An Examination of Psychological Tension and the Impact of Crime Type and Length of Incarceration on Confession Outcomes after the Introduction of Implicit Evidence of Deception in Law Enforcement Interrogations

Jason Drew Forgash

A Dissertation Submitted to the Faculty of

The Chicago School of Professional Psychology

In Partial Fulfillment of the Requirements

For the Degree of Doctor of Psychology

June 30, 2017

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Approved By:

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Acknowledgements

I first and foremost extend my enduring gratitude to my committee, Dr. Linda Gomberg and Dr. Aldwin Domingo. This project exists thanks to you. Dr. Gomberg, to whatever extent this project may be deemed successful, your endless well of support while pushing me to always dig deeper made it so. Dr. Domingo, I owe you a debt of appreciation for allowing statistics to come to life for a student for whom they were anything but natural.

To Detective Chad Jeansonne, I am indebted to you for the use of your dataset and for persevering through countless clarification inquiries. Along the way I came to understand you not only as a remarkable police detective but as an incredible human being. Your dedication not only to ideals of justice, but to the compassionate treatment of all of those involved in your cases is without equal. Stay safe my friend.

To my wife, Maria, and my mother, Cathy, may I one day be able to reciprocate with even a fraction of the patience and understanding you displayed during the writing of this project. It is but for you that the children were fed, the house remained standing, and life maintained a sense of normalcy. I love you both with all of my heart.

To my children, Hunter and Destiny. You are my gift, you are my world, you are my everything. The last of the midnight oil is burned. I can only hope that witnessing the writing of this has helped you believe you can accomplish anything you chose in life if you try your best. Each of you is unique and incredible. Always believe that. Live each moment of life's journey with passion while touching the lives of others in a positive way.

Abstract

An interrogation of a criminal suspect by law enforcement creates a condition of stress in which the suspected perpetrator may provide truthful admissions or a confession against his or her legal best interest. It is not clear to what extent the type of crime and length of potential incarceration for a crime may weigh on the length of time it takes a suspected perpetrator to admit or confess to a crime. This researcher examined 92 archived criminal interrogations to determine if, upon being presented with implicit evidence of a stress reaction, the type of crime and the length of the resulting incarceration for a crime have a direct interdependent relationship with the length of time it takes to obtain truthful admissions or a truthful confession from a suspected perpetrator. In analyses comparing petty crime with serious crime, and comparing property crimes with crimes of violence, there was no statistical significance in the median time to admission or confession. Conversely, there was statistical significance in the median time to confession between suspected perpetrators who would be sentenced to a minimal incarceration and those who would be sentenced to lengthier incarceration if convicted. This study confirmed that a suspected perpetrator experiences dissonance between the proximal discomfort of the interrogation and the distal consequence of incarceration during a law enforcement interrogation, and responds by undertaking actions to reduce the psychological tension. However, during the dissonance and response process, the specter of lengthier incarceration leads suspected perpetrators to resist confessing for a lengthier period of time.

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Chapter 1: Introduction

Nature of the Study

"Humans are not innately good… just as they are not innately evil" (Pinker, 2011, p. xxv). Enforcement of criminal law is documented in the ancient texts of the earliest known civilizations (Falconi & Cortez, 2016). In contemporary American society, law enforcement officers are responsible for proactively stopping or reducing the level of crime in a community and reactively solving crimes when they occur (Scott, 2008). At times, the latter can be accomplished with physical evidence, victim testimony, or witness testimony. When other evidence is lacking, it may be necessary to obtain the details of a crime from the suspected perpetrator. If the suspected perpetrator is forthcoming, investigators learn the truth through a law enforcement interview. During a law enforcement interview, a suspected perpetrator may be driven by the need for approval or the desire for a sense of belonging to answer direct questions from the interviewer (Behavior Analysis Training Institute, 2015). Because committing a crime will result in punishment, a suspected perpetrator may resist telling the truth for fear of the legal consequences (e.g., incarceration in a county jail or a state prison).

The hypothesis addressed in this study is that law enforcement interrogation triggers psychological tension within a suspected perpetrator through the introduction of indirect evidence. Psychological tension is the affective state accompanying events with potential emotional significance (Lehne & Koelsch, 2015). The evidence in this study is implicit evidence; a suspected perpetrator lied to the interrogator during a computer voice stress analysis examination. The researcher investigated whether, upon triggering this psychological tension, the

type of crime and length of resulting incarceration for a crime influence the length of time before a suspected perpetrator makes admissions or confesses to a crime.

Background of the Problem

When a direct law enforcement interview does not yield truthful information from a suspected perpetrator, the law enforcement interviewer may attempt to gain admissions or a confession by means of an interrogation. Leo (2008) called an interrogation the first step in the process of incrimination of the suspected perpetrator appearing guilty of a crime. Admission and confession evidence is valuable in the American justice system. It removes "uncertainty from the criminal process, while lending efficiency and predictability to the outcome" (Leo, 2008, p. 30). According to Kassin et al. (2010), there is a belief in American society that individuals do not confess to crimes they did not commit. Despite the fallibility of this belief, confessions are powerful in the American justice system and boost convictions by jurors (Kassin et al., 2010).

For the purpose of this study, the researcher defined an interrogation as a method for obtaining truthful admissions or a truthful confession from a suspected perpetrator who may not desire to confess through the use of interview techniques that create a condition of stress within the suspect (Wrightsman, 2010). It is not in a suspected perpetrator's legal interest to make admissions or confess to a crime because such statements may demonstrate his or her guilt in a court of law. However, a suspected perpetrator may provide an incriminating statement if an interrogation severely disrupts their self-regulation and rational decision-making abilities (Davis & Leo, 2012). The suspected perpetrator may focus on reducing or eliminating the proximal discomfort of the interrogation rather than on the more severe distal consequences of possible incarceration (Yang, Madon, & Guyll, 2015). According to Kelly, Miller, Redlich, and Kleinman

(2013), specific interrogation techniques include isolating the suspected perpetrator, challenging his or her values, threatening consequences, and presenting evidence of his or her involvement in a crime. Kelly et al. (2013) identified 71 unique interrogation techniques and sorted them into six separate domains: rapport and relationship building, context manipulation, emotion provocation, confrontation and competition, collaboration, and presentation of evidence.

Law enforcement interrogations are similar regardless of the criminal offense. For the purpose of this study, criminal law in the State of Louisiana must be understood. The state is unique in following the French-influenced Napoleonic Civil code, but most of Louisiana criminal law is based on British common law (Phelps & Pager, 2016). In Louisiana, criminal laws are called *revised statutes* and divided into felonies and misdemeanors. A felony is "any crime for which an offender may be sentenced to death or imprisonment at hard labor" (LSA-R.S. 14:2(4), 2016). Louisiana is a state with a three strikes law (Rodriguez, 2003). Strikes are imposed on individuals convicted of specific felony crimes. Louisiana's maintenance of a three strikes law within its criminal justice system may influence whether a suspected perpetrator with prior strikes confesses as having prior strikes lengthens incarceration. A misdemeanor in Louisiana is, "any crime other than a felony" and is a lesser crime punishable by up to a year of incarceration in the county jail (LSA-R.S. 14:2(6), 2016).

Criminal law includes crimes committed directly against persons, property crimes, and crimes that do not fall under either of these categories. Crimes committed against another person are generally violent (e.g., assault, robbery, child abuse, elder abuse, homicide, and sexually based crimes, including rape). Sentencing for violent crimes ranges from probation without incarceration for a misdemeanor assault charge to a death sentence for committing homicide

(LSA-R.S. 14:2; LSA-R.S. 14:30, 2016). Property crimes include offenses such as theft, damage to property, unauthorized use of a credit card, identity theft, forgery, and burglary. Sentencing for property crimes ranges from probation without incarceration for a theft charge to up to 30 years of being "imprisoned at hard labor" for an aggravated burglary charge if the perpetrator has a weapon or the intent to commit another felonious crime once inside a dwelling (LSA-R.S. 14:60, 2016). Crimes that are not crimes against persons or property crimes include those involving drugs, driving under the influence of alcohol, gambling, and bribery. Sentencing for these miscellaneous crimes ranges from probation without incarceration for being under the influence of drugs to being "imprisoned at hard labor" for up to 99 years for the sale of illegal Schedule I drugs (i.e., controlled substances that the federal Drug Enforcement Administration determined have no current medical use, such as heroin; LSA-R.S. 14:966, 2016).

Evidence of a crime varies from case to case. According to Walton (2006), explicit evidence that investigators can present to a suspected perpetrator includes physical evidence (e.g., crime lab reports of deoxyribonucleic acid (DNA), friction skin impressions (fingerprints), or dental impressions at the scene of the crime). Investigators may present explicit evidence (e.g., surveillance video footage or photographs at the scene of the crime or positive identification of a suspected perpetrator by witnesses or victims; Kelly et al., 2013). There are also implicit physiological measures (e.g., the polygraph instrument) that suggest a suspected perpetrator committed a crime (Kelly et al., 2013). A related instrument that measures a suspected perpetrator's physiological reaction to stress is the voice stress analysis instrument. Implicit evidence presented to a suspected perpetrator generates cognitive discomfort or tension that appears on a voice stress analysis instrument when answering questions related to the crime.

Chapman and Stathis (2012) piloted a study examining 329 confession outcomes selected in single-blind fashion from an original group of 2,109 interrogations conducted by one examiner. The interrogator used a voice stress analysis instrument resulting in a 96.4% confession rate. From these 329 confessions, Chapman and Stathis (2012) selected crimes that met federal mandatory minimum prison sentencing guidelines and pooled them into three categories of severity: high (20 years to life in prison), medium (5 to 20 years in prison), and low (less than 5 years in prison). When comparing "crime consequence ratings with percentage of confessions among the guilty, the Pearson's Coefficient was found to be $r = -0.94$ ($r^2 = 0.88$)" (Chapman & Stathis, 2012, p. 247). Thus, when the cost of being responsible for a crime is less severe (i.e., a shorter period of incarceration), resistance to telling the truth is lower. Conversely, when the length of incarceration is severe, resistance to telling the truth will be higher.

Research Question

The purpose of this study was to determine if confronting a suspected perpetrator with evidence of implicit verbal stress as interpreted by a police interrogator affects the suspected perpetrator's tendency to make admissions or confess to the crime. In particular, the researcher examined if, after triggering cognitive tension or dissonance via implicit verbal stress, crime type and length of incarceration have direct interdependent relationships with the length of time it takes to obtain truthful admissions or confessions from a suspected perpetrator.

Significance of the Study

The results of this study directly benefit law enforcement interrogator training. Davis and Leo (2012) stated that

> Police interrogation is a powerful social situation in which detectives with apparent authority to affect the suspect's long-term legal outcomes subject him or her to an often lengthy and relentless process, employing a full armament of the most powerful weapons of social influence. (Davis & Leo, 2012, p. 675)

Consistent with Hajcak and Foti's (2008) findings on defensive motivation, the National Institute for Truth Verification (NITV) Federal Services, the primary manufacturer and trainer for voice stress technology, specifically cited fear of incarceration as one of a suspected perpetrator's primary fears (NITV, 2015). The results of this study may better educate law enforcement interrogators about the relationship between the proximal stress created by evidence and the distal consequences of incarceration. Moreover, a greater understanding of interrogation conflict may reduce the use of confrontational techniques. Kelly, Miller, and Redlich (2015) associated confrontational techniques with greater resistance on the part of a suspected perpetrator. Conversely, collaborative techniques promote egalitarian conversation that leads to more useful information from a suspected perpetrator (Granhag, Oleszkiewiez, Stromwall, & Kleinman, 2015). Ultimately, law enforcement agencies may benefit from having a specially trained detective or investigator dedicated to the sole function of interrogating suspected perpetrators.

Chapter 2: Literature Review

Theoretical Framework: Psychological Tension

Conflict, Dissonance, and Instability

Lehne and Koelsch's (2015) psychological model of tension applies to the stress a suspected perpetrator experiences during a law enforcement interrogation. In the model, tension is an affective state associated with conflict, dissonance, and instability that creates the desire for a state of homeostasis. Instability and a desire for conflict resolution exist in every type of person-to-person interaction within the human condition (Lehne & Koelsch, 2015).

According to Cloud, Shepherd, Barkoff, and Shur (2002), a juvenile or mentally retarded individual may not objectively understand that providing admissions or a confession to a crime during a law enforcement interrogation may lead to that information being used against him or her in prosecution filing decisions and during trial. Other than these vulnerable individuals, most suspected perpetrators understand these ramifications. However, in the short-term, providing admissions or a confession may seem to be the only means of making an interrogator cease questioning, ending the emotional discomfort of being interrogated (Madon, Yang, Smalarz, Guyll, & Scherr, 2013). A suspected perpetrator's desire to avoid self-incrimination in a future court proceeding is at odds with the short-term emotional desire to end the interrogation by providing the interrogator with information. This internal conflict is the psychological state of cognitive dissonance; discomfort caused by an individual holding "two or more elements of knowledge that are relevant to each other but inconsistent with one another" (Harmon-Jones, Schmeichel, Inzlicht, & Harmon-Jones, 2011, p. 21).

