

CRIMINAL JUSTICE PROFESSIONALS' PERCEPTIONS OF THE NEED FOR
FAMILIAL DNA TESTING GUIDELINES IN THE CRIMINAL JUSTICE SYSTEM

By

Sherry A. O'Berry

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CRIMINAL JUSTICE PROFESSIONALS' PERCEPTIONS OF THE NEED FOR
FAMILIAL DNA TESTING GUIDELINES IN THE CRIMINAL
JUSTICE SYSTEM

Committee:

Janice Terrell, EdD, Chair

Jason Etchegaray, PhD, Committee Member

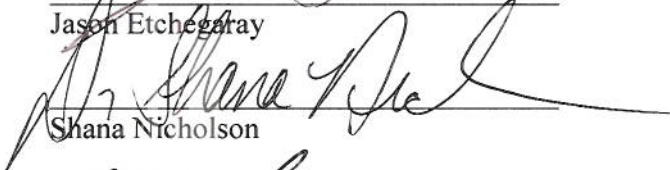
Shana Nicholson, PhD, Committee Member




Janice Terrell



Jason Etchegaray



Shana Nicholson



Jeremy Moreland, PhD
Academic Dean, School of Advanced Studies
University of Phoenix

Date Approved: March 11, 2015

ABSTRACT

The purpose of this qualitative, single case study was to explore criminal justice professionals' perceptions on whether clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system, and what guidelines are necessary if deemed clear guidelines are needed. Research has shown that criminal justice professionals regard DNA testing as a powerful method for fighting crime. However, the practice of familial DNA testing and its use in the criminal justice system prove to be a controversial technique noted by opponents and proponents of familial DNA testing. Twelve criminal justice professionals were interviewed to determine their perceptions of what ethical familial DNA testing guidelines should include. Five themes were pre-established from the in-depth interviews of the participants from Arizona, California, Colorado, District of Columbia, Florida, Maryland, and Virginia. Study findings revealed participants perceived guidelines are necessary for performing ethical familial DNA testing in the criminal justice system. Secondary findings disclosed themes used to identify the most ethical familial DNA testing guidelines perceived by participants such as the need for a search warrant; probable cause; public review process; and provisions that protect information in the DNA database. Tools necessary to ensure fairness, safeguarding privacy, and the protection of constitutional rights when performing ethical familial DNA testing were key focuses within the responses of participants. Recommendations for future studies were discussed, along with recommended actions.

DEDICATION

This research journey is possible because of God, to whom I give my dedication and gratitude. This research is also dedicated to my beloved Bobby, who unselfishly supported my efforts in this endeavor until his recent and untimely passing. Bobby, you saw something special in me that I could not and it was and continues to be your love, pride and commitment that supplemented my ability to complete this journey. It was your love that enabled me to keep the faith and achieve this life-changing, mind-altering feat. For that, I am humbled and more than grateful. I will forever love you for all your unimaginable love, support, and patience. I could not have asked for a greater team formed of a spiritual guide and an earthly love. And yes, I really do get it now...peace of mind.

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CHAPTER 1

INTRODUCTION

Deoxyribonucleic acid (DNA) evidence launched the criminal justice system into a new era (American Prosecutor's Research Institute, 2004). DNA evidence is one of the best improvements used in fighting crime since fingerprinting (Staley, 2005) and may prevail when additional forms of forensic or witness testimony is inadequate (McCarthy, 2011). DNA evidence provides criminal justice professionals access to a powerful tool used to help determine the identity of an individual who commits a crime (American Prosecutor's Research Institute, 2004). The use of DNA evidence by criminal justice professionals may offer major benefits to society by aiding in the conviction of criminals (Staley, 2005).

Although DNA is a powerful tool, the DNA comparison process does not always result in a perfect match (Stahl, 2007). An imperfect match means the convicted offender's DNA sample does not perfectly match DNA collected at the crime scene (Stahl, 2007). However, crime scene DNA may be very similar to an offender's DNA profile. This means an offender's tested and analyzed DNA could match the DNA profile of a close relative, such as the DNA of the offender's father, mother, sister, or brother (Stahl, 2007); the two sources may be biologically related (Pattock, 2011). The discovery of the similarity of family member DNA profiles resulted in the development of the technique known as *familial DNA testing* (Grimm, 2007).

Familial DNA testing is based on the genetic similarity of biological relatives. Familial DNA testing focuses on a partial DNA match (Grimm, 2007). This partial match is used as a basis to test family members of the criminal who's DNA had a partial match to the DNA gathered from a crime scene. The importance of the familial DNA testing process is that a partial match gives law enforcement personnel the option to investigate family members of the

criminal who has a DNA sample already recorded in law enforcement DNA databases (Stahl, 2007; Pattock, 2011).

However, opponents of familial DNA testing have questioned the constitutionality of this database and are concerned that familial DNA investigation may violate civil rights and civil liberties of the people being investigated (Stahl, 2007). Simoncelli and Krimsky (2007) noted that the federal DNA data banking distinguishes a new era of forensic DNA; an era laden with civil liberties, civil rights, and privacy concerns. At a minimum, this may make individuals safer (Simoncelli & Krimsky, 2007). Also, Epstein (2009) disclosed familial DNA testing implicates privacy and social equality concerns.

Familial DNA searches have facilitated the apprehension of criminals (Barca, 2013). Partial match searches aid in apprehending criminals who may previously have escaped detection. However, familial DNA testing raises concerns about privacy, precision, and the bias that concerns ethnic portrayal within the national DNA database. Also, there is no national accord regarding the nature or extent of an offense where familial DNA testing technology may be used (Barca, 2013). Currently, no firm guidelines regulate ethical use of familial DNA testing in the criminal justice system.

Chapter 1 contained a discussion of familial DNA testing in the criminal justice system. The discussion revealed the ethical challenges of familial DNA testing and the need for this study. The discussion also embarked on the relevance of guidelines in DNA testing that addresses what is legal or illegal DNA testing practice. The chapter offered a discussion of the background of familial DNA testing and how familial DNA testing is important for both social concern and theoretical interest. The chapter stated the general and specific ethical concerns familial DNA testing may pose to society. The purpose, significance, and nature of the study are

described. Chapter 1 also included a research question that described the relationship or comparison posed by the research focus. A discussion of the study's theoretical framework described how research fits within other research in the DNA field. This theoretical framework included important issues, perspectives, and controversies in the field. Included in Chapter 1 were relevant definitions, assumptions, scope, limitations, and delimitations concerning familial DNA testing in the criminal justice system. A summary concluded Chapter 1 with a presentation of key points presented.

Background of the Problem

DNA and familial DNA testing are complex and complicated topics that require a lengthy background within this study. DNA is complex and this study contains biological terms and situations that incorporate lengthy explanations relevant in understanding the path leading to the current state of DNA testing. No two people possess equal DNA, with the exclusion of identical twins; the order of DNA building blocks is distinctive in certain regions of the cell making each person's DNA unique (Turman, 2001). DNA and familial DNA testing are complex and complicated because biological samples that were not possible to test for DNA 10 years ago may result in critical evidence when tested today (Turman, 2001). DNA testing today plays a larger role in convicting the guilty and exonerating the wrongly accused. Analyzing the thorough background of DNA was relevant because the use of DNA and familial DNA testing in the criminal justice system is a proficient tool used to search for the truth (Turman, 2001).

