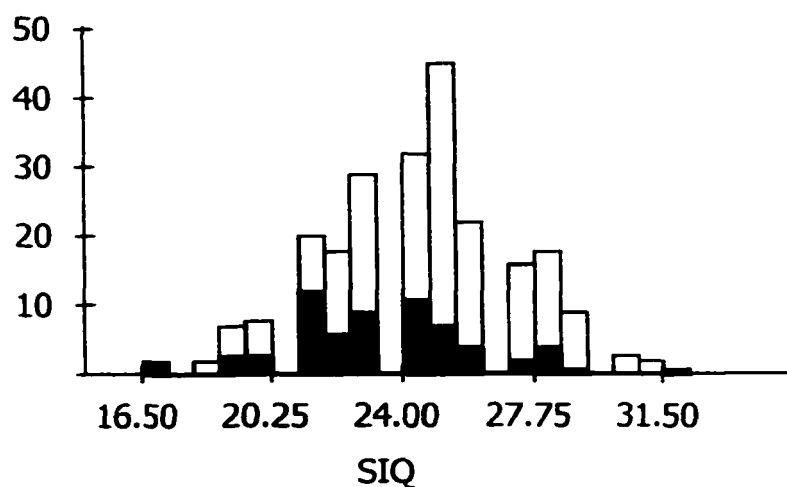


Figure 4. Histogram of the number of all participants based on age with control group sub-distributions. Notice the control group has a larger percentage of younger participants as compared to the other three groups (e.g., cadets, uniforms, and detectives).

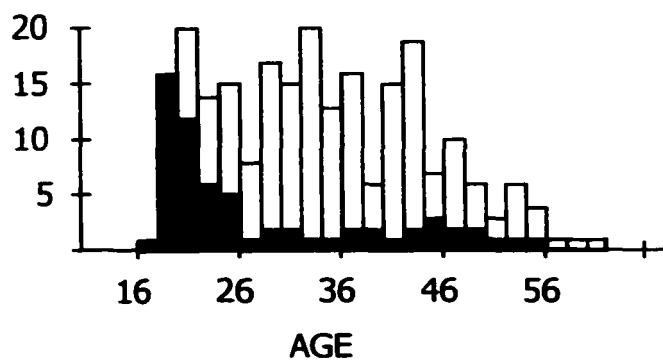


Figure 6. Bar graph of the number of participants in each of the four groups (e.g., cadet, control, detective and uniform officers) WGCTA scores with control group sub-distributions. The control group is shown in black.

In Table 7-8 and Figure 7 is analysis of variance for S.I.Q. scores with gender comparisons. In Figures 8-12, the females are shown in black. Note there was no significant means in relationship to gender.

Table 7

Analysis of Variance for S.I.Q. Scores versus Gender

Group	Count	Mean	Median	StvDev	25 th %tile	75 th %tile
Female	82	23.96	24	2.66	22	26
Male	152	24.52	25	2.82	23	26

Note: StvDev = Standard of deviation. %tile = percentile.

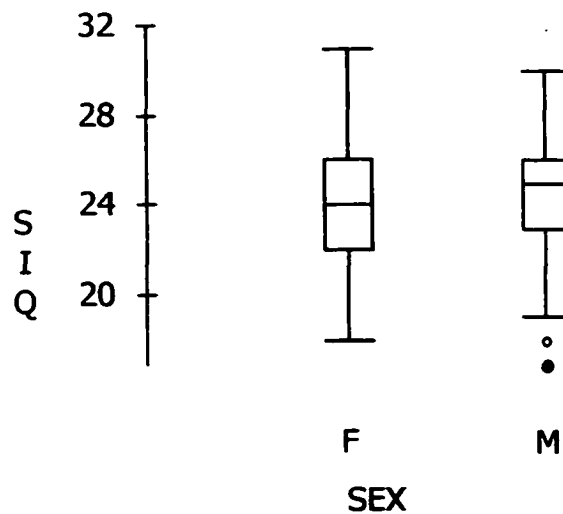


Figure 7. Side-by-side boxplots of S.I.Q. scores based on gender with small within group variation. Note there is no significant difference in means in relationship to gender.

Table 8

Summary Table of ANCOVA with S.I.Q. Scores versus Gender

Source of Variation	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate					
S.I.Q. Score	138457	1	138457		
Main Effects					
SEX	16.49	1	16.49	2.16	0.1432***
Total	1789.32	233			

*** $p < .001$

Distributions with Female Sub-distributions:

A bar graph of the number of female and male subjects who participated in the study quickly compares the size of each group as shown in Figure 8. Several distributions with female distributions (dark area) were statistically analyzed and displayed in the form of bar graphs or histograms (see Figures 9-12).

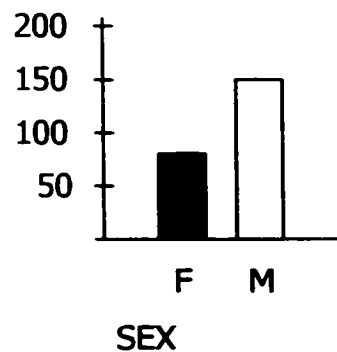


Figure 8. Bar graph of the number of females and males who participated in study. Note there were twice as many males as females. This is appropriate since there are more males than females in law enforcement.

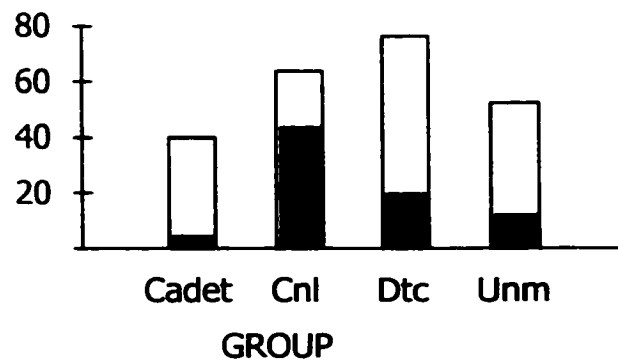


Figure 9. Bar graph of the number of participants in each of the four groups (e.g., cadet, control, detective and uniform officers) with gender sub-distributions. Note that there is not a balanced gender ratio, which is a confounding factor.

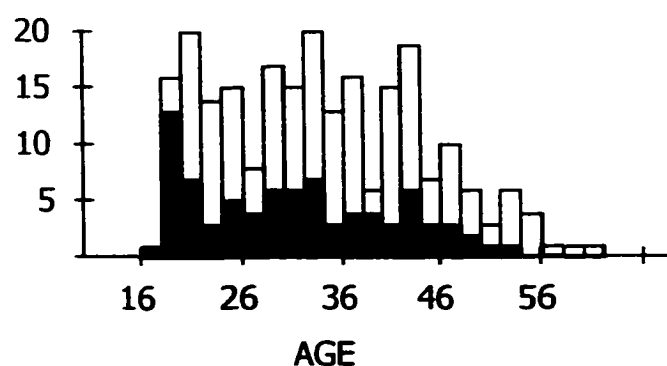


Figure10. Histogram of the number of participants in each of the four groups (i.e., cadet, control, detective and uniform officers) based on age with gender sub-distributions. The black sub-histogram displays the age distribution of just the females.

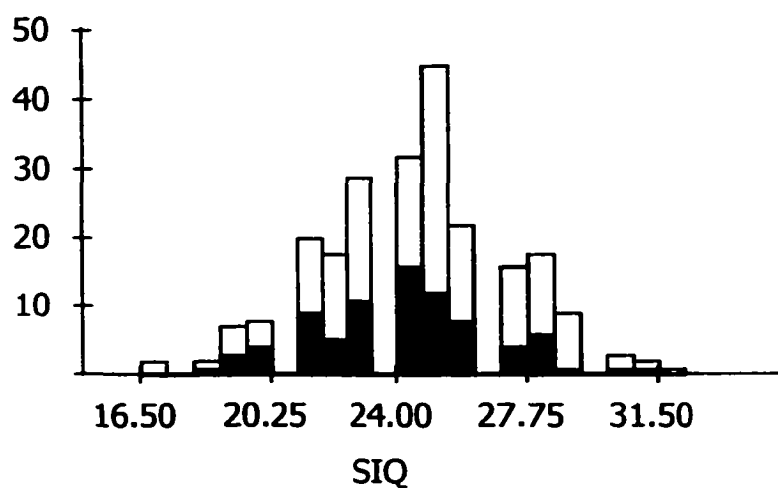


Figure 11. Distribution of S.I.Q. scores for all subjects, with female number shaded in black.