Cognitive dissonance is an internal process of discrepancy reduction (Hajcak & Foti, 2008). After a suspected perpetrator recognizes the dissonance, he or she may take action to change the cognition, efforts to reduce the psychological dissonance (Harmon-Jones et al., 2011). Balcetis and Dunning (2007) found that in a controlled experiment, the motivation to reduce dissonance resulted in a changed perception of the environment. In the context of being questioned in an interrogation room, reducing the dissonance may decrease the effect of the adversarial environment. If a suspected perpetrator is withholding information during an interrogation, he or she must exhibit continuous self-control, a limited resource that Muraven and Baumeister (2000) viewed as gradually depleting over time. Within the context of this model, the lengthier an interrogation, the more self-control depletes, and the more susceptible a suspected perpetrator is to providing admissions or a confession.

Expectation, Prediction, and Anticipation

When a consequential event triggers cognitive dissonance (e.g., a law enforcement interrogation), the critical elements of the experience from the perspective of the suspected perpetrator are the expectation, prediction, and anticipation of the outcome (Lehne & Koelsch, 2015). The expectation is the hope that an event will end well, and the fear that it may not end well (Lehne & Koelsch, 2015). Madon et al. (2013) artificially created expectations of a lengthy interrogation in a study of 177 undergraduates in a mid-Western university in the United States. Participants who expected an extended interrogation were more likely to provide incriminating information to avoid the proximal interrogation process despite the risk of incurring distal consequences than participants who did not expect an extended interrogation (p= .02; Madon et

al., 2013). The greater the variance in the expected outcome, the higher the level of intensity experienced by a person undergoing cognitive dissonance (Lehne & Koelsch, 2015).

People make predictions based not only on short-term knowledge of the event itself, but also on long-term knowledge of previous life experiences (i.e., simple learned concepts or more deeply imbedded ideas in an individual's schemata or generic knowledge of the world; Lehne & Koelsch, 2015). According to DiMaggio (1997), people can recall schematically embedded information more quickly and more accurately. In an interrogation study, Leo (1996) observed 182 law enforcement interrogations and found that a suspected perpetrator with a felony record was nearly four times as likely to invoke his or her right not to provide a statement to a detective than a suspected perpetrator with no prior police record. When suspected perpetrators with prior criminal experience willingly provide information during an interrogation, Granhag, Clemens, and Stromwall (2009) found that the information contained less crime-related actions than information from a suspected perpetrator with no prior criminal experience. According to Lehne and Koelsch (2015), the link between anticipated probabilities of future events and experienced tension are not yet clearly established.

Emotional Significance of Anticipated Events

A key aspect of anticipated events is that they must be significant and relevant to an individual's true concerns to create tension; "the amount of tension experienced appears to depend directly on the significance or desirability of anticipated events" (Lehne & Koelsch, 2015, p. 5). Luke, Dawson, Hartwig, and Granhag (2014) subjected 143 community members from a large urban city in the northeastern United States to mock interrogations regarding fictitious terrorism crimes. When they added emotional significance through the introduction of

potential evidence, subjects in the guilty condition became significantly more forthcoming ($p < .05$; Luke et al., 2014).

Jayne (1986) proposed that an interrogator may gain a confession by lowering the suspected perpetrator's beliefs and expectations of consequences while concurrently raising the individual's level of anxiety. This may explain why contemporary law enforcement interrogator training emphasizes reducing the intensity of accusations (Behavior Analysis Training Institute, 2015) while encouraging interrogators to project the belief that they already possess knowledge of a suspected perpetrator's complicity (May & Granhag, 2016). Utilizing voice stress technology may provide some implicit evidence of stress in relation to statements during an interrogation of a suspected perpetrator (Chapman & Stathis, 2012).

Psychological Model of Tension

According to Lehne and Koelsch's (2015) model of tension, an individual's experience begins with a perception of the initiating event. Conflict, dissonance, and instability lead to expectation, anticipation, and prediction based on context, an individual's personality, and previous knowledge. The knowledge can be short-term knowledge or long-term knowledge and can be explicit or implicit. The combination of these factors and previous experiences determines the range of divergence between hope for the best possible outcome and fear of the worst possible outcome. This range of divergence contributes to the level of tension that the individual experiences (Lehne & Koelsch, 2015).

Stress Detection as Implicit Evidence that Triggers Tension

Evidence acts as a contextual characteristic that directly impacts a suspected perpetrator's behavior during questioning (Moston, Stephenson, & Williamson, 1992). Evidence of stress in a

voice stress analysis examination is implicit evidence that an interrogator presents to a suspected perpetrator that triggers psychological tension regarding the truth of the statements he or she provided about a crime. In an experimental study by Jordan, Hartwig, Wallace, Dawson, and Xhihani (2012), 22% of participants offered a confession when they believed interrogators would accuse them of lying, whereas only 7% of participants who thought they would be believed offered a confession.

In a study of 82 police trainees, Hartwig, Granhag, Stromwall, and Kronkvist (2006) found that those trained to strategically present evidence to mock suspected perpetrators were significantly more successful in detecting inconsistent statements (85.4%) compared to success rates of untrained police trainees (56.1%). Granhag, Stromwall, Willen, and Hartwig (2013) interviewed 195 adults instructed to either steal an item or ask the price of an item. Prior to the interview, the researchers instructed subjects who asked the price of an item to tell the truth about the task. They instructed the other subjects to lie about the theft. A higher amount of disclosure about the theft was obtained from subjects who researchers allowed to provide their full narrative before presenting them with evidence of theft (Granhag et al., 2013). The results of these studies indicate the importance of the relationship between evidence, stress, and stress detection in the decision-making process of providing a confession.

Crime Types and Levels of Punishment

Lehne and Koelsch's (2015) cognitive-emotional theory described the emergence of psychological tension as focused upon the prediction and anticipation of the outcome of an event that initially triggered the psychological tension. In the case of confessing to a crime, this anticipation of the outcome may relate to the suspected perpetrator's knowledge of the type of

crime he or she committed and the length of potential incarceration based on the seriousness of the offense.

Previous research demonstrated that a suspected perpetrator is more likely to make admissions or confess to less serious crimes (e.g., theft of property and drug offenses) than to more serious or violent crimes. Many past studies are decades old, and have yet to be replicated in more contemporary literature. Neubauer (1974) studied 135 adults arrested for suspicion of perpetrating felonious crimes. Of the 69 accused of committing a property crime, 59% confessed as compared to a 29% confession rate among those accused of committing a violent crime (n=66). Neubauer (1974) surmised that the difference may be due to generally larger amounts of forensic evidence present in a property crime, which can persuade a suspected perpetrator to confess. Mitchell (1983) also found that suspected perpetrators accused of violent offenses were less likely to confess (64%) than suspected perpetrators of property offenses (76%). Sigurdsson and Gudjonsson (1994) equated low level offenses with higher confession rates; 95% of traffic violators and 94% of drug violators confessed to crimes, but the confession rate of those suspected of perpetrating violent crimes was only 77%. In a survey of police arrests and the resulting criminal justice system outcomes, Phillips and Brown (1998) attributed a lower confession rate in more serious crimes to the greater availability of tangible evidence and the higher likelihood of legal representation.

Sexual offenses are among the most severely judged crimes within society and due to the social stigma associated with these crimes a suspected perpetrator is likely to experience humiliation during interrogation (Beauregard & Mieczkowski, 2011). Sigurdsson and Gudjonsson (1994) found that the lowest rate of confessions came from suspected perpetrators of

sexual offenses (83%). A later study had mixed results. The confession rates of rapists (61%) was lower than the confession rates of other non-sexual violent crimes (77%), but the confession rate of child molesters was actually higher (83%) than the confession rate of non-sexually motivated violent crimes (Gudjonsson & Sigurdsson, 2000). Nugent and Kroner (1996) also found that child molesters confessed more readily than rapists. Beauregard and Mieczkowski (2011) analyzed the confession rate of 624 sex offenders incarcerated between 1994 and 2005 via a semi-structured interview with each participant and through analysis of the official police files. The authors found that 41% of those who sexually assaulted children, anyone under the age of 16, confessed to the crime; only 36% of offenders who sexually assaulted adults confessed. However, in cases where no force was utilized outside of the sexual act itself, results were nearly identical with a 45% confession rate for those who sexually assaulted children versus a 44% confession rate for those who sexually assaulted adults. Beauregard and Mieczkowski (2011) provided a potential explanation for the mixed results in these studies citing the age of a victim, crime event characteristics, and the specific interactions between a victim and a suspected perpetrator.

Contrary to the majority of findings, Mitchell (1983) reported that people suspected of perpetrating sexual offenses confessed at a higher rate (89.3%) than those suspected of perpetrating all other non-sexual offenses (70%). Sexual offenses, whether felonies or misdemeanors, are deemed serious by law enforcement. Leo (1996) found that the more serious a crime, the longer the interrogation of a suspected perpetrator. During longer interrogations, investigators use a greater range of interrogation tactics to obtain admissions or a confession (Leo, 1996).

Interrogation Domains

Kelly et al. (2013) identified six domains of interrogation techniques: rapport and relationship building, context manipulation, emotion provocation, confrontation and competition, collaboration, and presentation of evidence. Introduction of voice stress results to a suspected perpetrator falls under presentation of evidence, which Kelly et al. (2015) consider an adversarial domain similar to emotion provocation and confrontation and competition.

Context Manipulation

Context manipulation occurs outside the interrogation dialog, according to Kelly et al. (2013). Altering the physical and temporal space of the interrogation room can maximize the probability of a successful confession. Depending on the circumstances, this may include moving the interrogation from a neutral setting to a more formal interrogation room or the other way around (Kelly et al., 2013). Law enforcement interrogation rooms are the location best suited for conducting a successful interrogation (i.e., a private location within a police department) (Kassin, 2008). Two studies of active law enforcement interrogations demonstrated that being present in a police station is a stressful event; individuals are isolated from those whose presence could otherwise be emotionally supportive (Gudjonsson & MacKeith, 1982; Irving & Hilgendorf, 1980). In this setting, a suspected perpetrator experiences uncertainty about the fulfilment of basic needs such as access to water and use of the restroom and has no knowledge of how long he or she will be in this stress inducing environment (Gudjonsson & MacKeith, 1982; Irving & Hilgendorf, 1980).

Inbau, Reid, Buckley, and Jayne (2013) recommended that an interrogation room should not include any decorative objects that may distract suspects; a distraction-free environment keeps the suspected perpetrator focused on the interrogator. Historically, interrogation rooms are small to enhance the sense of social isolation that a suspected perpetrator experiences (Hinkle, 1961). Contemporary Western law enforcement interview rooms are not constructed with this idea specifically in mind, but the actions of the interrogator can create a sense of social isolation (Cleary & Warner, 2016). During the interrogation process, one form of context manipulation is for the interrogator to move their chair physically closer to a suspected perpetrator. This increases the anxiety of a suspected perpetrator, eliciting admissions or a confession to end the interrogation and escape from the confined space of the interrogation room (Cleary & Warner, 2016). More recent research by Dawson, Hartwig, Brimbal, and Denisenkov (2017), conducted in a laboratory setting, compared 151 participants willingness to speak openly in both a bare custodial room versus in a more spacious physical setting. Contrary to previous studies, Dawson et al. (2017) found that more spacious physical settings induced more openness from the participants ($p < .001$). The study is very recent and requires further research to validate these findings.

Emotion Provocation

The process of obtaining a confession is one of inherent conflict as a suspected perpetrator must provide information that is not in his or her long-term interest. According to Redlich, Kelly, and Miller (2014), the least coercive interrogation techniques are the most effective. Confrontational techniques negate, at least temporarily, a suspected perpetrator's cooperation with the interrogator (Kelly et al., 2015; Redlich et al., 2014). The emotion

provocation domain is the most psychologically coercive of the various domains of interrogation. It involves purposeful manipulation of a suspected perpetrator's emotions by targeting ego, fear, happiness, hate, love, pride, and sadness (Department of the Army, 2006). Interrogators identify the most likely trigger emotions for a suspected perpetrator by analyzing the crime and observing the suspected perpetrator prior to interrogation, during an initial interview, and during rapport building stages of interaction. The interrogator then focuses on eliciting that emotion to appeal to a suspected perpetrator's consciousness of guilt and self-interest (Kelly et al., 2015).