DNA analysis and the DNA database. Part of the reason criminal justice professionals and the criminal justice system exist are to deliver justice by convicting and punishing individuals who commit crimes (Center for Crime and Justice Studies, 2008). Often, identifying individuals who commit crimes is difficult. Criminal justice professionals use DNA to aid in

identifying criminal offenders. DNA analysis is valuable for criminal justice objectives because of its analytical capability to omit ample parts of the population as probable donors of genetic material (Koehler, 2001). The DNA match between the suspect's DNA sample and the crime scene DNA sample is a good indication the suspect was at the crime scene (Koehler, 2001).

When genetic material such as blood, semen, or hair can be recovered from crime scenes, DNA analysis can be a valuable tool for criminal justice professionals. If a suspect's DNA matches the DNA sample retrieved from a crime location, a prosecutor can dispute that the suspect is the possible source of the DNA sample left at the scene (Koehler, 2001).

Forensic DNA History. Forensic DNA testing began in 1985 when Sir Alec Jeffreys first contemplated using polymorphisms to pinpoint individuals in criminal cases (Serinhaus, 2009). The premise of DNA testing started with an identity test on a pair of human genetic samples (Serinhaus, 2009). The identity test included the comparison of one sample seized from a crime location and another sample taken from an alleged perpetrator. Performing identity tests led law enforcement agencies to store DNA profiles in computer databases for future comparison. In 1995, the United Kingdom's Forensic Science Service initiated the National DNA Database (NDNAD). In America, the FBI Combined DNA Index System (CODIS) database was approved by Congress. The CODIS database was officially launched in 1998 and has grown rapidly ever since (Serinhaus, 2009).

CODIS. The CODIS database is a central repository that contains DNA profiles for individuals at the national, state, and local level (Serinhaus, 2009). Many times the DNA comparison process does not result in a perfect match (Stahl, 2007). This means the convicted offender whose DNA is in the CODIS database did not commit the crime because his or her DNA does not perfectly match DNA at the crime scene. However, the crime scene DNA may be

very similar to the convicted offender's DNA profile located in the CODIS database (Pattock, 2011). A family member's DNA profile might match the tested and analyzed DNA of the offender (Stahl, 2007).

The creation of familial DNA testing. The development of the DNA databases and use of partial database matches, which come from comparing crime scene DNA and a sample of the DNA of a convicted offender found in CODIS, resulted in the technique known as *familial DNA testing* (Grimm, 2007). Familial DNA testing is based on the genetic similarity of biological relatives and focuses on a partial DNA match (Grimm, 2007). Familial DNA testing involves using the genetic information of a criminal suspect's family member to implicate the accused (Grimm, 2007). Familial DNA testing is based on a criminal's partial DNA sample match found in CODIS to that of a crime scene DNA sample. This partial match is used as a basis to test family members of the criminal who had a partial match to the crime scene DNA. The purpose of testing family members is to see if one of them possesses DNA that is a complete match to the crime scene DNA (Grimm, 2007).

Implications of familial DNA testing. The importance of the familial DNA testing process is that law enforcement personnel are armed with information to seek partial matches (Pattock, 2011). In contrast, opponents of familial DNA testing argue familial DNA testing may raise ethical issues that include individual civil rights and civil liberties. Johnson (2005) describes civil rights and civil liberties as "the rights of every citizen to freedom of thought, freedom of conscience, freedom of expression, freedom of movement, freedom to enjoy privacy and autonomy in the management of one's personal affairs, freedom of private individuals to associate voluntarily and to form organizations for pursuing common purposes, and freedom to participate politically in ways that do not infringe upon the similar rights of others" (p. 1).

Leaders, forensic personnel, and law enforcement officials debate over the use and technique of familial DNA testing.

Critics argued there is ethical concern because not enough focus is placed on civil rights and civil liberties violations familial DNA testing might cause. Violation of civil rights and civil liberties might cause moral dilemmas through the use of familial DNA testing (McConnell, 2010). Proponents of familial DNA testing may regard themselves as possessing moral reasons for favoring familial DNA testing. Individuals who oppose familial DNA testing may also have moral reasons for their position (McConnell, 2010). Part of the dilemma is that whatever choices leaders and law enforcement personnel makes, their decision to use or not to use familial DNA testing will not please everyone.

For instance, one Minnesota sheriff believes familial DNA testing is a valuable tool for narrowing the number of criminal suspects when an identical match is not found for DNA collected at a crime scene (Duchscher, 2011). This sheriff is striving for a state law to adopt familial DNA testing. The sheriff is a former legislator and an individual who views new technology as vital in fighting crime; technology, such as familial DNA testing. The sheriff believes it is law enforcement's job to protect citizens by using all available resources and technology available. He believes citizens expect the law enforcement process to make use of all available technology and that the public deserves law enforcement's support that the use of technology provides. The sheriff also believes that familial DNA testing is acceptable as long as personal liberties remain safeguarded (Duchscher, 2011).

People who oppose the sheriff's opinion note a possible breach of the privacy and civil rights of innocent people in the use of the familial DNA testing technique (Duchscher, 2011). Individuals who oppose the use of familial DNA testing also believe members of minority

groups may be disproportionately targeted by familial DNA testing because minorities comprise about 60% of the prison community in the United States (Duchshere, 2011). Despite this argument, the sheriff still supports the use of familial DNA testing. He believes this technique offers circumstantial evidence as vital as learning an individual's whereabouts or activities that may be related to a crime (Duchshere, 2011).

The president of Minnesota's American Civil Liberties Union (ACLU) believes familial DNA testing is not only intrusive but also unnecessary (Duchshere, 2011). Minnesota's ACLU president based his concerns on how many people will fall under suspicion of arrest and interrogation only to be exonerated. According to the ACLU president, legislators facing Minnesota's or other states' current financial deficits might hesitate to legislate safeguards because of the high cost of developing the needed safeguards for familial DNA testing (Duchshere, 2011).

In March 2011, Virginia's governor announced the adoption of the use of familial DNA testing by state law enforcement agencies (Caldwell, 2011). The governor noted how vital it is for law enforcement personnel to have every tool available at their disposal. He believed familial DNA testing is necessary for the protection of public security and for investigating the most violent crimes in Virginia. The governor revealed familial DNA testing allows forensic professionals to develop leads to crime suspects currently not available to law enforcement. The governor supported the view that familial DNA testing can accelerate identifying criminals in certain cases. According to the governor, familial DNA testing aids in getting perpetrators off the streets before more loss of life or harm to others ensue (Caldwell, 2011).

Rushton (2010) discussed privacy and how the collection of DNA is a sensitive topic and poses the possibility of genetic surveillance. A need to consider whether or not there is

justification that relatives of offenders have become subject to a lower standard of privacy. It is possible relatives of offenders will receive a lower standard of privacy than others not subject to investigation by virtue of their blood ties. This focus may be a reason to consider possible civil rights and discrimination concerns (Rushton, 2010). According to Rushton (2010), civil libertarians highlight the indignity of the investigation process and the personal impact of living under an element of suspicion. This element of suspicion has a potential to disrupt a career, destroy a marriage, or have other negative effects (Rushton, 2010). Suter (2010) also notes privacy concerns are raised because of those arrested and their family members may be exposed to lifelong surveillance.