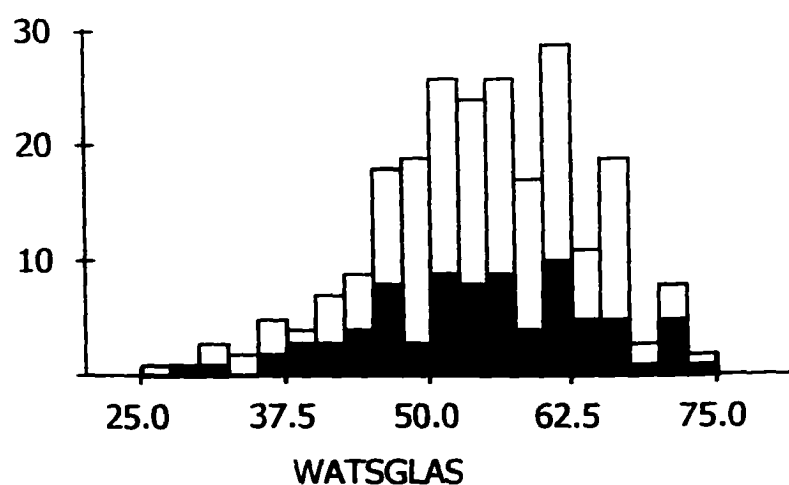


Figure 12. Histogram distribution of WGTCA scores for all subjects, with female number shaded in black.

The most effective way to display the relationship between the two quantitative variables S.I.Q. scores and age was to use a scatterplot. A color was assigned to each group and x's and o's were used to distinguish between genders. See Figure 13 and Table 9 for details). The dependent variable was S.I.Q. score and the constant variable was age.

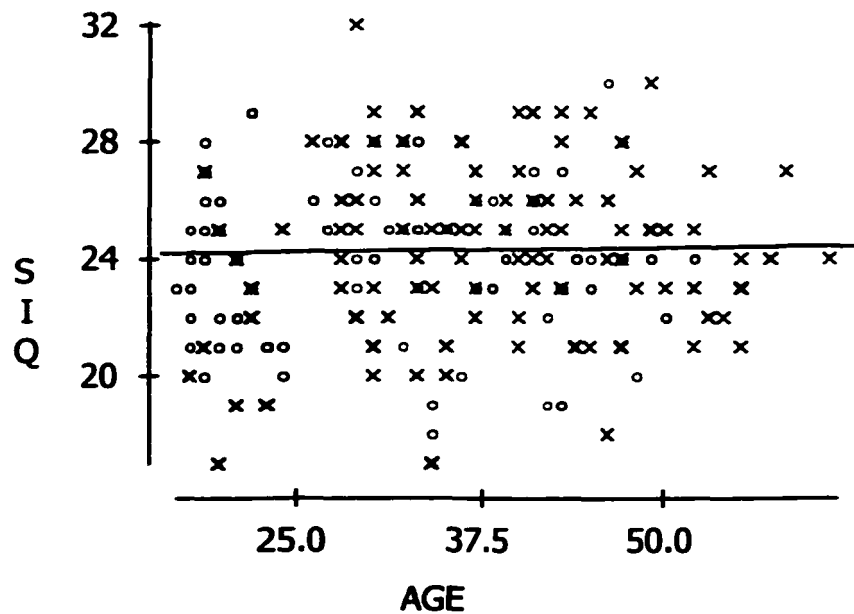


Figure 13. Regression analysis with S.I.Q. as the dependent variable and age as the constant variable. S.I.Q. scores and age in a scatterplot smoother with gender sub-distributions. The regression line shows no matter what age or gender there is a wide range of values. Note there is no correlation between S.I.Q. scores and age as demonstrated in the highlighted area R squared 0.0%. Note. x=males, o=females, Yellow=cadets, Red=control, Green=detectives, Blue=uniform.

Table 9

Summary Table of ANCOVA for S.I.Q. Scores; Based on Age

Source of Variation	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Regression	0.80	1	0.80	0.10
Residual	1788.52	232	7.71	
Variable	Coefficient	s.e. of Coefficient	t-ratio	p
Constant	24.14	0.62	38.9	≤ 0.00
Age	5.71	0.02	0.32	0.75

Note. R squared = 0.0%. R squared (adjusted) = -0.4%. $s = 2.777$ with $234 - 2 = 232$ degrees of freedom.

Again the most effective way to display the relationship between the two quantitative variables S.I.Q. and WGCTA scores was to use a scatterplot. The same colors were assigned to each group and x's and o's were used to distinguish between genders. See Figure 14 and Table 10 for details. The dependent variable was S.I.Q. score and the constant variable was WGCTA scores.

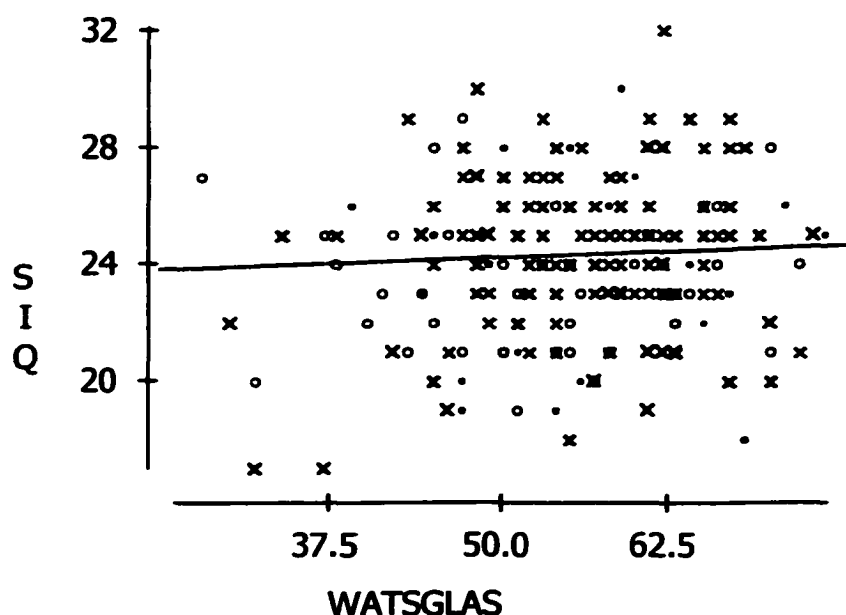


Figure 14. Figure 4.20 Regression analysis with S.I.Q. as the dependent variable and Watson-Glaser Critical Thinking Appraisal (WGCTA) as the constant variable. WGCTA scores and age in a scatterplot smoother with gender sub-distributions. The regression line shows no matter what S.I.Q. score or the WGCTA score there is a wide range of values. Note. There is no correlation between SIQ and WGCTA scores as demonstrated in R squared 0.3%. x=males, o=females, yellow=cadets, red=control, green=detectives, blue=uniform.

Table 10

Summary Table of ANCOVA for S.I.Q. Scores and WGCTA Scores

Source of Variation	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Regression	4.67	1	4.67	0.60
Residual	1784.64	232	7.69	

Variable	Coefficient	s.e. of Coefficient	t-ratio	p
Constant	23.49	1.08	21.0	≤ 0.00
WGCTA	0.02	0.02	0.78	0.44

Note. R squared = 0.3%. R squared (adjusted) = -0.2%. $s = 2.774$ with $234 - 2 = 232$ degrees of freedom. There was no correlation between S.I.Q. and WGCTA scores as demonstrated with R square equaling 0.3%.

In conducting a statistical analysis of WGCTA scores per group the mean, median, standard of deviation, and percentiles (25th & 75th) were calculated (see Table 11 for details). Note the yellow highlighted area, which shows the cadet group, scored lower on the WGCTA than the other three groups (control, detective, and uniform). In Table 12 an analysis of variance for WGCTA scores was conducted. Note the yellow highlighted area that shows a significant difference in the mean WGCTA scores among the groups. In Table 13 in using an analysis of variance we find that when the Non-cadet group is excluded there is no significant difference in WGCTA mean score. In Figure 15, boxplots were used for comparing distributions of the same variable, WGCTA scores in

four groups. Note the differences between centers shows that the cadet group scored lower than the other three groups. This was not a significant difference.

Table 11

Analysis of Variance for WGCTA Scores per Group

Group	Count	Mean	Median	StvDev	25 th %tile	75 th %tile
Cadet	40	48.66	49	8.81	43.50	54
Control	64	53.30	54.50	10.80	45.50	62
Detective	77	56.30	57	7.62	52	61
Uniform	53	56.34	55	7.80	50.75	63.25

Note: StvDev = Standard of deviation. %tile = percentile. The Cadet group scored lower on the WGCTA than the other three groups (i.e., control, detective, and uniform).