According to Redlich (2007), police interrogations differ from military interrogations in that they focus on gaining a confession from a suspected perpetrator believed to be guilty or at least deceptive, not on gaining intelligence from an individual in a wartime environment who possesses information tangentially or unrelated to the war itself. Nonetheless, there are similarities between law enforcement interrogations and military interrogations in the process of developing rapport and the provocation of emotions (Redlich, 2007). According to the Department of the Army (2006), interrogators can use the emotion provocation domain in a negative or a positive way. Negative emotion provocation includes techniques such as pride-and-ego-down and fear-up. In the former, the interrogator verbally demeans and wears down an aspect of a suspected perpetrator's emotional foundation, destroying a source of strength to resist confession (Department of the Army, 2006). Inducing fear of lengthy prison terms and suggestions of public humiliation are examples of interrogation strategies. However, if future interrogations of the same suspected perpetrator are necessary, any demeaning threads of conversation on the part of the interrogator may create a feeling of negativity and persecution

detrimental to an individual providing additional information; the previous humiliation leads to diminished feelings of security and decreased cooperation (Evans et al, 2014).

The positive approach to emotion provocation is to support a suspected perpetrator emotionally to obtain truthful admissions or a truthful confession through the use of techniques such as pride-and-ego-up and fear-down. As the names imply, the interrogator builds up the ego strength of a suspected perpetrator, and reduces fears of the results of a confession (Department of the Army, 2006). An interrogator may take this to the extreme by raising a suspected perpetrator's pride in the cleverness of the crime to such an extent that he or she feels compelled to take credit for committing the crime (Davis & Leo, 2012).

Confrontation and Competition

Although less psychologically coercive than the emotion provocation domain, Kelly et al. (2015) considered confrontation and competition to be the most verbally harsh interrogation domain. In law enforcement settings, the interrogator's use of this domain increases as a suspected perpetrator's cooperation decreases. Common tactics within this domain include challenging a suspected perpetrator's values, disparaging the alibis and other statements of a suspected perpetrator, refusing to allow denials by a suspected perpetrator, and emphasizing the interrogator's authority over a suspected perpetrator and the interrogation process. Essentially, the interrogator verbally forces a suspected perpetrator into submission (Kelly et al., 2015). This technique may quickly garner a confession from a suspected perpetrator with low ego strength, but the negative effects of the confrontation/competition domain on the cooperation level of a suspected perpetrator can last up to 15 minutes. There is no empirical evidence that the technique contributes to either cooperation or a confession (Kelly et al., 2015).

Presentation of Evidence

The presentation of evidence domain is the domain of focus for the present research study. In a landmark study, Leo (1996) observed 182 criminal interrogations from three different American cities. Detectives presented some type of evidence to a suspected perpetrator in 85% of the interrogations. The presentation of evidence succeeded in eliciting incriminating information from a suspected perpetrator in 78% of the interrogations. Overall, this was not statistically significant (p= .168), but it did result in statistically significant success in eliciting incriminating information from suspected perpetrators older than 30 years of age (p= .004). Leo (1996) considered a detective's perception of and use of evidence in a case to be one of the primary factors in determining whether the detective would file charges against a suspected perpetrator.

According to Kelly et al. (2015), the presentation of evidence to a suspected perpetrator during a law enforcement interrogation can decrease a suspected perpetrator's cooperation. This is similar to the use of confrontation/competition; it occurs because interrogators are frustrated by the lack of a suspected perpetrator's cooperation and may try to overwhelm him or her with actual or implied evidence. This strategy often decreases cooperation even further, and extends the length of the interrogation (Kelly et al., 2015). Decreased cooperation from a suspected perpetrator may result from the timing and intention of the presentation of the evidence (Kelly et al., 2015). In a mock-theft scenario conducted by Granhag et al. (2013) with 195 participants and six conditions, the "strength of the source of the evidence," the "degree of precision of the evidence," and the timing of when the interrogator presented evidence to a suspected perpetrator

were key to detecting deception, defying counter-interrogation strategies, and gaining a suspected perpetrator's cooperation (p. 350).

Stress Detection

Detecting deception or lies is the act of identifying a suspected perpetrator's implicit stress response to crime-related information. For the purpose of this study, a stress response is operationalized to mean the psychological state during which a suspected perpetrator perceives the circumstance of the interrogation as threatening due to indirect evidence of lying (Guyll et al., 2013). This psychological state leads to cognitive dissonance (Lehne & Koelsch, 2015). A suspected perpetrator wards off stress during an interrogation through defensive barriers such as keeping their story simple, remaining consistent, and remaining calm (Granhag, Giolla, Stromwall, & Rangmar, 2013).

Because stress responses cannot be directly correlated to deception, no courts within the United States allow for any of these means of detection to be accepted as sufficiently established within the scientific community as evidence in a court of law per the requirements of *Frye v. United States* (1923). However, an important dynamic within an interrogation is convincing suspected perpetrators "that escape through lying is blocked; then offer them an acceptable solution" (Behavior Analysis Training Institute, 2015, p. 15). Detecting potential deceptive behavior in suspected perpetrators remains a useful investigative tool.

Non-Verbal Body Movements

One method of identifying defensive barriers is through the observation of non-verbal body movements that do not include changes in facial expression. According to Porter, Campbell, Stapleton, and Birt (2002), lying creates physiological arousal for most people that

presents as either a decrease or an increase in non-verbal body movements (e.g., hand movements). Whether consciously or subconsciously, people observe the non-verbal body movements of others as they speak to gauge their level of honesty. Common cues to deception, such as avoiding eye contact, are not accurate measures of lying behavior as culture and circumstance make it difficult to know if a decrease or increase in any body movement is a result of deception or other explanations (e.g., fatigue or a change in thought process; Bond & DePaulo, 2006).

Taylor and Hick (2007) found that both hand movements and tense posture increased during serious lies. A meta-analysis of 54 studies on detecting deception in non-verbal body movements revealed that foot and leg movements, hand movements, and nodding all decreased the more a person lied (Sporer & Schwandt, 2007). However, Schade (2015) conducted a study of dual-task processing to measure lower body movements in relation to deceptive statements of 55 research participants, and found mixed results. Nuanced differences in foot and leg movement decreased during one deceptive statement, but did not significantly decrease during a second deceptive statement. Schade (2015) attributed this to the possibility that respondents' integration of truth into the second deceptive statement may decrease the cognitive load, allowing for near normal lower body movements to occur unabated. This is consistent with Lehne and Koelsch's (2015) findings that lesser variance in the expected outcome will lower the level of intensity in cognitive dissonance.

In their meta-analysis of hundreds of studies measuring deception via non-verbal body movements, accurate detection was only 54%, barely greater than chance (Bond & DePaulo, 2006). People trained to detect deception, presumably the most highly motivated to identify it,

are not necessarily the best at doing so. For example, Vrij and Mann's (2004) meta-analysis revealed that Central Intelligence Agency (CIA) case officers and law enforcement officers were less adept at identifying lying behavior via non-verbal body movements than college students. According to Porter, McCabe, Woodworth, and Peace (2007), professionals with a stake in accurately detecting deception may overly focus on changes in non-verbal body movement, and miss valuable deceptive clues in the words that a person is saying. Conversely, prison inmates, for whom deceit may be a common way of life and who often experience interrogations by law enforcement officers, were the most adept at detecting deception. Hartwig, Granhag, Stromwall, and Andersson (2004) found that inmates successfully detected deception 88.5% of the time compared with college students' deception detection rate of 65%. Prison inmates also demonstrated a high lie bias, making them poor judges of the truth in which they were only accurate 42% of the time (Hartwig et al., 2004). Overall, general observation of non-verbal body movements is not a consistently accurate means of determining deception.

Facial Expressions

Past researchers demonstrated that facial expressions can determine lying behavior. Frank and Ekman (2004) found that when the examination of facial expressions was compared to the observation of body movements and listening to content (filtered voice tone and reading words from a transcript), the examination of facial expressions was the only reliable predictor of truthfulness. In an earlier study, Frank, Ekman, and Friesen (1993) found that examining a person's smile to determine genuineness was accurate 74% of the time if the examiner had previous knowledge of what that individual's true smile looked like. Hurley and Frank (2011) studied 60 undergraduate students from a university in upper New York state, and found that

strategies to mask facial expressions through the use of deliberate facial control could reduce but not eliminate natural facial expressions. Specifically, none of the participants in the deception condition could fully mask a smile; 23 of 30 participants in the deception condition were unable to suppress a brow raise (Hurley & Frank, 2011).

Emotional leakage as revealed in the upper face around the eyes and the lower face around the mouth lasts longer in high-intensity masked expressions than in low intensity masked expressions (Porter, Brinke, & Wallace, 2012). Eye contact, lip-biting, and swallowing increase when telling lies with potentially serious consequences (Taylor & Hicks, 2007). Brinke and Porter (2012) examined high-stakes interpersonal deception by meticulously coding the facial expressions of 78 subjects in televised footage in which the subjects were pleading for the return of a missing relative. This coding resulted in 74,731 observable frames for analysis. Deceit was present in subjects who were later convicted of killing the missing relative. The results revealed significant predictors of deceit during the pleas (e.g., absence of sadness in the upper and lower face and the presence of lower face disgust). Furthermore, when directly appealing to the non-existent perpetrator, the presence of upper face surprise and lower face happiness significantly predicted deception (Brinke & Porter, 2012).

As with non-verbal body movements that do not result from changes in facial expression, interrogators must take care when assuming deception based on facial movements. Changes in micro-expressions may occur due to attempts to cover embarrassing emotions, the experiencing of multiple emotions, or simply feelings of doubt (Ekman & O'Sullivan, 2006). Additionally, identification of deception in micro-expressions may require significant training and practice as most occur within 167 and 500 milliseconds (Yan, Wu, Liang, Chen, & Fu, 2013).

Word Usage

Word usage may be a more accurate means of identifying lying behavior than visual cues (Mann, Vrij, Fisher, & Robinson, 2008; Porter, Rose, & Dilley, 2016). Increased hesitation, increased pauses, sentence incompletions, long sentences in relation to other sentences spoken by a subject, stuttering, unnecessary repetitions, unusual changes in sentences known as speech nonfluencies, changes in voice pitch, and word fillers are verbal cues to deception (Depaulo, Rosenthal, Rosenkrantz, & Reider Green, 1982; Taylor & Hicks, 2007). Clemens, Granhag, and Stromwall (2011) found that liars more consistently referred to their initial story with the interrogator than honest study participants. Walczyk, Roper, Seemann, and Humphrey (2003) attributed references to the initial story as a stalling tactic for the extra time it takes to access linguistic codes when telling a lie, a mental process that is not necessary when telling the truth. Lefter, Burghouts, and Rothkrantz (2016) found that sentences that conveyed helplessness, dissatisfaction, and aggressiveness were potential indicators of stress. The findings of their research study could prove useful to future research specific to identifying the stress of deception during an interrogation.

A cautionary note on the timing of word usage came from Clemens et al. (2011). The timing and manner in which interrogators presented evidence to test subjects potentially influenced the interrogator's ability to detect deception. Like mastering the skill of reading facial expressions, few law enforcement interrogators have the requisite training to dissect word usage. Furthermore, it is a skill more practical for post-interrogation analysis than for detecting real-time deception during the course of an in-person interrogation (Clemens et al., 2011).

Polygraph

One means of countering deception is a stress detection instrument that identifies otherwise undetected stress within a suspected perpetrator (Bourke et al., 2015). The oldest and most well-known mechanical means of measuring the stress induced by deceptive statements is the polygraph. This instrument utilizes the measurement of systolic blood pressure, galvanic skin response, respiration, and pulse to identify stress responses (Waid, Orne, & Orne, 1981). Modern polygraph instruments can record additional parameters that measure various movements of the body, including the masseter muscle that clenches the jaw as a means of masking emotional reactions (Chicago Polygraph Institute, 2016).

According to Grubin and Madsen (2005), use of polygraph testing by law enforcement began in the 1960s and accuracy rates range from 81% to 91%. Han (2016) conducted a survey of polygraph field studies dating back to 1969, and documented an accuracy rate range of 70.6% to 98.6%. Han (2016) includes the zero to 25% inconclusive rate in which polygraphers will not make a deception or no deception call on a chart. Physiological responses on the polygraph are measured as a suspected perpetrator answers *yes* or *no* questions. Control questions, unrelated to the crime, are also answered to establish a suspected perpetrator's baseline stress response level. The theory behind the instrument is that a guilty individual may have higher physiological arousal, or stress, during the relevant crime questions than on the control questions (Grubin & Madsen, 2005). The polygraph is an effective investigative tool for acquiring important information and potentially a criminal confession (Grubin, 2010).