Intrusion into family life may be a significant ethical and social concern in familial DNA testing. The mentality of maintaining a healthy family unit is of social interest and importance nation-wide (Rushton, 2010). The Victoria Law Foundation (Rushton, 2010) noted that in Australia, family is the essential unit of society. The family is entitled to protection by society and the state. Particular individuals labeled as crime families, and the possibility of revelation about the presence or absence of biological relationships, is among ethical and social considerations in familial DNA testing. Rushton (2010) argued the familial DNA testing technique may pose challenges to the broader picture of society. The rationale is the potential loss of control over familial relationships, in terms of the ability of science, might occur. This means science can uncover and expose fundamental biological truths unknown to individuals (Rushton, 2010).

Costs of performing familial DNA testing. Cost is another issue to consider when deciding whether to adopt familial DNA testing. According to Minnesota's ACLU president, because of the enormous deficit, legislators may be discouraged about the cost of establishing

new safeguards; safeguards, such as familial DNA testing (Duchschere, 2011). One cost is states must buy familial DNA software from states that already perform familial DNA searches. If states decide not to buy familial DNA software from another state, hiring a consultant to design familial DNA software is another cost to consider. Adopting familial DNA testing may be a costly venture (Duchschere, 2011).

In 2006, the Office of State Budget and Management (2006) in North Carolina indicated the average state crime laboratory cost of screened and unscreened rape kits is \$729.47. Private laboratory costs ranged from \$445 to \$1,200 per case. The private laboratory costs only cover laboratory processing. Private laboratory costs exclude in-house expenses for documentation control, quality checks, or probing CODIS for a match (Office of State Budget and Management, 2006). Some state costs for processing criminal cases and rape kit DNA samples range from \$425 to \$1,720 per case or kit. The cost to process in-house, convicted offender DNA samples range from \$25 to \$110 per sample (Office of State Budget and Management, 2006). Criminal justice and law enforcement leaders must acknowledge costs and availability of funds when considering using familial DNA testing.

Statement of the Problem

General problem. Criminal justice leaders use familial DNA testing techniques to investigate crimes. The general problem is familial DNA testing may pose a threat to individuals' civil rights and civil liberties (Murphy, 2010). Although evidence suggests benefits from familial DNA testing, familial DNA searches might also significantly affect the privacy, race, gender, and search and seizure rights of people who have relatives suspected of committing crimes (Murphy, 2010). Grimm (2007) noted an even larger concern may be the threat of privacy to individuals and unequal distribution of familial DNA testing throughout the

population. DNA profiles collected over years do not contain racially neutral data (Grimm, 2007). Because of years of disproportionate rates of conviction and arrest rates, African Americans and Hispanics are overrepresented (Grimm, 2007). Haimes (2006) suggested that in regard to the goal of identification, the law should be the focus. Tighter controls on obtaining access to genetic information might be necessary. These guidelines require more careful thought and consideration. Without clear and consistent guidelines directing procedures in the use of familial DNA testing, potential abuse of the familial DNA testing procedure might occur; safeguards may need to be developed and imposed through the usual testing of DNA databases and the implementation of rigid penalties for violations of any of the safeguards (Rooker, 2000). This study will address these general problems.

Specific problem. Criminal justice leaders continue to search for ways to apply criminal justice measures ethically. The use of familial DNA testing is an available resource for leaders and law enforcement officials to consider in fighting crime. The specific problem is there are no clear guidelines for conducting ethical familial DNA testing in the criminal justice system.

Barca (2013) revealed:

Representative Adam Schiff of Los Angeles County recently proposed legislation, House Bill 3361, that would nationalize the presently state-based systems for partial-match searches. While this legislation holds the promise to expand the public awareness and debate around an existent forensic technique, the legislation must be implemented with an eye toward the increasing critical discourse surrounding the use of partial-match searches already in practice. (p. 1)

Clear guidelines are necessary because familial DNA searches are not as conclusive as standard DNA searches are and extra care must be taken to evaluate the data being analyzed, the methods used to approach the data, and the database (Barca, 2013). Barca (2013) revealed different database protocols at the local, state, and federal levels convolute the development of a

nationalized familial search protocol. However, House Bill 3361 should be amended to require uniformity of procedures across federal and state lines that explicitly outline protocols and parameters for partial match and familial DNA searches (Barca, 2013). Without uniformity and guidelines across federal and state lines addressing partial matches and familial DNA testing, states will have too much leeway to manipulate a technology whose potential individuals are now starting to grasp (Barca, 2013).

The United States is not clear in its guidelines regarding familial DNA testing (Rushton, 2010). Colorado is the pioneer state that adopted familial DNA testing. Colorado's adoption of familial DNA testing included specific guidelines aimed at minimizing privacy and civil liberty concerns (Rushton, 2010). Rushton (2010) noted 14 states have no written guidelines that are easily accessible regarding familial DNA testing. The lack of guidelines might result in less clarity and transparency in many United States jurisdictions and might lead to uncertainty concerning the reception partial matches or familial DNA testing would receive in courts. The issue of divergent practices or guidelines of familial DNA testing across states may make harmony within the federal structure unlikely in the near future. The lack of, or inconsistent guidelines across the states might create a multiplicity of potential problems for the national coordination of crime fighting (Rushton, 2010).

Clearly, the use of familial DNA testing has advantages in the criminal justice system. Although familial DNA searches are of value, familial DNA testing may pose ethical concerns. Individuals might face the negativity of racial inequity, the lack of privacy, and a stigma placed on their families. Critics believe familial DNA testing contains procedures and principles that need work; procedures and principles that need to be addressed in specific guidelines. In 2007, Grimm (2007) noted a growing concern for a number of social and ethical issues involving

identity, privacy, and genetic bases. These ethical issues might cause concern for leaders about using familial DNA testing. These concerns may require the implementation of clear guidelines focused on addressing the procedure, the legal status, and possible security to ensure authenticity of testing and protection of privacy interests in familial DNA testing (Rooker, 2000).

Study. A qualitative, single case study was used in this investigation to explore the use of familial DNA testing. This qualitative, single case study explored criminal justice professionals' and leaders' perceptions about the effectiveness of familial DNA testing. Ten to 19 individuals received in-depth interviews. Specifically, criminal justice professionals from Arizona, California, Colorado, District of Columbia, Florida, Maryland, and Virginia were interviewed. The interviews explored the interviewees' perceptions of familial DNA testing in the criminal justice system.

Purpose of the Study

The purpose of this qualitative, single case study was to explore criminal justice professionals' perceptions on whether clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system. The purpose of this study also included exploring criminal justice professionals' perceptions of what guidelines are necessary if deemed clear guidelines are needed for ethical familial DNA testing in the criminal justice system. Criminal justice professionals use of familial DNA testing to search and profile the DNA of individuals who have not been convicted of a crime may have already exceeded reasonable constitutional protections (Simoncelli & Krimsky, 2007). Simoncelli and Krimsky (2007) also noted familial DNA testing gives law enforcement unprecedented passage into the private lives of innocent persons through their own genetic data.

