

COGNITIVE ABILITIES OF CRIMINAL JUSTICE LEADERS

by

Dustin Joe Addison

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy in Criminal Justice

Liberty University

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APPROVED BY:

Dr. Marc Weiss, Committee Chair

Dr. Douglas Orr, Committee Member

ABSTRACT

The purpose of this applied study was to help in the understanding of how stress has a significant impact on criminal justice leadership. The research design with the applied study was multimethod. The multimethod design correlated interviews, surveys, and archival data to understand the correlation between stress events and perceived cognitive abilities. The central questions within this study were related to prolonged exposure to high stress and whether criminal justice leaders have a lower cognitive ability than those not exposed to high-stress situations. With the malleability of the human brain allowed by neuroplasticity, do criminal justice leaders have altered abilities due to stress? This applied study used participants and collected both qualitative and quantitative data. The data collected came from surveys, interviews, and archival data. The eight participants held the role of criminal justice leader. The data were triangulated with three methods of research: interviews, surveys, and archival data. Participants in the study indicated that they noticed themselves thinking differently due to the job, even those with five years or less experience. However, the mean was higher, at 4.33, among participants with 16-20 years of experience. They showed a change in ability with the addition of negative emotions surrounding their jobs. Recommendations for future studies would be expanding the sample size and samples taken in metropolitan areas to compare against the samples in rural areas.

Keywords: Cognition, leader, neuroplasticity, stress

Dedication

This dissertation is dedicated to the people who have helped me and influenced me to keep going, my family—my wife, Karissa Addison, my son, Christian Addison, my daughter, Zara Addison, my father, Joe Addison, my mother, Gayla Moore, my grandmothers—Lola Addison, Jean Yvonne Payne and my sisters—Crystal Smith, Paige Hardcastle, and Jona Addison.

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The completion of my doctoral degree has been a process of hardship and challenge. However, the process has been advantageous, and as I am writing this acknowledgment, it is still hard to believe I have come this far in the process. I would like to thank God for giving me the perspective and courage to complete the degree process. I would like to thank my committee chair, Dr. Marc Philip Weiss. Thank you for guiding me through this grueling process and giving me the tools to complete it. I thank my other committee member, Dr. Douglas Allan Orr. Thank you for the time spent helping me in this process. We all have had to make sacrifices, including time away from our families, so I want to thank you for the time spent helping me.

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CHAPTER ONE: INTRODUCTION

Overview

The study of neurobiology is vast and includes mixed views on understanding cognition. Criminal justice leaders have a large amount of influence within the communities they serve. Understanding criminal justice leaders' cognition is crucial to maintaining trust within the community and among the people they serve. In the criminal justice field, the overall atmosphere can be rather volatile, and the human brain evolves based on a person's environment (Violanti et al., 2016). The criminal justice profession is rather stressful, creating an atmosphere within which the brain acts on a more primitive scale rather than a higher cognitive scale. When a person uses more cognition, the prefrontal cortex is activated, the last part of the brain that is evolved, making it less primitive. If a person reacts from the more primitive part of their brain, they will make a less educated decision, often with problematic results. Making instinctual or uneducated decisions within the criminal justice system can lead to a loss of trust within the system and overall failure. Specific stressors in the criminal justice system cause a higher likelihood of primitive behavior (Violanti et al., 2016).

The brain is involved in adapting an individual to different environments. One of the brain's main functions is to adapt the individual to social and physical stressors. When a person is stressed for a considerable period, a structural remodeling occurs of the neural architecture of the human brain (McEwen et al., 2015). People who have been exposed to a large amount of stress, people such as military personnel and criminal justice professionals, often show signs of remodeling of the neural architecture within the brain, which is a failure of stress resilience. It is important to understand the brain for

efficacy and interventions among these populations to combat anxiety and stress disorders and help with cognitive ability (McEwen et al., 2015).

Background

The cognitive abilities of leaders within the criminal justice system can be altered because of stress induced by day-to-day operations. This issue is important due to the continually changing perceptions of police officers and how the police interact with the public. How a person obtains and maintains information is crucial in understanding the world. Imagine people in leading roles who cannot understand the world. Failure is likely within leading roles with this kind of lack of understanding. Criminal justice is an extremely complex discipline that must be practiced with the utmost cognitive abilities to succeed (Hartley et al., 2017). For an individual working in a criminal justice organization, such as a police officer, one of the elements of the job is stress. Stress is influential to the overall cognitive abilities of police officers (Hartley et al., 2017).

Since police officers hold leadership roles within the criminal justice system, they likely have been exposed to a large amount of stress. A person exposed to a large amount of stress can develop a substance dependence on dopamine secretion (Sapolsky, 2017). With higher substance dependence, there is a lower sense of self-worth. With the brain's physical reactions and reorganization of synapses in response to stress, or neuroplasticity, the amygdala enlarges, making the person a more primitive thinker with less ability to make effective decisions (Sapolsky, 2017). However, with the support of family, criminal justice leaders may have a reduction in stress. With the reduction of stress, the amygdala's enlargement will likely subside, and the prefrontal cortex will become more active. With the enlargement of the prefrontal cortex comes greater cognitive ability in

criminal justice leaders. For criminal justice leaders, cognition is essential to understanding problems and mitigating the lack of effective thinking within the profession (Griffin & Sun, 2018).

Criminal justice leaders must have advanced cognition to do their jobs effectively. The primary factor impacting one's cognitive ability is the stress the person endures. When examining people working in the criminal justice profession, a plethora of signs can identify troubled employees. One of the first factors is the reliance on a substance. In many instances, that substance is alcohol. When people lack dopamine secretion within the brain, they often rely on a substance such as alcohol to increase that secretion (Sapolsky, 2017). Many criminal justice employees are addicted to alcohol or have problematic alcohol consumption, which is correlated to critical incident stress (Zavala & Curry, 2018).

With a criminal justice leader's homeostasis continually being fight or flight, that significant amount of alertness creates a different level of homeostasis than other individuals. Through time, people tend to feel a negative sense of worth and start to look for an action that will secrete dopamine within their brain. Criminal justice personnel have a broad range of coping mechanisms used throughout their occupational lives to help mitigate the impact of stress. For example, a coping mechanism could be dependence on prescription medications or alcohol consumption. First responders experience a wide range of trauma, and people are often unsure how to cope with the trauma they face. In many instances, this uncertainty can lead to reliance on a substance. Many criminal justice agencies lack a wide range of training in how a person should cope with traumatic events.

Police officers generally show signs that substance reliance as a coping measure is used at much higher rates than other first responders (Arble et al., 2018). If leaders within the criminal justice system face the same amount of traumatic coping disorders as each other, there is a high chance that employees who seek help with their traumatic events will be chastised within the criminal justice organization (Arble et al., 2018). The criminal justice profession can be harsh on employees with disorders. It is crucial to explore all aspects of the criminal justice occupation to understand the factors that lead to trauma, stress, and low-performing cognition. Cognition is vital for advanced, evolved thought (Arble et al., 2018)

Stress is the overall cause of negative neuroplasticity within the criminal justice profession. Understanding the biology of stress is crucial in understanding its effect on the human mind's cognition. It is essential to differentiate between positive stressors that have an impact on the brain and negative stressors that affect the brain. After exposure to stress for an extended period, a person usually experiences an adverse change in the mind (Søndenaa et al., 2015). However, once the person returns to an environment that has lower levels of stress, in some instances, the brain returns to a system baseline. In other instances, the baseline is not obtained, and the person experiencing stress has lower levels of cognition (Søndenaa et al., 2015).

Burnout and post-traumatic stress disorder also significantly impact people's overall cognition within stressful jobs. The criminal justice field, in particular, has a large number of stressors from its day-to-day operations. When a person is exposed to daily negative stressors, the amygdala will probably enlarge (Søndenaa et al., 2015). When that part of the brain enlarges, the baseline can be moved again as the person is exposed to

more stress. To cope with a large amount of stress, the person shifts to more primitive behavior. This behavior often is more spontaneous and aggressive. Many indicators are often present, as a person experiences a large amount of stress to assume a higher likelihood of primitive behavior (Søndenaa et al., 2015). However, within the criminal justice profession, a person is less likely to seek help for negative stressors; this is even less common among senior staff within the criminal justice system. One mechanism that has seen success within the criminal justice system is the transitioning to different roles within an organization to combat burnout. Burnout is a significant reason for stress within the workplace. If burnout can be eliminated within the criminal justice system, overall stress within the organization will likely be less prominent (Søndenaa et al., 2015).

Cognition is a crucial part of adult life because of the complex daily decisions that can significantly impact other people's lives. The overall mythology of cognition is that, in general, the brain uses certain principles, laws, categories, and methods to solve complex theoretical and practical problems (Porada, 2018). However, several widely unknown external and internal factors can have a lasting effect on cognition. If cognition is lacking, in many instances, that person will act more primitively and less evolved than other humans (Porada, 2018). To understand the effect of stress on cognition properly, researchers should employ the scientific method to diagnose the overall problems of criminal justice leaders and cognition accurately (Porada, 2018).

Occupational stress within the policing organization and the effects on memory, psychological, and behavior factors are important to understand because they relate to the lasting effect of cognition. Understanding police officers' stress during regular duty provides a larger picture of the lasting impact on cognition for the police officers

promoted into supervisory roles. It is essential to examine stress levels across pre- and post-working conditions. It is crucial to understand when the alertness of the mind is at its peak and how long it stays at that peak level. Also, years of service are essential to the study.

Years of police service are essential to this research. In most cases, people with fewer years are more likely to have less stress. Overall, police officers have differences in working memory abilities across different levels of seniority (Gutshall et al., 2017). Senior police officers have different personalities and behavioral traits compared to junior officers. However, a study across a short period on personality and behavior yields fewer differences between senior-level and junior-level police officers (Gutshall et al., 2017). The study must consist of many years to return results.

Situation to Self

This study's motivation exposes the needs of the academic community and the criminal justice system. Further motivation for the study is to help the public understand what police officers go through on a cognitive level. The study helps understand changing cognition that can lead to adverse behavior. Considering the need for the study and how the study helps translate actions that are taken by criminal justice personnel, the conclusion of the study sets a precedent in exposing the perspectives of criminal justice personnel and how neuroplasticity can alter the perception of people within the community prior to acceptance of criminal justice professionals.

This dissertation included qualitative and quantitative studies, and the research paradigm was pragmatic. This dissertation was a qualitative study. The research's philosophical assumption is that people's nature can impact the overall understanding of

cognition. The epistemological assumption is to progress past the extrinsic and intrinsic assumptions of the brain to gain a view of how we commonly fail to understand certain aspects of ourselves from a biological limitation of human understanding. The axiological assumption for the study is the value of understanding the perception of criminal justice leaders on a higher level from a cognitive point of view rather than a subjective view, based on bias and daily perception of social climate (Morgan, 2014).

Problem Statement

Stress significantly impacts decision-making, and criminal justice leaders have a wide range of decisions that must be made daily while under stress. Whether political or strategic, if the criminal justice leader experienced a large amount of stress within a career in criminal justice, there is a higher likelihood of an ineffective decision. Stress disrupts the prefrontal cortex's circuits, which often make people insensitive to potential losses (Arnsten et al., 2017). A disconnect to the prefrontal cortex is often likely because of stress, which can help explain the widespread reliance on substance abuse among people dealing with high amounts of stress, people such as police officers.

The gap within the literature involving neuroplasticity, or the malleability of the brain, involves the study of criminal justice leaders. Decision-making is crucial for law enforcement professionals. Studies add to the body of work that considers police stress; however, future studies are also needed for decision-making that could positively impact society (Crippen, 2018). It was a benefit for this study that I, the researcher, have experience with stress events and their impact on cognition. This gap within the literature was addressed within this research by studying criminal justice leaders' cognition by a researcher with experience in stress events and the impact of cognition.

Successful criminal justice leaders are driven by the overall success of the criminal justice organization, which is their reward. Stress can alter or impair the values in which the reward information is created, and these values develop the decision-making processes (Porcelli & Delgado, 2017). Mental health significantly impacts the cognitive ability of a person to react to specific external stimuli. Law enforcement personnel, in particular, have a high likelihood of developing mental health issues. Treatment facilities are needed for combatants of mental health issues within the criminal justice system (Steinkopf et al., 2015). The current problem is a primitive understanding of criminal justice leaders' decision-making or cognitive levels as they relate to stress events throughout their careers.

Purpose Statement

The purpose of this applied, multimethod study was to help understand how stress has a significant impact on criminal justice leadership. The research design with the applied study was multimethod, with in-person interviews, surveys, and the analysis of past research from criminal justice leaders to understand adverse behavior related to stress events. If leaders can better understand the stress within criminal justice professions, there is a higher likelihood that the effects of stress can be combated. Understanding how the mind deals with stress is crucial regarding its impact and how it can change the cognitive abilities of how people interact with one another (Bishopp et al., 2016). Whatever strains there are within a criminal justice organization create a higher likelihood of overall policing deviance and wrongdoing (Bishopp et al., 2016).

A better understanding of the effects of neuroplasticity from stress is crucial to combat poor decision-making abilities. When people are exposed to several

environmental factors, such as stress, a person will likely develop a mood disorder. Stress can induce changes to the hippocampus, which controls memories and has been linked to mood disorders (Gray et al., 2018). The hippocampus plays a vital role in anatomical subdivisions and employs pyramidal neurons that see remodeling from neuroplasticity when exposed to chronic stress. Some genes are related to the way people deal with stress. However, these genetic predispositions sometimes do not activate until the person is exposed to specific environments (Gray et al., 2018). If a person within the criminal justice system is not exposed to a stressful situation, there is a higher likelihood the person's genetics, those connected to stress, will not be activated (Gray et al., 2018).

Stress is seen to have a significant impact on human cognitive ability. Stress induces changes in levels of hormones. Constantly in flux within the human body, hormones such as cortisol and oxytocin create stress. Stress hormones tend to influence sensory perception, focus attention, and impact behavioral response, considered habits rather than cognitive reactions (Wirth, 2015). Stress induces more primitive behavior rather than reactions of thought-based action. The two stress-responsive systems within the human body are the sympathetic nervous system and the HPA axis (Wirth, 2015). The primary system with the most significant effect is the sympathetic nervous system, which controls the fight or flight responses within a person's brain. This system causes hormones to be released, causing impacts on learning and memory (Wirth, 2015).

One of the largest threats to the cognition of criminal justice leaders is the overall exposure to stress throughout one's career. However, it is essential to consider all factors in determining whether individual occupations within criminal justice are the causes of primitive behavior or if other external influences affect those changes. A 1995 Family

Services for Law Enforcement Personnel study shows no correlation between job stress and sex, race, education, and tenure within the criminal justice organization (Tsai et al., 2018). However, effects on family discussion with coworkers, counseling, and a negative work environment are probable (Tsai et al., 2018). The two main impacts on criminal justice organization stressors are adverse working environments and counseling support (or lack thereof). Several factors can induce stress among people. Ultimately, stress causes several brain functions that can have lasting impacts. Some effects subside once the person is not exposed to the stressful environment anymore because of neuroplasticity. However, all factors must be analyzed to understand the scope of stress and how it impacts cognitive abilities among leaders (Tsai et al., 2018).

This dissertation is a qualitative study. The observation method refers to meaning, concept definitions, and characteristics to help understand the neuro characteristics of criminal justice leaders as they relate to stress. This research was intended to be as intuitive as possible to analyze the topic properly. In the future, it would be useful if there could be more research on criminal justice leaders between lower and higher levels of command to help understand the stress related to overall cognitive abilities.

It was essential not to have any bias in the research paper. I do not have any bias on the topic of stress; the topic of stress was researched among several different aspects to help with biased opinions. Throughout the research, the literature review gives a perspective of the evidence gathered for the topic. The last chapter within the paper is a proper analysis of the topic and the evidence gathered to help with the conclusion about whether the cognitive abilities of criminal justice leaders are altered because of stress.