A shortfall of the polygraph is that physiological arousal is experienced in situations other than when lying. A suspected perpetrator may experience physiological arousal when

excited or when experiencing a complex, threatening, or unusual event (Bouton, Mineka, & Barlow, 2001; Sporer & Schwandt, 2007). An innocent individual may experience increased physiological arousal over questions about visceral aspects of a crime, be emotionally triggered by key words unbeknownst to the examiner, or may not demonstrate any arousal for questions for which he or she cannot remember the truth (Injodey & Joseph, 2007; Waid et al., 1981). Intelligence, morals, nervousness, taking sedatives prior to the test, poor training or inexperience on the part of the examiner, and poor question formation by the examiner may impact test outcomes (Injodey & Joseph, 2007).

Voice Stress Analysis

According to Hansen and Patil (2007), physical stress increases respiration, which increases sub-glottal pressure when a human utters speech sounds. As this occurs, articulation rate changes, which modifies sound frequency (Hansen & Patil, 2007). Taylor, Freeman, Olguin, and Kim (2016) measured voice pitch on a sociometric microphone device attached to the clothing of a convenience sample of 35 college students during a problem-solving task. They compared the test subjects' voice pitch with their level of cortisol derived from a saliva sample. Taylor et al. (2016) found that participants who exhibited a stress response to the problem-solving task also had significantly greater deviation ($p < .05$) in voice pitch on the sociometric microphone. Experimental trials successfully identified individuals based on the emotions within their speech with recognition rates between 62.50% and 99.47% (Yogesh et al., 2016).

Lippold (1971) discovered the 8-12 Hz range physiological tremor, which led to the ability to measure physiological stress in the human voice. Bell (1981) invented the first commercially available voice stress analyzer in the late 1970s, which measured frequency-

modulated (FM) infrasonic modulations under 20 Hz. As stress increases, FM intonation becomes flatter, an effect that can be graphically displayed on a chart (Bell, 1981). As the mathematical algorithms utilized with voice stress technology improved, the accuracy of measuring stress through voice stress technology increased. The latest version of the Computer Voice Stress Analyzer (CVSA II®), built by the NITV, contains a built-in Final Analysis Confirmation Tool (FACT®) program that scores the charts for comparison with the examiner's determination of *deception indicated* (DI) or *no deception indicated* (NDI). The FACT® ensures consistent accuracy in chart pattern evaluation with 98% accuracy during thousands of trials (NITV, 2015).

The CVSA II® instrument has similar, and in some cases higher, accuracy rates in detecting stress responses than the polygraph (Chapman & Stathis, 2012). Relative to the polygraph, the CVSA II® has a significantly shorter training time, lower equipment cost, and a much lower and relatively minor level of intrusiveness: a microphone is clipped to a suspected perpetrator's shirt. The present study utilized the CVSA II® as the stress detection instrument. The interrogator presented a suspected perpetrator's stressful responses to him or her as implicit evidence that he or she was lying, which triggered a psychological state of cognitive dissonance and a potential path to an admission or a confession.

Chapter 3: Research Design and Methods

Purpose of the Study

Law enforcement interrogations occur when a suspected perpetrator is unwilling to provide law enforcement investigators with truthful admissions or a truthful confession. Based on the key assumption that people anticipate a future outcome, the researcher assumes suspected perpetrators experience psychological tension when confronted with indirect evidence of lying (e.g., voice stress test results). The suspected perpetrator's knowledge of the type of crime and the length of incarceration for that crime may influence the length of time before he or she provides admissions or a confession. When a crime committed by a suspected perpetrator is relatively minor and the potential resulting punishment or consequences are not severe, there may be less resistance to provide the truth and shorten the interrogation process. Conversely, when a crime committed by a suspected perpetrator is serious and the resulting consequences are severe, resistance to confessing the truth may be high and prolong the interrogation process.

Hypothesis

Upon being presented with evidence of a stress response to interrogation questions, the amount of time it takes for a suspected perpetrator of a crime to make truthful admissions or confess to a crime will increase as the seriousness of the crime and length of the resulting incarceration increase.

Variables

The independent variables in the present study were categorical: the type of criminal offense and the potential length of incarceration for the criminal offense. The dependent

variables were the mean duration of time to an admission and the mean duration of time to a confession during a criminal interrogation, measured in minutes.

Participants

The researcher conducted this study using an archival data set of 92 criminal interrogations conducted by one detective. For the overall data set, the individuals were accused of perpetrating crimes ranging from misdemeanor theft and property damage to armed robbery and aggravated rape in an urban central Louisiana city. The age range of the suspected perpetrators was 20 to 55 years (M = 31, SD= 8.73). Of the 92 suspected perpetrators, 24 were females and 68 were males. The racial-ethnic make-up of the suspected perpetrators was 40 African-Americans and 52 Caucasians. Twenty-nine were identified as high school dropouts, one was identified as having a general educational development high school diploma equivalency credential (GED), 46 had high school diplomas, 14 had some college education, and two were identified as unknown. Fifty-five were identified as being employed, 33 were unemployed, one was identified as a student, one was identified as retired, and two were identified as unknown. Furthermore, 36 suspected perpetrators had no prior arrest record, 37 had between one and three prior arrests, and 17 had four or more prior arrests. For two suspected perpetrators, the detective conducting the interrogation was unable to determine if they had any prior arrests. For a majority of the suspected perpetrators who had previously been arrested in the State of Louisiana, the detective listed the crimes for which they had previously been convicted.

The detective documented the suspected perpetrators' economic status. Thirty-one were identified as poor, 40 were identified as blue-collar, 14 were identified as middle class, and seven were identified as unknown. The researcher determined that this demographic category was

inadequately defined with no further explanation. For example, an individual may be accurately defined as both blue-collar and poor. Conversely, an individual may be accurately defined as both blue-collar and middle class. Thus, the researcher did not use this demographic category in the study.

Information from the suspected perpetrators' interrogations included the type of crime for which the individual was being interrogated. The data set of 92 criminal interrogations included 38 cases of theft, seven cases of damage to property, 17 cases of burglary, five cases of robbery, seven cases of child abuse, 15 cases of sexual battery, and three cases of rape. The crimes and the subsequent interrogations took place between November 2008 and November 2014. For each type of crime, the detective documented the potential length of sentencing under Louisiana state law at the time of the commission of the crime. The detective documented that the potential length of sentencing for theft was probation up to three years in prison. The potential length of sentencing for the damage to property cases was probation. The exception was one case wherein a graveyard was vandalized and the potential length of sentencing was five years in prison. The detective recorded that the potential length of sentencing for burglary was probation up to five years in prison. The potential length of sentencing for robbery was between 10 and 25 years in prison. The potential length of sentencing for child abuse was between five and 20 years in prison. The detective recorded that the potential length of sentencing for sexual battery was between five and 10 years in prison. Finally, the detective recorded that the potential length of sentencing for the cases of rape under Louisiana state law was 20 years in prison.

Instrumentation

The Computer Voice Stress Analyzer II (CVSA II®)

Law enforcement officials utilize multiple means to verify the truth. Depending on the method, truth detection is alternately referred to as lie detection or stress detection. The truth verification instrument for the data set in the present study was the CVSA II® manufactured by the NITV. First manufactured in 1988, the CVSA II® underwent continual technology upgrades and now includes a FACT®. This tool utilizes a mathematical algorithm to analyze, categorize, and score the results of the CVSA II®. This technology increases inter-rater reliability, and significantly reduces the inherent human error associated with measuring a stress response (NITV, 2015).

All participants in the data set were interrogated by the same police detective, who used the same CVSA II® instrument in each case. The detective saved this data to conduct a future analysis of the effectiveness of the CVSA II® in criminal interrogations. When the detective determined that a suspected perpetrator was withholding truthful information or being deceptive, the detective asked the suspect to volunteer to undergo a CVSA II® examination. If a suspected perpetrator agreed, the detective formulated a series of direct questions requiring an affirmation (yes) or a denial (no). The questions consisted of three types: relevant, control, and irrelevant. Relevant questions pertained directly to the crime. An example of a relevant question is, “did you rob the liquor store?” Control questions measured a suspected perpetrator’s verbal denial. Control questions are known truths with no connection to the crime to which a suspected perpetrator was told to lie. The stress response on a benign question unrelated to the crime should not be high. Thus, for a suspected perpetrator who is innocent of the crime in the relevant

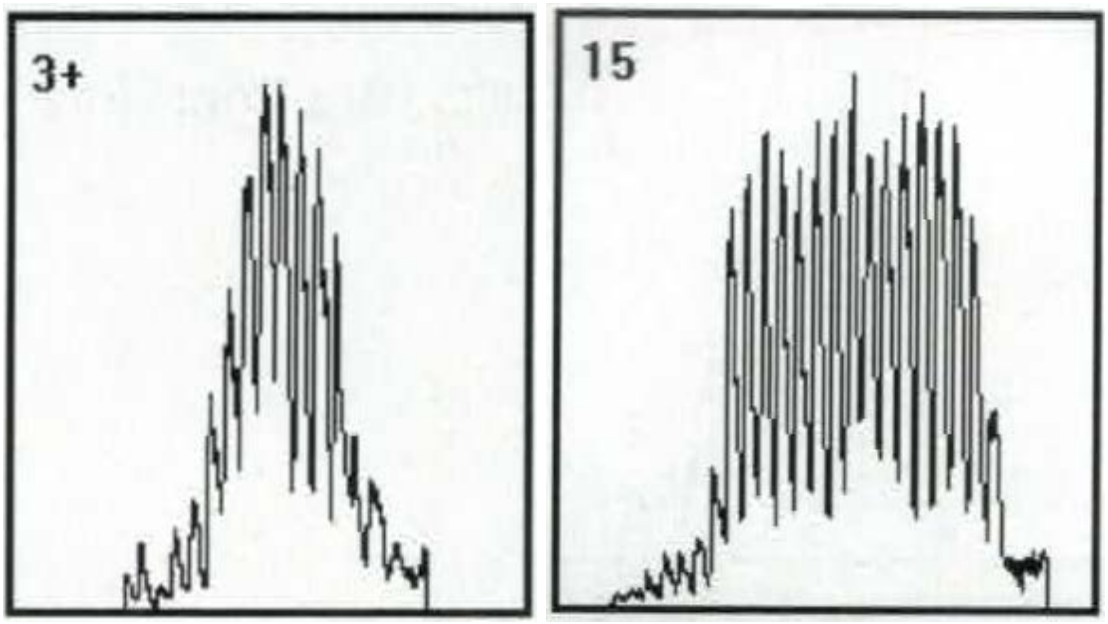
questions, control questions allow innocent individuals to channel their stress when asked to lie. Conversely, a suspected perpetrator with guilt knowledge tends to disregard the control questions and focus on the relevant questions associated with real-life consequences. An example of a control question to a licensed adult might be, “Have you ever driven over the posted speed limit?” Irrelevant questions elicit truthful responses to a neutral issue with no relationship to the crime. They capture and display delayed stress that may carry-over from relevant and control questions. For example, if the interrogator is wearing a watch, an example of an irrelevant question could be, “Am I wearing a watch?”

After forming the questions, the detective asked them to a suspected perpetrator who responded into a microphone connected to the CVSA II®. The instrument captured each response, quantified and categorized the unique characteristics of each response, and then charted it on a voice graph for visual inspection. The detective evaluated the voice graph chart based on training and experience, and compared the graph patterns for signs of stress. After the assessment of the chart, the detective put an overall evaluation of deception indicated (DI) or no deception indicated (NDI) into the CVSA II®. The CVSA II® conducted a mathematically-based evaluation for each question and the chart in its entirety using the FACT® scoring system. If the FACT® results agreed with the detective’s evaluation, the CVSA II® examination was completed (NITV, 2015).

If there was disagreement between the detective’s assessment and the FACT®, then another expert evaluated the results. This additional verification method is known among CVSA II® examiners as a *cold call*. The cold call consists of emailing the charts, which contain the patterns with no additional accompanying information, to other trained examiners who have no

involvement with the matter under investigation. These examiners evaluate the charts to verify whether there is DI or NDI, and provide this objective evaluation to the original examiner (NITV, 2015). The detective followed this procedure in all cases in this data set.

Graphs for truthful answers versus deceptive answers on the CVSA II® appear in Figure 1. When a relevant question or its following irrelevant question scores in a flat mesa shape (given a numerical value of 84 or higher on the chart), the chart is scored as DI. When this occurred during the 92 criminal interrogations in this data set, the detective directly accused the suspected perpetrator of being deceptive. The detective then interrogated the suspected perpetrator to obtain admissions or a confession to the crime.



No Deception Indicated Deception Indicated

Figure 1. Graphs for truthful answers versus deceptive answers on the CVSA II®.