Addressing familial DNA testing procedures might aid in the development of future forensic DNA technology. Addressing familial DNA testing procedures might also aid in the prevention of unnecessary concerns or mishaps in the future of forensic DNA testing (Williams & Johnson, 2006). A potential concern of familial DNA testing might include forensic techniques that were never subjected to rigorous scientific evaluation (Innocence Project, 2013). In addition, forensic techniques that have been properly validated are sometimes erroneously conducted or inaccurately transmitted in trial testimony; some cases report forensic examiners who fabricated results or engaged in other transgressions that require ethical consideration (Innocence Project, 2013).

Addressing ethical concerns, including civil right and civil liberty issues, might additionally aid in the prevention of wrongfully imprisoning individuals (Innocence Project, 2013). For instance, Alejandro Dominguez was 16 years old when he was convicted in Illinois of a rape he did not commit (Innocence Project, 2013). Eyewitness misidentification and the constrained science of a blood type match aided jurors in believing evidence against Dominguez was stronger than it really was (Innocence Project, 2013). The forensic analysts testified the semen located on the victim's body matched Dominguez's blood type; this means Dominguez could have been the perpetrator. However, what the forensic scientist failed to tell the jury was that two thirds of men in America would have matched the sample (Innocence Project, 2013).

This mishap led to Dominguez's conviction and sentencing of 9 years in prison (Innocence Project, 2013). Dominguez was set free after serving 4 years and obtained DNA testing at his own expense that verified he was innocent (Innocence Project, 2013). Civil rights and civil liberties concerning DNA testing are worth exploring to aid in the prevention of possible DNA testing mishaps. A qualitative, single case study was appropriate for this study.

The outcome of this study helped individuals understand, consider, and possibly implement more ethical processes when using this technique.

The leaders and professionals interviewed came from the criminal justice and law enforcement professions. The geographical locations of interviewees included Arizona, California, Colorado, District of Columbia, Florida, Maryland, and Virginia. These locations chosen were, in part, because government leaders and criminal justice professionals in these states have considered adoption and implementation, or have already adopted the familial DNA testing process. Leaders and law enforcement professionals in Maryland and the District of Columbia were included because leaders in these locations have refused to adopt familial DNA testing. Leaders and law enforcement professionals in the other selected states provided a balance of perspectives for studying the positive and negative aspects of familial DNA testing. Participants were selected from each geographical area because of their leadership, knowledge, experience, and contributions to the field of criminal justice, forensic science, and DNA testing.

Significance of the Study

This study was important because criminal justice professionals conducting familial DNA testing in the criminal justice system currently have no specific guidelines for the use of this technique. Therefore, there are no clear requirements or guidelines that address ethical concerns relating to familial DNA testing. “We must be confident that the police and the Government use DNA in a way that respects our fundamental right to privacy and protects our civil liberties” (Staley, 2005, p. 5). This study revealed beneficial knowledge addressing implications of the social impact of what might result in unethical outcomes of some familial DNA testing. Even though familial DNA testing is likely to make it through a constitutional challenge within the

Equal Protection Clause (Grimm, 2007), there will most likely be a rejection under the Fourth Amendment probable cause requirement (Grimm, 2007). The Fourth Amendment states:

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized. (The Charters of Freedom, 2012, p.1)

Significance of the study to leadership. This study was significant to leadership because of the importance of ethics and the fundamentals of right and wrong that determine what humans should do; customarily in terms of rights, obligations, benefits to society, fairness, or particular virtues (Velasquez, Andre, Shanks, & Meyer, 2010). Leaders should be ethical by acting and making ethical decisions (Rabinowitz, 2012). Furthermore, leaders must lead ethically (Rabinowitz, 2012). Ethical leaders model ethical conduct to the organization and the community. Possessing a reputation for ethical behavior can provide a model for other organizations and the community (Rabinowitz, 2012). Addressing the application of familial DNA testing in the criminal justice system provided leaders with ethical options when deciding whether or not to use familial DNA testing procedures.

This study was important to criminal justice leaders and law enforcement personnel because of the knowledge presented in the literature. Knowledge revealed in the literature indicated the importance of implementing new methods addressing ethical concerns that might affect social, privacy, political, and civil familial DNA testing concepts; concepts concerning legislation, authorization, financial support, and judicial endorsement (Williams & Johnson, 2006). Study results added to more comprehensive familial DNA testing coverage of operational policing strategies for criminal justice personnel. This included policing strategies' response to intelligence opportunities (Williams & Johnson, 2006). This knowledge offered solutions for more ethical criminal justice methods of coordination and control of DNA testing and testing

results. Leaders of criminal justice and law enforcement personnel will likely have interest in this study because they might learn how to evaluate ethical implications and assess practice technologies pertaining to familial DNA testing (Charek, 2008).

Nature of Study

A qualitative methodology was appropriate for this study to gain a better understanding of a complex situation and address the studied problem. A qualitative, single case study was deemed appropriate because the interview process revealed criminal justice professionals' perspectives regarding familial DNA testing in the criminal justice system. The study required exploring individuals' perceptions of familial DNA testing. The quantitative research method differs from the qualitative method. In contrast to the qualitative method, researchers using the quantitative method focus their concern on measurement issues (Neuman, 2006).

In the quantitative method, measurement is treated as a distinct step in the research process. The quantitative method process occurs before data collection and special terminology and techniques are developed for this process. The quantitative research method relies on the adoption of a deductive approach that begins with a concept. Following the concept, empirical measures are created. The empirical measures precisely capture the concept in a form that can be represented by numbers (Neuman, 2006). Qualitative research methods focus on measurement differently. Qualitative researchers create ways to grasp and express concepts using alternatives to numbers. Quantitative methods use a deductive approach and qualitative methods often rely on an inductive approach where concepts are created as a part of meaning (Neuman, 2006).

Transferability adds to the validity of the qualitative method. Transferability is applied by the readers of research and can apply in alternating degrees to most types of research (Barnes,

J., Conrad, K., Demont-Heinrich, C., Graziano, M., Kowalski, D., Neufeld, J., Zamora, J. & Palmquist, M., 2013). Generalizability normally pertains only to specific types of quantitative methods and sound generalizability depends upon data on large populations; quantitative research (Barnes et al, 2013). Transferability invites readers of research to make associations between elements of a study and their own experience. Researchers debate that historically, generalizable studies are more beneficial because the value of research is often decided by if a study was generalizable to a population as a whole (Barnes et al, 2013). However, more social analysts are realizing the value of using various methods of inquiry, and the value of transferability is being realized (Barnes et al, 2013).

Generalizability concerns making predictions based on a recurring experience. Transferability is most applicable to qualitative research methods such as case studies (Barnes et al, 2013). Reports based on transferability research approaches are detailed and specific. However, because transferable studies often regard only one subject or one group, researchers who perform such studies rarely generalize the results to other populations. The detailed nature of case study results makes them perfect for transferability research methods (Barnes et al, 2013).

A case study was pertinent because of the collection of extensive data on individuals, programs, and events. According to Yin (1984), the case study research approach is an empirical exploration that studies a modern phenomenon within real-life conditions. Using a case study is important when the borders in the middle of phenomenon and context are not acutely apparent and different origins of proof are used (Yin, 1984). The single case study design is important for exploration of social issues dealing with ethical guidelines in the use of familial DNA testing in the criminal justice system.