Table 12

Summary Table of ANCOVA for WGCTA Scores

Source of Variation	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate					
WGCTA Score	686996	1	686996	8811.5	≤ 0.0001
Main Effects					
GROUP	1854.95	1	618.316	7.9306	$\leq 0.0001^{***}$
Total	19787.10	233			

*** $p < .001$

Table 13

Summary Table of ANCOVA for WGCTA Scores; Non-cadet group

Source of Variation	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate					
WGCTA Score	593690	1	593690	7607.60	≤ 0.0001
Main Effects					
GROUP	390.81	2	195.405	2.50	$\leq 0.0001^{***}$
Total	15296.2	193			
*** $p < .001$					

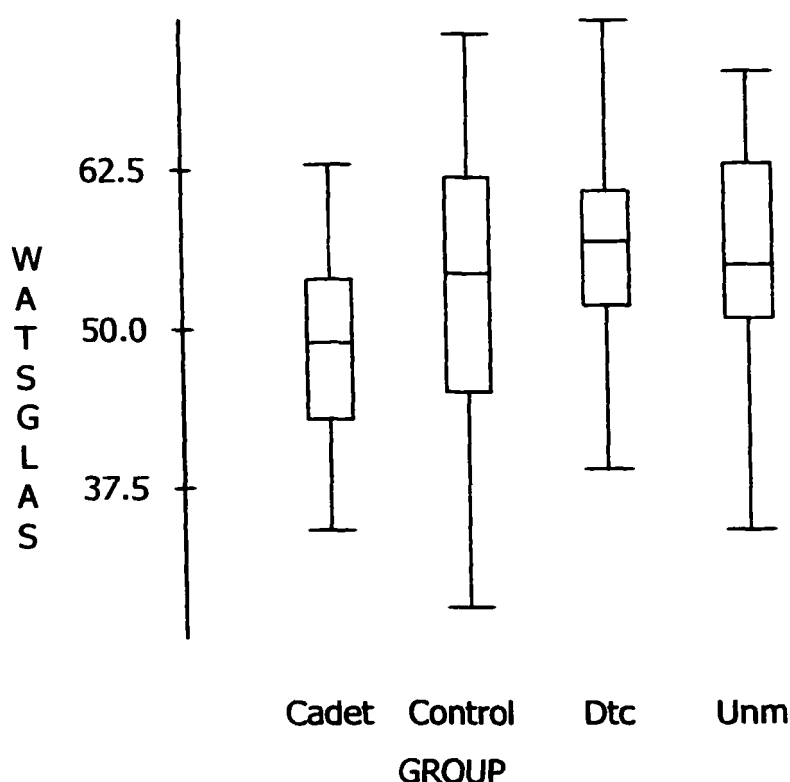


Figure 15. Side-by-side boxplots of Watson-Glaser Critical Thinking Appraisal scores based on grouping (e.g., cadet, control, detective, and uniform) with small with-in group variation among the control, detective and uniform groups. This suggests that WGCTA scores for the cadet group is lower than the other groups. (See Table 11 for ANOVA confirmation.)

In an ANCOVA analysis where we considered all pairings between the factors (e.g., WGCTA scores, groupings, gender, and age) there appears to be no strong relationship between any of the factors or their interactions. This appears to be due to there being too many variables to explain the differences in scores. S.I.Q. scores were the dependent variable in relationship to WGCTA scores, groupings, gender, or age.

The control group's mean S.I.Q. score was significantly lower than the other groups individually and collectively. There is no significant difference in S.I.Q. scores among the non-control groups (e.g., cadets, uniform, and detectives). What creates this difference is unknown. Therefore, it is very likely that the following null hypotheses are false which indirectly provides evidence that the research hypotheses are probably true:

1. There is no difference in intuitive abilities between the detectives and uniform groups compared to a demographically comparable population of non-police individuals.
2. There is no difference in intuitive abilities between the cadet group (defined as individuals who are in training to become police officers) compared to a demographically comparable population of non-police individuals.

The four groups were not of equal size or gender distribution, which was a confounding factor. There were twice as many males as females who participated in the study. However, this difference was appropriate in this study because there are far more males than females in law enforcement.

There was a good cross-section of ages with some sort of interaction with the variable of age. However, it appears to be more due to the group rather than age alone (the cadet group was younger than the uniform group and the detective group). Due to the nature of individuals who enroll in cadet training it would be expected that this group would be younger in age than those who are in the uniform group and detective group.

As this research project ended the question arose as to whether some groups performed better than others on individual S.I.Q. questions. Therefore, an item analysis

was conducted. The findings showed the cadet, detective, and uniform groups scored higher individually and collectively, as stated earlier. However, there were a few inverse correlations where the control group scored higher (see S.I.Q. Item Analysis questions # 8, 15, 18, and 21 for details found in Appendix F). The reason for this inverse correlation on four questions is unknown.

In conclusion, the cadet, uniform, and detective groups individually and collectively appear to be more intuitive than the control group as measured by the S.I.Q. The most interesting and unexpected finding in the project was that the cadet group performed as well as the experienced officers (e.g., uniforms and detectives). S.I.Q. scores did not appear to increase based on experience in policing. It may be that individuals who are intuitive tend to gravitate toward Law Enforcement careers or possibly careers that involve working with people. Further study would be needed to draw more conclusive findings.

Chapter Five: Conclusions, Judgments, and Recommendations

The data from this study could be interpreted from many perspectives. The field of psychology, claims that we are all born with the ability to become intuitive and that some individuals may have more innate ability than others (e.g., Freud, Fromm, Jung). From this perspective, this study discovered that those who are more intuitive might tend to gravitate toward professions that involve working with people, as in the populations studied (e.g., cadets, uniform officers, detectives).

The literature reviewed from an interdisciplinary perspective revealed intuition to be a skill that can be developed and/or enhanced. It is up to each individual to develop the skill, just as one may develop muscles in the body. There are many who believe that intuition can be taught. Popular books, videos and cassette programs profess to teach the student “how to” develop their intuitive abilities. Following is a listing of a variety of self-help books, videos, and cassette programs available:

- “Awaking intuition: Using your mind-body network for insight and healing” by Mona Lisa Schulz, M.D., Ph.D. (1998, book).
- “Dr. Judith Orloff’s guide to intuitive healing: 5 Steps to physical, emotional, and sexual wellness” (2000, book).
- “Emotional Intelligence” by Daniel Goleman, Ph.D. (1995, book and cassette).
- “Health and hunches: Unlocking your intuition” by G. Harris (2000, videotape).

- “How to expand your S.I.Q.-Social Intelligence Quotient” by Dane Archer, Ph.D. (1980, book).
- “Intuition: Your Electric Self” by Sharon Franquemont (1999, cassette).
- “Intuition Training with Helen Palmer” (1990, cassette).
- “Practical Intuition” by L. Day (1996, cassette).
- “Second Opinions: Stories of intuition and choice in the changing world of medicine” by Jerome Groopman, M.D. (2000, book)
- “The Intuitive Manager” by Roy Rowan (1986, book).
- “Scared Legacies – Healing Your Past and Creating a Positive Future” by Denise Linn (1998, book).
- “Women’s spirituality/Develop your intuition” by Mary Hayes-Grieco (1998, cassette).

The concept of “women’s intuition” as superior to men was not validated in this study (Darwin, 1871; Schultz, 1998; Hayes-Grieco, 1998). It appears that there are far more similarities between the sexes than difference. However, it may be more socially acceptable for women to use their intuition than men. This trend appears to be changing as the skill of intuition is becoming valued in the medical field (e.g., Drs. Groopman, 2000; Orloff, 2000; Schulz, 1998), businessmen (e.g., Willax, 2000) and businesses (e.g., General Foods, Shell Oil, Phillips Petroleum, Proctor & Gamble and Digital Equipment Corp.).

Those who performed well on the S.I.Q. test were able to recognize relationships in several areas (e.g., recognizing intimacy, lovers and strangers, kinship clues, and signs of power and competition). This showed that expertise developed in one situation might be utilized successfully in other situations. What an individual learns in one situation or context can be transferred to other situations or contexts as long as the underlying logic of different situations or contexts remains the same.

An interesting note is that this researcher was sometimes aware of what population she was testing (e.g., cadets, control group). Yet, at other times the group was mixed with uniform officers and detectives. Some subjects would be in uniform and some would be in their street clothes. Due to there being times that the rank/position of the individuals being tested was unknown it would seem that the Rosenthal's "expectation effect" would not affect the findings in this study.

The Rosenthal's "expectation effect" was an experiment that was conducted during the 1964-1965 school year in an elementary school. Harvard's Robert Rosenthal conducted the experiment at Oak School. Children were randomly selected and labeled as "special" and "magic." Teachers were told the names of the children who were "unusual." At the end of the term, all were tested. The students labeled as "special, magic, and/or unusual" performed better in the eyes of their teachers and scored significantly higher on standardized IQ tests. In other words, teachers' expectations had improved the academic performance of their students. Where they expected success, they inspired it.

The general concern of Rosenthal & Jacobson's book entitled, Pygmalion in the Classroom (1968) is about self-fulfilling prophecies: "how one person's expectation for another person's behavior can quite unwittingly become a more accurate prediction simply for its having been made" (p. vii). The concept of self-fulfilling prophecies is not a new idea. One reason may be that people do not like to be wrong.

Police officers/detectives must deal with multiple stimuli (e.g., visual, audio, olfactory) from many sources when identifying relationships among real people, rather than as depicted in the still life black and white slide photographs. Therefore, the use of slides is limited when compared with what takes place in real life situations.

Photographs can pick up odd behavioral details that we tend to miss, overlook, or suppress. We have all viewed photographs that record blinks, odd facial expressions, or gestures that we were not aware of viewing or producing. Archer (1980) found in one of his photographs that only 13 percent of the judges picked the correct answer as to which team won a game of tennis. In the choice photograph of one team, one of the men has his tongue hanging out. Most of the judges misinterpreted the man's protruding tongue (p. 144).