Procedures

The interrogator detective was the owner of the data set, which did not contain specific identifying information such as names and dates of birth. The letter from the detective granting permission to utilize this data set is in Appendix A. In the data set, time to an admission was set from the moment the detective ended his statement accusing a suspected perpetrator of being deceptive, as indicated by the CVSA II®, to the beginning of any verbal admission by a suspected perpetrator indicating participation in the crime. Time to a confession was set from the moment the detective ended his statement accusing a suspected perpetrator of being deceptive, as indicated by the CVSA II®, to the beginning of the first sentence made by a suspected perpetrator that constituted the beginning of his or her verbal confession. These guidelines ensured that the measured time to a confession was not influenced by the full length of a suspected perpetrator's confession, which varies greatly based on verbal style, the circumstances of the crime, and the number of follow-up questions asked by the detective. The detective precisely documented the beginning of the admissions and confessions by reviewing the audio and video recordings of the interviews after the interrogations.

Data Analysis

The primary analysis conducted on the archival data was the Kaplan-Meier Survival Curve statistical analysis, a mathematical calculation to compare the length of time to an admission and a confession under specific conditions (Kaplan & Meier, 1958). This method is an advanced T-test similar to an ANOVA that can take into account a greater number of data points. The researcher used this statistical method to measure whether the amount of time it took for the suspected perpetrator of a crime to admit or confess to a crime increased as the seriousness of the

crime and the length of the potential resulting incarceration increased. Within the test, time-to-event is a time duration variable with a beginning that started at the point of accusation by the detective and with an ending point at the moment the suspected perpetrator started the first sentence of an admission or a confession. This duration of time is known as the interval or serial time.

With a Kaplan-Meier Survival Curve, the researcher may eliminate subjects if the survival time cannot be accurately measured. In this study, the researcher utilized a suspected perpetrator in the data set who did not show as deceptive on the voice graph or who did not provide an admission or a confession for overall statistical purposes, but not in the time to admission or time to confession survival curve analysis. The researcher prepared graphs with the X-axis designating time to an admission and time to a confession, and the Y-axis designating specific type of crime, category of crime, or length of incarceration. The steepness of each Y-axis curve depended on the survival duration. The researcher utilized confidence intervals to visually display differences in the survival durations by calculating the chi-square (X^2), utilizing the *log rank test* or the *hazard ratio* (Rich et al., 2010).

Boundaries of the Study

The detective did not interrogate any suspected perpetrators for the crime of homicide during the course of the collection of this data set. The detective recorded the length of sentencing for all crimes included in the data set based on the guidelines set forth in the Louisiana criminal code and Louisiana sentencing guidelines. Length of time to a truthful admission or confession was from the moment that the detective directly accused a suspected perpetrator of giving a deceptive statement based upon the outcome of a truth verification (stress

detection) instrument to the moment a suspected perpetrator made a statement directly linking himself or herself with criminal responsibility for the crime.

Although rare, false confessions do occur in criminal interrogations. Malloy, Shulman, and Cauffman (2014) reported that false confessions occur more frequently during interrogations lasting longer than two hours and during high-pressure interrogations such as those containing threats by a law enforcement interrogator. To avoid inadvertently including false confessions within this study, the researcher included no interrogations lasting over one hour. Additionally, the researcher excluded interrogations utilizing high pressure tactics such as challenging a suspected perpetrator's values, emphasizing interrogator authority, or disparaging a suspected perpetrator's alibis. If a suspected perpetrator was found to be deceptive, the researcher only included cases leading to a conviction or a plea bargain in this study.

For the purpose of this study, the researcher defined an admission as acknowledgement of culpability or responsibility in a particular crime. A schematic example of an admission in a robbery case is:

(Detective) "Did you take part in the robbery?"

(Suspected Perpetrator) "Yes."

For the purpose of this study, the researcher defined a confession as a formal statement detailing involvement in a particular crime. A schematic example of a confession in a robbery case is:

(Detective) "Did you take part in the robbery?"

(Suspected Perpetrator) "Yes. Billy and I drove to the liquor store. He waited in the car while I walked inside, pointed the gun at the clerk, and demanded the cash from the

register. The clerk handed me the cash and I stuffed it in my jacket pocket. I ran out of the liquor store, got into the car, and Billy drove away. I tossed the gun in a ditch along Highway 1 as we drove north. Billy and I later divided the $200 that I stole in the robbery evenly between us."

Chapter 4: Analysis of the Data

The independent variables in the present study were the type of criminal offense for which a suspected perpetrator was interrogated and the potential length of incarceration for each criminal offense. The criminal offenses in the original data set included the categories of theft, damage to property, burglary, criminal credit card use, identity theft, illegal drug use or sales, robbery, shooting an animal, assault, child abuse, sexual battery, and rape. The researcher eliminated the following interrogations from the final data set due to an insufficient number of interrogations for statistical comparison: criminal credit card use (two interrogations), identity theft (one interrogation), drug crimes (three interrogations), shooting an animal (one interrogation), and assault (one interrogation). This left seven crime categories: theft (38 interrogations), damage to property (seven interrogations), burglary (17 interrogations), robbery (five interrogations), child abuse (seven interrogations), sexual battery (15 interrogations), and rape (three interrogations); a total of 92 criminal interrogations.

While the three interrogations for rape fell under the recommended sample size of five necessary for basic statistical analysis, the researcher combined them with the 15 interrogations for sexual battery into the category of sex crimes with a total of 18 interrogations. In one analysis, the researcher compared this category to all non-sex crimes. Similarly, in the confession condition the robbery and child abuse categories also fell under the recommended sample size of five necessary for basic statistical analysis. The researcher retained both for integration into the crimes against persons category sample. Overall, when interrogations from any type of crime resulted in no stress indicated on the CVSA II®, suspected perpetrators were likely answering honestly about not taking part in the crime and the researcher eliminated these interrogations

from further analysis. When interrogations resulted in no admission or resulted in no confession, the detective was unable to substantiate the suspected perpetrators' involvement in the crime. Thus, the researcher also eliminated these interrogations from further analysis.

The dependent variables in the study were the mean duration of time to an admission and the mean duration of time to a confession during a criminal interrogation. Time was measured in minutes. The 92 interrogations that comprised the final data set are listed in the admission condition (Table 1) and in the confession condition (Table 2). The study sample means and standard deviations in both conditions appear in Table 3.

Table 1

Characteristics of the Interrogation Study Sample in the Admission Condition

Characteristic	No Stress Indicated (n = 24)	Admission (n = 59)	No Admission (n = 9)	Total (n = 92)
Theft	12	23	3	38
Prop Damage	0	7	0	7
Burglary	4	11	2	17
Robbery	0	3	2	5
Child Abuse	3	3	1	7
Sexual Battery	4	10	1	15
Rape	1	2	0	3

Table 2

Characteristics of the Interrogation Study Sample in the Confession Condition

Characteristic	No Stress Indicated (n = 24)	Confession (n = 52)	No Confession (n = 16)	Total (n = 92)
Theft	12	21	5	38
Prop Damage	0	7	0	7
Burglary	4	11	2	17
Robbery	0	1	4	5
Child Abuse	3	3	1	7
Sexual Battery	4	7	4	15
Rape	1	2	0	3

Table 3

Interrogation Study Sample Time to Admission and Time to Confession

	Admission			Confession		
Characteristic	*n*	*M* (*SD*)	95% CI	*n*	*M* (*SD*)	95% CI
Theft	23	15.3 (11.0)	[11.0, 19.7]	21	19.9 (12.1)	[14.7, 25.2]
Prop Damage	7	14.0 (8.6)	[6.1, 21.9]	7	22.6 (9.3)	[13.5, 31.6]
Burglary	11	18.6 (8.7)	[12.3, 24.9]	11	24.2 (13.3)	[17.0, 31.4]
Robbery	3	13.7 (8.6)	[1.6, 25.7]	1	21 (N/A)	[-2.9, 44.9]
Child Abuse	3	18.0 (2.6)	[5.9, 30.0]	3	30.3 (9.5)	[16.5, 44.1]
Sexual Battery	10	24.7 (13.1)	[18.1, 31.3]	7	26.8 (11.6)	[17.8, 35.9]
Rape	2	10.0 (5.6)	[-4.7, 24.7]	2	21.0 (9.9)	[4.1, 37.9]

Results

Crime Type

The present research examined whether the amount of time it takes for a suspected perpetrator of a crime to admit or confess to a crime would vary based upon seriousness of the crime. In the case of this data analysis, seriousness of the crime was the comparison between committing a crime of sexual battery versus committing a crime of theft. In general, a crime of sexual battery is a more serious crime than the relatively low-level crime of theft (Beauregard & Mieczkowski, 2011; Sigurdsson & Gudjonsson, 1994). Sexual battery carries a harsher criminal penalty than a crime of theft. In this data set, the criminal penalty for sexual battery was between five and 10 years in prison; the criminal penalty for theft was probation or up to five years in prison (LSA-R.S. 14:43.1; LSA-R.S. 14:67).

The researcher found that the mean length of time to an admission during interrogation about a crime of sexual battery was lengthier (M= 24.70 minutes, SD= 13.09) than the length of time to an admission about a crime of theft (M= 15.35 minutes, SD= 11.05), t (31)= -2.114, p =0.043, two-tailed test. This provides some support for the research hypothesis of this study that a serious crime results in a lengthier time to an admission after being confronted with voice stress implicit evidence by an interrogator. However, in the confession condition, the researcher found a lack of significance between the mean length of time to a confession for sexual battery (M= 26.86 minutes, SD= 11.62) and the mean length of time to a confession for theft (M= 19.95 minutes, SD= 12.14), t (26)= -1.316, p =0.200, two-tailed test.

Under more rigorous conditions, the significance in time to admission between these two categories disappears as well. The researcher combined the property crime category of theft (a

relatively low criminal penalty) with the property crime category of burglary (a serious felony with a relatively high criminal penalty of probation up to twelve years in prison) (LSA-R.S. 14:62). There is no legal significance to this combination. However, Liederbach, Fritsch, and Womack (2011) found the property crimes combination in use at a police department in Texas. Additionally, this researcher found that 34 incorporated cities in a southern California county assigned theft and burglary cases to designated property crimes detectives who were distinct from detectives working in cases involving crimes against persons. Furthermore, this combined property crimes category has a historical precedence dating back to studies by Leo (1996) and Neubauer (1974). Researchers still often cite these two landmark studies on law enforcement in contemporary research and they have yet to be replicated. Finally, this division was specifically utilized by Frantzen and Can (2012) who gathered data from municipal police departments throughout the state of Texas and compared the lie detection ability of property crimes detectives to detectives who investigate violent crimes. By joining the theft and burglary categories, this researcher more closely aligned the criminal penalty for the property crime category and the sexual battery category. The researcher compared the combined property crime category with the sexual battery category using the more rigorous Kaplan Meier Survival Curve (Figure 2).

Utilizing this analysis, when comparing the median time to admission between individuals accused of committing a crime of sexual battery versus individuals accused of committing a property crime, the researcher found a lack of statistical significance. This lack of significance was evident in the beginning of the interrogation (Breslow test), χ^2 (1, N = 44) = 5.097, p= 0.078, in the middle of the interrogation (Tarone-Ware test), χ^2 (1, N = 44) = 5.227, p= 0.073, and at the end of the interrogation (Log Rank test), (1, N = 44) = 4.166, p= 0.125. Overall,

the non-significant result of the Kaplan Meier Survival Curve comparing individuals accused of committing a crime of sexual battery versus individuals accused of committing a property crime demonstrates that there is no real distinction in the median time to admission to the crime throughout the entire length of the interrogation process.