The grounded research method holds some merit for studying criminal justice professionals' perceptions of the need for ethical familial DNA testing guidelines in the criminal justice system. Grounded research method focuses on what theory or explanation comes from analysis of the data (Laws & McLeod, 2006). The grounded theory approach involves methods for developing theories grounded in collected, analyzed data. Grounded theory also requires the use of four distinct stages that include open coding, axial coding, selective coding, and theoretical saturation (Laws & McLeod, 2006). These stages were not suitable for this study. The single case study was better suited for this study because the process strives to find how the case relates to the larger context of society. The single case study also strives to discover what can be learned from an examination of the case studied (Laws & McLeod, 2006).

The Delphi research method also holds merit for this study. The Delphi approach is a procedure used to assemble and extract undisclosed knowledge of experts (Skulmoski, Hartman, & Krahn, 2007). The Delphi method uses data collection and an analysis approach permeated with assessments. The Delphi method is an appropriate research method when there is inadequate knowledge about an issue or phenomenon (Skulmoski, Hartman & Krahn, 2007).

However, the Delphi method is not suitable for all kinds of research questions (Skulmoski, Hartman, & Krahn, 2007). Although this research study required interviewing criminal justice professionals, the criminal justice interviewees' professions vary across the criminal justice field. The criminal justice professionals' expertise varies according to the position they hold. Each criminal justice professional interviewee in this study was familiar with familial DNA testing but there were only a few who were considered familial DNA testing experts. The familial DNA testing technique is a fairly new procedure in the criminal justice system. Criminal justice professionals are authorities and experts in their respective fields but

further analysis is needed in the field of familial DNA testing to qualify more individuals as familial DNA experts.

The single case study was appropriate for this research study. A single case study is perfect for looking at the familial DNA testing issue while exploring different criminal justice professionals' perspectives (Baxter & Jack, 2008). Specifically, this type of single case study describes a holistic case study with embedded units. This type of single case study allowed the researcher to explore the case and consider the influence criminal justice professionals perspectives might have on familial DNA testing (Baxter & Jack, 2008). Looking at embedded units within the study offered the researcher the ability to engage in profound inquiry while highlighting the case (Baxter & Jack, 2008).

Phenomenological research differs from case studies and is also not suitable for this study. Phenomenology seeks to discern the meaning, architecture, and essence of lived experiences of a phenomenon by individuals or a group of individuals (Hancock, 2002). The purpose of phenomenological research is to obtain a look into the participant's life and world. Phenomenological research seeks to understand the participant's meanings constructed from lived experiences (Hancock, 2002).

In this study, a population of criminal justice leaders and professionals were interviewed consisting of a chief attorney for a forensics division of an office of the public defender; an attorney who is a former police officer; a Colorado, prosecuting attorney; Virginia, defense attorney and former prosecutor; staff attorney, American Civil Liberties Union (ACLU); Virginia, prosecutor and former defense attorney; an Arizona law student who is a ten year veteran of a sheriff's office; criminal defense attorney and member of the National Association of Criminal Defense Lawyers; judge and former legal analyst; supervisor of a forensic biology

section, Department of Forensic Science; defense attorney; and a prosecutor. Extensive literature was collected for comparison to the collected population and sample data. Twelve years of extensive literature was collected starting from the year 2002 until the current date of this study; the United Kingdom started using familial DNA testing in approximately 2002. Extensive literature was collected from University of Phoenix's Library, ProQuest, EBSCOhost, multiple articles from electronic journals, and the Google Internet research database sources.

Convenience and judgment sampling was used because of those willing to volunteer and the deliberate choice of samples. In addition to extensive literature and the collected population, pictorial records were used as a data source. Three data sources were necessary to establish validity in the study; validity requires triangulation. Qualitative researchers use triangulation to confirm validity by analyzing a research question from various perspectives (Guion, Diehl & McDonald, 2012).

The data collection method consisted of gathering information from participants through open-ended questions in face-to-face, e-mails, or telephone interviews. Data collected was recorded through the use of a voice recorder, computer input notes, and handwritten notes. Data was analyzed by data coding, clustering of the codes, and drawing and confirming conclusions (Whittemore & Melkus, 2008). Further, the data analysis involved counting, comparing codes within and across participants, and annotating patterns and themes. Inspecting relationships between codes completed this data analysis (Whittemore & Melkus, 2008).

Research Question

The purpose of this qualitative, single case study was to explore criminal justice professionals' perceptions on whether clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system. The purpose of this study included

exploring criminal justice professionals' perceptions of what guidelines are necessary if deemed clear guidelines are needed for ethical familial DNA testing in the criminal justice system.

Interviewing was the main method for data collection in the proposed study. The following was the guiding interview research question for this study:

RSQ. What do criminal justice professionals perceive ethical familial DNA testing guidelines should include?

Theoretical and Conceptual Framework

The theoretical framework of the research study encompassed criminal justice professionals' use of DNA testing as a source for solving crimes. Today, DNA analysis plays a major role in helping criminal justice personnel identify criminals suspected of committing crimes. The United States holds the world's largest DNA database samples (Maschke, 2008). This database houses samples of criminals and criminal suspects. As of 2009, this database maintained 5.6 million DNA profiles (Maschke, 2008).

Because technology continues to evolve, a new type of DNA testing emerged. Familial DNA testing is a new type of DNA testing and criminal investigative tool. Familial DNA testing is a significant consideration for criminal justice professionals when solving crimes. Because the process of familial DNA testing also involves testing relatives of convicted felons, the objective of this study is to uncover if familial DNA poses ethical concerns. Particular issues may need to be addressed concerning guidelines for performing ethical familial DNA testing.

The current research study related to existing research concerning possible ethical concerns regarding familial DNA testing. This study involved exploring criminal justice professionals' perceptions of familial DNA testing and familial DNA testing's compatibility with ethical processes and procedures. The research was a source of current information regarding

the use of familial DNA testing. This study added to the research of familial DNA testing by focusing on possible ethical concerns familial DNA testing might pose.

Ethical concerns in the study included civil rights and civil liberties that pertain to the U.S. Constitution and The Bill of Rights Amendment 4 and Amendment 14 that involve individual privacy issues. The study highlights the need for familial DNA testing guidelines; currently no specific guidelines exist. The following is a discussion of issues and perspectives related to individual civil rights and civil liberties, how and why civil rights and civil liberties exist, and specific laws that support civil rights and civil liberties. One of the most significant criteria of the American political culture is the respect for civil rights and civil liberties (Advanced Placement Program, 2013). The founding fathers of the United States were concerned with defining and protecting rights and liberties. The founding fathers' civil rights and civil liberties' achievements are noted in the Declaration of Independence, the Constitution, and the Bill of Rights (Advanced Placement Program, 2013). The discussion also addresses how civil rights and civil liberties relate to familial DNA testing.

The Declaration of Independence. The Declaration of Independence is based on the beliefs that governments are accountable for defending the “unalienable rights” of “life, liberty, and the pursuit of happiness” (as cited in Advanced Placement Program, 2013, p. 1). The founding fathers of the United States believed individuals are clearly able to abuse the natural rights of others. The goal of The Declaration of Independence is that the government protects the rights of their citizens (Advanced Placement Program, 2013). Specifically, in 1776, Thomas Jefferson wrote:

We hold these truths to be self-evident; that all men are created equal, that they are endowed by their Creator with certain unalienable rights, that among these are life, liberty, and the pursuit of happiness. That, to secure these rights, governments are

instituted among men, deriving their just powers from the consent of the governed. (as cited in Advanced Placement Program, 2013, p.1)

United States Constitution. The U.S. Constitution established national government and fundamental laws, and promised specific basic rights for American citizens (History, 2013). The U.S. Constitution's foundation is based on the historic words:

We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defence, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America. (U.S. Constitution, as cited in Charters of Freedom, 2013, p. 1).