Dan Archer found judges used different styles of social intelligence. Some used a deductive method and others an inductive method. Both deduction and induction are forms of logic. When using deduction one reasons from the general to the specific. And the process of induction is to reason from the specific to the general. In the logical deductive method, "a person first makes a decision about a question and then looks selectively for clues in terms of this prior decision" (p. 152). In the inductive method, "a

person examines the clues with as few preconceptions as possible and then tries to construct a decision based on careful examination of the available evidence” (p. 152). Archer’s conclusion was the inductive approach was “far more successful than the logical approach” (p. 152). As an example, Archer wrote the following regarding the picture the judges misinterpreted the man’s protruding tongue:

One man said, “It takes hard work to win (his tongue is hanging out).” I think an intriguing analysis was made by the woman who said, “The man with his tongue out looks like a ham. He may be trying to pretend that it was a rough game, although he probably enjoyed every minute of it and loved winning.” (p.144)

The S.I.Q. test that I used consisted of 37 black and white slides chosen from photographs used in Archer’s (1980) book, How to Expand Your S.I.Q. - Social Intelligence Quotient. Since this test has never (to my knowledge) been used as a psychological test to measure an individual’s S.I.Q., there are no validity or reliability studies done to date.

As technology improves, the use of video with audio would provide more information to the senses than black and white photographs. It would be interesting to develop an intuition test that utilized virtual reality to increase authenticity. This type of technology is used today in police training. This is often referred to as FATS; Fire Arms Training Simulation.

I attempted to keep each group the same in size and ratio regarding gender and age. Perforce, the cadet group will always be younger in age because people must go through training prior to becoming an officer. In my study, many of the control group

were drawn from college classes and were, therefore, more similar to the cadets than the other groups. I would suggest that in future studies the control group have the same gender and age ratio as the other three groups combined.

In psychology, as in all fields it is vital to keep current on new research findings, testing instruments, and so on. As new tests are developed, better instruments to measure intuition may appear. Some may provide a different perspective on, or definition of, the nature of intuition.

In this study, the cadet group scored similarly to the detective and uniform groups. As this was unexpected, further studies would need to be done to confirm accuracy and/or determine why this seemingly invaluable skill does not develop further along the individual's career path. A twenty or thirty year longitudinal study with periodic retesting might give valuable information in this area and answer the question:

Additional studies may be undertaken relative to other occupations. It would be interesting, for example to test individuals who have chosen careers in business; human resources, management, and entrepreneurial fields. One could explore whether other professions that involve working with people (e.g., physicians, psychiatrists, psychologists, social workers, CEO's, teachers) are more intuitive than professions in which people work alone or with things (e.g., bookkeeper, truck driver, engineer, computer programmer).

Some of the literature reviewed suggested a connection between right or left hand dominance and intuition (Schulz, 1998). A similar project could be developed based on

this model that would explore the correlation of these factors and S.I.Q. scores. I did not gather data with regard to whether the subjects were left or right handed.

Also, cultural issues were not considered in this study. Since the use of one's intuitive abilities is more acceptable in some cultures than others (e.g., Native American and other ancient cultures) it may be an interesting factor to add a cultural component to future studies. (Linn, 1998) This information could have been gathered on the Participant Data form in Appendix C.

In conclusion, for a psychologist to better assist police agencies in selecting new employees, performing promotional evaluations, and choosing the right talent for special assignments (e.g., administrator, detective, patrol officer,) it may be helpful to interview a core cadre of officials to locate their best employees. Once located it would be interesting to conduct a comprehensive interview of each individual. To ask the star employees what skills, personality types, home/work environmental conditions and so on they believe is necessary in their position to work optimally. From the data collected a profile could be developed for each position. The psychologist could use this information when choosing what questions to ask during interviews and in choosing testing instruments.

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Appendix A

Social Intelligence Quotient (S.I.Q.) Questionnaire

Police Officer

Intuition

Research Project

S.I.Q. TEST

ANSWER SHEET

Sponsored by

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SOCIAL INTELLIGENCE QUOTIENT***(S.I.Q.) TEST***

Participant's Control # : _____	Date: _____
Participant Type: _____ (P or NP)	
Participant's Name: _____	
(NP) Occupation: _____	
Test Site:(city) _____	(state) _____

Recognizing Intimacy

1. What is the relationship between these two people?

- a. husband and wife
- b. student and teacher
- c. close friends

2. These two people have known each other for:

- a. an hour
- b. a year
- c. five years

3. These two people:

- a. have met for the first time a few hours ago
- b. have known each other for four years and are in love
- c. are brother and sister

4. This couple is married. They have known each other:

- a. nine months
- b. nine years
- c. thirty-nine years

5. These two people are:

- a. strangers who never met before
- b. brother and sister
- c. a married couple

6. The man with the beard is in both photographs. In one he is with a friend he has known for seventeen years; in the other he has known the person less than a week. Which person has he known longer?

- a. The man
- b. The woman

7. The same man is in both pictures. In one, he is seated with his wife; in the other, he is seated with an old friend. Which picture shows the husband and wife?

- a. Picture 1
- b. Picture 2

8. These two people are:

- a. brother and sister
- b. a couple married four years
- c. strangers who have just met

9. This woman is talking:

- a. to a woman who is her boss
- b. to a man friend of three years
- c. with an eleven-year-old boy whom she is baby-sitting

10. These two people are married and have known each other for:

- a. six months
- b. six years
- c. sixteen years

11. These two people are:

- a. a couple married eight years
- b. friends but not a couple
- c. strangers posing together

12. These two people:

- a. are strangers posing together
- b. are brother and sister
- c. have been a couple for three months

Lovers and Strangers

13. These two people are:

- a. a couple together one year
- b. strangers posing together

14. These two people are:

- a. a couple together two years
- b. strangers posing together

15. These two people are:

- a. a couple married two years
- b. strangers posing together

16. These two people are:

- a. a couple married five years
- b. strangers posing together

17. These two people are:

- a. a married couple
- b. strangers posing together

18. These two people are:

- a. a couple together five years
- b. strangers posing together

19. These two people are:

- a. a married couple
- b. strangers posing together

20. These two people are:

- a. a married couple
- b. strangers posing together

Kinship Clues

21. Which of these two men is the father of the little boy?

- a. the man on the left
- b. the man on the right

22. Which of these two women is the mother of these children?

- a. the woman on the left
- b. the woman on the right

23. This young man is the son of one of these two men. Who is the father?

- a. Man 1
- b. Man 2

24. The woman on the telephone is the daughter of one of these women. Who is the mother?

- a. Woman 1
- b. Woman 2

25. This woman is:

- a. waking her husband from a nap
- b. watching an arm-wrestling match
- c. playing with her baby daughter

26. The man on the right in each picture is the father of:

- a. the little girl
- b. the little boy

27. Is this woman the boy's mother?

- a. yes
- b. no

28. These two people are:

- a. strangers posing together
- b. father and son
- c. salesmen in a car dealership

29. These two women are:

- a. a mother and daughter having a picnic
- b. clerks in a stationery store who are on their lunch break
- c. strangers who agreed to be photographed together

30. In one of these two pictures, the man with the beard is talking with his son. Which picture shows the son?

- a. Picture 1
- b. Picture 2

Signs of Power and Competition

31. These two women are co-workers. Who is in charge?

- a. Person 1
- b. Person 2

32. These two men just played basketball. Who won?

- a. Person 1
- b. Person 2

33. These two men are co-workers in a bookstore. Who is in charge?

- a. Person 1
- b. Person 2

34. These two women just played a game of racquetball. Who won?

- a. Person 1
- b. Person 2

35. These four men just played a game of tennis. Which team won?

- a. Team 1
- b. Team 2

36. These two women work together, one is a sale clerk, and one is the manager. Which one is the manager?

- a. the woman on the left
- b. the woman on the right

37. These two men have just arm wrestled. Who won?

- a. Person 1
- b. Person 2

Appendix B

Watson-Glaser Critical Thinking Appraisal Manual's: Other Statistical Information

RELIABILITY

The reliability of the *Critical Thinking Appraisal* was assessed in several ways. Estimates were made of the test's internal consistency, the stability of test scores over time, and the correlation between scores on alternate forms.

The degree of internal consistency in the CTA was measured by calculating split-half reliability coefficients. The usual method of correlating responses to alternate items was not employed, since groups of items are associated with given reading passages on the CTA and thus lack complete inter-item independence. In constructing the two split-halves, items related to a given passage were kept together and items from all CTA subtests were represented on each of the two split-halves.

The manner in which items were assigned to given split-halves is shown in Table 9, for Forms A and B. This table shows, for example, that the 16 items on the Inference subtest for Form A were split so that Items 1-10 (referring to the first two passages on the subtest) are included in the first split-half scores, and Items 11-16 (referring to the third passage on the subtest) are included in the second split-half scores.

Scores for items on each of the halves were totaled separately, and the resulting summed scores were correlated. The coefficients obtained were corrected for test length using the Spearman-Brown formula.

Split-half reliability coefficients were calculated for ten of the CTA norm groups. Samples were chosen for reliability studies so that at least one representative from each of the kinds of groups used for norming might be

included. These coefficients are shown in Table 1 along with the means, standard deviations, sample size, and standard errors of measurement associated with each group. The coefficients range from .69 to .85.