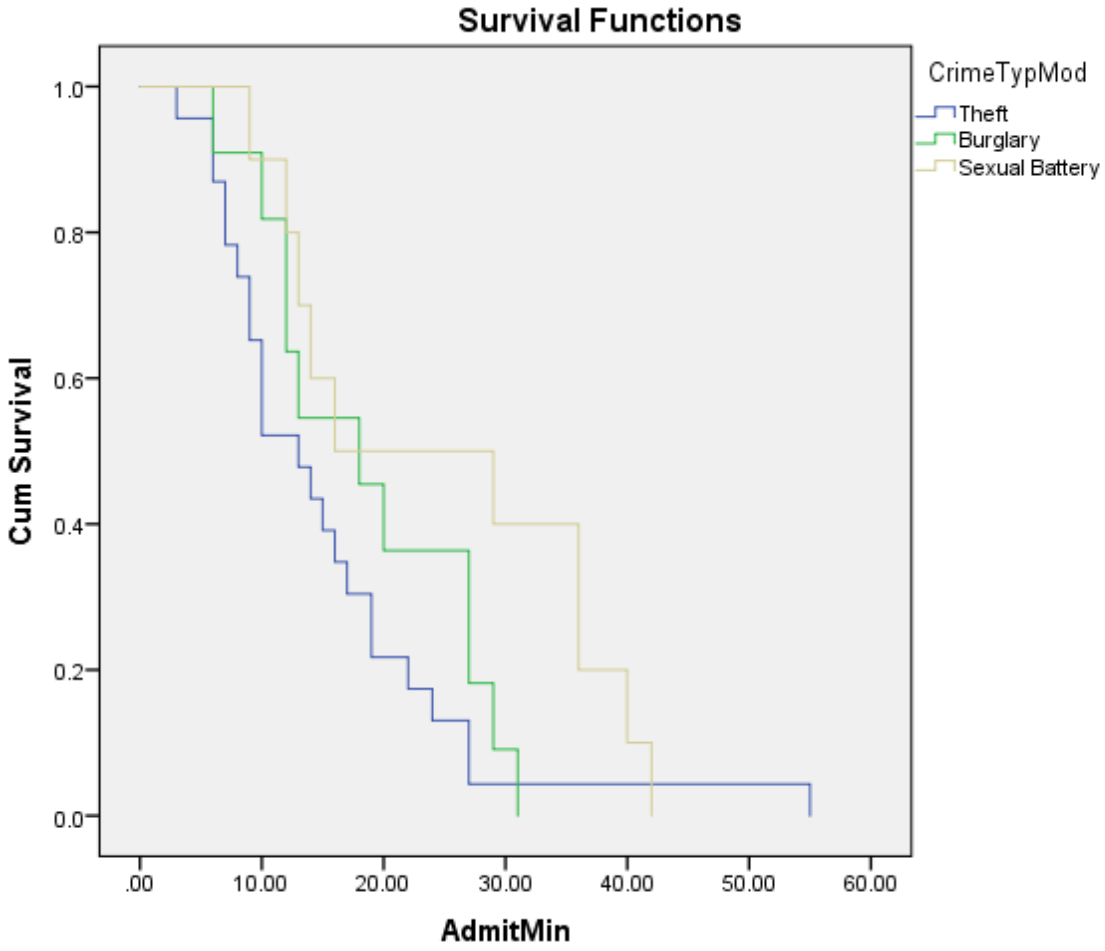


Figure 2. Combined Theft and Burglary versus Sexual Battery (Admission condition) Kaplan Meier Survival Curve.

Similarly, the Kaplan Meier Survival Curve data comparing the median time to confession between individuals accused of committing a crime of sexual battery versus individuals accused of committing a property crime had a lack of statistical significance. As shown in Figure 3, this lack of significance was evident in the beginning of the interrogation (Breslow test), χ^2 (1, N = 39) = 1.903, p= 0.386, in the middle of the interrogation (Tarone-Ware test), χ^2 (1, N = 39) = 1.629, p= 0.443, and at the end of the interrogation (Log Rank test), (1, N = 39) = 1.001, p= 0.606. Overall, the non-significant result of the Kaplan Meier Survival Curve comparing individuals accused of committing a crime of sexual battery versus individuals accused of committing a property crime demonstrates that there is no real distinction in the median time to confession to the crime throughout the entire length of time associated with the interrogation process triggered by providing a suspected perpetrator with voice stress implicit evidence.

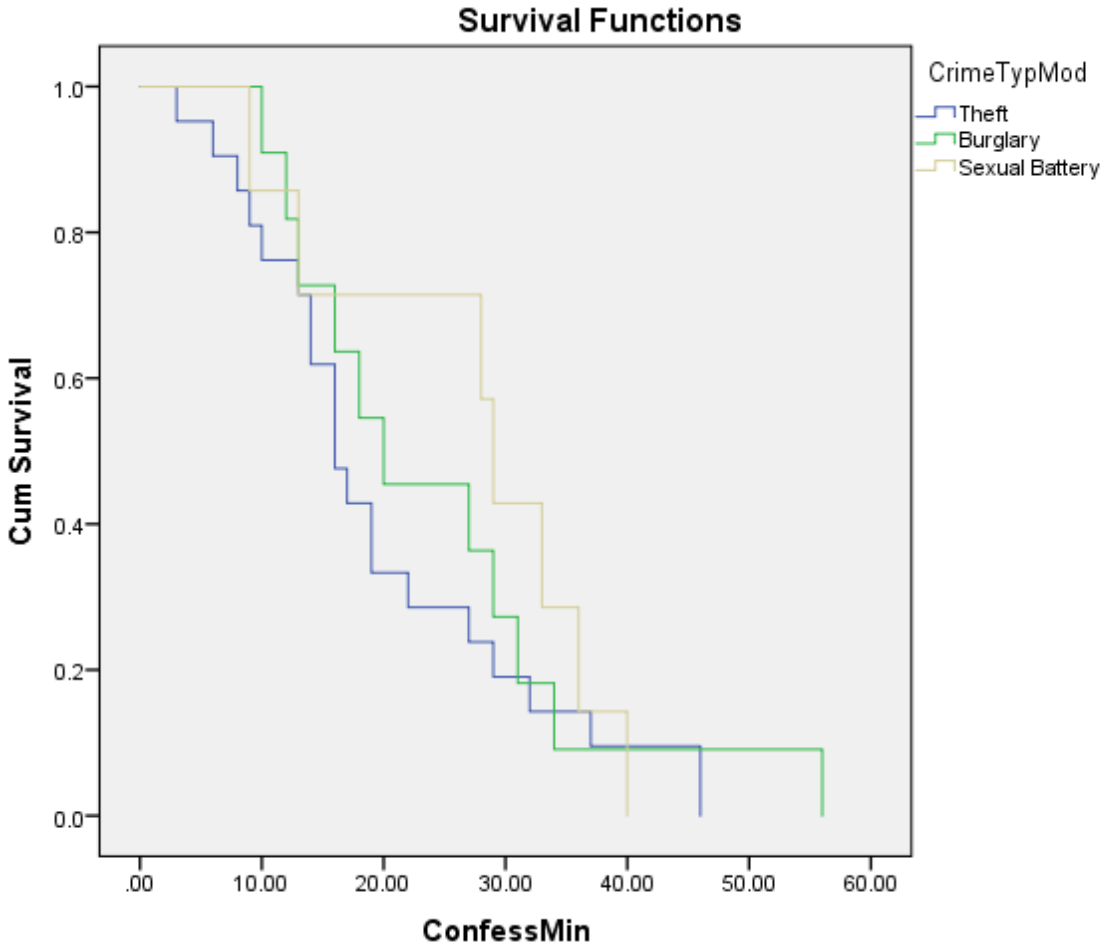


Figure 3. Combined Theft and Burglary versus Sexual Battery (Confession condition) Kaplan Meier Survival Curve.

Property Crimes versus Crimes Against Persons

To further explore the nature of the time to admission and time to confession in the interrogation process, the researcher conducted a Kaplan Meier Survival Curve analysis comparing the median time to admission and the median time to confession between individuals accused of committing a property crime versus individuals accused of committing a crime

against another person. Expanding on the previous analysis and consistent with the studies by Frantzen and Can (2012), Leo (1996), Liederbach et al. (2011), and Neubauer (1974), the researcher combined all crime categories within the acquired data set into the property crimes and crimes against persons categories. The full property crimes category consisted of burglary, theft, and vandalism with sentencing ranging from probation to 12 years in prison (LSA-R.S. 14:62; LSA-R.S. 14:67; LSA-R.S. 14:225). The crimes against persons category consisted of child abuse, rape, robbery, and sexual battery with sentencing ranging from five years in prison to 99 years in prison (LSA-R.S. 14:403; LSA-R.S. 14:42.1; LSA-R.S. 14:64; LSA-R.S. 14:43.1). The sentencing range of the two categories in this analysis was more disparate than in the previous analysis, but the size of the categories was more robust, which potentially added to the utility of the findings. Furthermore, the researcher will address disparate sentencing in the follow-on analysis in this research study. In the admission condition of the current analysis, there was no significance in the time to admission between the property crimes and the crimes against persons categories in the beginning of the interrogation (Breslow test), χ^2 (1, N = 68) = 2.169, p= 0.141, in the middle of the interrogation (Tarone-Ware test), χ^2 (1, N = 68) = 2.150, p= 0.143, and at the end of the interrogation (Log Rank test), (1, N = 68) = 1.870, p= 0.172 (see Figure 4).

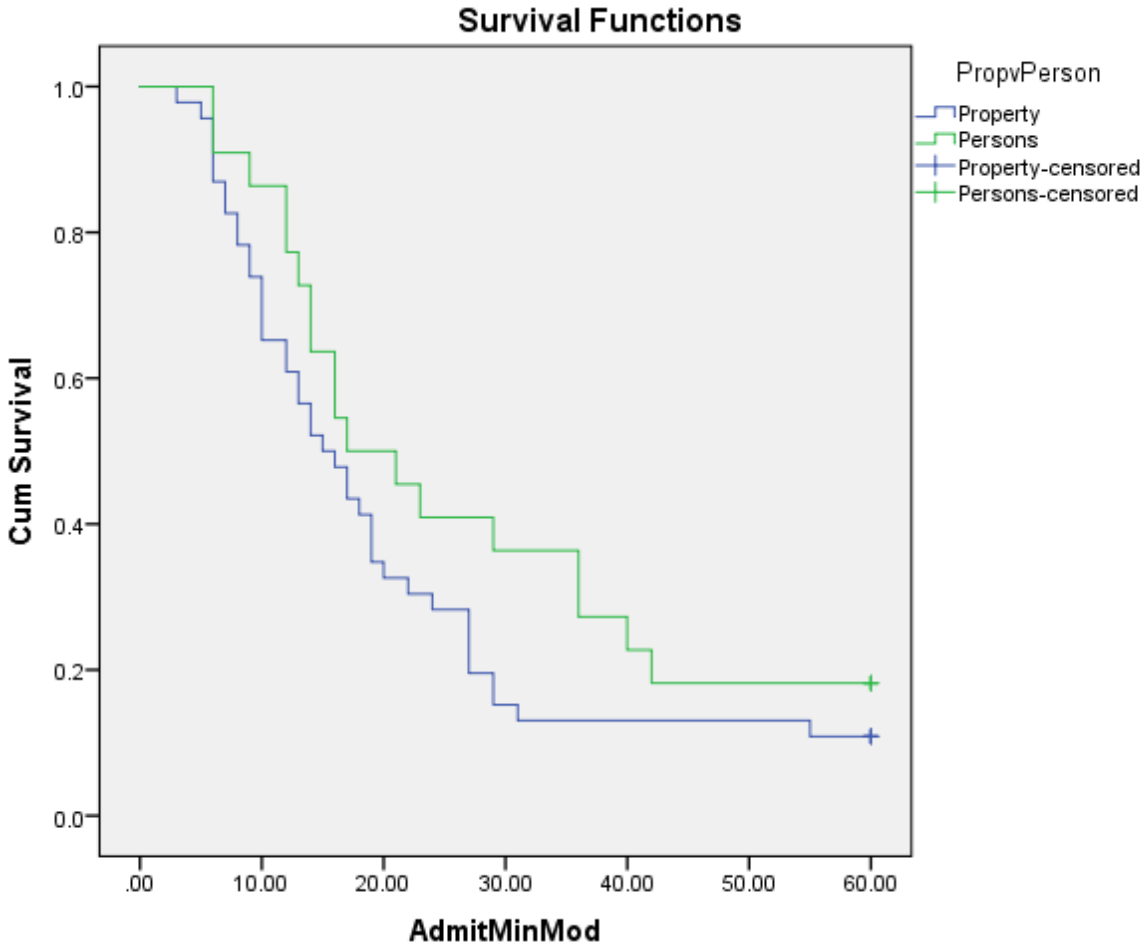


Figure 4. Property versus Persons (Admission condition) Kaplan Meier Survival Curve.

Conversely, in the confession condition (Figure 5) at the beginning of an interrogation (Breslow test), there was a statistically significant difference between the survival curve of the property crimes condition and the crimes against persons condition: χ^2 (1, N = 68) = 6.704, p= 0.010. In the middle of an interrogation (Tarone-Ware test), there was a statistically significant difference between the survival curve of the property crimes condition and the crimes against

persons condition: χ^2 (1, N = 68) = 6.755, p= 0.009. At the end of an interrogation (Log Rank), there was a statistically significant difference in time between the survival curve of the property crimes condition and the crimes against persons condition: χ^2 (1, N = 68) = 6.432, p= 0.011.