Significance of the Study

The practical contributions the study makes to the law enforcement community have lasting effects on a better understanding of how stress can impact law enforcement leaders' decision-making processes from prolonged exposure to stress. With a better understanding of criminal justice leaders' cognition, there is a higher likelihood that there can be a combatant against adverse decisions and ultimately a path to more cognitively advanced decision-making processes. This research includes a large number of articles with the intention of understanding neurobiology. With the understanding of neurobiology, researchers can use the information within the articles to transcribe crucial information regarding criminal justice leaders' cognition into usable data. I based my problem statement and overall study questions on my experience of stress within the field of criminal justice. I had to overcome stress within the criminal justice system. I noticed a changing perspective in how I would contemplate situations and my overall awareness of the world around me. I understood this was problematic, and a loss of advanced cognition was present. I began to study the problem to combat the issue.

To build on past research, it is crucial to understand what is stressful for law enforcement officers and how that stress ultimately alters decision-making processes in the daily actions of criminal justice leaders (Crippen, 2018). Emotional intelligence correlates with stress levels and decision-making (McCutcheon, 2018). However, a limitation regarding the time spent policing and the relationship between emotional intelligence and stress among police officers is evident (McCutcheon, 2018). More research is needed on stress management and how often police officers should seek help for stress management (Bailey, 2018). This gap within the literature is being addressed

within this study by considering criminal justice leaders' cognition by a researcher with experience in stress events and the impact of cognition. This paper's research has helped in understanding the effects of stress on law enforcement leaders and how stress management could mitigate adverse decision-making among criminal justice leaders. Mandatory stress assessments within law enforcement agencies can help mitigate adverse actions among law enforcement officers (Bailey, 2018). The study of the cognition of criminal justice leaders can help to effect change in mandatory stress assessments to combat adverse decisions within the criminal justice system. This study addresses the problem of a primitive understanding of criminal justice leaders' decision-making processes or cognitive levels as they relate to stress events throughout their careers.

Research Questions

Central questions: With the prolonged exposure to high stress, do criminal justice leaders have a lower cognitive ability than those not exposed to high-stress situations? With the malleability of the human brain from neuroplasticity, do criminal justice leaders have altered abilities due to stress?

Subquestion one: How would criminal justice leaders' qualitative interviews answer whether prolonged stress exposure lowers cognitive ability compared to people not exposed to high stress? Interviews of criminal justice leaders can use a funnel protocol, leading to a large amount of information surrounding cognition and stress exposure.

Subquestion two: How would criminal justice leaders' quantitative survey information answer whether prolonged stress exposure lowers cognition compared to people not exposed to high stress? Understanding the interviewee's age, gender, and time

of service gives information regarding correlations of time, service, and the effects of age and gender.

Subquestion three: How would criminal justice leaders' quantitative archival data information answer whether prolonged stress exposure lowers cognition compared to people not exposed to high stress? With the malleability of the human brain from neuroplasticity, do criminal justice leaders have altering abilities due to stress? Archival data give information regarding disciplinary actions throughout one's career related to the amount of stress the person has been exposed to throughout their career.

Definitions

1. *Allostatic load*: The definition of an allostatic load is broad because the physiological system represents the multidimensional state space with parameters. An example of an underlying allostatic load is within the cost of gene transcription, metabolic activity, and alteration in one's cells (Oken et al., 2015).
2. *Amygdala*: This part of the brain has a shape similar to a nut with neurons and lies within the temporal lobe. The amygdala has the largest role in a person's emotions and primitive ways of thinking. The amygdala forms certain parts of the limbic system (Sapolsky, 2017).
3. *Cognition*: An action performed by the mind that gives understanding through thought, senses, and experiences as a way to obtain knowledge (Sapolsky, 2017).
4. *Genetic changes in the brain*: There are different gene classes within the underlying effects of a person's environment. These diverse effects are within the glucocorticoids of brain function. Stress affects telomeres, which limit blood to

- the brain. Lack of blood to the brain from genetic activation caused by stress affects brain function (Oken et al., 2015).
5. *Hippocampus*: The hippocampus is a small part of the brain, and it is a part of the limbic system. The hippocampus plays a vital role in the formation of new memories and has a role in learning and emotion (Sapolsky, 2017).
 6. *Limbic system*: The limbic system is crucial in becoming motivated, emotional, educated, and proficient in memory. The limbic system is near the cerebral cortex (Sapolsky, 2017).
 7. *Neuroscience/neurobiology*: The study of the human nervous system related to physiology, anatomy, biology, cytology, and psychology (Sapolsky, 2017).
 8. *Perception*: A person can hear, feel, see and be aware of surroundings through one's senses. People do not perceive anything around them until they become aware of the environment (Oken et al., 2015).
 9. *Peripheral biomarkers*: Peripheral biomarkers are most often seen in Alzheimer's disease, which is an associated dysfunction in the metabolic, oxidative, inflammatory, and biochemical pathways in the tissue of the brain (Oken et al., 2015).
 10. *Physiological brain changes*: The brain can change size from experiences endured by a person's environment, for example, stress-related changes in a person's daily routine (Oken et al., 2015).
 11. *Prefrontal cortex*: The prefrontal cortex covers the front of the frontal lobe. The prefrontal cortex helps in the understanding of complex tasks, cognitive behavior

- expression, and making decisions within one's social environment (Sapolsky, 2017).
12. *Resilience*: Resilience is used in many different ways based on the type of research conducted. Resilience affects how quickly and effectively the brain returns with the utility of an attractor basin, for example, the distance of an attractor basin to the boundary of an adjacent basin (Oken et al., 2015).
 13. *Stress*: The feeling of tension from external and internal factors that gives tension to one's day-to-day life (Kula, 2017).
 14. *Stressor*: An environmental event that perturbs the entire human system in a manner that takes away from the optimal attractor, resulting in a lower state of utility (Oken et al., 2015).
 15. *Structural brain changes*: The changing in size of brain tissue. For example, stress-related states like post-traumatic stress disorder are linked to the changing of the hippocampus and shrinkage of the frontal cortex (Oken et al., 2015).
 16. *Temporal lobe*: The temporal lobe is at the bottom of the brain and on each side of the brain. The temporal lobe is crucial in understanding language and making a person able to hear one's surroundings (Sapolsky, 2017).

Assumptions

Throughout the study of how stress affects cognitive abilities among criminal justice leaders, I assume that all the information gathered is correct and credible. I assume that all participants answered honestly throughout the interview and the surveys. All the information gathered was from review articles and books with credible authors and publishers within the fields of neuroscience or criminal justice. The primary focus of the

study of humans is the effects of stressful environments for an extended period. Criminal justice employees fight against a large amount of stress, and it is crucial to understand the effect of stress for long periods to fully understand the cognition abilities of criminal justice leaders (Logan, 2019). The study lacks statistical evidence on cognition and criminal justice leaders.

The data were used within the literature review portion of the paper to help understand how stress can significantly affect cognition. However, throughout the study, I needed to stay vigilant in perceiving bias among organizations and myself. With the use of any information known for biases, there must be a consideration of the credibility of the author and publisher. I assumed all of the information used within this paper was credible.

Scope

The overall scope of this paper was to understand cognition and how it can be lost based on the experiences throughout one's life. Criminal justice employees have a more stressful life than most people throughout the nation. Cognition can be damaged before the employee attains a leading role within the criminal justice system, leading to problematic results for the entire system. Cognition can be damaged within any period of one's life. When examining one's life, it is likely a different period than the current one is more vulnerable (Peterson, 2018).

From the years zero to age seven, a person's brain is within the theta state, meaning that the theta waves within the brain are obtaining a large amount of information to gain experiences (Fattinger et al., 2017). A child within the theta state forms the path used to perceive the environment for the rest of their life. However, there are ways to

hack theta waves, but those methods are rather cumbersome because they often are unethical (Peterson, 2018). If a person within the theta phase does not obtain proper guidance, there is a higher likelihood of that individual gaining less cognition after the person reaches adolescence (Peterson, 2018).

Stress can lead a person to a loss of experience gained through theta phases from neuroplasticity. Parts of the person's brain shrink and more primitive aspects of the brain enlarge, creating a higher likelihood of loss of memory and more aggression (Sapolsky, 2017). Within this study, criminal justice leaders are considered people exposed to high stress prior to obtaining leadership roles. Because of a large amount of stress, there is a higher likelihood that the brain has remained in a more primitive state. Within this more primitive state, the criminal justice leader could make bad decisions (Sapolsky, 2017).

Limitations

Neuroscience has gained traction in understanding how and why people act in specific ways (Markram, 2015). In many instances, neuroscientists have shown much-needed research-based evidence in cognition and criminology. The time limits of the study and lack of medical resources limited its measurements of plasticity within a criminal justice leader's brain. However, with the necessary research methods established by neuroscience, the research has not been translated into benefits to overall society. Rapid growth has emerged in the neuroscience field, showing more promise and lacking limitations surrounding the study of cognition among criminal justice leaders. However, the limitations in the neuroscience field, which can translate to limitations in the study of cognition, are probable (Markram, 2015).

1. The first challenge is that neuroscience is changing. When looking at the overall promises from the study of neuroscience, a limitation with methodology or technology is unlikely. However, a limitation within the structures and the practices of the discipline is probable. Within most neuroscience laboratories, a small number of engineering resources are likely. A large amount of fragmentation within the field of science concerning the brain shows limitations. There must be a collaboration in the field with data to have a more significant chance of success within the area. The neuroscience field can offer a plethora of contributions to several areas such as medicine, computing, and understanding human actions (Markram, 2015). To combat the way neuroscience is practiced would include having better collaborative efforts (Markram, 2015).
2. The second challenge with neuroscience is called data ladders. When looking at the information gathered from several neuroscience studies, a lot of information can result in very different outcomes. For example, when considering the different brain levels, researchers see that the brain works in different areas, in different animals, and at different ages. Think of all the different animals used to study our brains. A human's visual cortex knowledge is from cats, and cognition comes mostly from monkeys and human volunteers (Markram, 2015). One of the main problems with understanding the brain is that the brain does not have just one area where data can be collected. In other words, there is no probable way to identify manipulating biological mechanisms. The second problem is the creation of data laddering. There needs to be intermittent data connected to all other data to give a broader picture of the study of the brain (Markram, 2015).

3. The third challenge in neuroscience is the difficulty in predictive neuroscience.

One of neuroscience's most difficult challenges is persistent problems due to how little we know about the brain. Completely characterizing the brain would be a huge project because it would require measurements of more than 80 billion neurons (Markram, 2015). However, scientists could create studies of particular pathways and specific neurons instead of measuring every neuron. Within recent research, there has been a discovery of the ability to characterize synaptic pathways in a particular area of the brain. Categorizing pathways could help predictive strategies because what is known about a small area could be applied to larger areas. With the combination of predictive neuroscience with brain data processing, there is a high likelihood of new abilities in predicting protein maps for neural tissue in the near future. If scientists can build a database with active neuro mapping through a better understanding of the classification of neurons, there could eventually be a resolution to the classification problem in neuroscience. There need to be specific strategies put in place to further human brain projects (Markram, 2015).

4. The fourth challenge is to stimulate the brain. In many instances, information is limited to how the brain processes and computes information; few principles can describe the process. There need to be causal mechanisms established to help understand the data of a human brain. For example, it is crucial to understand that neurotransmitters and hormones modulate to understand the binding of brain information. A significant study limitation in this area arises from the low likelihood of candidates and funding for experimentation on human brains. With

the low probability of all-encompassing experimentation on brains, there will always be a gap in the information needed to understand the human brain (Markram, 2015).

5. The fifth challenge for neuroscience involves classifying and simulation of brain diseases. Overall, about 33% of the population is affected by some form of brain disease (Markram, 2015). From the high likelihood of brain disease across community members, it is evident there will be rising costs for the health care needed to combat brain diseases. The costs involved in the creation of drugs for brain diseases are also rising. To combat the effects of brain disease, neuroscientists need to develop a categorization of possible effects on the brain during illnesses and how they alter the structures of the brain (Markram, 2015)
6. The sixth challenge in neuroscience is a lack of technology mimicking brain function. The human brain is considered the most sophisticated information processor (Markram, 2015). It operates on computational principles rather than conventional computing principles like modern computer technology. It is essential to remain open to new technology that will work more like a human processor. There will need to be a large number of computing problems solved before any computer can ever achieve the processing power of humans. A computer with artificial neurons will need to be designed (Markram, 2015).
7. The seventh and final challenge of neuroscience involves working with society. Concern is growing to understand how research is conducted and how experiments affect animals and humans. Neuroscience must recognize society's

challenges and fears about this kind of research to combat the fear effectively and gain trust (Markram, 2015).

Summary

Chapter 1 of this study has expressed the complications present in the attempt to understand stress. Many situations can contain stress, from the theta period of one's life to the senior citizen. Several complications exist in understanding the neuroscience of stress, especially from the massive amounts of data scattered among disciplines, fields, and study purposes. The clear statement of focus is an attempt to understand better the problems induced by stress and how the criminal justice environment creates stressors on cognition among criminal justice leaders. Several changes have been made to the criminal justice environment over the past decade. A large number of stressors and pressures of liability proliferate. Technology has also brought new challenges while also saving lives. Criminal justice leaders always need to combat the issue of stress, but with more knowledge and understanding of its cognitive effects, there is a significant chance the problem can be mitigated over time. In the next chapter, a literature review provides evidence about the scale of the problem.

CHAPTER 2: LITERATURE REVIEW

Overview

Throughout Chapter 2, an intensive literature review brings light to the questions within the study. Throughout the literature review, a broad focus on several issues related to cognition and criminal justice leaders is examined. It is essential to understand how the brain functions within a stressful environment. A significant amount of knowledge about the neuroscience of how people react to stressful environments is within the review. Many articles and books used within the study of cognition have information about psychology and stress as they pertain to cognition over time. There is likely a direct correlation between one's cognition and environment during the early part of life and the plasticity that can occur later in life (Sapolsky, 2017). I created a method of explaining the brain's functions in several steps, starting in childhood and working through a criminal justice leader's professional years to help understand cognition and how it is obtained. Stress has a significant effect on the mind and affects cognition more so than any other external factor. This study relied heavily on the presence of stressors and how stressors affect the brain and overall cognition in criminal justice leaders. Stress creates plasticity within one's mind, creating a probability of lower cognition and higher primitive behavior (Sapolsky, 2017). In this study, I examined all brain factors and gave an unbiased opinion on the effects of stress and cognition within criminal justice leadership.

Theoretical Framework

This study of cognition in criminal justice leaders was qualitative. The reason for using qualitative research was the presence of underlying cognition problems among

criminal justice leaders. Criminal justice leaders must demonstrate productive cognition. Qualitative research provides insight into the issues that persist within the criminal justice profession's stress problem. It is essential to understand what stress does to the human body. When a person is stressed for an extended period, a long-term effect on the overall cognition of the human brain is probable. Because of the higher likelihood of lower cognition, there is less job satisfaction, lower trust within the organizational leadership, and higher levels of burnout (Kula, 2017).

Understanding the overall effects of stress is crucial to determining successful decision-making strategies under pressure within criminal justice leadership. The job of policing can often be a rather harsh environment because of the uncertainties of danger and the constant flux of one's physiological flight or fight mechanisms. A large amount of evidence suggests a spillover of work stress into police officers' personal lives. With the high overflow rate, most police officers do not have time to rest because of the stressors of work and what they then bring home. With this high amount of stress, there is a high probability of dependence on a substance from low dopamine secretion (Tuttle et al., 2018). The work and home environments often create an atmosphere that can spiral out of control. This study is essential to understanding the effects of stress throughout one's career, from rookie status to a leader within the criminal justice system (Tuttle et al., 2018).

The stressful conditions within which criminal justice employees work and live and the studying of prolonged effects on the psychological well-being of criminal justice professionals are crucial in combating cognitive problems. Much information about the stressful environment for criminal justice employees is based on post-traumatic stress

disorder research. However, many stressors within the criminal justice profession do not lead to post-traumatic stress disorder. Many of these stressors can significantly affect a person's brain functions, alter perceptions, and cause a higher probability of making problematic decisions (McCreary et al., 2017). This study brought the problems to light while understanding the brain's functions during these problems.