The stability of responses to the *Critical Thinking Appraisal* over time was assessed by administering it twice to a group of college students ($N = 96$), with an interval of three months between testing periods. The means and standard deviations obtained were virtually identical for the first testing period (Mean = 57.4; SD = 8.1) and the second testing period (Mean = 56.8; SD = 8.4). The correlation between responses at the two time periods was .73, reflecting reasonable stability of the measure over time.

Alternate-form reliability was calculated by correlating responses of subjects who took both Forms A and B of the CTA. For a group of twelfth grade students ($N = 228$) the correlation of responses to Form A and those to Form B is .75. The means and standard deviations obtained were equivalent for Form A (Mean = 46.6; SD = 9.8) and Form B (Mean = 46.6; SD = 9.3).

The reliability estimates reported here are consistent with those observed for total test scores of the CTA forms Ym and Zm. They are sufficiently high to warrant use of the CTA in group administration and research studies.

VALIDITY

The validity of a test is not an attribute that can be described by a single study or isolated correlation coefficient. It is a joint characteristic of the test and the purpose for which the test is to be used. Accordingly, the validity of the CTA was examined in a number of different settings, with test users who had a variety of needs and purposes in mind. Evidence of the test's validity has been drawn from studies using the revised Forms A and B, as well as the earlier Forms Ym and Zm.

One important use of the CTA is its application to the measurement of critical thinking in classroom settings. In examining the test's content validity, it should be noted that there is not general agreement on the definition of critical thinking. However, within each instructional setting where teachers attempt to develop or improve the critical thinking abilities of their students, there is a contextual frame of reference from which teachers must work. The extent to which the CTA measures a sample of the specified objectives of such instructional programs is an indication of its content validity.

Instructional settings have also been useful in helping to establish the construct validity of the CTA. If the CTA is to measure a trait called critical thinking, experience in programs aimed at developing this ability should be reflected in changes in CTA performance.

TABLE 9

Item Assignment for Calculation of Split-Half Reliability Coefficients

Subtest	Form A		Form B	
	First-Half Items	Second-Half Items	First-Half Items	Second-Half Items
Inference	1-10	11-16	1-6	7-16
Recognition of Assumptions	17-19 26-29	20-25 30-32	19-21 25-27 31-32	17-18 22-24 28-30
Deductions	33-35 41-45	36-40 46-48	36-38 45-48	33-35 39-44
Interpretation	49-51 55-57 62-64	52-54 58-61	52-54 57-59 62-64	49-51 55-56 60-61
Evaluation of Arguments	68-70 74-76	65-67 71-73 77-80	68-70 74-80	65-67 71-73

Split-Half Reliability Coefficients, Means, Standard Deviations, and Standard Errors of Measurement

Group Description	Form A					Form B				
	N	Mean	SD	SEm	r ^a	N	Mean	SD	SEm	r ^a
Ninth-grade students	243	41.4	7.3	4.1	.69	230	41.6	8.9	4.4	.76
Tenth-grade students	213	44.5	8.6	4.5	.73	214	43.4	8.8	4.3	.76
Eleventh-grade students	170	47.2	9.6	4.7	.76	163	46.3	9.8	4.5	.79
Twelfth-grade students	144	46.4	9.5	4.6	.76	154	46.7	9.5	4.6	.77
Students in junior and community colleges	148	53.2	9.4	3.9	.83	173	53.8	9.1	4.1	.79
Freshmen in four-year colleges	139	55.8	8.6	3.8	.80	139	55.3	8.2	3.8	.79
Upper division students in four-year colleges	212	59.5	8.5	3.6	.82	193	59.3	8.1	4.0	.75
Nursing students in a baccalaureate program at a university in the South	129	56.6	7.3	3.9	.72	121	56.0	6.9	3.8	.70
Third-year medical school students at a university in the West	127	66.6	8.6	3.3	.85					
Police officers in a large southern city						150	55.4	9.2	4.2	.79
National sample of sales representatives from a large business machine company	66	60.2	8.7	3.5	.84	80	59.1	8.8	3.7	.82

Note: Examinees who omitted more than five items were excluded from these analyses.

^aThe reliability coefficients (r) presented are based on split-half correlations corrected by the Spearman-Brown formula.

Sorenson (1966), for example, found that participants in laboratory-centered biology classes showed greater change in CTA scores than did members of classes where the teaching method was predominantly a traditional lecture approach. Similarly, Agne and Blick (1972) found that CTA performance was differentially affected by teaching earth science through a data-centered, experimental approach as compared with a traditional lecture approach. In both of these studies, critical thinking was cited as a key curriculum element for the nontraditional teaching methods.

Students at advanced levels in liberal arts training have been found to perform at higher levels on the CTA than those who have had less exposure to a college curriculum. Fogg and Calia (1967), for example, note changes in CTA performance in a longitudinal study of liberal arts students over a period of two years. Similarly, Burns (1974) found that upper division undergraduates had higher CTA scores than lower division students. In

the normative data presented in this Manual, this trend is also apparent, with upper division college students performing at higher levels than incoming freshman students.

CORRELATIONS WITH OTHER TESTS

The Critical Thinking Appraisal has been shown to relate to various measures of academic achievement, including the *Stanford Achievement Tests*, overall grade point averages, and individual course grades. These correlations are shown in Table 11. CTA scores have also been shown to be effective predictors of performance by police academy recruits in their academic preservice training (Sherman, 1978).

Not unexpectedly, the CTA is also related to traditional measures of general intelligence. These relationships are described by the correlations presented in Tables 11 and 12. High correlations are found between

TABLE 11
Correlations Between the Critical Thinking Appraisal, Forms A and B, and Selected Variables

Student Groups	N	Critical Thinking Appraisal			Variable			
		Form	Mean	SD	Description	Mean	SD	r
A public high school in an upper SES community in the Northeast:	55	A	48.8	11.2	{ Otis-Lennon Mental Ability Test, Int., Form K Stanford Achievement Test, Reading, Form A Stanford Achievement Test, Language, Form A	121.3 ^a 11.5 ^b 11.9 ^b	11.3 1.6 1.5	.62** .50** .30*
	52	B	48.7	8.0	{ Otis-Lennon Mental Ability Test, Int., Form K Stanford Achievement Test, Reading, Form A	120.8 ^a 11.5 ^b	10.4 1.4	.41** .49**
	51	B	48.8	8.0	Stanford Achievement Test, Language, Form A	11.6 ^b	1.6	.24
	42	A	53.3	9.4	{ Otis-Lennon Mental Ability Test, Int., Form K Stanford Achievement Test, Reading, Form A Stanford Achievement Test, Language, Form A	121.7 ^a 12.2 ^b 11.9 ^b	11.2 1.1 1.5	.70** .51** .53**
	44	B	53.0	8.7	{ Otis-Lennon Mental Ability Test, Int., Form K Stanford Achievement Test, Reading, Form A Stanford Achievement Test, Language, Form A	119.6 ^a 12.1 ^b 12.1 ^b	9.8 1.2 1.3	.61** .32* .35*
Grade 10	27 30	A B	54.4 53.1	11.6 12.2	Otis-Lennon Mental Ability Test, Int., Form J	116.2 ^a 117.7 ^a	15.0 15.3	.70** .78**
Grade 11	53 55	A B	52.8 54.9	10.5 9.1	Otis-Lennon Mental Ability Test, Adv., Form J	112.5 ^a 112.2 ^a	12.0 10.9	.62** .81**
Grade 12	31	A and B	49.1	13.0	Otis-Lennon Mental Ability Test, Adv., Form J	110.0 ^a	15.6	.70**
Freshman English composition courses at a college in the Southeast	26	A	44.1	10.7	Course grades in English composition	6.7 ^c	2.5	.16
	34	B	46.2	7.2		6.6 ^c	3.6	.35*
	20	A	45.2	11.1	Scholastic Aptitude Tests, Verbal	320.5	84.1	.69**
	23	B	47.1	7.3		295.7	72.0	.37
Freshman orientation course at a university in the South	61	A and B	43.3	8.6	{ American College Testing Program, Composite Score California Achievement Tests, Reading First Semester grade-point average	11.4 9.7 2.6 ^d	4.0 1.9 0.7	.65** .64** .30*
Freshmen in liberal arts courses at a branch of a large university in the Northeast	60	A and B	57.5	6.8	{ Scholastic Aptitude Tests, Verbal Scholastic Aptitude Tests, Math	478.8 531.2	81.0 90.3	.60** .41**
Nursing students in a baccalaureate program at a university in the West	32	A	56.3	7.0	{ Scholastic Aptitude Tests, Verbal Scholastic Aptitude Tests, Math	47.2 ^c 45.7 ^c	18.3 17.9	.45** .48**
	24	A	57.7	8.1	{ American College Testing Program, English American College Testing Program, Math	48.7 ^c 33.1 ^c	27.4 18.7	.21 .30
	86	A	56.6	8.5	High School grade-point average	3.2 ^d	0.4	.19
A small college in the Northeast geared toward early entry	116 50	A A	58.6 57.5	7.7 6.7	First Semester grade-point average { Scholastic Aptitude Tests, Verbal Scholastic Aptitude Tests, Math	2.2 ^d 514.5 502.7	0.8 106.8 109.8	.12 .57** .29*