The U.S. Constitution was created because under America's initial governing document, the Articles of Confederation, the national government was weak; states performed like separate countries (History, 2013). Delegates developed a strategy for a solid federal government that includes three branches, at the 1787 Constitutional Convention. The three branches are the executive, legislative, and judicial branch.

Delegates also devised a system of checks and balances to ensure no individual branch possesses too much power (History, 2013). Presided over by George Washington, The U.S. Constitution was signed on September 17, 1787 by delegates to the Constitutional Convention in Philadelphia. Ten amendments that guarantee primary individual protections, such as freedom of speech and religion are known as The Bill of Rights. The Bill of Rights became part of the Constitution in 1791. To date, there are a total of 27 constitutional amendments (History, 2013).

The Bill of Rights. The bulk of court findings describing American civil rights and civil liberties are based on the Bill Rights (Advanced Placement Program, 2013). The equal protection clause of the Fourteenth Amendment is one of the most instrumental Constitutional provisions during the middle to late 20th century. This Amendment pertains to civil rights and civil liberties and prohibits any state to:

[D]eny to any person within its jurisdiction the equal protection of the laws. This clause has not been interpreted to mean that everyone is to be treated the same, but that certain divisions in society, such as sex, race, and ethnicity are suspect categories, and that laws that make distinctions that affect these groups will be subjected to especially strict scrutiny. (as cited in Advanced Placement Program, 2013, p. 1)

The United States is home to different racial and ethnic groups who experienced different dimensions of approval into the American culture (Advanced Placement Program, 2013).

Considerable racial and ethnic minorities consist of African Americans, Latinos, Asians, and Native Americans. African Americans experienced 250 years of slavery followed by approximately a century of rampant inequity. African Americans' struggle to secure equal rights and dispose of segregation paved the way for others; civil rights protected in the Fourteenth and Fifteenth Amendments (Advanced Placement Program, 2013).

The Fourth Amendment guarantees freedom from unreasonable search and seizure (Advanced Placement Program, 2013). The Constitution requires that searches of private premises are permitted only if probable cause exists. A probable cause element must indicate that a crime may have taken place. In addition, the exclusionary rule is a very important principle related to the Fourth Amendment. The exclusionary rule supports the principle that evidence obtained illegally cannot be used in trial (Advanced Placement Program, 2013).

Ethics and criminal justice professionals. Ethics describe a discipline involving good and evil and with moral duty or moral principles or process (Merriam-Webster Dictionary, 2013). Criminal justice professionals face ethical difficulty in many areas of the criminal justice system. Criminal justice professionals must follow ethical codes created to identify and portray ethical behavior in the criminal justice vocation (Pollock, 2010). Criminal justice leaders and all criminal justice professionals encounter many situations that require him or her to make choices. These choices may be evaluated after the fact as right or wrong. Characteristics of criminal justice professionals entail a public trust that entails power over others. Individuals who possess

such power must be perceptive to the ethical issues that may arise in his or her professional life (Pollock, 2010).

Criminal justice professionals have an ethical duty to preserve the constitutional safeguards that are the keystone of our legal system; distinctively, due process and equal protection (Pollock, 2010). Due process protects all citizens from flaw in any governmental deprivation of life, liberty, or property. The government has the right to control and punish, but citizens have rights protections against capricious or unlawful use of that power that include civil right and civil liberty protections (Pollock, 2010). Power of criminal justice professionals should be used fairly and in an equitable manner. This power includes equal protection that is not decided by the color or our skin, our gender, nationality, or the religion we practice. The protection of laws extends to all. Although evidence indicates different treatment exist, equal protection is a necessary component of our legal system and criminal justice professional ethics. Equal protection should be an operating fundamental for each person working in the criminal justice profession (Pollock, 2010).

Familial DNA testing, civil rights, and civil liberties. The use of familial DNA testing is the source of Los Angeles police cracking a series of murders spanning decades on July 7, 2010 (Ram, 2011). The serial killer known as the Grim Sleeper left DNA at the crime scene several times. The DNA left at the crime location did not match any of several million DNA profiles of previous violators in the National DNA Index System. When California probed the state DNA database for a genetic profile similar but not identical to the killer's, familial DNA testing was instrumental. The partial match revealed that an immediate genetic relative of the matching violator was the Grim Sleeper (Ram, 2011).

Pattock (2011) revealed although familial DNA testing is hotly contested across the country, its usefulness in helping law enforcement officials catch and prosecute criminals is well established. Pattock (2011) noted society benefits from familial DNA testing because identifying partial matches in investigations can deter crime. Familial DNA testing also increased the rate of accuracy in identifying suspects. This means the focus is on individuals more likely to be guilty. Individuals who are not likely to be guilty are not subjected to the stressful investigation process (Pattock, 2011).

According to Murphy (2012), it is never easy to argue against a law enforcement investigative tool that proves effective in apprehending perpetrators of the worst crimes imaginable; some who long evaded capture. Murphy (2012) suggested asking whether a particular crime-solving method may work is to ask the wrong question. If criminal justice professionals or the government are allowed to randomly tap telephones, read e-mails, indiscriminately search medical, financial, or education records, or simply install cameras in private spaces, possibly much crime would be solved; still more averted (Murphy, 2012). However, most individuals who believe in the basic freedoms of a liberal democracy may find such an extreme loss of privacy too high a price to pay (Murphy, 2012).

Significant problems with familial DNA testing raise practical, technical, rights-based, legal, and ethical concerns (Rushton, 2010). Familial DNA testing poses a considerable scope for technical, statistical, and human error. The government of Australia notes reliability, overreliance, and cost are the main practical concerns associated with the implementation of familial DNA testing. The issues must be addressed if the technique is applied to the Australian criminal justice system (Rushton, 2010).

Epstein (2009) noted familial DNA testing subjects a whole new class of innocent individuals to genetic scrutiny by the government. Any relative of a convicted offender who is identified through a familial search is a relative who is not already in a criminal DNA database. Relatives who fall under suspicion as a result of familial DNA searching are individuals who otherwise, would not be found in the database. These relatives have somewhat of a shadow presence as a result of the inferences that may be drawn from their relationship to an offender's genetic profile (Murphy, 2012). Familial DNA searching allows police to do indirectly what otherwise could not be done directly; familial DNA searching allows police to generate suspect lists based on genetic information that law enforcement never would have been allowed to obtain (Murphy, 2012). This brings up the consideration of whether non-database-eligible-relatives of convicted offenders be accessible in this manner while everyone else retains the right to keep his or her genetic code private (Murphy, 2012).

Familial DNA testing has the effect of informally extending databases to search for the involvement of relatives of convicted offenders (Rushton, 2010). This lowers the genetic privacy of relatives by association. Relatives of offenders become subject to a lower standard of privacy than other individuals not subject to investigation. These relatives become subject to a lower standard of privacy by virtue of his or her blood ties (Rushton, 2010).