It is essential to understand the measurements of stress. The indications of stress within humans are linked with dynamic physiological change (Oken et al., 2015). Peripheral biomarkers can measure stress within a short period. For example, blood draws or urine samples can measure cortisol levels that reflect overall changes within the body (Oken et al., 2015). In addition, the human brain changes because of stress. When a person is within a stressful environment, a loss of cognitive function, especially memory, is likely. Cognitive decline affects the human mind's speed, attention, and executive functioning (Oken et al., 2015). Stress-related effects within the body, such as post-traumatic stress disorder, have a high probability of causing structural brain changes. When a person is subjected to stress, there is often a decrease in hippocampal regions of the brain over time, a smaller prefrontal cortex, an increase in the size of the amygdala, and decreases in inhibition of the amygdala (Oken et al., 2015). Event-related stress, which is the type that criminal justice professionals often face, can also cause physiological brain changes. In many instances, due to the plasticity of the brain lobes, changes take place within the frontal parts of the brain. If fewer events transpire, the brain returns to a normal state. However, event occurrence is difficult to measure because of limitations in processing (Oken et al., 2015). Genetic changes within the brain can significantly affect the overall adaptation to stress.

Different gene classes can also affect the brain's overall function, including glucocorticoids on brain function. Stress affects telomeres, and human performance limits peripheral blood flow, also limiting brain function (Oken et al., 2015). The allostatic load measure was developed to provide a composite marker of stress-related disequilibrium from a large number of physiological measures. The time frame used when measuring the allostatic load is somewhat volatile, however, because some changes take place rather quickly while others may be slower to occur (Oken et al., 2015). Stress can cause diseases, which is another way to measure a person's overall stress. For example, chronic stress often causes a decline in cognition and the plasticity of the brain, but it also contributes to neurodegenerative diseases through the allostatic load (Oken et al., 2015).

Stress is a rather complicated factor to measure regarding how it affects cognition in criminal justice leaders. Criminal justice leaders have usually been exposed to a large amount of stress throughout their careers. However, because of the neuroplasticity of the human brain, there could be a possibility that the brain will return to its original state once the stress is no longer part of day-to-day operations. It is essential to measure the overall effect of stress and long-term brain function of people exposed to stress to understand the overall trends in cognitive abilities.

Strategy for Proper Literature for the Study

A plethora of articles and books regarding neuroscience related to stress and cognition is available from past research. However, only a tiny part of this research relates to criminal justice leaders' difficulties with cognition in the profession. I believe this connection is crucial in the attempts to understand cognition problems from stress; one must research how cognition comes from one's experiences. As a person is exposed

to prolonged stress, brain function can change. Several studies show how stress affects police officers within their day-to-day operations.

To fully understand cognition, a psychological approach to criminal justice leader cognition is most productive. Understanding how the brain evolves throughout a person's life is essential. However, these search terms yield a vast number of resources well into the hundreds. However, many of the resources are now out of date. To understand cognition, clinical psychologists' and behavior scientists' theories are most pertinent to understanding how we obtain cognitive behaviors. I have found 23 references to help in the study of loss of cognition among criminal justice leaders from stressful environments. It was necessary for me to expand my research to bring a more thorough understanding of the topic question and a wider range of research about the topic.

To expand my research, I used several search engines: Google Scholar, the Liberty University Library, and Galileo. I searched the Google search engine for reliable articles to obtain credible information on cognition. The topics of perception and criminal justice leaders result in information regarding theta waves and how a person gains neurological experience, which ultimately leads to greater abilities in cognition. As my study moved forward, I also found research on how stress can cause damage to cognitive levels in one's brain. There is a need to understand these brain functions within criminal justice leaders to help combat problematic decision-making.

Related Literature

Understanding the Beginning of Cognition

To understand how one's cognition dexterity can be lost, it is essential to understand how it develops in the first place. When a human is born, active theta waves

are prominent within the brain (Gallagher, 2018). The brain absorbs all the information it can to gain awareness and create cognition for later use. Most people are strongly influenced by their parents at the beginning of their lives (Gallagher, 2018). For example, a person born with a large number of resources, such as wealth, experiences a different perception of the world compared to a person with fewer resources. Understanding the origins of cognition can assist in the understanding of that person's later self-narrative. However, the process is complicated by all the interactions a person has throughout life. Criminal justice leaders have a large number of interactions characterized by stress that can shape how they do their job from a fairly young age (Gallagher, 2018).

Many people have misconceptions about the duties involved in criminal justice leadership. However, when understanding how cognition can be altered, a person's sinful nature should be considered when stress is involved. People are born with a sense of their best interests (Peterson, 2018). A person naturally wants to commit wrongful actions if they seem within their best interest, regardless of whether it is advantageous to society. Sinful natures can affect cognition levels and cause more primitive thinking to emerge. When a child lies, they show intelligence through the active prediction of the future and the decision to manipulate reality to get what they want (Gallagher, 2018). If people are not given guidance from a young age, the likelihood of low cognition, primitive behavior, and criminal or unjust actions rises. If a criminal justice leader does not have proper guidance from the start, there will usually be less growth in cognition (Peterson, 2018).

Neuroplasticity

Neuroplasticity is a rather complex process the human body can undergo in response to intrinsic and extrinsic factors. In many instances, neuroplasticity is begun

from the higher need to survive a given environment. Neuroplasticity is a term that, in many cases, is used sparingly to refer to the way the nervous system can change (Costandi, 2016). As a person is introduced to certain stimuli, a rewiring of one's brain begins. The rewiring of one's brain can be loosely understood or completely misunderstood, and many believe in the ability of the brain to rewire in response to love and happiness (Costandi, 2016). However, the understanding of neuroplasticity, or rewiring of the brain, is rather young. Just half a century ago, there was not much merit in neuroplasticity or the rewiring of one's brain (Costandi, 2016).

In the past, the brain was believed to be malleable to an extent; however, as time progressed within one's life, the brain was thought to harden, and there was no indication of continual change (Costandi, 2016). A better understanding of the brain and how it progresses throughout one's life is needed. The human brain experiences changes throughout one's life as it grows in a constant state of transition caused partly by what a person does and how they learn. Scientists understand that the nervous system has evolved to enable a person to better adapt to their environment through reactions that are needed because of what has been learned in the individual's past (Costandi, 2016).

Considering that the brain can change to fit a person's need for survival better, several different types of understanding of neuroplasticity exist. Neuroplasticity can be found in many studies of the brain and is shown to have a significant effect on the results. Considering every growing result of neuroplasticity, different views surface on how it can alter one's perception and how perception can even be measured in the first place. Considering the vagueness in understanding neuroplasticity, it is essential to understand

the basic meaning of neuroplasticity and how the science will be applied in future cognition research.

History of Neuroplasticity

Even though neuroplasticity is relatively new, the study of the brain has been around for over 200 years (Costandi, 2016). However, the ways researchers have understood neuroplasticity have changed, leading to differing opinions of how plasticity is thought of as leading to a newfound understanding of brain change. In the late 1700s, Michele Malacarne and Charles Bonnet posited that mental exercises might lead to brain growth (Schmahmann et al., 2019). From their research and with a newfound understanding of brain growth gained through tests from mental exercises, there was a better understanding of the brain that would lead to the hypothesis that the brain is not stagnant. This possibility of continual brain growth was tested. Animals from the same litter received training, and their brains were measured, leading to the discovery that the cerebellum was more extensive in trained animals (Costandi, 2016). Within the early days of the study, which eventually led to the understanding of neuroplasticity, the brain was thought to have similarities to muscles within the human body. If the brain were exercised, scientists believed there would be a higher likelihood that the brain would become larger or grow cognitively to support the exercise (Costandi, 2016).

Johann Spurzheim studied the correlation between how one acts and cranium size and shape. In many places, Spurzheim theorized that mental abilities could be judged based on one's skull shape and markings (Sanders et al., 2017). However, when contemplating neuroplasticity, Spurzheim contributed lasting studies centered on the nervous system as it relates to the brain's function. In later years, the size of the cranium

and its relationship to an individual's knowledge became considered quackery (Sanders et al., 2017). However, Spurzheim's investigation of the brain and the nervous system led to a correlation of the brain with the nervous system. Spurzheim created a steppingstone for future understanding of brain anatomy (Sanders et al., 2017).

There was a large amount of skepticism surrounding the early study of the brain and the nervous system. In some instances, researchers argued that the nervous system was made of cells, while others stated that the nervous system was a continuous sheet of tissue (Costandi, 2016). However, as time progressed and technology improved, particularly in microscopy, it became clearer what the nervous system was made of within the human body. In the late 1800s, Ramon Cajal examined the nervous tissue of animals and humans and began to find correlations. Cajal began to draw the brain and its functions to help understand what the brain is made of and how it operates (Ehrlich, 2017). Because of Cajal's drawings, the scientific community concluded that the nervous system is made of neurons (Costandi, 2016). Due to this research, Cajal is now considered the founding father of modern neuroscience (Ehrlich, 2017).

One of the pioneering researchers of neuroplasticity is Charles Darwin. At the time he lived and worked, very little was known about the nervous system, but in 1874. Darwin had early thoughts of neuroplasticity. Darwin speculated that neuroplasticity was possible from his study of rabbits. Darwin's study of rabbits indicated a difference in the main structures of the nervous system between farm rabbits and wild rabbits (Darwin, 2008). The study by Darwin is one of the first indications of the possibility of brain plasticity. However, when contemplating the term *plasticity*, there were no indications of its use in past studies until the text called *Principles of Psychology* by William James

(Costandi, 2016). The term plasticity has been used in dramatically different ways throughout several studies. In William James's studies, the term plasticity was defined as a structure that is weak enough to yield (Costandi, 2016).

One of the characteristics of plasticity generally understood within the late 1800s is habit formation. James's study indicated a strengthening and a formation of connections within one's brain when a person performs many habits (Costandi, 2016). The understanding of plasticity started to proliferate because of the new understanding of neurons within the nervous system. Following the discoveries of James, Cajal showed a connection between plasticity that lies in nerve cells and mental exercise over time. The fibers within one's brain begin to grow to show plasticity following mental exercise (Costandi, 2016).

As time progressed and the formation of neuroscience began to inspire more scientists to study the brain and its functions, several additional understandings began to take shape. Charles Sherrington, for example, named parts of the brain, such as the junctions, synapses, and haptin, which, it was speculated, was where learning took place (Costandi, 2016). The junctions, synapses, and haptin are strengthened to form opportunities for plasticity, while the nervous system saves energy from amplifying connections that have responded to an event that has transpired (Sherrington, 1952). One of the main arguments for plasticity is the enlargement of parts of the brain and the body with no significant alterations to people's head size or knowledge (Costandi, 2016). The argument that relied on nerve fibers showed a small number of variations in organ sizes. In many cases, organ sizes stay the same throughout one's life, supporting that plasticity enlarges the brain when a person obtains a habit. However, Cajal contested that some cell

bodies shrink as other cell bodies begin to increase in size. In these cases, brain size changes are not correlated to intelligence (Costandi, 2016).

In the mid-1900s, the study of neuroscience started to take a turn because of several discoveries regarding the nervous system. David Hubel and Torsten Wiesel (2012) explored the receptive field properties of neurons in the visual cortex. Many of their studies used animals with missing eyes (Hubel & Wiesel, 2012). Understanding sensory impacts helped in the understanding of neuroplasticity in the late 1990s. Thanks to the study of sensory substitution, Paul Bach-y-Rita showed evidence that the human brain is not fixed, as believed in the past, while showing new cells created in adult animals (Costandi, 2016). However, within the mid-1900s, much of this evidence was ignored and seen as questionable.

As time progressed, more steps led the scientific community to move closer and closer to the foundations of neuroplasticity. In the early 1970s, Tim Bliss and Terje Lømo discovered long-term potentiation (Costandi, 2016). Within their long-term potentiation study, there was a discovery within rabbits that activation of the prefrontal path in granule cells within the brain's hippocampus region increased the efficiency of transmission among prefrontal path cell synapses that would last for hours (Lømo, 2003). Prior to the study by Lømo (2003), it was generally thought that the motor neurons controlled the properties of muscle fibers outside the neuromuscular junction. However, with the discovery from Lømo (2003), the finding of direct muscle stimulation restored normal properties within the muscle, as acetylcholine sensitivity overall mimics the impact on cross-reinnervation. Overall, the discovery of changes within the nervous system helped

lead the scientific community to have a newfound realization of the potential for, and a better understanding of, neuroplasticity in the coming decades.

The Beginning of Modern Neuroplasticity

One of the first modern understandings of neuroplasticity surfaced in the 1990s with the discovery of neural stem cells in the adult brain (Costandi, 2016). The discovery of neural stem cells led the scientific community to realize that neuroplasticity research was credible. When the scientific community recognized the discovery of stem cells within the brain, everything previously thought true within the brain was then made speculative, bringing light to new understandings of the brain and how a human reacts to certain aspects, both intrinsic and extrinsic (Costandi, 2016). Technology has played a crucial role in understanding the brain, such as how neural connections are altered. More recently, scientists have visualized the brain in detail and manipulated activity more precisely.

Thanks to modern technology, neuroplasticity can be seen in several different ways and has led to newfound scientific studies, such as this study on cognition as it relates to stress within criminal justice leaders. A widespread understanding now exists of how neuroplasticity, and other brain-wide systems, have a lasting effect on behavior. However, some effects on behavior have a lifelong effect, while others can be seen only for a period of time (Costandi, 2016). The two different types of plasticity occur separately and together (Costandi, 2016). Because the foundations of neuroplasticity research are becoming part of periodic changes to lifelong changes within the scientific community, a sense of two different types of neuroplasticity, functional plasticity and

structural plasticity, now exists (Costandi, 2016). The two types of plasticity often occur over a wide time frame.

One of the types of plasticity is functional plasticity. Functional plasticity changes the physiological aspects of nerve cell functions (Costandi, 2016). For example, functional plasticity can occur when a person has a nervous impulse that makes the connections within one's nervous system stronger or weaker depending on the signal. Another aspect of functional plasticity important to the study of cognition is how it relates to age. Cognitive aging usually reflects a loss of cognition and a loss of adaptation to lower cognitive function (Greenwood, 2007). The brain can change thanks to plasticity through training and experiences (Greenwood, 2007). Cognitive aging is functional plasticity because of the most consistent shrinkage in the prefrontal and parietal cortices within adulthood (Greenwood, 2007). With a combination of behavioral and neuroimaging evidence, causation of functional plasticity exists, which can alter the course of cognitive aging (Greenwood, 2007). Because of functional plasticity, a loss of cognition can adversely affect decision-making processes among criminal justice leaders throughout the aging process.

The second type of plasticity is structural plasticity. Structural plasticity consists of volumetric changes in brain regions and the creation of new neural pathways (Costandi, 2016). In many instances, the reason for structural plasticity is the growth of new cells. The hippocampus is one area of the brain that shows signs of an impressive capacity for structural reorganization (Leuner & Gould, 2010). The reason for the new growth within the hippocampus is that novel neural connections are formed through neurogenesis (Leuner & Gould, 2010). In the past, the brain was thought solid and

believed to stay the same through adulthood. However, the hippocampus is now seen as structurally plastic throughout one's life (Leuner & Gould, 2010).

As time has progressed, a changing value of neuroplasticity is prominent within the neuroscience community. The effects and prominence of depression have improved due to a better understanding and recognition of chemical secretions that occur within the brain related to depression (Serafini, 2012). People within stressful environments must become resilient to resist the negative effects of neuroplasticity. Resiliency is the ability to adapt to life, whether stressful or not (Serafini, 2012). Several parts of the brain exist that help in the mediation of depression from the surrounding environment. The hippocampus, amygdala, and prefrontal cortex all play key roles in the cognitive and affective areas with neurotransmitter molecules (Serafini, 2012). Neuroplasticity has undergone several changes in definition and its functions within the brain. In modern terms, neuroplasticity is defined as the neural framework of all different internal events at the molecular or systemic level to produce neural changes (Serafini, 2012).