^a Otis-Lennon Mental Ability Test results are expressed as deviation IQs
^b Stanford Achievement Test results are expressed as grade equivalents
^c Scores range from 0-12 points
^d Significant at .05 level
^e Significant at .01 level

TABLE 12
Correlations Between the Critical Thinking Appraisal, Forms Am, Ym, and Zm, and Selected Variables
 (Adapted from 1964 Manual)

Group	N	Form	Variable	r
Senior women in 10 liberal arts colleges	554	Ym	<i>Otis Mental Ability Tests: Gamma</i>	.66
Freshmen in 15 liberal arts colleges	5,297	Ym	<i>Otis Mental Ability Tests: Gamma</i>	.60
High school students in Grades 9 through 12	20,312	Ym	<i>Otis Mental Ability Tests: Gamma</i>	.75 ^a
High school students in Grades 9 through 12	20,312	Zm	<i>Otis Mental Ability Tests: Gamma</i>	.73 ^a
Midwestern high school students in Grade 9	167	Ym	<i>California Test of Mental Maturity</i>	
			Language Test	.70
			Non-Language Test	.43
			Total Test	.68
Managers and executives	49	Am	<i>Miller Analogies, Form H</i>	.55
Managers and executives	49	Am	<i>Wechsler Adult Intelligence Scale</i>	
			Verbal Scale	.55
			Performance Scale	.02
			Total Scale	.41
Freshmen in a Western liberal arts college	378	Ym	<i>College Entrance Exam. Board</i>	
			Verbal	.54
			Mathematics	.43

^aFischer's-z average of four coefficients computed separately by grade.

scores on the CTA and scores on the *Otis* and *Otis-Lennon Mental Ability Tests*, the *California Test of Mental Maturity*, and the *Wechsler Adult Intelligence Scale, Verbal Scale*. In addition, high correlations are found with other ability measures, such as the *Miller Analogies Test*, the *College Entrance Examination Board*, the *Scholastic Aptitude Test*; and the *American College Test*.

Although the CTA has been found to correlate with general intelligence, its overlap as a construct is not complete. Factor analyses of the CTA subtests with other measures of intelligence generally show that the CTA is measuring a dimension of ability that can be seen as distinct from overall intellectual ability. Landis (1976), for example, factor analyzed the CTA subtests with measures drawn from the *Guilford Structure of Intellect Model*. The CTA tests were found to reflect a dimension of intellectual functioning that was independent of that tapped by the measures of the structure of intellect system. Follman, Miller & Hernandez (1969) also found that the CTA subtests were represented by high loadings on a single factor, when analyzed along with various achievement and ability measures.

In analyzing the item data from a large sample of CTA high school and college students (N = 500), Comrey (1974) found that a single factor solution was most consistent with the data. This finding provides support for the notion that the CTA is measuring a unidimensional aspect of ability, and provides additional evidence for the test's internal consistency. The scores on CTA subtests are related to the total score, as evidenced by the

TABLE 13

Correlations Between Subtests and Total Score on Forms Ym, Zm, A, and B of the Critical Thinking Appraisal

Subtest	Total Score				
	Ym ^a	Zm ^a	A ^b	B ^b	A&B ^b
	(N=2947)	(N=2995)	(N=129)	(N=121)	(N=250)
Inference	.75	.74	.55	.54	.54
Recognition of Assumptions	.64	.62	.69	.68	.69
Deduction	.73	.73	.61	.65	.63
Interpretation	.79	.76	.61	.59	.60
Evaluation of Arguments	.52	.56	.45	.55	.50

^aGrade 10 normative samples, as reported in the 1964 Manual for Forms Ym and Zm.

^bNursing students enrolled in a baccalaureate program at a university in the South.

correlations presented in Table 13 for Forms Ym and Zm, as well as for Forms A and B. For Forms Ym and Zm, these correlations range from .56 to .79. Similarly, for forms A and B combined, the correlations range from .50 to .69.

Appendix C

Participant Data Form

Participant #

Police :

Police Officer

Intuition

Research Project

Participant Data

Conducted by

Management and Behavior Consultants, P.C.

537-B South Garfield

Traverse City, Michigan 49684

Wayne R. Hill, Ph.D.

Clinical Psychologist

Project Coordinator

Ms. Roxanne K. Fall, MSW, ACSW, CSW, CAC-II

Doctoral Candidate

231-946-0299

**POLICE OFFICER INTUITION
RESEARCH PROJECT**

PARTICIPANT DATA FORM

Participant # _____	Date Completed: _____
----------------------------	------------------------------

01. **Name:** _____
02. **Age:** _____
03. **Gender: (M / F)** _____
04. **Agency Name:** _____
05. **Number of years in law enforcement:** _____

Type Agency: (Choose one by using an X)

06. **Sheriff's Department:** _____
07. **City Police Department:** _____
08. **Township Police Department:** _____
09. **State Police Department:** _____
10. **Other:** _____

Agency State: (Choose one by using an X)

11. **Michigan:** _____
12. **Pennsylvania:** _____
13. **Connecticut:** _____
14. **Other:** _____ (print state name)
15. **Federal Agency:** _____ (print agency name)
16. **Military Agency:** _____ (print agency name)

Agency Size: (determined by number of law enforcement officers)**(Choose one by using and X)**

- | | |
|-------------------|----------------------|
| 17. 10 – 20 _____ | 22. 101 – 150 _____ |
| 18. 21 – 30 _____ | 23. 151 – 200 _____ |
| 19. 31 – 40 _____ | 24. 201 – 500 _____ |
| 20. 41 – 50 _____ | 25. 501 – 1000 _____ |
| 21. 51- 100 _____ | 26. Over 1000 _____ |

Assignment Information:

27. How long in current assignment: _____
28. Are you a uniformed Law Enforcement Officer yes _____ no _____
29. Have you ever been a Detective or Criminal Investigator? yes _____
no _____
30. Are you a Detective / Criminal Investigator now ? yes _____ no _____
31. Number of years as Detective / Criminal Investigator : _____
32. I requested or applied for Investigative assignment : _____
33. I was selected for investigator assignment but did not want the
assignment. yes _____ no _____
34. Supervisor (type rank): _____
35. Other Assignment : _____

Jurisdiction Size: (determined by estimated # of residents:) Use X to select one

- | | |
|-------------------------------|---------------------------|
| 36. 5000 – 9000 persons _____ | 39. 31,000 – 40,000 _____ |
| 37. 10,000 - 20,000 _____ | 40. 41,000 - 50,000 _____ |
| 38. 21,000 – 30,000 _____ | 41. Over 50,000 _____ |

Watson-Glazer Critical Thinking Test:

Raw Score Subtest # 1 _____

Raw Score Subtest # 2 _____

Raw Score Subtest # 3 _____

Raw Score Subtest # 4 _____

Raw Score Subtest # 5 _____

Total Raw Score: _____

S.I.Q.

Picture # 01 Correct _____ Incorrect _____

Picture # 02 Correct _____ Incorrect _____

Picture # 03 Correct _____ Incorrect _____

Picture # 04 Correct _____ Incorrect _____

Picture # 05 Correct _____ Incorrect _____

Picture # 06 Correct _____ Incorrect _____

Picture # 07 Correct _____ Incorrect _____

Picture # 08 Correct _____ Incorrect _____

Picture # 09 Correct _____ Incorrect _____

Picture # 10 Correct _____ Incorrect _____

Picture # 11 Correct _____ Incorrect _____

Picture # 12 Correct _____ Incorrect _____

Picture # 13 Correct _____ Incorrect _____

Picture # 14 Correct _____ Incorrect _____

Picture # 15 Correct _____ Incorrect _____

Picture # 16 Correct _____ Incorrect _____

Picture # 17 Correct _____ Incorrect _____

Picture # 18 Correct _____ Incorrect _____

Picture # 19 Correct _____ Incorrect _____

Picture # 20 Correct _____ Incorrect _____

Picture # 21 Correct _____ Incorrect _____

Picture # 22 Correct _____ Incorrect _____

Picture # 23	Correct _____	Incorrect _____
Picture # 24	Correct _____	Incorrect _____
Picture # 25	Correct _____	Incorrect _____
Picture # 26	Correct _____	Incorrect _____
Picture # 27	Correct _____	Incorrect _____
Picture # 28	Correct _____	Incorrect _____
Picture # 29	Correct _____	Incorrect _____
Picture # 30	Correct _____	Incorrect _____
Picture # 31	Correct _____	Incorrect _____
Picture # 32	Correct _____	Incorrect _____
Picture # 33	Correct _____	Incorrect _____
Picture # 34	Correct _____	Incorrect _____
Picture # 35	Correct _____	Incorrect _____
Picture # 36	Correct _____	Incorrect _____
Picture # 37	Correct _____	Incorrect _____