The use of familial DNA testing could result in the reach of DNA databases expanding to include 4 to 5 times more African Americans than Caucasians in the context of the United States (Rushton, 2011). This reference is based on the current over-representation of African Americans in correctional facilities. Familial DNA's practical effect may be politically explosive. Familial DNA's practical effect may have differential consequences in the application of the technique according to ethnic groups (Rushton, 2011).

Currently, the Supreme Court is revisiting the crossroad of privacy and evolving science (De Vogue, 2013). The Supreme Court is considering whether law enforcement officials can take DNA without a warrant. The basis of this consideration is an allegation by Alonzo Jay King Jr. who alleges his constitutional rights were breached when he was arrested in 2009 for an assault. Officials swabbed King's cheek and obtained his DNA without a warrant (De Vogue, 2013). King's 2009 specimen was later paired in a state database to DNA from a 2003 rape case. The new evidence resulted in rape and robbery charges for King and King is currently serving a life sentence (De Vogue, 2013). Lawyers for King appealed the ruling. King's attorneys argued that obtaining the warrantless DNA from an individual who was arrested but not found guilty of a severe offense defies the Fourth Amendment's restriction on unreasonable search and seizure. Maryland's Court of Appeals ruled in support of King (De Vogue, 2013). Court papers in King's case focus on two sides that address the balance between an individual's privacy and the needs of law enforcement (De Vogue, 2013).

Familial DNA testing addresses an area of investigation used by law enforcement to identify criminal offenders. The theoretical framework regarding the U.S. Constitution, The Bill of Rights, and privacy issues offer theories and concepts used to address the basis of familial DNA testing. The basis of this study addresses ethical concerns of familial DNA testing. The current study involves exploring criminal justice professionals' perceptions on whether clear guidelines are necessary for ethical familial DNA testing in the criminal justice system. The current study also involves exploring criminal justice professionals' perceptions of what guidelines are necessary, if deemed clear guidelines are needed for conducting ethical familial DNA testing.

Definition of Terms

The following definitions were used in this study:

American Civil Liberties Union (ACLU) seeks to protect and enhance individual freedoms secured by the Bill of Rights. These freedoms consist of speech, assembly, and religion. Freedoms also include separation of church and state, due process, equal protection under the law for all individuals, and reproductive rights. Further, the ACLU defends immunity from unreasonable search and seizure and fair treatment by government. The ACLU accomplishes this work by ensuing litigation, legislative work, and public education (ACLU of Florida, 2005).

Civil liberties are basic rights and freedoms guaranteed through the Bill of Rights and the Constitution. These rights and freedoms include freedom of speech, the right to privacy, the right to be free from unreasonable search of your home, the right to a fair court trial, the right to marry, and the right to vote (Reuters, 2012).

Civil rights traditionally revolve around the basic right to be free from unequal treatment. This unequal treatment is based on certain protected characteristics, such as race, gender, and disability (Reuters, 2012).

Civil Rights Movement is a term used historically to refer to endeavors toward attaining genuine equality for African-Americans in every aspect of society, but today the term "civil rights movement" is also used to describe the progress of equality for all people regardless of race, sex, age, disability, national origin, religion, sexual orientation, or other protected characteristic (Reuters, 2013a).

Combined DNA Index System (CODIS) is a central repository that contains DNA profiles for individuals at the national, state, and local level (Serinhaus, 2009).

Deoxyribonucleic acid (DNA) is the fundamental building block of an individual's entire genetic makeup. DNA is a component of virtually every cell in the human body (DNA Initiative, 2012).

Disparate treatment refers to the treatment of an individual that is less supportive than treatment of others for discriminatory reasons (as race, religion, national origin, sex or disability (Reuters, 2013b).

DNA dragnets define when police seek to collect samples from many individuals who have a general description. These individuals are not individually suspected but one might have committed the crime (Katsanis, 2008).

Equal Protection Clause refers to the clause in the Fourteenth Amendment to the U.S. Constitution that prohibits any state from denying to any person within its jurisdiction the equal protection of the laws (Reuters, 2013c).

Ethics is a discipline dealing with good and evil and with moral duty or moral principles or practice (Merriam-Webster Dictionary, 2013).

Familial DNA testing/searching is testing/searching based on the genetic similarity of biological relatives (Grimm, 2007). Familial DNA testing/searching focuses on a partial DNA match and involves using the genetic information of a criminal suspect's family member to implicate the accused (Grimm, 2007).

Felony defines a crime or sentence punishable in excess of one year (Mason, 2012).

Forensic Science. "The word "forensic" comes from the Latin word *forensis*: public; to the forum or public discussion; argumentative, rhetorical, belonging to debate or discussion. From there it is a small step to the modern definition of forensic as belonging to, used in or suitable to courts of judicature, or to public discussion or debate. Forensic science is science used

in public, in a court, or in the justice system. Any science used for the purposes of the law is a forensic science” (Forensic Sciences Foundation, 2012, p. 1).

Fourteenth Amendment, Section 1 states “All persons born or naturalized in the United States and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws” (Fourteenth Amendment, 2014).

Fourth Amendment states “the right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized” (Legal Information Institute, 2012, p. 1).

Genetic surveillance occurs when family members share a common gene pool and are likely to have similar profiles; the government allows DNA databases to be searched for near matches between DNA profiles contained in databases and DNA profiles obtained from samples collected at crime scenes. Further, the government expands surveillance beyond individuals whose DNA is contained in the database to family members (Mercer, 2008).

Guidelines refer to a rule or a set of rules giving guidance on how to behave in a situation (Free Dictionary, 2013).

Local Database Index System (LDIS) is a locally maintained database (Suter, 2010)

National DNA Database: A system of DNA profile records input by criminal justice agencies (DNA Initiative, 2012).

Offender/database lead is a database of individuals who have DNA stored in DNA databases (Suter, 2010).

Partial match is a partial DNA match unplanned during a regular and initial criminal database search (Cantrell, 2010).

Perfect match defines a perfect DNA match during a normal and initial criminal database search (Cantrell, 2010).

Prosecution is “The act or process of prosecuting; *specifically*: The institution and continuance of a criminal suit involving the process of pursuing formal charges against an offender to final judgment” (Merriam-Webster, 2012, p. 1).

Racial Disparate Impact is defined as the frequently wrongful arrest, prosecution, and conviction of African Americans and Hispanics at a far higher rate than Caucasians (Schwartz, 2011).

Source is a pool of suspects generated as a result of a database partial match search or an undefined number of individuals under suspicion as a result of a partial match search that identified one or more database leads as a possible relation of the source (Suter, 2010).

State Database Index System (SDIS) is a state maintained database (Suter, 2010).

Surveillance may involve close observation by a person(s). Contemporary practices allow surveillance to be carried out from afar as with satellite images or the remote monitoring of communications and work. Surveillance is also classified as scrutiny through the use of technical means to extract or create personal or group data, whether from individuals or contexts (Marx, 2005).

Victoria Law Foundation refers to an independent, community benefit organization established in 1967. This foundation provides grants for innovative law and justice projects.

The foundation also establishes legal publications in plain language for the community. Annually, the foundation runs a legal research and policy internship program that places law students in public sector, government, and community organizations. In 2010, the Australia New Zealand Police Advisory Agency and the National Institute of Forensic Science participated in the program (Rushton, 2010).