Stress plays a large role in the framework of the human brain. In many cases, pharmacology can help alleviate the effects of stress (Serafini, 2012). Neuroplasticity factors shape neural networks within the human brain to change a person's social and emotional behavior (Davidson & McEwen, 2012). One of the primary aspects of neuroplasticity related to the study of criminal justice leaders within prolonged, stressful environments is how it can lead to loss of cognition and adverse decision-making. Increased growth in several sectors of the amygdala occurs while opposite changes within the hippocampus and the prefrontal cortex occur (Davidson & McEwen, 2012). However,

training can help mitigate the negative effects to promote positive plasticity within the brain and encourage positive decision-making.

Stress and How It Affects Cognition

Stress significantly affects cognition in the form of increased risky behavior.

Stress affects several parts of the body when it is uncontrollable. When a person endures a large amount of stress, it can present as symptoms of neuropsychiatric disease (Arnsten et al., 2017). When making a decision, a person is analyzing cost versus benefits. When a person has been exposed to a large amount of stress, less cost analysis and a likelihood for risky behavior proliferates. A person who makes decisions with less cost analysis often resorts to a greater reliance on habitual responding. Stress can create a drive for drug addictions, which leads to more primitive actions (Arnsten et al., 2017). When contemplating criminal justice leaders, in some instances, a leader experiences a false sense of paranoia as if everyone is out to obtain information to contradict the criminal justice leader. With high levels of stress, there is a higher likelihood of the leader's disordered cognitive processing, which is also seen in schizophrenia patients (Arnsten et al., 2017). Also, this leader could experience effects of sensorimotor symptomatology, which is also presented as Tourette's syndrome (Arnsten et al., 2017).

When a person makes a cognitive decision, the brain undergoes several processes, such as habitual past actions and the outcome of the activities. There will likely be a primitive behavior (Arnsten et al., 2017). If this primitive behavior continues habitually, a new pattern within the brain can form, making the person more susceptible to similar decisions in the future. If stress within the criminal justice system is not limited to

employees but extends to their leadership, then there is a higher chance of habitual wrongful decisions (Arnsten et al., 2017).

A person who has been exposed to stress tends to rely on simple decision-making, which causes them to turn to habits rather than cognitively induced, goal-directed actions. When a person obtains knowledge of an environment, a natural progression to goal-oriented thinking begins, rather than simple actions that are not advantageous to the person and society. People within a state of less stress have a higher likelihood of reaching reflective or reflexive states. A reflective state is better for advanced cognition because of the higher amount of thought completed within the brain. When a person is reflexive, primitive thinking exists, developed from acts of survival needed in subcortical structures (Arnsten et al., 2017). When a person is stressed, there is a release of catecholamine. Catecholamine released within the prefrontal cortex erodes synaptic connectivity, reducing neural firing. When a person experiences chronic stress, there is more often the production of hypertrophy, which increases the activation of the amygdala and the sensorimotor striatum (Arnsten et al., 2017).

When understanding the normal functions of behavior related to stress, the effect of stress on behavior must be understood. In many instances, stress leads to impulsive behavior, which leads to more stress (Arnsten et al., 2017). However, impulsive behavior that leads to more stress is most often seen in people with addictive problems. It can be speculated that a cumulation of these aspects leads to a person relying on an addictive substance. For example, a person could have family issues that contribute to relying on a substance, leading to impulsive behavior, and ultimately to a larger amount of stress. These patterns can be found in criminal justice personnel from the stress of the job and

post-traumatic stress disorders. Impulsive behavior is prevalent in stress disorders, leading to more stress and lower cognition (Arnsten et al., 2017).

Coping with Stress

Police officers are exposed to threat-related stress, which affects their well-being daily. When a person is exposed to vigilant threat-related information, an increase in stress symptoms exists. However, that vigilance within coping mechanisms is beneficial when a person is in situations that can be life-threatening. Two coping strategies help alleviate stressful situations (Kubiak et al., 2017). First, vigilance involves a person's attention. Second, cognitive avoidance can also help if the person has the cognition to understand the stressful action. Cognition avoidance occurs when a person understands the stress and avoids the action altogether (Kubiak et al., 2017). A human uses these coping mechanisms if the brain is working correctly. The problem with these avoidance mechanisms occurs if a person is introduced to a high-stress environment. The person may then lose mechanisms within the brain to alleviate the complications of stress (Kubiak et al., 2017).

Work within the criminal justice system is considered high frequency and high intensity related to threats of injury and one's life. Criminal justice personnel must take action to avoid injury and death, which makes the environment unpredictable. When an environment is unpredictable, there is a higher amount of stress and a likelihood of increased primitive decision-making (Kubiak et al., 2017). In many cases, vigilant coping strategies are considered a reaction to threatening behavior. Vigilant reactions can be problematic if the situation is not threatening. Criminal justice leaders could overreact to particular conditions, leading to bad decisions. Policing and wrong decisions made in the

profession often lead to public unrest and a lack of faith in the criminal justice system (Kubiak et al., 2017).

External Factors that Mediate Police Stress

Over the past several years, police work has changed. There has been a growing demand to combat terrorism and mass shootings, a proliferation of departmental budget cuts, an abundance of new technology, and the newfound militarization of police because of military surplus. More accountability and legitimacy exist for policing than ever before. All these aspects within the policing profession have increased stress to go along with the new policing efforts. Two types of stress experienced through policing are physiological and psychological stress, leading to burnout (Griffin & Sun, 2018). One aspect often overlooked when understanding the effects of stress on police officers is their families. Work/family conflict is one aspect that significantly affects an individual's stress levels. When a police officer has a supportive family life, there is a greater likelihood of successful stress combatants for that officer (Griffin & Sun, 2018).

Several different ways to define stress exist, such as medical and psychological. When looking at the stressful environments of policing, one must understand the external and internal stimuli. When examining external factors that cause a stress response, researchers need to consider scenarios such as a commander pressuring a police officer to stop more cars or solve a case. Alternatively, an internal stimulus is a response from within the body that disrupts one's natural homeostasis (König et al., 2017). When considering a police officer's daily activities within a normal working day, officers are exposed to both internal and external stimuli (Griffin & Sun, 2018). Both stress factors,

physiological and psychological, can have external stimuli, which can cause a more substantial stress reaction within the mind (König et al., 2017).

When examining the study of stress within policing organizations from the past, two considerations should be contemplated, occupational and organizational stress. Occupational stress originates in the nature of policing work as a whole. Organizational stress is experienced because of the organizational structure that police officers work within, such as the hours worked (Griffin & Sun, 2018). Several factors must be considered when studying police stress. For example, intrapersonal relationships relate to stress. Health is a significant stress factor. If a person is healthy, there is a higher likelihood that the person will be able to combat stress (Griffin & Sun, 2018). If a person is unhealthy, there is a higher likelihood of stress-induced diseases. A consideration of gender and race among police officers is also necessary. New findings suggest that minorities and females experience more stress within policing organizations. Many contradictions are present when considering race and gender, however. In many cases, this is due to the problematic representation within policing agencies of minority groups and gendered groups (Griffin & Sun, 2018).

A weak association between police officer demographics and resiliency exists, and the only way to combat a stressful environment is to identify and overcome daily operations challenges (Griffin & Sun, 2018). A police officer must have social support from their family and leaders within the policing organization. If more social support is present, there is a higher probability that the officer will find coping mechanisms to deal with stress and stay within the organization. An officer's family's support decreases burnout and stress. A police officer with a supportive family has a greater chance of

resiliency. If a higher probability of resilience exists, there are fewer occupational hazards and conditions within the workplace. It is essential to understand that a person within the criminal justice organization is exposed to more stress, which causes a higher likelihood of problematic behavior and less complex decision-making (Griffin & Sun, 2018).

Mood Disorder from Stress

Environmental factors, such as stress or factors that cause stress over a prolonged period, have a high probability of leading to mood disorders within the brain. Because of neuroplasticity, when a person is exposed to stress, their brain evolves, with enlargements and shrinkage occurring to certain parts of the human brain. In many cases, the hippocampus suffers when a person experiences a large amount of stress (Sapolsky, 2017). Scholarly studies have indicated that the hippocampus has a large amount of influence on mood disorders (Gray et al., 2018). A person's perception can change because of the environment the person is within; for example, if a person is within a high-stress environment, there could be a mutation of genes. When genes mutate, there will be several activations of formation of the body and brain. If a gene mutates, the amygdala could enlarge, and the hippocampus could shrink (Gray et al., 2018).

The hippocampus has a very important job in learning and obtaining memory. Studies have indicated that stress has a significant effect on the hippocampus. When a person has an enlarged hippocampus, there could be more anxiety and depressive behaviors. The reason for these behavior changes lies in the brain's neuronal structure as it has changed. With environmental stress, mental illness will probably present in people exposed to environmental stress and post-traumatic stress disorder. The pyramidal neurons within the hippocampus have an essential role in spatial memory (Gray et al.,

2018). When the pyramidal neurons have been altered, there could be mood disorders. These pyramidal neurons have a particularly negative reaction to high amounts of stress. Once the brain is exposed to chronic stress, it can reshape, and neurons begin to evolve, making memory and advanced cognition more difficult (Gray et al., 2018).

The first indication of chronic stress altering one's genetic code was seen in mice. When a person or an animal is exposed to stress for a long period, their genes begin to change. For this reason, it is necessary to understand how genetics, stress, and mental illness are related. A person's or an animal's DNA serves as an instruction manual for cells, and the functions of the cells follow the instructions of the DNA. Everyone on earth is exposed to different environments, which is how each person's brain and DNA are unique (Weidman, 2017). Even siblings are exposed to different environments. However, if a person understands their environment, they are more likely to understand why another person acts the way they do. When a person is exposed to a particular environment, a temporary modification of the DNA to adapt or change the sequence of thought in the brain is present, creating a larger probability of survival (Weidman, 2017). Modification within the brain is highly regulated, and the brain takes several exposures to a certain experience to change the instructions of the DNA (Weidman, 2017). However, research indicates that drugs, either prescribed or illegal, can alter the instructions of one's DNA. Considering the altering of DNA, hope is possible that, in decades to come, there could be more advanced therapy for people suffering from mental disorders through the use of drugs to change the instructions of one's DNA for positive effect (Weidman, 2017).

When a person commits suicide, indications that the person's DNA has experienced changes are present, and the instruction includes the direction of one's self-destruction. Police officers have a high suicide rate, indicating that the effects of high-stress situations daily can lead to these kinds of DNA changes. When a person is exposed to a large amount of stress, DNA evolution exists that affects the blueprint of the mind. When the mind is changed, in many instances, the changes are usually negative. When understanding the effects of cognition in criminal justice leaders, researchers must acknowledge that a brain decline is likely to transpire from the effects of the job as the person moves into a leading role. This decline could then lead to less productive cognitive problem-solving skills.

Stress and Sleep Quality

Sleep is needed for a person's body to function properly (Hartley et al., 2017). If a person does not obtain the right amount of sleep, there is a higher likelihood of stress building in the mind and body to affect bodily functions over time. A study of police work characteristics that includes workload, policing rank, experiences within the military, and shift work are all considered when trying to understand the potential effects of sleep deprivation and stress in this discipline (Hartley et al., 2017). To help prevent sleep deprivation and reduce stress, there must be an understanding that the effects are much more significant for police officers with higher workloads, who hold lower ranks, and who do not have military experience. Police officers must create a proper sleeping schedule to combat stress and make sleep deprivation less of an occurrence (Hartley et al., 2017).

When a person faces a large amount of stress, the person needs more sleep to overcome the issues. However, when a person is exposed to a large amount of stress, there is a lower likelihood the person will be able to obtain more sleep to overcome stress. Several effects can alter the brain functions of humans who do not get enough sleep. Stress from sleep deprivation enhances the consolidation of emotional memories (Payne & Kensinger, 2018). A correlation exists between neuroplasticity of the amygdala and the hippocampus from lack of sleep caused by stress. Memory consolidation within the brain can be somewhat selective based on the importance the brain assigns to the memory. For example, the emotional aspects of an event can be incorporated into a more readily available mind. When a person is exposed to a large amount of stress, a transition might begin in their DNA, leading to sleep deprivation, which leads to more stress and loss of cognition (Payne & Kensinger, 2018).

Sleep is an essential function in the human body, the homeostatic function. The homeostatic function occurs within the circadian rhythms, which organize physiology and behavior (McEwen & Karatsoreos, 2015). Sleep deprivation and circadian disruption can be stressors that enhance other stressors within the person's environment (McEwen & Karatsoreos, 2015). Allostatic overload within the body often wears the bodily systems down, which leads to more stress. With too much stress, there is inefficient management within the body systems that promote adaptation within the body. When a person is affected by a circadian disruption, an alteration of the allostasis occurs, putting greater wear on bodily functions. One of the most common circadian disruptions is sleep deprivation. With sleep deprivation or circadian disruptions, many effects on brain activity are likely. Sleep deprivation increases appetite, increases inflammatory diseases,

decreases parasympathetic systems, increases sympathetic tones, and increases blood pressure (McEwen & Karatsoreos, 2015).

Mood disorders are prominent among police officers. Mood disorders usually involve disrupted circadian rhythms and can cause sleep deprivation through interrupted sleep-wake patterns (McEwen & Karatsoreos, 2015). It is much like a spiral; when a person has a mood disorder, in many cases, it leads to sleep deprivation that spirals into antidepressant effects that manipulate the timing of melatonin secretion in an attempt to combat sleep deprivation. Many studies on mood disorders and sleep deprivation have indicated that brain regions become altered (McEwen & Karatsoreos, 2015). The hippocampus is sensitive to glucose and insulin. Memory is impacted through sleep deprivation, lower secretion of glycogen, and an increase in oxidative stress; free radical production of sensitive hormones affects overall stress levels. If a criminal justice leader is unaware of their sleep patterns, there could be a loss of cognition stemming from sleep deprivation (McEwen & Karatsoreos, 2015).

Occupational Stress

One primary factor that can help combat stress is happiness with as many aspects of life as possible. One main element that causes stress is a person's occupation. If occupational stress exists, the loss of cognition is more probable (Kula, 2017). Among criminal justice leaders, a large amount of stress exists within the position and, prior to that position, in the daily operations of criminal justice duties. In many instances, job satisfaction is directly related to occupational stress (Kula, 2017). Operational stress is also associated with work-related burnout. However, indications that work-related burnout is related to job satisfaction are absent. Supervisors have a great amount of

influence over the people they supervise. However, a direct correlation between organizational and operational stress in job satisfaction is absent. Organizational stressors greatly influence the overall burnout rate, which is correlated to overall stress and burnout. With a large amount of burnout, a higher chance of an overall loss of cognition and a higher probability of problematic decision-making is likely (Kula, 2017).

Stress is known to have a large effect on demands within the human body, consequences, and modifiers of brain activity and function. Stress is related to 70% of deaths nationwide (Quick & Henderson, 2016). Cardiovascular disease is the leading cause of death, which often includes stress as a cause. When a person has occupational stress, it is more likely that there will be cardiovascular problems throughout their life (Quick & Henderson, 2016). With occupational stress, work demand, which is considered environmental, triggers a stress response. Several studies led to the same conclusion. If both remain at high levels, work stress and stress from home life will ultimately lead to a loss of cognition or even death (Quick & Henderson, 2016).

The causes of stress are vast; however, occupational stressors are prominent. Occupational stressors expand through many occupations. Policing or employees within the criminal justice system experience a large amount of occupational stress from the ever-changing environments and accountability in and under which they work. Occupational stress has three main aspects: work, family, and individuals. With higher amounts of strain within the workplace, increased demands and lower control are present (Quick & Henderson, 2016). Other stressors within the workplace stem from the lack of employee decision latitude. If an employee cannot make a proper decision, low

accountability is present, and the employee is less likely to believe the right decision can be made (Quick & Henderson, 2016).

When looking at several studies, it becomes apparent that occupational stress is inevitable. In some cases, stress can be beneficial to help employee productivity (Quick & Henderson, 2016). However, a fine line regarding the effects stress has on employee cognition and health should be considered. When stress becomes too great, there is a higher chance of disfunction and failure of the organization. It is essential to create stress management agendas within every organization, especially policing organizations (Quick & Henderson, 2016). Policing organizations implement several services to help in the alleviation of stressors. However, with the blue curtain and the overall stigma of using such services, there is a low chance of success with the services provided. Many criminal justice leaders and employees look down upon people who need services to help combat stressors. However, across generations, these problems might be fixed to help retain advanced cognition for criminal justice leaders in years to come. Stress must be fought to encourage overall success for criminal justice leaders (Quick & Henderson, 2016).