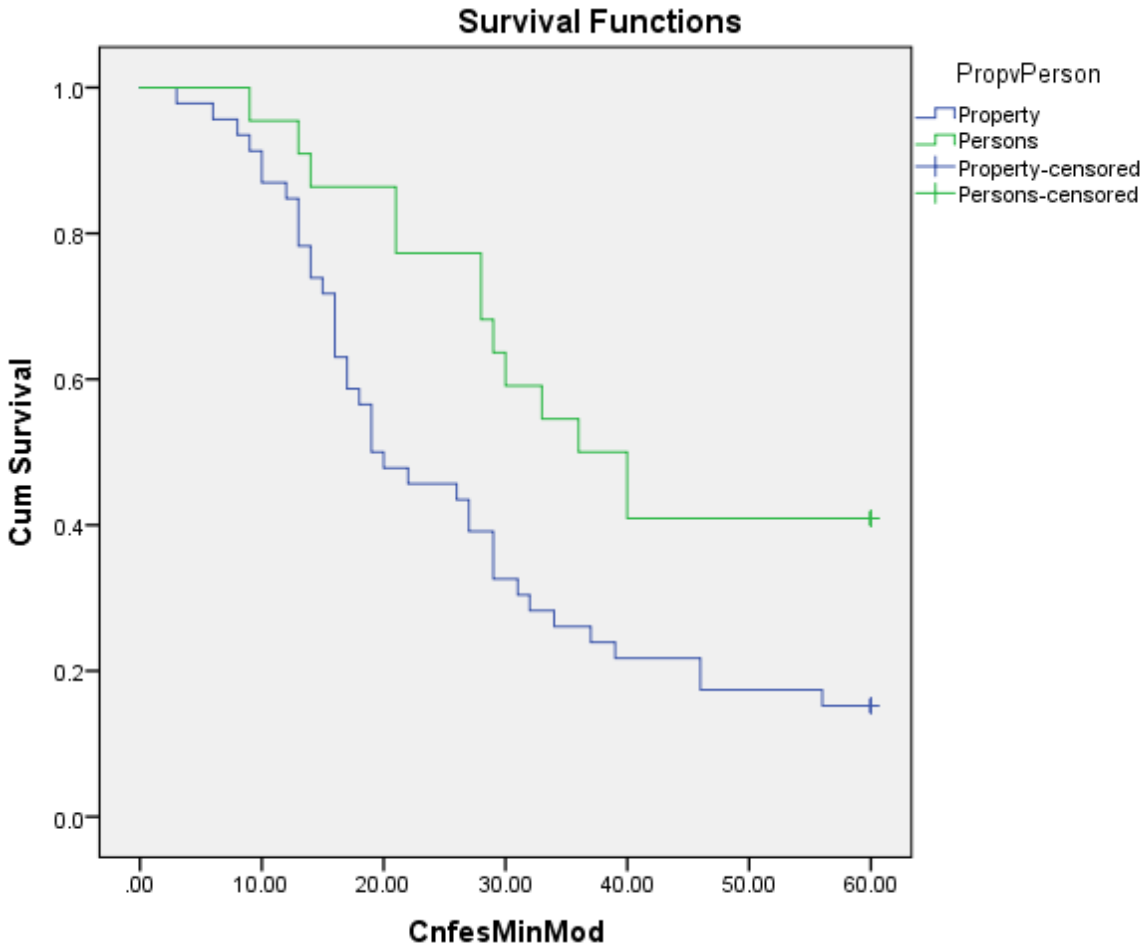


Figure 5. Property versus Persons (Confession condition) Kaplan Meier Survival Curve.

Overall, the significant results of the Kaplan Meier Survival Curve analysis in the confession condition comparing individuals accused of committing a property crime versus individuals accused of committing a crime against persons demonstrate that there might be a distinction in the median time to confession during different time periods (beginning, middle, end) associated with the interrogation process when confronted with voice stress implicit evidence by an interrogator (Table 4).

Table 4

Time to Admission and Time to Confession for the Property Crimes and Crimes Against Persons Samples

		Admission			Confession	
Characteristic	*N*	*M* (*SD*)	95% CI	*n*	*M* (*SD*)	95% CI
Property Crimes	46	20.8 (16.7)	[15.6, 25.9]	46	27.4 (17.7)	[22.1, 32.7]
Persons Crimes	22	27.4 (18.9)	[19.9, 34.8]	22	40.1 (18.6)	[32.4, 47.7]

Length of Sentence

Considering the anticipatory process (Lehne & Koelsch, 2015), certain types of crimes and length of sentence influence the length of time to an admission or confession after interrogators confront suspects with voice stress implicit evidence. The researcher examined the length of sentence regardless of the type of crime. The research hypothesis for this analysis was that the amount of time it takes for a suspected perpetrator to admit or confess to a crime varies

based upon the severity of the resulting penalty ranging from legal probation to incarceration for 10 or more years. The Kaplan Meier Survival Curve data comparing the median time to admission did not demonstrate a statistically significant difference between the four groups at the beginning of an interrogation (Breslow test) χ^2 (3, N = 68) = 3.060, p=0.382, in the middle of an interrogation (Tarone-Ware test) χ^2 (3, N = 68) = 3.664, p=0.300, or at the end of an interrogation (Log Rank test) χ^2 (3, N = 68) = 3.746, p=0.290 (see Figure 6).

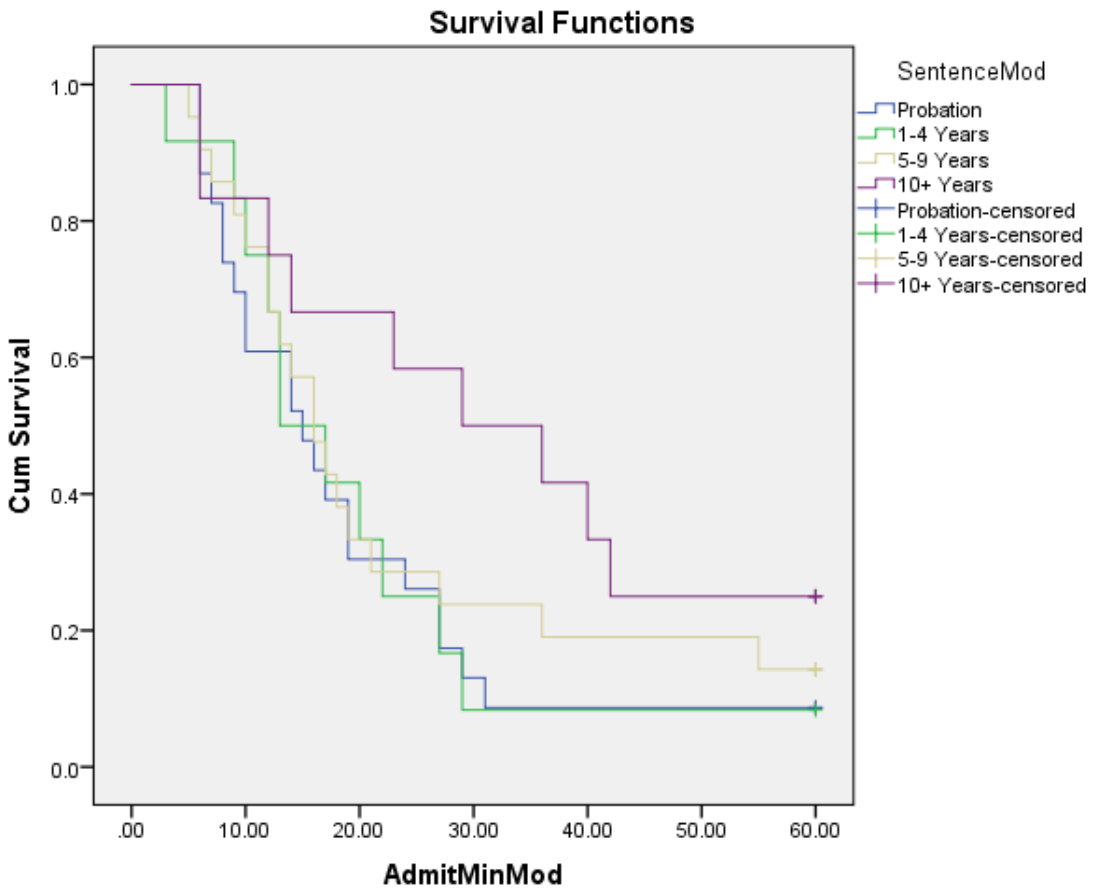


Figure 6. Length of Sentence (Admission condition) Kaplan Meier Survival Curve.

Conversely, the Kaplan Meier Survival Curve data comparing the median time to confession between individuals potentially sentenced to minimal incarceration time (one to four years) versus those potentially sentenced to lengthier incarceration (five to nine years) demonstrated statistical significance (see Figure 7). At the beginning of an interrogation (Breslow test), there was a statistical difference between the survival curves of the sentencing categories: χ^2 (3, N = 68) = 11.832, p=0.008. In the middle of an interrogation (Tarone-Ware test), there was a statistical difference between the survival curves of the sentencing categories: χ^2 (3, N = 68) = 12.568, p=0.006. Furthermore, at the end of an interrogation (Log Rank test), there was a statistical difference between the survival curves of the sentencing categories: χ^2 (3, N = 68) = 12.826, $p < .005$. Overall, the significant results of the Kaplan Meier Survival Curve analysis comparing individuals facing one to four years of incarceration versus those facing five to nine years of incarceration demonstrated a clear distinction in the median times to confession during various time periods (beginning, middle, end) in the interrogation process.

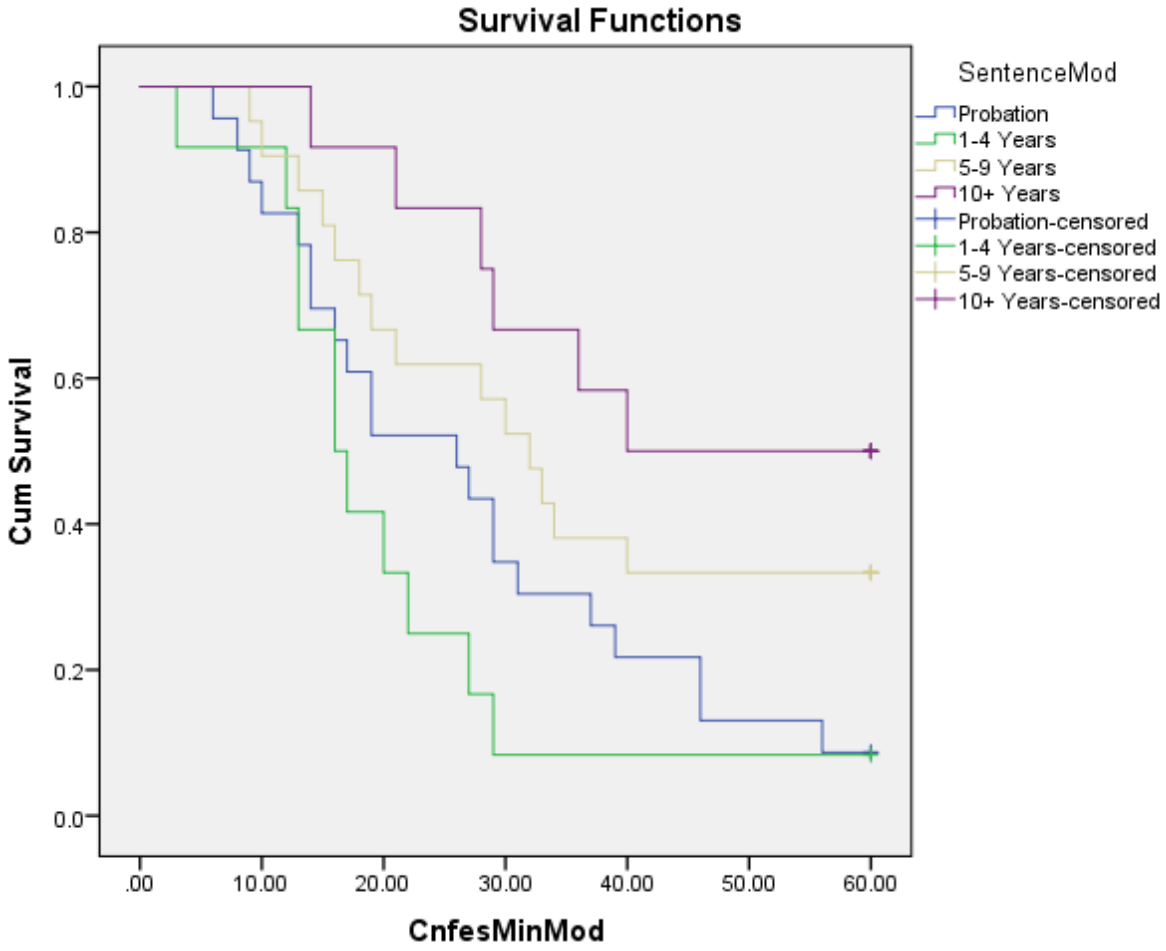


Figure 7. Length of Sentence (Confession condition) Kaplan Meier Survival Curve.