Total # Correct Responses: _____

Appendix D

AMERICAN PSYCHOLOGICAL ASSOCIATION

Ethical Principles of Psychologists and Code of Conduct Sections 6.06-6.21

AMERICAN PSYCHOLOGICAL ASSOCIATION

ETHICAL PRINCIPLES OF PSYCHOLOGISTS AND CODE OF CONDUCT

Effective date December 1, 1992

6.06 Planning Research.

- (a) Psychologists design, conduct, and report research in accordance with recognized standards of scientific competence and ethical research.**
- (b) Psychologists plan their research so as to minimize the possibility that results will be misleading.**
- (c) In planning research, psychologists consider its ethical acceptability under the Ethics Code. If an ethical issue is unclear, psychologists seek to resolve the issue through consultation with institutional review boards, animal care and use committees, peer consultations, or other proper mechanisms,**
- (d) Psychologists take reasonable steps to implement appropriate protections for the rights and welfare of human participants, other persons affected by the research, and the welfare of animal subjects.**

6.07 Responsibility.

- (a) Psychologists conduct research competently and with due concern for the dignity and welfare of the participants.**
- (b) Psychologists are responsible for the ethical conduct of research conducted by them or by others under their supervision or control.**
- (c) Researchers and assistants are permitted to perform only those tasks for which they are appropriately trained and prepared.**
- (d) As part of the process of development and implementation of research projects, psychologists consult those with expertise concerning any special population under investigation or most likely to be affected.**

6.08 Compliance With Law and Standards.

Psychologists plan and conduct research in a manner consistent with federal and state law and regulations, as well as professional standards governing the conduct of research, and particularly those standards governing research with human participants and animal subjects.

6.09 Institutional Approval.

Psychologists obtain from host institutions or organizations appropriate approval prior to conducting research, and they provide accurate information about their research proposals. They conduct the research in accordance with the approved research protocol.

6.10 Research Responsibilities.

Prior to conducting research (except research involving only anonymous surveys, naturalistic observations, or similar research), psychologists enter into an agreement with participants that clarifies the nature of the research and the responsibilities of each party.

6.11 Informed Consent to Research.

- (a) Psychologists use language that is reasonably understandable to research participants in obtaining their appropriate informed consent (except as provided in Standard 6.12, Dispensing with Informed Consent). Such informed consent is appropriately documented.
- (b) Using language that is reasonably understandable to participants, psychologists inform participants of the nature of the research; they inform participants that they are free to participate or to decline to participate or to withdraw from the research; they explain the foreseeable consequences of declining or withdrawing; they inform participants of significant factors that may be expected to influence their willingness to participate (such as risks, discomfort, adverse effects, or limitations on confidentiality, except as provided in Standard 6.15, Deception in Research); and they explain other aspects about which the prospective participants inquire.
- (c) When psychologists conduct research with individuals such as students or subordinates, psychologists take special care to protect the prospective participants from adverse consequences of declining or withdrawing from participation.
- (d) When research participation is a course requirement or opportunity for extra credit, the prospective participant is given the choice of equitable alternative activities.
- (e) For persons who are legally incapable of giving informed consent, psychologists nevertheless (1) provide an appropriate explanation, (2) obtain the participant's assent, and (3) obtain appropriate permission from a legally authorized person, if such substitute consent is permitted by law.

6.12 Dispensing With Informed Consent.

Before determining that planned research (such as research involving only anonymous questionnaires, naturalistic observations, or certain kinds of archival research) does not

require the informed consent of research participants, psychologists consider applicable regulations and institutional review board requirements, and they consult with colleagues as appropriate.

6.13 Informed Consent in Research Filming or Recording.

Psychologists obtain informed consent from research participants prior to filming or recording them in any form, unless the research involves simply naturalistic observations in public places and it is not anticipated that the recording will be used in a manner that could cause personal identification or harm.

6.14 Offering Inducements for Research Participants.

- (a) In offering professional services as an inducement to obtain research participants, psychologists make clear the nature of the services, as well as the risks, obligations, and limitations. (See also Standard 1.18, Barter [With Patients or Clients].)
- (b) Psychologists do not offer excessive or inappropriate financial or other inducements to obtain research participants, particularly when it might tend to coerce participation.

6.15 Deception in Research.

- (a) Psychologists do not conduct a study involving deception unless they have determined that the use of deceptive techniques is justified by the study's prospective scientific, educational, or applied value and that equally effective alternative procedures that do not use deception are not feasible.
- (b) Psychologists never deceive research participants about significant aspects that would affect their willingness to participate, such as physical risks, discomfort, or unpleasant emotional experiences.
- (c) Any other deception that is an integral feature of the design and conduct of an experiment must be explained to participants as early as is feasible, preferably at the conclusion of their participation, but no later than at the conclusion of the research. (See also Standard 6.18, Providing Participants With Information About the Study.)

6.16 Sharing and Utilizing Data.

Psychologists inform research participants of their anticipated sharing or further use of personally identifiable research data and of the possibility of unanticipated future uses.

6.17 Minimizing Invasiveness.

In conducting research, psychologists interfere with the participants or milieu from which data are collected only in a manner that is warranted by an appropriate research design and that is consistent with psychologists' roles as scientific investigators.

6.18 Providing Participants With Information About the Study.

- (a) Psychologists provide a prompt opportunity for participants to obtain appropriate information about the nature, results, and conclusions of the research, and psychologists attempt to correct any misconceptions that participants may have.**
- (b) If scientific or humane values justify delaying or withholding this information, psychologists take reasonable measures to reduce the risk of harm.**

6.19 Honoring Commitments.

Psychologists take reasonable measures to honor all commitments they have made to research participants.

6.20 Care and Use of Animals in Research.

- (a) Psychologists who conduct research involving animals treat them humanely.**
- (b) Psychologists acquire, care for, use, and dispose of animals in compliance with current federal, state, and local laws and regulations, and with professional standards.**
- (c) Psychologists trained in research methods and experienced in the care of laboratory animals supervise all procedures involving animals and are responsible for ensuring appropriate consideration of their comfort, health, and humane treatment.**
- (d) Psychologists ensure that all individuals using animals under their supervision have received instruction in research methods and in the care, maintenance, and handling of the species being used, to the extent appropriate to their role.**
- (e) Responsibilities and activities of individuals assisting in a research project are consistent with their respective competencies.**
- (f) Psychologists make reasonable efforts to minimize the discomfort, infection, illness, and pain of animal subjects.**
- (g) A procedure subjecting animals to pain, stress, or privation is used only when an alternative procedure is unavailable and the goal is justified by its prospective scientific, educational, or applied value.**
- (h) Surgical procedures are performed under appropriate anesthesia; techniques to avoid infection and minimize pain are followed during and after surgery.**
- (i) When it is appropriate that the animal's life be terminated, it is done rapidly, with an effort to minimize pain, and in accordance with accepted procedures.**

6.21 Reporting of Results.

- (a) Psychologists do not fabricate data or falsify results in their publications.**
- (b) If psychologists discover significant errors in their published data, they take reasonable steps to correct such errors in a correction, retraction, erratum, or other appropriate publication means.**

Appendix E

Informed Consent Form

CONSENT TO PARTICIPATE IN RESEARCH PROJECT

This is a research project designed to measure social intelligence quotient, or the knack of picking up nonverbal signals. If you participate in this study, you will be asked to complete the following: (1) a Watson-Glaser Critical Thinking Appraisal which is an 80-item self-report, paper and pencil inventory, (2) view 37 slides and select the best answer from the multiple choice Social Intelligence Questionnaire, and (3) fill out a three-page Participant Data Form. This project will take approximately an hour to complete.

No negative consequences are expected from participation in this study, but it is always your option to discontinue at any time. It is not expected, but if you do find that your participation in this research project brings up disturbing thoughts or feelings, please let the researcher know and she will be glad to refer you to a mental health professional. If you do complete all of the questionnaires, the information will be used to help us learn more about social intelligence quotient, or the knack of picking up nonverbal signals.

All information is confidential and will be seen only by the immediate research staff of this project. The results of these questionnaires will be used in the compilation of a dissertation research project, and all of the reporting regarding your participation or scores will be strictly anonymous.

If you would like to know your individual testing results, please write to Ms. Roxanne K. Fall, 1529 Ridgeview Court, Traverse City, Michigan 49686 (telephone # 231-941-9878). She will be happy to send you an explanation of your questionnaire results when this project is completed.