Loss of Cognition

In the previous sections, there has been a plethora of knowledge about how stress can change the brain and affect how people think. How does all this information connect to the cognitive abilities of criminal justice leaders? Remember, criminal justice leaders, placed somewhere within the criminal justice system, are usually exposed to a great deal of stress. The brain is the central part of the human body involved in perceiving and adapting to environments around the individual (McEwen et al., 2015). Remember, this adaptation stems from how one person perceives the environment, not how the entire

population within the organization perceives the environment. When a person is exposed to a stressful environment, there is a structural remodeling of their neural architecture (McEwen et al., 2015). Think of this remodeling as a survival mechanism to give the person the most significant opportunity to survive. In some cases, these adaptations are successful; however, there are costs. If the environment is highly stressful, the amygdala often enlarges, making the person act more primitively and with less cognition (McEwen et al., 2015).

Amino acids and glucocorticoids have large amounts of influence in the restructuring of neural architecture. With these influences, there is an ever-changing gene activation or transgression pattern. Think of your body reading the environment, such as scanning for the need to prepare for high stress and changing for what it reads as needed for you to survive. If a person is continually threatened, the body needs to react quickly rather than take time for complex thought. Less cognition and more natural behaviors transpire daily in high-stress environments (McEwen et al., 2015). With all of the alterations of the brain from plasticity, underlying mechanisms of vulnerability are present, which shows the reason for overall cognitive decline (McEwen et al., 2015).

Impact of Stress and Cognitive Decision-Making

Three main aspects are present when studying cognitive decision-making. Stress can crucially impair the evaluation and reward of information received by the brain. Evaluation and reward information is needed to make a proper cognitive decision. When a person is under considerable stress, goal orientation is no longer considered necessary (Porcelli & Delgado, 2017). A habit-based decision-making process trumps cognitive decision-making. Risk-taking is done in response to gut feelings, where the person's mind

has analyzed unconscious information to give a feeling of the right decision—unconscious cognition—which can lead to successful risk-taking. If lower levels of cognition are present, there will be more problematic risk-taking. A wide range of experimentation is present that helps understand the decision that must be made to have the best outcome (Porcelli & Delgado, 2017). These cognitive efforts surpass simple brain functions such as fight or flight mechanisms (Porcelli & Delgado, 2017).

Many studies have indicated stress rewards decisions that lead to problematic results. People show a large amount of loss of cognitive efforts after exposure to stressful environments (Porcelli & Delgado, 2017). Studies have indicated the overall consensus that people will react more from habit rather than from analysis of the decision, resulting in more problematic results (Porcelli & Delgado, 2017). The future in understanding the effects of stress and cognition looks promising, for there have been significant advancements to help in the overall effects of stress and the human brain. However, since criminal justice leaders are subject to losing cognitive decision-making and acting more from habit, I have a growing concern for criminal justice leaders and their loss of cognition.

Hormones' Impact on Cognition

Hormones have a significant effect on learning and memory processes. Stress also has an impact on learning and memory. Two hormones have a particularly significant effect on how a person reacts to situations: cortisol and oxytocin. These two hormones are in constant flux. Constant flux is the environmental stimulus that gives a person's brain information to react (Wirth, 2015). In some ways, the brain is affected by cognitive processes such as perception, attention, learning, and memory. As indicated in the

previous section, stress makes people react more from habit rather than advanced cognition (Wirth, 2015). Oxytocin is a peptide hormone that cannot directly pass through a cell (Wirth, 2015). Oxytocin acts on receptors that are within the membrane. The pituitary gland releases hypothalamic neurons, a hormonal response to an external factor (Wirth, 2015).

Hormones adversely affect long-term memory. Like all other factors, it largely depends on many factors that lead to a loss of memory and cognition. A person who experiences a prolonged environment of high stress and hormone secretion often sees a loss of memory and cognition (Wirth, 2015). Police officers or criminal justice professionals usually find themselves in many different environments and find different types of brain activations. Some officers have a lot of stress, leading to the loss of cognition and higher hormonal secretions, leading to various devolutions of their minds. People's brains have amazing capabilities to sift through a large amount of information daily. When a person is involved in a stressful event, there is a progression to adapt, and in many instances, the loss of cognition occurs (Wirth, 2015).

More Examination

The advising literature does not adequately grasp the effect of neuroplasticity and stress as they relate to criminal justice employees' decision-making processes. Neuroplasticity is a rather new concept of understanding the brain's functions. A decade ago, it was thought that the brain or nervous tissue could change. It was not considered a credible understanding of brain functions (Costandi, 2016). In many instances, it was understood that the brain was stagnant and did not develop past adult formation. However, a new understanding that the brain changes throughout one's life from

experiences and genetic makeup is relatively new (Costandi, 2016). A new acceptance of neuroplasticity is present related to brain functions. However, additional research is needed on how neuroplasticity relates to stress and cognition. This study helped fill the gaps in the understanding of neuroplasticity and how it affects cognitive decision-making processes in criminal justice leaders who have been in a stressful environment for a long period.

Summary

While considering the overall questions asked in this paper and the information provided here, readers should also recognize a newfound perspective on the loss of cognition. With prolonged exposure to high stress, do criminal justice leaders have lower cognitive abilities than those not exposed to high-stress situations as often or constantly? Criminal justice leaders have a higher probability of the loss of cognition because of high-stress environments throughout a criminal justice career. The good news is that it can be fought. Lower stress therapy and understanding a person's brain help regain cognition (Sapolsky, 2017). One of the scariest parts of this process is that the person losing cognitive abilities usually is unaware of this loss because of the evolution of the brain. The person believes they are acting as they always have (Sapolsky, 2017).

The second question in this paper is: With the malleability of the human brain from neuroplasticity, do criminal justice leaders demonstrate altered mental abilities due to stress? Neuroplasticity can cause the mind to evolve in response to the environment the person lives in (Sapolsky, 2017). For example, the mind changes because of the environment, which is called neuroplasticity. A criminal justice professional in a high-stress environment sees a higher probability of an enlargement of the amygdala and

shrinkage of the prefrontal cortex and the hippocampus. A person in this state of mind acts more primitively and from instinctual habits rather than cognitively. The cognitive state can often be regained if the person changes their environment; the mind then evolves to increase the chance of survival (Sapolsky, 2017).

Pharmacology can influence the extent of neuroplasticity to create a higher likelihood for the brain to remain strong. In many instances, positive results exist through pharmacology therapy to mitigate the negative effects on the brain by using antidepressants to combat stress-induced plasticity (Serafini, 2012). It is well documented that stress-related disorders lead to impaired brain functions. When the hippocampus and the prefrontal cortex are impaired, they shrink in response to stress and depression. However, an enlargement within the amygdala can also present, but most abnormalities can be explained by the actions of glutamate (Serafini, 2012).

With antidepressant treatment, whether pharmaceutical drugs or therapy, while associated with neurogenesis, glycogenesis, dendritic arborization, new synapse formation, and cell survival, this treatment often shows a great deal of promise in helping with the mitigation of the negative effects of stress as they relate to plasticity (Serafini, 2012). However, would the person need to remain on the drugs or therapy to mitigate negative neuroplasticity from stress in the long term, or could the person intermittently resort to drugs to alleviate the problems temporarily once diagnosed with a mental illness or loss of cognition? A large amount of study is needed to benefit criminal justice leaders.

The third and final question remains: Can stress make criminal justice leaders have a higher probability of mental disabilities? A person exposed to post-traumatic stress disorder has a higher chance of a lifelong mental disability. Many argue that most police

officers are exposed to great stress. The one good aspect that must be considered for criminal justice leaders is the lower chance of stress in leadership roles.

When a criminal justice leader moves into higher ranks, leaders are exposed to less stressful life-threatening events, giving the person time to regain lost cognitive abilities. None of the loss of cognition needs to be lifelong if the person understands what is happening to their brain as they are exposed to new environments and how they can alter memory, primitive actions, and cognition. Jobs within criminal justice departments give employees a higher probability of mental disabilities if the disabilities are not treated correctly. However, with the use of therapy and pharmaceuticals, there could be a possibility of mitigating the negative effects of stress on brain functions.

CHAPTER THREE: PROPOSED METHODS

Overview

In Chapter 3, the methodology is focused on how these questions are answered in this study. With prolonged exposure to high stress, do criminal justice leaders have lower cognitive abilities than those not exposed to high-stress situations as often or continually? Research has indicated a significant probability of the loss of cognition from prolonged stress. It is important to note this study was qualitative and quantitative. The information within the study is also both descriptive and conceptual. The traits and the personal characteristics that determine how one acts when exposed to stress can be categorized based on actions. A large amount of information regarding police stress is present. However, there were problematic results from research conducted regarding cognition among criminal justice leaders.

Throughout the literature review, a large amount of information is presented regarding the understanding of cognition within a healthy person who is not subject to a large amount of stress daily. Also, a large amount of information is present regarding stress and its effects on a person who does not have a healthy mental state. I was unable to find a great deal of information on cognition related to criminal justice leaders exposed to a large amount of stress. This study provides a more comprehensive view of how stress affects a person's cognitive ability (Sapolsky, 2017). I gathered information from governments and other credible sources to obtain information regarding cognition among people who work in these careers. It was crucial that credible information was obtained from credible sources to form a sustainable study. Most studies had the same conclusion. Stress affects cognition in negative ways. These negative consequences stem from the

neuroplasticity of the human brain. The brain uses neuroplasticity as a survival mechanism to create a higher probability of survival (Sapolsky, 2017).

No ethical issues concerning the institutional review board (IRB) were present. I studied interviews, surveys, and archival data. I was not conducting a study involving animals. I used current articles to obtain information due to the lack of other resources to conduct the study. When the interviews of criminal justice leaders were conducted, each interviewee asked questions to help obtain credible information to consolidate with information from archival data.

Design

The research design of this applied study was multimethod. The multimethod design correlated interviews, surveys, and archival data to understand the correlation between stress events and perceived cognitive abilities. The first part of the research design included in-person interviews to obtain quantitative information. The second part of the research consisted of the collection of surveys. Surveys obtained participants' perceived recognition of their cognition and the activation of their brains as they lashed out due to stressful events. Surveys are the study of a population to give a consensus on behavior or opinions (Jansen, 2010). The third part of the research involved archival data. Archival data gave the researcher data on stress events related to adverse behavior. Within the criminal justice system, surveys are used to gain information discreetly. Considering the information needed within this study regarding cognition and stress, a discreet way to obtain information was beneficial for a better understanding of what criminal justice leaders are exposed to within their daily duties. The main benefit of using

a survey was obtaining information from a large segment of the criminal justice population (Mathiyazhagan & Nandan, 2010).

The survey was qualitative in design with open-ended questions. There was quantitative information needed within the survey, such as age, gender, and years of service within the criminal justice system. The quantitative information was needed because the plan correlated with age, gender, and years within the criminal justice occupation to differing cognitive abilities. The analysis of archival data benefited this study because of the information gained about disciplinary actions against criminal justice personnel as they progressed through their careers. The quantitative study of archival data was considered carefully because unknown sampling frame, data preparation, and reporting can have consequences on the random data aspects within a study (Miller et al., 2020). The researcher created the survey to obtain the information needed to solve the questions within the study.

Research Questions

Central questions: With prolonged exposure to high stress, do criminal justice leaders have lower cognitive abilities than those not exposed to high-stress situations as often or continually? With the malleability of the human brain from neuroplasticity, do criminal justice leaders have altered mental abilities due to stress?

Subquestion one: How would criminal justice leader qualitative interviews answer the question about prolonged stress exposure and whether it seems to lower cognition? With interviews of criminal justice leaders, the interviewer used a funnel protocol, leading to a large amount of information surrounding cognition and stress exposure.

Subquestion two: How would criminal justice leaders' quantitative survey information answer the question concerning prolonged stress exposure and its effect on lowering cognition? Understanding these participants' age, gender, and time of service gave information regarding correlations between the time of service and the effects of age and gender.

Subquestion three: How would quantitative archival data on criminal justice leaders answer the question about prolonged stress exposure and its propensity to lower cognition? These data also provide answers about the malleability of the human brain from neuroplasticity, such as the question: Do criminal justice leaders have altered abilities due to stress? Archival data gave information regarding disciplinary actions experienced throughout one's career as they relate to the amount of stress the person has been exposed to.

Setting

The setting of this study was the southeast United States. The study took place within the state of Georgia. The reason for this location is because of the vast number of population differences available to access in the state of Georgia. Population sizes correlate to criminal activity and department sizes. The geographical location affects the stress level criminal justice employees are exposed to daily. The study considered this location because of the different leadership strategies present in this space. Departments with a community-oriented strategy might react to stress in one way, while others might not have the staffing or resources to conduct such strategies. It was important for this study to understand small and larger criminal justice organizations, such as those at the

state and county levels, to access varying information. Stress factors and resources can play vital roles in stress levels, leading to differences in cognition levels over time.

Participants

A study of criminal justice leaders in an attempt to understand their theta wave stages, adolescent years, and ultimately all of the stress experienced through their careers was crucial. A study of newly hired criminal justice employees and differing population experiences helped understand cognitive functions. The population used within this study stemmed from existing data on police stress and cognitive functions. Once the stress was analyzed, a study to determine cognition level was crucial. The age of the participants was limited to 18 or over. This applied study collected both qualitative and quantitative data from participants. The collected data were from surveys, interviews, and archival data. There were eight participants in the study in criminal justice leader roles. All interactions within the study were considered voluntary. Each participant consented to the study. All participants fit the same criteria for the survey, interviews, and the archival data collected.

A multivariate analysis of variance design of statistical data was used because of the multiple dependents in variables within the analysis (Salkind, 2010). For instance, two or more groups experienced stressful events within the workplace and included people without stressful pasts. All factors must be understood to determine whether a person's cognition originates from early life or stress from the criminal justice profession. It was essential to determine how each participant functioned within the criminal justice leadership role. For example, did the participant gain their career due to politics, or did the person's cognitive level play a significant role in gaining a successful career? The

advantage of interviewing criminal justice leaders is that these interviews can determine the role of stress and the level of their desire to obtain advanced cognition as the leaders progress throughout their careers. The sampling procedure was convenience sampling. Convenience sampling was the most credible way of obtaining information regarding the topic (Etikan et al., 2016). Convenience sampling was used because, within this study, it was impossible to use an entire population of criminal justice leaders. The rationale for using a convenience sampling technique included this technique's likelihood of providing the information needed within the study. The sample demographic was mixed and could be replicated through random selection. However, the geographical location played an important role.

Procedure

For current studies, more participants are needed to understand cognition. There could be a more complete view of the criminal justice leader's experiences in obtaining their positions. For example, was the position obtained due to cognitive abilities, or were they placed for political reasons? All of this study's information was gained from existing articles. Reading and articulating all of the information was necessary to understand how cognition was gained and lost throughout one's life. I started the study by examining the first years of life to understand early cognition. Within the first seven years of a person's life, the person is within the theta phase, when the brain obtains perspective to understand the world around the person (McEwen & Karatsoreos, 2015). Different experiences and high-stress factors during this early phase can play a vital role in understanding cognition and decision-making practices throughout one's career. Surveys were delegated to gain information at local and state-level agencies to gain a wider perspective from both small

and large agencies. Interviews were conducted with state and local personnel within the criminal justice system. Existing information was obtained from adverse behavioral actions and their varying degrees related to experiences within the criminal justice system. The research design in this applied study was multimethod, with in-person interviews, surveys, and the analysis of past research. The data gathered for the study were through surveys, interviews, and archival data. The purpose of gathering the data using these forms was to understand if there was a correlation between stress and cognition among criminal justice leaders. The survey was conducted electronically and indicated whether the participants were stressed within their working environments and whether their perceptions had changed due to the stress events. The interviews allowed participants to elaborate on their perceptions of stress and how it impacted their lives as they moved through their careers. The archival data collected pertained to stress events and how they impacted adverse actions such as complaints and reprimands. See Appendix A for IRB approval information. See Appendix B for participant consent form information.