The confidence intervals of the median time between the one to four years of incarceration and the five to nine years of incarceration sentence categories do not overlap. This reinforces the statistical significance indicated by the survival curve analysis. Table 5 summarizes the median confession time values and corresponding confidence intervals between the one to four years of incarceration sentencing category and the five to nine years of incarceration sentencing category.

Table 5

Time to Confession for the One to Four Years and Five to Nine Years Incarceration Sample

		Confession	
Characteristic	*n*	*M* (*SD*)	95% CI
1-4 Years	12	16.0 (2.3)	[11.5, 20.5]
5-9 Years	21	32.0 (3.8)	[24.5, 39.5]

Demographic Data

The researcher examined whether there were any relevant demographic features that might influence the length of time to an admission or confession among suspected perpetrators during an interrogation. The researcher found that the mean length of time to an admission in minutes, when the suspected perpetrator had a high school level education or some college education, was lengthier (M= 19.11 minutes, SD= 12.25) than the mean length of time to an admission in minutes when the suspected perpetrator was a high school dropout (M= 14.05 minutes, SD= 6.70), t (54.85) = -2.016, p=.049, two-tailed.

In contrast to the findings of admission in minutes in relation to education, the researcher did not find any significance in the time to a confession in minutes: high school level education (M= 23.34 minutes, SD= 11.67) versus a suspected perpetrator who was a high school dropout (M= 21.61, SD= 12.14), t (34.20) = -.491, p=.626, two-tailed. The researcher did not find that any other demographic feature contributed to any significant differences in the length of time to an admission or confession to a crime.

Chapter 5: Findings, Conclusions and Implications

Summary of the Study

Along with physical evidence, victim statements, and eyewitness testimony, the admissions and confessions of suspected perpetrators of criminal offenses are important to efficiently legitimizing convictions in American criminal courts (Leo, 2008). Conversely, a law enforcement interrogation creates a condition that challenges a suspected perpetrator's cognitive capacities and under which the suspect does not act in his or her best legal interest (Davis & Leo, 2012). Past researchers demonstrated that the seriousness of a crime influences admission and confession outcome (Kelly et al., 2015; Mitchell, 1983; Neubauer, 1974; Phelps & Pager, 2016; Sigurdsson & Gudjonsson, 1994). Given the psychological tension created during a law enforcement interrogation, this study set out to determine if the seriousness of a crime, based on crime type and length of potential incarceration, have a predictive relationship with the length of time it takes to obtain truthful admissions or confessions from a suspected perpetrator.

Findings

Results related to the type of crime committed by the suspected perpetrators were mixed. The researcher compared the serious crime of sexual battery with a sentence of 10 years in prison with the less serious crime of theft and a sentence of probation. The result was that the mean length of time to an admission for the crime of sexual battery was lengthier than the mean length of time to an admission about the crime of theft, thus providing support for the research hypothesis. However, more stringent survival curve analysis found a lack of statistical significance in the admission condition, as did all statistical analyses comparing these groups in median time to confession.

The researcher conducted further exploration to compare the more general categories of those suspected of perpetrating relatively serious crimes against a person with sentencing ranging from five years in prison to 99 years in prison versus those suspected of committing relatively less serious crimes against property with sentencing ranging from probation to 12 years in prison. Overall, stringent survival curve analysis demonstrated no statistically significant difference in the median times to an admission between these categories. Conversely, the same analysis revealed that there might be a distinction in the median times to confession during various different time periods associated with the interrogation process. However, overlapping confidence intervals did reveal some weaknesses in the results.

When focusing on the length of sentence associated with committing a crime regardless of crime type, there were no statistically significant results in the median time to an admission. However, statistically significant results were evident in the confession condition when comparing the median time to confession between individuals who could receive a sentence of incarceration for one to four years with those who could receive a five to nine year sentence. Furthermore, the confidence intervals of the median time between the two categories did not overlap, further reinforcing the statistical significance indicated by the survival curve analysis.

Demographic features were not a focus of this study, but education proved statistically significant. The mean length of time to an admission for those who graduated from high school or had some college education was marginally lengthier than the mean length of time to an admission for those who dropped out of high school. This finding did not hold significance related to the mean time to confession for the two groups.

Conclusions

The statistically significant, albeit slight difference in the mean time to an admission for a theft versus a sexual battery may be due to cultural norms. The act of theft breaks both a criminal and ethical code in American society, but "sex offenders are perhaps the most feared and reviled criminals in our society" (Appelbaum, 2008, p. 352). Thus, while internal conflict in making an admission to a theft is low (Neubauer, 1974), sexually violating another human being in American society carries strong criminal penalties and strong social stigmas (Gudjonsson, 1989). This is especially true if the victim is a child, as was the case in several of the interrogations for sexual assault crimes in this study's data set. According to Bourke et al. (2015), "the sexual abuse of a child is generally considered one of the worst (if not the worst) of crimes a person can commit" (p. 354).

Upon being granted parole, most offenders must register as a sex offender for the remainder of their lives (Mancini, Barnes, & Mears, 2011). Given the stigma and harsh penalties, "it therefore is not surprising that most sex offenders keep their actions hidden for as long as possible- ideally forever- and when they are apprehended for one act they adamantly deny ever committing others" (Bourke et al., 2015, p. 354). This cultural reality exacerbates a suspected perpetrator's internal dissonance, increasing the emotional significance of the interrogation, and expanding the psychological tension as the suspected perpetrator must choose between making admissions about a stigmatized crime or withholding the admissions and remaining subject to the discomfort of the interrogation (Lehne & Koelsch, 2015; Madon et al., 2013). After an admission, an interrogator who treats a suspected perpetrator with dignity and respect (Alison et al., 2014), is empathetic, and appeals to humanity and morality without resorting to power

dominance provides tacit permission for the suspect to be relieved of the full emotional burden of committing such a crime, thus potentially leading to a confession (Beauregard & Mieczkowski, 2011).

Conversely, after the researcher combined specific crime types of sexual battery and theft into the more general categories of crimes against persons and property crimes respectively, the social stigmas became more nebulous. According to Madon et al. (2013), "ample research within the field of criminology attests to the fact that people perceive crimes to vary in terms of their seriousness" (p. 61). When comparing the time to an admission during an interrogation between the general categories of crimes against persons and property crimes, the differences in the time to an admission disappear.

However, a statistically significant difference in the time to confession between the crimes against persons category and the property crimes category appeared in the present study. This may result from crimes against persons generally incurring lengthier incarceration sentences than property crimes. Stylianou (2003) stated that a major factor contributing to a suspected perpetrator's perception of the seriousness of a crime is their belief about the crime's consequences. This ties directly to both the theoretical basis of this research study and to the study's most statistically significant finding. When a suspected perpetrator experiences psychological tension in a law enforcement interrogation and is faced with the possibility of lengthy incarceration, the dissonance creates an internal discrepancy (Hajcak & Foti, 2008). To reduce the discrepancy, the individual undertakes actions to change the cognitions and reduce the dissonance (Harmon-Jones et al., 2011). Given the lengthier long-term punishment associated with crimes against persons, the individual may resist confessing for a lengthier period of time.

Implications for Interrogation Training

The results of this study directly impact detectives and investigators who conduct law enforcement interrogations. Research demonstrated that "the power of the situational forces acting upon police suspects is routinely underestimated by those at all levels of the legal system" including law enforcement interrogators and clinical interrogation scholars (Davis & Leo, 2012, p. 676). Because most law enforcement interrogators are unaware of the ramifications of the psychological tension created within an interrogation, greater education is necessary and may reduce conflict during interrogations.

Conflict reduction in a law enforcement interrogation is in the best interest of law enforcement interrogators. Kelly et al. (2015) demonstrated that use of less confrontational techniques was a predictor of suspected perpetrator cooperation, while the use of confrontational techniques was "significantly associated with the likelihood that the suspect would resist the interrogator's methods" (p. 10). Utilizing collaborative techniques that promote egalitarian conversation rather than techniques that emphasize the interrogator's authority are more likely to garner useful information (Granhag et al., 2015).

As evidenced in this study, there is extensive scientific literature that underpins the study of interrogation techniques, psychological tension, stress detection, and other components of law enforcement interrogation. A final way in which knowledge from this study may benefit large law enforcement agencies is in the creation of interrogation positions as a full-time assignment. This already occurred with the creation of the law enforcement crisis negotiator position, a job that is also strongly intertwined with psychology (Charles, 2007). Specially trained interrogators

could conduct suspect interrogations. This concept has precedence as such teams are already in use in Canada, and every branch of the United States military has interrogation specialists.

Limitations and Future Research

A limitation in this study was the lack of interrater reliability. The findings were based on interrogations conducted by one Louisiana detective. Future research may benefit from comparing the length of time to admission and confession from multiple interrogators, especially those from other geographic regions within the United States and other countries.

A related limitation was the relatively small demographic area of this data set. Suspected perpetrators in this study were either Caucasian or Black, and were predominately of lower educational background and lower socio-economic status. Future research may benefit from comparison with Caucasian and Black subjects from other geographic areas and from comparison with other racial and ethnic groups. Additionally, it could prove interesting to compare the results of this study with interrogations of individuals from higher educational backgrounds and those from middle and upper socio-economic groups.

Related to this limitation was the detective's allocation of suspected perpetrators to designated socio-economic and employment groups. For this detective's demographic details, for example, *poor* and *blue collar* may have specific income level designations. The same categories may not apply in other regions of the country where terms such as poor and blue collar may be synonymous as poor is related to financial status, whereas blue collar indicates a type of job or career. Furthermore, the term employment can be somewhat misleading. A person could be employed, but underemployed and financially struggling. This could lead an individual to periodically commit crimes of theft to maintain a basic standard of living. Conversely, a person

could be unemployed but on some form of government assistance that maintains a basic long-term standard of living without the need to commit theft.

Another limitation in this study was the type of crimes. Initially, there were 12 categories of crimes that included both property crimes and crimes against persons. Due to a limited number of interrogations in five of the categories, the researcher only analyzed seven crime categories and compared them in relation to the length of time it took for the detective to obtain an admission and a confession. The crimes were theft, damage to property, burglary, robbery, child abuse, sexual battery, and rape. Of these, there were only three cases of rape, five cases of robbery, and seven cases of both damage to property and child abuse. Thus, the most significant results in this study came from comparing the 38 relatively low consequence theft cases with the 15 relatively higher consequence crimes of sexual battery. These results may be misleading. The length of potential sentencing among the sexual battery cases ranged from five to 20 years in prison. This 15 year difference is significant and could impact the behavior of a suspected perpetrator during interrogation. Accordingly, comparing robust numbers of high consequence crimes, both with each other and with large numbers of relatively minor lower sentence crimes, may provide more useful findings. Such crimes could include violent sexual assaults, sexual assaults of young victims, and homicides with lifetime prison sentences or capital punishment.

An unanticipated finding within the study was the statistical significance of the education demographic in relation to the length of time to an admission or confession among the suspected perpetrators. The mean length of time to an admission in minutes when the suspected perpetrator had a high school level education or some college education was marginally lengthier than the mean length of time to an admission when the suspected perpetrator was a high school dropout,

yet this was not the case in the confession condition. Further research in this area may give greater insight into why a suspected perpetrator's level of education influences the decision to provide admissions regarding a crime, but not to provide a full confession to a crime.

A strength of the study was the consistency with which the detective conducted the interrogations. Specifically, the use of the CVSA II® to determine deception followed by a definitive transition from an interview into an accusatory interrogation allowed for precise documentation of the length of time it took to obtain an admission or a confession. Conversely, the detective's exclusive use of the CVSA II® instrument leaves open the possibility that the length of time in an interrogation may differ if a suspected perpetrator completed a polygraph test or was presented with strongly inculpatory physical evidence. Law enforcement interrogators may benefit from future research into the use of these mediums as evidence to present to suspected perpetrators to demonstrate his or her involvement in a crime during interrogation.

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Appendix A: Database Permission Letter

Mr. Forgash,

I am granting you permission to utilize the data that I have collected during the course of my police interrogations in any manner you deem necessary for your dissertation. There is no personal information or means of identifying any individual from the data in the Excel spreadsheet that I will send to you, so your use of the information creates no legal or ethical issues for me or for the Alexandria Police Department. On the contrary, your study may prove useful in guiding future interrogation policy, so please share your end results with us. I collected the data between November 2008 and November 2014, in-order to determine the validity of using the CVSA II® voice stress instrument in my interrogations. While the instrument itself is not a focus of your study, the results were quite remarkable, which, I believe, will enhance the scientific validity of your study. Please contact me when you have received the necessary permissions from your university and I will send you the data. Should you have any questions in the meantime, I can be reached via email or telephone.

Sincerely,

Detective Chad Jeansonne
(318) 359-1729
cjeansonne1@yahoo.com