I agree to participate in this study:

Signature _____

Print Name _____

Date _____

Please write down the following address. If you should have any complaints or questions about the way this research project was conducted, you may write to someone at the address listed below:

The Union Institute
Office of the Graduate Dean
440 East McMillan Street
Cincinnati, Ohio 45206-1925
1-800-486-3116

Appendix F

Item Analysis Data

SIQ 1

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	38 95	60 93.8	77 100	49 92.5	224 95.7
Incorrect (Cnt & %)	2 5	4 6.25	0 0	4 7.55	10 4.27
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 5.489 with 3 df. $p = 0.1393$

SIQ 2

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	12 30	18 28.1	20 26	10 18.9	60 25.6
Incorrect (Cnt & %)	28 70	46 71.9	57 74	43 81.1	174 74.4
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 85 with 3 df. $p = 0.5965$

SIQ 3

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	37 92.5	55 85.9	66 85.7	46 86.8	204 87.2
Incorrect (Cnt & %)	3 7.5	9 14.1	11 14.3	7 13.2	30 12.8
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 1.256 with 3 df. $p = 0.7395$

SIQ 4

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	34 85	45 70.3	63 81.8	45 84.9	187 79.9
Incorrect (Cnt & %)	6 15	19 29.7	14 18.2	8 15.1	47 20.1
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 5.317 with 3 df. $p = 0.1500$

SIQ 5

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	29 72.5	47 73.4	59 76.6	43 81.1	178 76.1
Incorrect (Cnt & %)	11 27.5	17 26.6	18 23.4	10 18.9	56 23.9
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 1.282 with 3 df. $p = 0.7333$

SIQ 6

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	37 72.5	54 73.4	69 76.6	44 81.1	204 76.1
Incorrect (Cnt & %)	11 7.50	17 15.6	18 10.4	10 17.0	56 12.8
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 2.691 with 3 df. $p = 0.4417$

SIQ 7

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	25 62.5	34 53.1	48 62.3	31 58.5	138 59.0
Incorrect (Cnt & %)	11 7.50	17 15.6	18 10.4	10 17	56 12.8
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 1.476 with 3 df. p = 0.8779

SIQ 8

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	15 37.5	26 40.6	29 37.7	18 34	88 37.6
Incorrect (Cnt & %)	25 62.5	38 59.4	48 62.3	35 66	146 62.4
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 0.5488 with 3 df. p = 0.9080

SIQ 9

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	35 87.5	50 78.1	62 80.5	42 79.2	189 80.8
Incorrect (Cnt & %)	5 12.5	14 21.9	15 19.5	11 20.8	45 19.2
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 1.537 with 3 df. p = 0.6737

SIQ 10

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	26 65	33 51.6	46 59.7	32 60.4	137 58.5
Incorrect (Cnt & %)	14 35	31 48.4	31 40.3	21 39.6	97 41.5
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 2.091 with 3 df. $p = 0.5537$

SIQ 11

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	31 77.5	37 57.8	50 64.9	28 52.8	146 62.4
Incorrect (Cnt & %)	9 22.5	27 42.2	27 36.1	25 47.2	88 37.6
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 6.740 with 3 df. $p = 0.0806$

SIQ 12

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	34 85	47 73.4	64 83.1	45 84.9	190 81.2
Incorrect (Cnt & %)	6 15	17 26.6	13 16.9	8 15.1	44 18.8
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 3.566 with 3 df. $p = 0.3123$

SIQ 13

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	36 90	52 81.2	68 88.3	50 94.3	206 88
Incorrect (Cnt & %)	4 10	12 18.8	9 11.7	3 5.66	28 12
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 4.949 with 3 df. $p = 0.1756$

SIQ 14

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	33 82.5	55 85.9	68 88.3	45 84.9	201 85.9
Incorrect (Cnt & %)	7 17.5	9 14.1	9 11.7	8 15.1	33 14.1
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 0.7948 with 3 df. $p = 0.8507$

SIQ 15

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	4 10	10 15.6	9 11.7	6 11.3	29 12.4
Incorrect (Cnt & %)	36 90	54 84.4	68 88.3	47 88.7	205 87.6
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 0.9181 with 3 df. $p = 0.8211$

SIQ 16

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	27 67.5	47 73.4	61 79.2	41 77.4	176 75.2
Incorrect (Cnt & %)	13 32.5	17 26.6	16 20.8	12 22.6	58 24.8
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 2.179 with 3 df. $p = 0.5361$

SIQ 17

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	32 80	52 81.2	69 89.6	51 96.2	204 87.2
Incorrect (Cnt & %)	8 20	12 18.8	8 10.4	2 3.77	30 12.8
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 8.146 with 3 df. $p = 0.0431$

SIQ 18

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	32 80	52 81.2	69 89.6	51 96.2	204 87.2
Incorrect (Cnt & %)	8 20	12 18.8	8 10.4	2 3.77	30 12.8
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 8.146 with 3 df. $p = 0.0209$

SIQ 19

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	19 47.5	24 37.5	42 54.5	27 50.9	112 47.9
Incorrect (Cnt & %)	21 52.5	64 62.5	77 45.5	53 49.1	234 52.1
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 4.336 with 3 df. $p = 0.2274$

SIQ 20

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	14 35	38 59.4	44 57.1	35 66	131 56
Incorrect (Cnt & %)	26 65	26 40.6	33 42.9	18 34	103 44
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 2.382 with 3 df. $p = 0.4970$

SIQ 21

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	25 62.5	39 60.9	40 51.9	27 50.9	131 56
Incorrect (Cnt & %)	15 37.5	25 39.1	37 48.1	26 49.1	103 44
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 9.662 with 3 df. $p = 0.0217$

SIQ 22

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	32 80	51 79.9	66 85.7	43 81.1	192 82.1
Incorrect (Cnt & %)	8 20	13 20.3	11 14.3	10 18.9	42 17.9
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 1089 with 3 df. $p = 0.7797$

SIQ 23

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	22 55	19 29.7	30 39	24 45.3	95 40.6
Incorrect (Cnt & %)	18 45	45 70.3	47 61	29 54.7	139 59.4
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 7.167 with 3 df. $p = 0.0668$

SIQ 24

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	31 77.5	49 76.6	60 77.9	40 75.5	180 76.9
Incorrect (Cnt & %)	9 22.5	15 23.4	17 22.1	13 24.5	54 23.1
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 1184 with 3 df. $p = 0.0995$

SIQ 25

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	38 95	56 87.5	74 96.1	48 90.6	216 92.3
Incorrect (Cnt & %)	2 5	8 12.5	3 3.9	5 9.43	18 7.69
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 4.281 with 3 df p = 0.2327

SIQ 26

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	35 87.5	49 76.6	68 88.3	43 81.1	195 83.3
Incorrect (Cnt & %)	5 12.5	15 23.4	9 11.7	10 18.9	39 16.7
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 4.171 with 3 df p = 0.2435

SIQ 27

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	32 80	48 75	60 77.9	40 75.5	180 76.9
Incorrect (Cnt & %)	8 20	16 25	17 22.1	13 24.5	54 23.1
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 0.4528 with 3 df. p = 0.9291

SIQ 28

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	26 65	33 51.6	49 63.6	30 56.6	138 59
Incorrect (Cnt & %)	14 35	31 48.4	28 36.4	23 43.4	96 41
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 2.868 with 3 df. $p = 0.4124$

SIQ 29

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	27 67.5	24 37.5	38 49.4	32 60.4	121 51.7
Incorrect (Cnt & %)	13 32.5	40 62.5	39 50.6	21 39.6	113 48.3
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 10.94 with 3 df. $p = 0.0121$

SIQ 30

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	12 30	10 15.6	13 16.9	15 28.3	50 21.4
Incorrect (Cnt & %)	28 70	54 84.4	64 83.1	38 71.7	184 78.6
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 2.868 with 3 df. $p = 0.1405$

SIQ 31

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	38 95	58 90.5	74 96.1	51 96.2	221 94.4
Incorrect (Cnt & %)	2 5	6 9.38	2 2.60	2 3.77	12 5.13
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 5.583 with 3 df. $p = 0.4715$

SIQ 32

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	38 95	58 90.6	74 96.1	52 98.1	222 94.9
Incorrect (Cnt & %)	2 5	6 9.38	3 3.90	1 1.89	12 5.13
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 3.759 with 3 df. $p = 0.2887$

SIQ 33

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	24 60	39 60.9	57 74	29 54.7	149 63.7
Incorrect (Cnt & %)	16 40	25 39.1	20 26	24 45.3	85 36.3
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 5.846 with 3 df. $p = 0.1193$

SIQ 34

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	37 92.5	58 90.6	72 93.5	49 92.5	216 92.3
Incorrect (Cnt & %)	3 7.5	6 9.38	5 6.49	4 7.55	18 7.69
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 3.759 with 3 df. $p = 0.9372$

SIQ 35

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	5 12.5	5 7.81	9 11.7	5 9.43	24 10.3
Incorrect (Cnt & %)	35 87.5	59 92.2	68 88.3	48 90.6	210 89.7
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 0.8445 with 3 df. $p = 0.8388$

SIQ 36

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	18 45	23 35.9	34 44.2	20 37.7	95 40.6
Incorrect (Cnt & %)	22 55	41 64.1	43 55.8	33 62.3	139 59.4
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 1.482 with 3 df. $p = 0.6864$

SIQ 37

	Cadet	Control	Detective	Uniform	Total
Correct (Cnt & %)	35 87.5	49 76.6	57 74	39 73.6	180 76.9
Incorrect (Cnt & %)	5 12.5	15 23.4	20 26	14 26.4	54 23.1
Total (Cnt & %)	40 100	64 100	77 100	53 100	234 100

Chi-square = 3.222 with 3 df. $p = 0.3586$

Note: Item Analysis of each of the 37 SIQ questions. The cadet, detective and uniform groups individually and collectively scored higher than the control group. However, there were a few inverse correlations where the control group scored higher (e.g., SIQ #8, 15, 18, 21).