Researcher's Role

The goal of my study was to obtain a better understanding of cognition and stress related to leaders within the criminal justice system. A large number of criminal justice employees suffer from post-traumatic stress disorder. This leads to problematic decision-making and an overall likelihood of lost trust among citizens in their criminal justice systems. I studied a large number of articles with the goal of better understanding neurobiology. With this understanding of neurobiology, I was able to better transcribe the information within the articles into crucial information regarding criminal justice leaders'

cognition levels. I based my problem and overall study questions on the experiences of stress within the criminal justice field. I had to overcome my own stress within the criminal justice system. I noticed my changing perspective, which is why I would contemplate situations and the overall awareness of the world around me differently. I understood this was problematic, and a loss of cognition was present. I began to study the problem to combat the issue.

It is important to understand the correlation of cognition and how it can relate to the daily activities of a criminal justice leader. It is essential to understand how a person obtains cognition. To gain an understanding of cognition, I had to study the birth of cognition. In most instances, people obtain basic cognition at birth. However, it is a rather complicated process because of the influences of family, education, and the overall theta wave movement of a person's brain. It is essential to determine the relationship this study had with actual criminal justice leaders. For example, many studies regarding neuroscience have been conducted on mice. Even though the information from those animal studies can help determine the results of stress and cognition, it is not as applicable to understanding stress and cognition as they affect criminal justice leaders. The oldest article I used within the study was published in 2015. Studies range from 2015 to 2018, with a large majority of the studies being very current.

Data Collection and Analysis

When collecting data, it is important to understand data triangulation. Data triangulation is using multiple methods or data sources in research to develop a comprehensive understanding (Carter et al., 2014). Data triangulation was used in this study and helped acquire the information needed to understand cognition related to

criminal justice leaders within a stressful environment. By studying different departments in different communities serving different populations through surveys, this study used interviews and prior data to triangulate the data for a vast understanding of the loss of cognition from stress. The data were triangulated from interviews, surveys, and archival data from the departments of the surveyed and interviewees that showed adverse behavior. It is crucial to understand several perspectives related to gaining and losing cognition. The research question remained: With prolonged exposure to high stress, do criminal justice leaders have a lower cognitive ability than those not exposed to high-stress situations? The hypothesis stated that prolonged criminal justice-related stress negatively impacts cognition. A large amount of information suggests that stress shrinks the hippocampus and the prefrontal cortex, subjecting a person to act more primitively rather than acquiring complex thoughts (Quick & Henderson, 2016). After sorting through the information regarding stress and its impact on the brain, a conclusion about the effects on the brain of prolonged stress was present. However, studies indicated the brain could resort to more complex thinking processes once the stress was lowered.

Three different data collection methods were present in this study. The first data collection process was qualitative, in the form of in-person interviews. The second collection process consisted of surveys. The surveys were qualitative in design with open-ended questions. There was quantitative information needed within the survey, such as age and gender markers and years of service within the criminal justice system. The final data collected consisted of the analysis of archival data involving criminal justice employees in disciplinary actions and stressful situations throughout their careers.

Interviews

The first subquestion within this study explored how prolonged stress exposure lowers cognition compared to people not exposed to high-stress situations or environments. Interviews helped determine which effects of stress affect cognitive ability in participants working within the criminal justice system. The collection of the data from interviews occurred face-to-face as well as over the phone. The number of participants exceeded the minimum of five needed for this study. During the interviewing phase of the study, the interviews were semi-structured with protocols. Protocols within the interviewing phase of the study were critical because the protocols structured the interviews (Harrell & Bradley, 2009). The interviews needed to be consistent to facilitate reliable data. Funnel protocols were used during the interviewing process to start a broad topic for rapport and then move to a more focused question. It is important to move into the discussion of stressful events because the interviewees probably did not speak freely at the beginning of the interviewing process without rapport (Harrell & Bradley, 2009). All data were collected during the afternoon, depending on the participants' availability. The researcher collected all data transcribed from each of the interviews. There were no conflicts within the logistics of the data collection during the interviewing process. All questions within the interviewing process were answered using a semi-structured collection strategy and a funnel protocol.

1. How would you define your career in criminal justice?

This question helped funnel the interviewee's information to obtain a perspective of their career. This first question also helped establish a professional relationship

between interviewer and interviewee before moving into more personal questions regarding stress.

2. How would you define stress as it relates to your career?

Understating the interviewee's definition of stress helped determine if the literature matched a participant's overall view of stress and how it can relate to cognition loss through time or exposed stress.

3. Have you been exposed to a large amount of stress in your career?

Environmental factors, such as stress, or factors that cause stress over a prolonged period, have a higher probability of causing mood disorders within the brain.

Because of neuroplasticity, when a person is exposed to stress, their brain evolves, and enlargements and shrinkage to certain parts of the human brain are present. In many cases, the hippocampus suffers when a person experiences a large amount of stress (Sapolsky, 2017). This question aligns with the relative stress factors and how they can affect the decision-making process within one's brain.

4. Has your career changed the way you perceive things around you?

A large number of studies are present that indicate that stress provides rewards for decisions with problematic results. A large amount of loss of cognitive efforts exists for people exposed to stressful environments. Studies have indicated the overall consensus that people react more within a habit base rather than an overall analysis of the decision that is made, resulting in more problematic results (Porcelli & Delgado, 2017). Determining whether the interviewees' career is creating an effect on the decision-making process can help understand the decision-making process and its relationship to stress.

5. Has stress changed the way you perceive things around you?

In the face of stress, researchers see participants engage in more of a habit-based decision-making process that trumps cognitive decision-making. Risk-taking can be seen as both more and less common in response to stress. However, it may, for instance, lower the prevalence of risk-taking when the individual acts more often from gut feelings, where the person's mind has analyzed unconscious information to create feelings of the right decision—unconscious cognition—which can lead to successful risk-taking. If lower levels of cognition are present, however, more problematic risk-taking will be probable (Porcelli & Delgado, 2017). The question helped determine how the interviewee perceived their environment and how that perception has changed because of the exposure to stress within the workplace.

The data within the interviews were analyzed through transcription of the interview data. It is important, although seldom necessary, to note that reflexivity within the transcription process can lead to a broader view of the information obtained within the interview (Weinbaum & Onwuegbuzie, 2016).

Surveys

Quantitative survey information answered the second subquestion: Can prolonged stress exposure lower cognition? Understanding participants' age, gender, and time of service provided information regarding correlations between the time of service and the effects of age and gender. The survey was developed quantitatively to collect the data needed for the study. The Likert scale was used within the survey for questions regarding the survey takers' experiences within their careers. The Likert scale used in this study was the most frequently used in educational and social science research (Joshi et al., 2015).

The survey was sent via email in a document format. Each survey taker completed the survey and sent the document back for analysis. No logistical concerns were present because of the methods deployed to conduct the surveys. The survey information was analyzed by descriptive statistics, such as mean and frequencies. However, the use of graphs and charts was limited because the information obtained correlated with other information gained throughout the study.

Archival Data

The third subquestion came from quantitative archival data information answering the question of whether prolonged stress exposure lowers cognition and with the question of whether the malleability of the human brain from neuroplasticity causes altered abilities due to stress. Archival data provided information regarding disciplinary actions taken throughout one's career related to the amount of stress the person has been exposed to. The data were collected through past research from criminal justice leaders' data as they progress in their careers. Data helped measure the importance of stressful situations and their relationships to disciplinary actions. The archival data were collected and compounded to develop an understanding of how stress can alter cognition.

Trustworthiness

The research design with the applied study was multimethod, including in-person interviews, surveys, and the analysis of past research conducted by people within the criminal justice system, from small to large organizations. The data gathered from the study were collected through surveys, interviews, and archival data. The study's trustworthiness was assumed that all participants were truthful in answering all questions

within the surveys and interviews. The archival data were collected within each agency through personnel files.

In-person Interviews

The study's trustworthiness assumed all participants were truthful in answering all interview questions.

Surveys

The study's trustworthiness assumed all participants were truthful in answering all survey questions.

Archival Data

The archival data were collected within each agency through personnel files.

Ethical Considerations

When conducting a study using existing literature, there is less likelihood of an ethical dilemma. The study of present criminal justice leaders did not include an ethical concern because the participation in the study was voluntary, and the protection of the identity of each participant remained intact. With the study of existing information, ethical shortcomings are less likely. Criminal justice leaders were studied, and the names and organizations remained confidential to lower the possibility of ethical issues. The age of people used within the study was important for understanding the beginning of cognition and how people obtain perspective throughout life cycles. The only data used to understand cognition within the study came from existing articles. It is crucial to understand if an interviewing method was used. The identity information was considered confidential material and was not used to identify problematic results while studying

cognition. This study was approved through the IRB application process. See Appendix A for the approval letter.

Summary

The study that was conducted regarding cognition within criminal justice leaders' was qualitative and quantitative. The study was conducted to emphasize criminal justice employees' large amount of stress and how it can affect cognition within the brain. I used existing means to conduct the study from recent articles. Because of the use of existing information regarding cognition, there were few areas of concern. Even though it was current, existing information, the articles were analyzed to determine if the information was valid prior to use within the study. Ethics were upheld within the study to maintain the validity of the overall study and the information within this paper.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this applied study was to help in the understanding of how stress had a significant impact on criminal justice leadership. The research design for the applied study was multimethod, with in-person interviews, surveys, and the analysis of past research from people within the criminal justice system, including small organizations to large organizations. If leaders can better understand the stress created and faced within criminal justice professions, there is a higher likelihood that the effects of stress can be mitigated. Understanding how the mind deals with stress is crucial for studying its impact and how it can change cognitive abilities (Bishopp et al., 2016).

Stress has a significant impact on decision-making. Criminal justice leaders have a wide range of decisions that must be made daily. Whether political or strategic, if the criminal justice leader experienced a large amount of stress within a career in criminal justice, there was a higher likelihood of that individual making an ineffective decision. Stress disrupts the prefrontal cortex's circuits, which often makes people insensitive to potential losses (Arnsten et al., 2017). A disconnect to the prefrontal cortex is probable because of stress, which can help explain the propensity for reliance on substances among people dealing with high amounts of stress.

The data gathered within the study came in the form of surveys, interviews, and archival data. The purpose of gathering the data using these methods was to understand if there is a correlation between stress and cognition among criminal justice leaders. The survey was conducted electronically to indicate whether the participant was stress-induced within their working environment and if their perception changed due to those

stressful events. The survey asked whether the participant was stressed and whether the job had caused the participant stress. Whether the job caused the participant stress helped in understanding whether the working environment was causing stress. The survey questioned whether the participant was disgruntled with the workplace, indicating a perception change due to the years worked in law enforcement. The interview was intended to allow the participant to elaborate on their perceptions of stress and how it has impacted their life and perception as they move through their career. The collected archival data were used to understand the stress event and how it caused adverse actions, such as complaints and reprimands.

Participants

The applied study used participants and collected both qualitative and quantitative data. The collected data came from surveys, interviews, and archival data. There were eight participants in the study, each working in a criminal justice leader role. All interactions within the study were considered voluntary. Each participant consented to the study. All participants were the same for the collected surveys, interviews, and archival data.

Participants' Demographic Information

Table 1

Demographic Information

| | Participant | Age | Sex | Years Worked in Law Enforcement |
|---|-------------|-------|------|---------------------------------|
| 1 | 1.00 | 35-44 | Male | 11-15 |
| 2 | 2.00 | 35-44 | Male | 16-20 |
| 3 | 3.00 | 35-44 | Male | 11-15 |
| 4 | 4.00 | 25-34 | Male | 11-15 |
| 5 | 5.00 | 45-54 | Male | 16-20 |
| 6 | 6.00 | 45-54 | Male | 16-20 |
| 7 | 7.00 | 18-24 | Male | Less than 5 |
| 8 | 8.00 | 18-24 | Male | Less than 5 |

The average age of the participants in the study was 36.75. Eight males participated in the study. Participant 1 was a male between 35-44 and a supervisor within the law enforcement profession. Participant 2 was a male between 35-44 and a supervisor in a special unit within law enforcement. Participant 3 was a male between 35-44 and a supervisor within law enforcement. Participant 4 was a male between 25-34 and a supervisor within a department's executive branch. Participant 5 was a male between 45-54 and among one of the top leaders within the law enforcement profession. Participant 6 was a male between 45-54 and a supervisor within the law enforcement profession. Participant 7 was a male between 18-24 and was within a small law enforcement department. Participant 8 was a male between 18-24 and was a newly promoted supervisor within law enforcement.

Results

Within the criminal justice career, differing degrees of experience and high-stress factors can play vital roles in understanding cognition and decision-making practices

throughout one's career. Surveys were collected to gain information at local and state-level agencies to gain a broader perspective from small agencies to large agencies. Interviews were conducted among state personnel within the criminal justice system and local agencies to help correlate the surveys and the archival data. Existing information was obtained from adverse behavioral actions and their varying degrees related to experience within the criminal justice system.

Subquestion One

Subquestion one for this study asked: How would criminal justice leaders' qualitative interviews answer the question of whether prolonged stress exposure lowers cognition? Interviews of criminal justice leaders used a funnel protocol, leading to a large amount of information surrounding cognition and stress exposure. The interviews were conducted with people within law enforcement who were in a supervisory role to find themes related to prolonged stress and lower cognition. Within the interview questions, the theme for the first two questions was short, and participants answered the question with a "yes" or a "no" with little to no elaboration on the topic. All eight participants answered the first question: "yes"; they had been exposed to large amounts of stress within their careers. The objective for the second question was an answer indicating "yes" or "no" as well. The theme addressed the changing way each participant thought due to a career in law enforcement. The interviews indicated that this change was inevitable. The idea of how stress changes a person was not as well known among the participants. The question was answered with mostly a "yes" or "no" without context. Most answers indicated that defining one's career initially was positive; as time

progressed, there were more negative perceptions of their careers. Definitions of stress included anxiety and worry correlated with the meaning of stress among the participants.

Table 2

Frequency of Codes Interview

| Codes | Frequency |
|--|-----------|
| Exposed to a large amount of stress | 8 |
| Yes, the career changing the way you think | 7 |
| Yes, stress changing the way you think | 5 |
| Define law enforcement career | 5 |
| Define stress as anxious as it relates to career | 4 |
| Define stress as worried as it relates to career | 3 |
| No, stress did not change the way you think | 3 |
| Define law enforcement career as negative | 2 |
| Define law enforcement career as negative and positive | 1 |
| No, the career has not changed the way you think | 1 |

Theme One

The first theme indicated that all participants considered themselves exposed to a large amount of stress. When asked the first question in the interview, all participants stated “yes” to having been exposed to a large amount of stress in their careers. Theme one helped in understanding the participants’ perceptions regarding their careers as they related to stress and whether they had been exposed to stressful events within their careers.

Theme Two

The second theme helped indicate whether participants’ careers changed the way they thought, helping researchers understand the effect of plasticity on the mind. Seven of the eight participants indicated “yes,” their careers had changed the way they thought. One participant indicated “no,” their career did not change the way they thought. Theme

two helped understand the participant's perspective on whether there was a change in the way they thought, a change induced by plasticity.

Theme Three

The third theme was understanding whether stress changed how the participants thought. With this question, there were different answers from participants. Participants with over 16 years of service indicated that stress had changed the way they thought. However, participants with less than five years of service indicated that stress had not changed how they thought. One participant with over 11 years of service indicated that stress had not changed his way of thinking. This theme uncovered the fact that, with more years in law enforcement, there was a correlation between the impacts of stress and decision-making.

Subquestion Two

How would criminal justice leaders' quantitative survey information answer the question of whether prolonged stress exposure lowers cognition compared to the cognition of people who are not exposed to high stress? Understanding the ages, genders, and the time of service provided information regarding correlations between the time of service and the effects of age and gender. The participants with the greatest number of service years had worked in law enforcement for 16-20 years. All of the participants were male. The participants were between the age of 18-54 within this study. The study was conducted through a series of questions to help understand the correlation between years of service and the impacts of stress.

Table 3*Frequency of Codes Survey*

| Codes | Frequency |
|--------------------------------------|-----------|
| Male | 8 |
| Age 35-44 | 3 |
| Years in law enforcement 11-15 | 3 |
| Years in law enforcement 16-20 | 3 |
| Age 45-54 | 2 |
| Age 18-24 | 2 |
| Years in law enforcement less than 5 | 2 |
| Age 25-34 | 1 |

Theme One

The first theme focused on the ages of the law enforcement supervisors. Within this study, the older the participant, the more years the participant worked within the law enforcement profession. With the youngest ages at 18-24 within the survey, there was an indication of a statistic mean of 2.0 showing a recollection of disagreeing with the thought of having stress within the workplace. With the ages of 35-44, the statistical mean of stress was 4.66, indicating more stress within the higher-aged group. The age group of 45-54 indicated a statistical mean of 3.5, indicating higher stress than the age group of 18-24.

Theme Two

The second theme focused on the years in law enforcement and how they related to perceived stress. The participants with less than 5 years indicated a statistical mean of 2.00, showing disagreement with the perceived stress within the survey. Participants with 11-15 years of service had a statistical mean of 4.66, indicating a higher stress level than the perceived stress of people with less than 5 years of service. Participants with 16-20 years of service had a statistical mean of 3.66. However, fewer participants had years of

service between 16-20 years. Participants with years of service between 16-20 years showed a higher rate of perceived stress than participants with less than 5 years.

Subquestion Three

How would criminal justice leaders' quantitative archival data information answer the question of whether prolonged stress exposure lowers cognition and the impact that the malleability of the human brain has from neuroplasticity? Do criminal justice leaders have altering abilities due to stress? Archival data provided information regarding disciplinary actions experienced throughout one's career related to the amount of stress the person had been exposed to. The archival data that were accessed treated the correlation of stressful events with complaints and reprimands. Correlating archival data with perceived stress and acts of lower cognition helped in understanding plasticity and the impact of the job on criminal justice leaders.

Theme Three

The first theme involved understanding years of service and the complaints a participant has received within the past year. Six of eight of the participants had a complaint on file. The two participants who did not have a complaint had less than five years of service. The two participants with less than five years of service also indicated that they did not lash out or consider themselves disgruntled with the workplace. However, only one participant with less than five years of service had a stress event within the last year.

Theme Two

The second theme addressed the correlation between years of service, reprimands, and the number of stress events within the past year. Three of eight participants had

reprimands on their files from the past year. The participants with reprimands had more stressful events than those who did not have reprimands. Participant 1 had 11-15 years of service with a reprimand and complaints with 2 stress events from the past year.

Participant 2 had 16-20 years of service with reprimands, complaints, and 3 stress events.

Participant five had reprimands, complaints, and two stress events.

Theme Three

Age correlated to reprimands and complaints within the participants' law enforcement careers. All participants aged 25-54 had complaints about their files within the past year. Participants aged 18-24 did not have complaints in their files. Participants 1 and 2, aged 35-44, had complaints and reprimands in their files. Participant 5, aged 45-54, has a complaint and a reprimand on their file. These participants had the most stressful events when compared to the other participants.

Discussion

There was a small probability of an unjust interpretation of the job among criminal justice leadership. However, when understanding cognition and how it can be altered, a person's sinful nature should be considered when stress is involved. For example, people are born with a sense of their best interests (Peterson, 2018). This means that a person naturally wants to commit wrongful actions if they are within the best interests of oneself, regardless of whether they are advantageous to society. This sin nature defines the kind of behavior and decision-making engaged when cognition is lacking, and more primitive thinking emerges. Consider the manifestation of evil within the Garden of Eden—the temptation of doing what God said not to do within the garden. Humans have a temptation to sin, a sinful nature. A perfect garden manifested evil as a

human showed the presence of a sinful nature or sinful actions by choosing their own best interest. When a child lies, there is a demonstration of intelligence due to the child's active prediction of the future and the decision to act within their personal best interest. If people from a young age are not given guidance, there is a higher probability of lower cognition, primitive behavior, and a higher likelihood of criminal or unjust actions among these individuals. If a criminal justice leader does not have proper guidance from the start, there will be less cognition (Peterson, 2018). When a criminal justice leader activates their more primitive mind, there is a higher likelihood of them lashing out or exhibiting lower cognition. The prefrontal cortex is not as active, and the person makes adverse decisions through primitive activation within the mind.

Lashing Out

This study showed the impacts of stress and the presence of adverse behavior due to a lashing out among participants. The participants with the lowest number of services within law enforcement disagreed that the job impacted the propensity to lash out. The participants with more stressful events and over 10 years of service within the law enforcement profession had a better understanding of how often they lashed out with aggression, showing signs of more activation of the primitive brain and less use of the prefrontal cortex. When contemplating age related to the perspective of stress levels, data indicated a higher mean of 4.66 among participants aged 35-44. The lowest mean was among the participants between 18-24, with a 2.0 mean, showing little to no stress within their careers. Job stress concurred with the overall stress levels of the participants aged 35-44, with a mean of 4.66. Considering that an employee's lashing out indicated activation of the amygdala, stress levels concurred with the propensity of lashing out

within the same age ranges among the participants. The mean of lashing out was 4.33 among the ages of 35-44. The study indicated a correlation within the literature, showing a change in perception due to stress by activating the primitive brain and lashing out aggressively to make way for higher survival probabilities, according to the unconscious mind's perspective.

Adverse Behavior

Stress has a significant impact on cognition in the increased likelihood of risky behavior. Stress affects several parts of the body when it is uncontrollable. When a person endures a large amount of stress, it can cause symptoms of neuropsychiatric disease (Arnsten et al., 2017). When considering a decision, the person analyzes cost versus benefits. When a person has been exposed to a large amount of stress, there is less cost analysis and a greater likelihood of risky behavior. A person then makes decisions with less cost analysis and greater reliance on habitual responding. Stress can create a drive toward drug addiction, leading to more primitively based actions (Arnsten et al., 2017). When considering these effects on criminal justice leaders, there were some instances when there was a false belief that everyone was out to get information to contradict the criminal justice leader. With high stress levels, the criminal justice leader had a probability of disordered cognitive processing, also seen in schizophrenia patients. There is also a relationship between stress and the effects of sensorimotor symptomatology, which is Tourette's syndrome (Arnsten et al., 2017).

This study indicated a correlation between years of service, stress, and stress events as they relate to decision-making. The decision-making process was analyzed through archival data. Archival data suggest that, with more years within the law

enforcement profession, there was a higher likelihood of reprimands and complaints as the participant moved through their career. The archival data showed a mean of 1.66 reprimands between the years of services of 16-20. The data indicated a 1.33 mean between the years 11-15. Less than 5 years have the lowest mean of 1.0, indicating fewer adverse actions in fewer years of service. However, was there a correlation between years of service and stress events related to reprimands and complaints? The stress events, as they correlated to years of service, showed a correlation between the stress events and adverse actions. The highest mean occurred in the years 16-20 with 2.00. The lowest mean correlated to the lowest years of service of a .500 mean with less than 5 years of service in the profession.

Table 4*Statistics for Years Worked*

| | Years Worked in Law Enforcement | Mean |
|---|---------------------------------|--------|
| Does the job cause stress? | Less than 5 | 3.5000 |
| | 11-15 | 4.6667 |
| | 16-20 | 4.3333 |
| | Total | 4.2500 |
| Does archival data show reprimands? | Less than 5 | 1.0000 |
| | 11-15 | 1.3333 |
| | 16-20 | 1.6667 |
| | Total | 1.3750 |
| Does archival data show complaints? | Less than 5 | 1.0000 |
| | 11-15 | 2.0000 |
| | 16-20 | 2.0000 |
| | Total | 1.7500 |
| Is there a stress event surrounding the reprimands or complaints? | Less than 5 | .5000 |
| | 11-15 | 1.6667 |
| | 16-20 | 2.0000 |
| | Total | 1.5000 |

Impact of Stress and Cognitive Decision-Making

There are three main aspects to take into consideration when understanding cognitive decision-making. Stress can be a crucial impairment on the evaluation and reward information received. Evaluation and reward information is needed to make proper cognitive decisions. When a person is under great stress, goal orientation is no longer necessary (Porcelli & Delgado, 2017). Habit-based decision-making processes trump cognitive decision-making. Risk-taking can often be seen as well, although not always. However, risk-taking is performed by gut feelings, where the person's mind has analyzed unconscious information—unconscious cognition—which can lead to

successful risk-taking. If there are lower levels of cognition, there is more problematic risk-taking. A wide range of experience helps decide the best outcome (Porcelli & Delgado, 2017). These cognitive efforts surpass simple brain functions such as fight or flight mechanisms (Porcelli & Delgado, 2017).

A large number of studies indicate that stress rewards decisions with problematic results. Stress exposure influences neural circuits involved in reward processing and learning (Porcelli & Delgado, 2017). Stress influences the human tendencies of reward-seeking and risky decision-making (Byrne et al., 2019). These tendencies create a large cognitive loss among people exposed to stressful environments (Porcelli & Delgado, 2017). The studies indicated the overall consensus that people react more from habit rather than from analysis, resulting in more problematic results (Porcelli & Delgado, 2017). The future in understanding the effects of stress on cognition looks promising. There have been significant advancements in studies of stress and the human brain. Criminal justice leaders, in particular, are subject to losing cognitive decision-making abilities and acting more from habit. Overall, I have a growing concern for criminal justice leaders and their loss of cognition.

As time progresses within a career in law enforcement, and considering the malleability of the human brain, there is a higher likelihood of prolonged negative cognitive functions, such as becoming disgruntled. Stress significantly impacts how one thinks and has a lasting impact as long as the person is exposed to stress without relief. Participants show a trend of changing the way they think and becoming disgruntled. As the participants gain more years within the criminal justice profession, there is a higher likelihood of stress leading to unhappiness. With less than 5 years within the profession

in criminal justice, the mean of having a disgruntled perspective was 2.00. The mean for the years 11-15 and 16-20 was the same, 4.33. The perspective of stress changing the way one thinks was correlated to the perspective of being disgruntled. Less than 5 years had a mean of 1.00. In contrast, 11-15 years was 1.66, and 16-20 was 2.00.

Table 5

Descriptive Statistics

| | Years Worked in Law Enforcement | Mean |
|--|---------------------------------|--------|
| Disgruntled with the job | Less than 5 | 2.0000 |
| | 11-15 | 4.3333 |
| | 16-20 | 4.3333 |
| | Total | 3.7500 |
| Has stress changed the way they think? | Less than 5 | 1.0000 |
| | 11-15 | 1.6667 |
| | 16-20 | 2.0000 |
| | Total | 1.6250 |

Summary

As time progresses, the understanding of neuroplasticity and the impact of stress events relating to the perception of adverse behavior can be predicted, and strategies can be implemented to mitigate negative behavior among criminal justice leaders. With prolonged exposure to high stress, do criminal justice leaders have lower cognitive abilities than those not exposed to high-stress situations as often? The study shows themes that indicate adverse behaviors increase when there are long years worked within law enforcement. Among the study participants, there was a theme of stress events and lashing-out behavior. As the participants increased in years of service, there was a larger mean of reprimands and complaints. The mean also correlated with the perception of stress and aggressive behavior with more years of experience within law enforcement.

Therefore, with exposure to stress within one's career within the criminal justice system, there was often lower cognitive thinking and more primitive behavior seen in lashing out related to stress events.

Considering the malleability of the human brain from neuroplasticity, do criminal justice leaders have altered abilities due to stress? With the exposure to events in a criminal justice profession, there was a higher likelihood that the employee would have different perspectives due to their exposure to the stressful events of their jobs. With exposure to stress, the brain creates abilities with the goal of higher survivability, unlike people with less stress who have the abilities or time to act more cognitively. Study participants indicated that they had a perception of thinking differently due to the job, even the participants with five years or less experience. However, the mean was higher at 4.33, with the participants having 16-20 years of experience. They showed a change in altered abilities because one's perception was the disgruntled factor.

Participants often had a disgruntled perception with more years of experience within the criminal justice profession. There was a correlation between the years of experiences, stress events, complaints, and reprimands as the participant moved through their career. As participants moved through careers, their positive perception changed to a more negative understanding of criminal justice. Participants with less than five years had more positive outlooks on their careers within criminal justice. As the participants progressed within the profession, there was a higher probability of a negative shift in outlook. Participants indicated that, at first, there was a positive perception of their careers, but as time progressed, the negative aspects of their careers began to alter their perceptions of the criminal justice profession. Therefore, showing the altered abilities due

to neuroplasticity impact the understanding of the criminal justice career as time progresses.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this applied study was to help in the understanding of how stress has a significant impact on criminal justice leadership. The research design was multimethod, including in-person interviews, surveys, and the analysis of archival data from people within the criminal justice system, from small and large organizations. If leaders can better understand the stressors within criminal justice professions, there is a higher likelihood that the effects of stress can be mitigated. Understanding how the mind deals with stress is crucial regarding its impact and how it can change cognitive abilities (Bishopp et al., 2016). Stress has a significant impact on decision-making. Criminal justice leaders have a wide range of decisions that must be made daily. There is a needed solution to these challenges due to stress's higher impact on the criminal justice profession. Agencies and organizations must make long-term commitments to resolving the problem; therefore, resources need to be allocated for long-term goals. The strategies for mitigating the problem within the criminal justice profession will need to be implemented while understanding each step related to the long-term process of changing the impacts of stress on cognition.

Restatement of the Problem

Stress can alter or impair the values and rewards that create and develop decision-making processes (Porcelli & Delgado, 2017). A problem among the criminal justice system's leaders is the stressful environment's impact on cognition. This study showed a measurable impact on participants' decision-making process caused by stressful events. Mental health significantly impacts cognitive ability and how a person reacts to specific

external stimuli. With more experiences within the criminal justice profession, employees face a higher likelihood of adverse actions, such as complaints and reprimands. Law enforcement personnel are more likely to develop mental health issues (Steinkopf et al., 2015). The participants with fewer experiences within the criminal justice profession showed a lower likelihood of depleted cognition due to the fewer instances of reprimands and complaints. It is essential for criminal justice employees to have the resources for treatment. Treatment facilities are needed for victims of mental health issues within the criminal justice system (Steinkopf et al., 2015). If criminal justice employees exhibit more adverse actions, there could be a loss of trust within the criminal justice system, which could lead to recruits who are not as qualified and negative perspectives of the communities the criminal justice organizations are sworn to protect. If there is more trust within the community, the stress levels can lower, leading to more cognition among criminal justice leaders.

Discussion

Proposed Solution to the Central Question

Stress can crucially impair evaluation and reward information that is received. Evaluation and reward information is needed to make proper cognitive decisions. When a person is under great stress, goal orientation is no longer necessary (Porcelli & Delgado, 2017). One of the more significant ways to help lower stress levels among criminal justice leaders is the implementation of leadership strategies among employees of lower rank to help mitigate stress events. Emergent leadership will more likely create trust when implementing different leadership strategies. Path-goal theory is needed to drive motivation within the department. Servant leadership involves leaders being at the service

of followers (Northouse, 2019). With a more productive management strategy, there is a higher likelihood of free-thinking, leading to better mental capacities. A habit-based decision-making process trumps cognitive decision-making when under stress. Risk-taking can be seen at times in response to stress. However, in many instances, risk-taking is taken by responding to gut feelings when the person's mind has analyzed unconscious information—unconscious cognition—which can lead to successful risk-taking. If lower levels of cognition are present and the risk is not delegated to other individuals, there is more problematic risk-taking. A wide range of experience is present that helps in understanding the decision that must be made to have the best outcome (Porcelli & Delgado, 2017). Therefore, there must be a change in experiences to help mitigate adverse actions made by criminal justice employees. These cognitive efforts surpass simple brain functions such as fight or flight mechanisms (Porcelli & Delgado, 2017).

People exposed to stressful environments show a large amount of loss of cognitive effort (Porcelli & Delgado, 2017). People react more often from habit rather than from an analysis of the decision, usually resulting in more problematic results. Therefore, new habits must be created to lower the probability of problematic decisions. For example, a habit of decompression after a stress event can help mitigate prolonged exposure to stress. For instance, exercise is a form of decompression for stress relief (Lakoff et al., 2018). With the implementation of more exercise within the criminal justice profession, there is a higher likelihood of lowering the impact of stress events. However, there would need to be an effort to increase staffing to alleviate the negative impacts of having employees exercising while on duty. The future in understanding the effects of stress on cognition looks promising. There have been significant advancements

to help in the overall effects of stress and the human brain. Criminal justice leaders are subject to losing cognitive decision-making and acting more out of habit. It is important for the criminal justice system to see the implications of stress events as they relate to cognition and the communities due to the lower cognition and adverse actions. With adverse actions, the community would likely lower its trust in the criminal justice system. Therefore, the impact of the stress events should be considered, and new management strategies must be implemented to lower stress. Stress impacts can be mitigated with more exercise; however, more recruits would be needed to alleviate the workload on members exposed to stress events.

Resources Needed

The resources would need to be vast to combat the issue of adverse actions among criminal justice leaders. There is a compilation of reasons for the adverse actions among criminal justice leaders, one being stress events as the employees progress throughout their careers. To combat the impacts of stress events as they change the brain due to neuroplasticity, an organization must have enough recruits to alleviate the personnel exposed to stressful events. Recruits would be needed for long-term commitments to combat the negative impacts of neuroplasticity. However, employees must be committed to the cause and understand the requirements for combating adverse actions. There is a direct correlation between employee commitment and the success of strategy implementation processes as they relate to organizational policy and a positive impact on the performance of an organization (Nwachukwu et al., 2020). For the department to gain better recruits, there would need to be more funding. To gain more funding, the perspective of the local communities needs to be positive regarding policing.

Communities can drive for more resources and make way for better recruits if their perspectives are positive. Obtaining and maintaining trust requires changing people's perspectives to be more positive. As trust is acquired, there is a higher likelihood of combating weaknesses, capitalizing on opportunities, and mitigating constraints. With the opportunity of employing better recruits, there is a higher likelihood that trust will be maintained. However, there are challenges due to the long-term commitment an organization needs to make to create a trustworthy atmosphere within an organization and the community.

Funds Needed

Funds needed for these improvements are vast due to the personnel issues many criminal justice agencies face. Many agencies obtain funding through higher taxes or stricter laws during legislative sessions. To combat the adverse actions caused by neuroplasticity, there needs to be a change in the environment for criminal justice employees' perceptions. To change the environment, there need to be areas or times to combat stress events through exercise or other means and times to reflect on the events that transpired. There needs to be an influx of recruits to spread the load of stress events. Having personnel transition employees exposed to stressful events out of those roles for some time allows departments to mitigate negative impacts.

Roles and Responsibilities

Some roles are needed to alleviate the loss of cognition in criminal justice leaders due to stress, including new recruits to lower employees' exposure to stressful events. Many criminal justice organizations have a problem obtaining qualified recruits. Today, there is a high likelihood of a harsh environment playing a role in the recruitment process

to become a criminal justice employee. However, as the employee population decreases, there will be lower budgets for organizations, leading to fewer resources and a lower probability of accessing the training that will be needed. Trust is needed between law enforcement organizations and communities. With the opportunity of better recruits, there is a higher likelihood that trust will be maintained. However, due to the long-term commitment needed within the criminal justice profession, creating a trustworthy atmosphere within the department and the community is challenging. The primary function of the new recruits would be to alleviate the over-extended personnel exposed to stressful events. The recruits would give organizations staffing to move employees after a stressful event to help with long-term mental impacts.

Timeline

The timeline for the mitigation of the problem of adverse actions can be problematic to predict. The reason for the problematic prediction is the changes a department needs to experience to solve the problem. Criminal justice organizations need a long-term commitment to their employees to have the highest likelihood of successfully combating the issue. However, even during long-term commitments, there will be changes within commands and legislators within the state, and in some cases, the command will change even on the federal level. Command within the state and local levels will almost certainly change during an individual's career, leading to a likelihood of policy change, which can jeopardize the vision of trust within the community and suppress the strategies' long-term goals. This would hamper stress relief within the organization from gaining better recruits. Therefore, the timeline for hiring more recruits

to suppress the negative aspects of stress events would become skewed, making the timeline predictions irrelevant and difficult to consider.

Implications

Understanding the positive and negative implications of the proposed actions is crucial to mitigate stress among criminal justice employees. Resources needed to solve the criminal justice cognitive problems are vast and require a long-term commitment. The positive implications are creating more jobs within the criminal justice system. However, the negative aspects include the number of resources needed to commit to the long-term goals of an organization. The funds needed within organizations correlate to the amount of staffing hired to alleviate the impacts of stress events. However, workforce issues are plagued by the community's ambivalent perspectives of law enforcement. With the workforce issue widespread, there is a likelihood of funding being approved by state and local legislators. However, with the flux in the economy, funding could diminish, putting the strategy of mitigating stress event impacts through additional personnel in jeopardy. Implementing an initiative for more recruits would positively impact mitigating stress events and overall staffing issues. However, today, there is a changing perspective of the criminal justice profession, leading to the implementation of changing standards to meet the needs of every organization. The timeline for the implementation process is skewed due to the ever-changing commands of state and local agencies, making it problematic to create a timeline for the strategy to combat stress events.

Evaluation Plan

The impact evaluation method is advantageous for creating stress relief strategies through the use of recruits. Impact evaluation is an assessment strategy that would help

researchers understand the impacts of the implementation process, both intended and unintended (Gertler et al., 2016). The reasoning for using this type of assessment strategy stems from the broad view of the study and the implementation process of the mitigating factors of stress and how it impacts criminal justice leaders. The standards that must be used would focus on the impacts of stress events and adverse actions among employees. Therefore, standards concerning the kinds of adverse actions occurring are crucial to helping researchers understand the impacts stress has on decision-making. If funding permits, an outside organization should be responsible for assessing the impacts of hiring additional recruits on limiting employees' exposure to stressful events and the resulting adverse actions. With an outside organization, there would be less chance for a blue curtain-like effect to impact the study, leading to shaming when employees admit negative behaviors due to stressful events. Throughout the study of how stress affects cognitive abilities among criminal justice leaders, I assumed that all of the information gathered was methodologically in order. I assumed that all participants answered honestly throughout the interviews and the surveys.

Limitations

The time limits of the study and lack of medical resources limited the measurements of plasticity within a criminal justice leader's brain. However, with the necessary research methods of neuroscience, the research has not been translated into benefits for society. The rapid growth that has emerged in neuroscience shows more promise and a lack of limitations in the study of cognition among criminal justice leaders.

Another significant limiting factor to the study was participation. Once participants understood that researchers could access their archival data or past files, they

would sometimes back out of the study. Therefore, with this limitation to participation in the research, study results could have changed due to the size of the dataset. The researcher could not control potential participants withdrawing from the study due to the use of archival data.

Recommendations for Future Research

Recommendations for future studies include larger sample sizes in metropolitan areas and comparing those samples to those taken in rural areas. When considering metro areas and population sizes compared to rural areas, population size could help understand the types of stress events that have the largest impact on adverse plasticity in criminal justice leaders. If there is a broader understanding of negative stress events related to adverse actions, new strategies could be implemented to combat the negative impacts of stress and adverse actions.

This study could help researchers express the need to understand criminal justice leaders and the impact of stress events on their cognition. With the ever-changing climate on the perception of police, society must strive for a more complete understanding of what criminal justice professionals endure. The criminal justice profession is often challenged by the expectation that police professionals must live with declining cognition. This study could open the door to searching for new ways to fight against the problem of the loss of cognition, not by way of indicating police wrongdoing but by mitigating problems prior to their arrival.

Summary

This study helps in understanding decision-making related to stress events. As time progresses within the criminal justice profession, employees are exposed to stressful

events, which leads to a change in their minds due to neuroplasticity. This study shows a high likelihood that the loss of cognition within criminal justice leaders is due to the impact of stress events. This study indicates that, with more experience within the criminal justice profession, there is a higher likelihood of an individual moving toward exhibiting more primitive behaviors, such as lashing out. Staffing of recruits within criminal justice agencies could help mitigate stress events. However, many criminal justice organizations have a problem with recruiting and retaining employees within the organization.

Today, there is a higher likelihood of a harsh environment playing a role in the recruitment process to become a police officer. With fewer recruits, there is a higher likelihood that employees will be exposed to more and higher stress events. With the higher probability of exposure to stress events due to this study, there is an indication that employees will have more episodes of lashing out, perspective changes, and disgruntled behavior. Therefore, it is crucial to implement a strategy against stress with the implementation of more recruits to give law enforcement officers for decompression, exercise, and time to reflect. For future research, a larger sample size from metro and rural areas could help understand stress events related to decision-making among criminal justice leaders. However, this study shows indications of negative impacts of stress events on cognition due to regression and increased primitive behaviors with more experience in criminal justice. With stress mitigation processes in place, organizations are more likely to combat the negative impacts and have less primitive behavior and more cognition among criminal justice leaders.

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APPENDIX A: IRB APPROVAL LETTER

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

October 5, 2021

Dustin Addison
Marc Weiss

Re: IRB Exemption - IRB-FY20-21-1045 Cognitive Abilities of Criminal Justice Leaders

Dear Dustin Addison, Marc Weiss,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:

The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

APPENDIX B: CONSENT FORM

Consent

Title of the Project: Cognitive Abilities of Criminal Justice Leaders

Principal Investigator: Dustin Addison, Ph.D. Student at Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be 18 years of age or older and either a current or former criminal justice leader. Criminal justice leaders are defined as people within the criminal justice profession with authority over other employees. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of the study is to help in the understanding of how stress has a significant impact on criminal justice leadership.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following things:

1. Complete a survey. The survey contains 2 demographic questions and 7 research questions. The survey will be conducted on SurveyMonkey. The survey should take approximately 10 to 20 minutes to complete.
2. Complete an interview. The interview contains 5 open-ended questions for discussion. The expected time for the interview is dependent on the interviewee and how in-depth the questions are answered. However, the interview may take from 15 to 30 minutes.
3. Review your interview transcript for accuracy.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include generating data that could provide a more in-depth understanding and knowledge of how stress or a traumatic event has an impact on criminal justice leadership.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher and faculty sponsor will have access to the records.

- Participant responses will be kept confidential through the use of codes. Interviews will be conducted in a location where others will not easily overhear the conversation.

- Data will be stored on a password-locked computer and may be used in future presentations, such as the dissertation defense. After three years, all electronic records will be deleted.
- Interviews will be transcribed. The interview will be recorded for transcription. The transcription will be stored on a password-locked computer for three years and then erased. Only the researcher will have access to these recordings.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the email address included in the next paragraph. Should you choose to withdraw, data collected from you will be destroyed immediately and will not be included in this study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Dustin Addison. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [REDACTED]. You may also contact the researcher's faculty sponsor, Dr. Marc Weiss, at [REDACTED].

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at [REDACTED].

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study researcher the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

APPENDIX C: SURVEY

Survey

Demographic Information Questions

Please answer each of the questions with one of the responses provided

1. What is your email address?
2. What is your age?
 - 18-24
 - 25-34
 - 35-44
 - 45-54
 - 55-64
 - 65-70
 - Over 70
3. What is your sex?
 - Male
 - Female
 - Other

Research Questions

4. How many years have you worked in law enforcement?
 - Less than 5
 - 6-10
 - 11-15
 - 16-20
 - 21-30
 - More than 30
5. As the years have progressed in law enforcement, do you feel more aggressive?
 - Strongly agree
 - Agree
 - Neither agree nor disagree
 - Disagree
 - Strongly disagree
6. Do you think differently because of your experiences in law enforcement?
 - Strongly agree
 - Agree
 - Neither agree nor disagree
 - Disagree
 - Strongly disagree
7. Are you stressed?
 - Strongly agree
 - Agree
 - Neither agree nor disagree
 - Disagree
 - Strongly disagree
8. Does your job in law enforcement cause you to have stress?
 - Strongly agree
 - Agree
 - Neither agree nor disagree

- Disagree
Strongly disagree
9. Do you feel that you have a short fuse or lash out quickly?
Strongly agree
Agree
Neither agree nor disagree
Disagree
Strongly disagree
10. Do you consider yourself as being more disgruntled with the more years you work within law enforcement?
Strongly agree
Agree
Neither agree nor disagree
Disagree
Strongly disagree

APPENDIX D: PERMISSION REQUEST

Dear sir or madam,

As a graduate student in the Helms School of Government at Liberty University, I am conducting research as part of the requirements for a Doctor of Philosophy in Criminal Justice degree. The purpose of my research is to investigate the impact of stressful or traumatic experiences on criminal justice leaders' cognitive functions by describing the effects the stressful events from a job in law enforcement have on the cognitive decision-making process in criminal justice leaders when compared to criminal justice leaders that do not experience stressful or traumatic events within a law enforcement occupation. The title of my study is Cognitive Abilities of Criminal Justice Leaders.

I am writing to request your permission to contact members of your department to invite them to participate in my research study and to obtain archival data of misconduct among officers within the department. All of the information is private and will not be associated with the department nor any person involved within the conduct-assessments data.

Participants will be asked to complete the attached survey and contact me to schedule an interview. The data will be compared with interviews and surveys to help in the understanding of stress and its impact on cognitive functions. Participants will be presented with informed consent information prior to participating. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, please provide a signed statement on official letterhead indicating your approval. A permission letter document is attached for your convenience.

Sincerely,

Dustin Addison

APPENDIX E: PERMISSION LETTER

Dear Dustin Addison,

After careful review of your research proposal entitled Cognitive Abilities of Criminal Justice Leaders, I have decided to grant you permission to contact our staff and invite them to participate in your study receive and utilize our misconduct data.

I grant permission for Dustin Addison to contact members of the department to invite them to participate in his research study.

The requested data WILL BE STRIPPED of all identifying information before it is provided to the researcher.

I am requesting a copy of the results upon study completion and/or publication.

Sincerely,

APPENDIX F: RECRUITMENT LETTER

Dear Sir or Madam:

As a graduate student in the Helms School of Government at Liberty University, I am conducting research as part of the requirements for a Doctor of Philosophy in Criminal Justice degree. The purpose of my research is to investigate the impact of stressful or traumatic experiences on criminal justice leaders' cognitive functions by describing the effects the stressful events from a job in law enforcement have on the cognitive decision-making process in criminal justice leaders when compared to criminal justice leaders that do not experience stressful or traumatic events within a law enforcement occupation. Whether or not you have experienced a stressful or traumatic event, your experience as a criminal justice leader is important to this research, and I am writing to invite you to participate in my study.

Participants must be 18 years of age or older, and current or former criminal justice leaders. Criminal justice leaders are defined as people within the criminal justice profession with authority over other employees. Participants will be asked to take a survey and complete an interview. The survey contains 2 demographic questions and 7 research study questions. The survey will be conducted on SurveyMonkey. It should take approximately 10 to 20 minutes for you to complete the survey. The interview will take approximately 15 to 30 minutes. Participants will have the opportunity to review the interview transcripts for accuracy. Names and other identifying information will be requested as part of this study, but the information will remain confidential.

Would you like to participate? If yes, could I get your email address so I can send you the link to the survey? Please complete the survey and submit the survey as soon as possible. Can we set up a time for the interview process? If you would not like to participate, I understand. Thank you for your time.

An informed consent document is provided as the first page you will see after you click on the survey link. The informed consent statement contains additional information about my research. If you choose to participate, you will need to sign the consent document and select "Agree" in order to proceed to the survey.

It would be an honor if you would consider participating in this study. Please, complete the survey as soon as possible.

Thank you for your time and consideration.

Sincerely,

Dustin Addison
Ph.D. Student at Liberty University Helms School of Government

APPENDIX G: INTERVIEW QUESTIONS

1. Have you been exposed to a large amount of stress in your career?
2. Has your career changed the way you think?
3. Has stress changed the way you think?
4. How would you define your career in criminal justice?
5. How would you define stress as it is related to your career?

APPENDIX H: INTERVIEW TRANSCRIPTS

#2

Have you been exposed to a large amount of stress in your career in law enforcement?

Has your career change the way you think?

Has stressed change the way you think

How would you define your career in criminal justice?

How do you define stress as it relates to your career?