Y-haplotype defines first, the Y chromosome. The Y chromosome is transferred from father to son. Testing the Y chromosome furnishes information about the direct male line, meaning the father to his father and so on. Second, haplotype refers to classifying a person's primary population class and provides facts about the ancient source of the male line (Family Tree DNA, 2014).

Assumptions

Clarity for the research was provided by identifying assumptions that occurred during the design of this study. It was assumed all participants in this study would tell the truth when responding because of voluntary participation. It was assumed participants in this study would refrain from bias in their discussion and feedback. Another assumption was that all participants would have knowledge of the criminal justice system and familial DNA testing. There was also an assumption that participants and the researcher would gain understanding from the study that resulted in new learning (Goodwin, 2011).

Scope of the Study

The scope of the study was limited to 12 leaders and professionals in criminal justice agencies and law enforcement personnel located in California, Colorado, Florida, New York, Virginia, Maryland, District of Columbia, and Washington, D.C. These individuals were also

selected because of their experience with criminal justice processes and procedures. These individuals were selected because of their knowledge of familial DNA testing procedures. Individuals chosen for participation in the study possessed knowledge of DNA testing and they had experience in evaluating DNA testing in the criminal justice system. Extensive literature was used to analyze and determine individuals equipped with criminal justice and DNA knowledge. Individuals were also contacted who could suggest participants who fit the profile of the study. Specifically, participants were selected from each geographical area because of his or her leadership, knowledge, experience, and contributions to the field of criminal justice, forensic science, and DNA testing. The study involved soliciting participants via in-person, e-mail, or telephone.

Each participant received a signed copy of the informed consent form. This ensured he or she understood the procedure of confidentiality. The researcher received permission from the participant if the interview was to be audio tape-recorded. Each participant was offered a review of his or her copy of the interview transcript. The research material was stored in the researcher's home and only the researcher had access to the research material. The electronic data was stored on the hard drive of the researcher's home laptop. The electronic files required passwords for access. Only the researcher knows the file passwords.

Limitations

There were a few limitations outside the research study. The first limitation was potential bias of participants. Some participants may favor familial DNA testing and others may be against familial DNA testing. Another limitation may be the openness of participants. Some participants may be hesitant to include the negative aspects of familial DNA testing because they are in favor of the testing. Hesitation for openness may also include participants who may have

failed to disclose positive aspects of familial DNA testing because they are against familial DNA testing. A third limitation may be the extent of criminal justice professional's and law enforcement personnel's knowledge of the concept of familial DNA testing.

Delimitations

The research was confined to gathering literature pertaining to DNA, familial DNA, forensic DNA, and criminal justice practices and procedures. Research was confined to gathering information from participants through open-ended questions in face-to-face, e-mails, or telephone interviews. There was no limitation to ideas presented to validate and enhance the idea of producing ethical guidelines for familial DNA testing. The intent of the research study was to create a framework that explored concerns in the ethical use of familial DNA testing in the criminal justice system. The proposed research study included identification of recommendations on guidelines criminal justice professionals could use to develop guidelines addressing ethical concerns.

The research was delimited to focus on criminal justice professionals' perceptions on the ethical use of familial DNA testing. The study used open-ended questions to collect data. Data was collected at different times during the day in unstructured environments. Criminal justice professionals were asked to share ideas concerning perceptions and recommendations regarding familial DNA testing.

Summary

The United States Constitution, the Bill of Rights, privacy, social, and ethical concerns are the legal theoretical framework based on the foundation of this study. Familial DNA testing poses a challenge in the criminal justice system. Given the concept of familial DNA testing,

critics argue there are advantages and disadvantages in familial DNA testing. Initially, forensic specialists and law enforcement personnel searched DNA databases for profiles that matched DNA found at a crime scene. Because perfect matches were not always the result, forensic specialists and criminal justice professionals sought other ways to use DNA to find suspects. Comparing crime scene DNA to offender DNA databases sometimes result in partial matches. Familial DNA testing is about using these partial matches to test family members of offenders who have DNA stored in offender databases.

Proponents of familial DNA testing revealed the benefits of this method. For instance, the police turned to familial DNA testing and after 25 years and 11 murders, the Grim Sleeper killer was finally apprehended (Pattock, 2011). Evidence indicated the usefulness of familial DNA in assisting law enforcement officials identify, apprehend, and prosecute criminals. Some critics believe the benefits of familial DNA testing outweigh any invasion of privacy rights (Pattock, 2011). A district attorney in Denver, Colorado, noted the FBI, prosecutors, and police departments should feel obligated to victims and potential victims to follow leads through the use of familial DNA testing (Stahl, 2007).

However, opponents of familial DNA testing advocate familial DNA testing goes too far. In 2011, the ACLU revealed concerns they have with familial DNA testing. They believe familial DNA testing causes racial disparate impact (Schwartz, 2011). This assumption is based on African Americans and Hispanics being arrested, tried, and condemned at a higher percentage than Caucasians are. Thus, familial DNA testing of arrested and condemned individuals negatively impacts racial minorities (Schwartz, 2011).

Another reason the ACLU opposes familial DNA testing is this method can result in inconsistent categorization (Schwartz, 2011). This means there are family members of convicted

felons who turn into criminal suspects because of familial DNA testing. Individuals not related to convicted felons cannot become criminal suspects because of familial DNA testing. In this case, the ACLU believes the practice of familial DNA testing categorizes individuals based on if they are related to criminals. The ACLU views this as a stride backward toward genetics and exploitation of blood (Schwartz, 2011).

Individuals in favor of familial DNA testing pointed out most relatives subjected to familial searches will never know that a search occurred, that a lead developed, or that they were ever considered a suspect in a criminal case (Murphy, 2012). However, opponents argue individuals need to know he or she was or is targeted. A targeted relative must understand, by virtue of the misdeeds of a biological relative, he or she are at risk. Murphy (2012) indicated, the greatest indication familial searches are unjust is the steadfast resistance to a universal, compelled DNA database. According to Murphy (2012), if citizens do not believe the government should have access to their genetic code unless and until he or she forfeits privacy by committing a criminal offense, then we, as a community, should not turn our backs when the government seeks to extract this information from one segment of the community; a segment of the community solely on account of the accident of genetic relatedness (Murphy, 2012).

The problem is there are no clear guidelines for conducting ethical familial DNA testing in the criminal justice system. The purpose of this qualitative case study was to explore criminal justice professionals' perceptions on whether clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system. The purpose included exploring criminal justice professionals perceptions of what guidelines are necessary if deemed clear guidelines are needed for conducting ethical familial DNA testing. This study explored familial DNA testing with the intent of the study's results eventually supporting law enforcement and

criminal justice personnel's understanding, consideration, and implementation of effective and ethical guidelines related to the use of familial DNA analysis methods. The case study design was important for exploring social issues dealing with the ethical use of familial DNA testing in the criminal justice system. A review of the literature on DNA, the advantages and disadvantages of familial DNA testing, and ethical concerns of familial DNA testing are examined in Chapter 2.

CHAPTER 2

REVIEW OF THE LITERATURE

The purpose of this qualitative research case study was to explore criminal justice professionals' perceptions on whether clear guidelines are necessary for conducting familial DNA testing in the criminal justice system. The purpose included exploring criminal justice professionals' perceptions of what guidelines are necessary if deemed clear guidelines are needed for conducting familial DNA testing. The qualitative, single study explored criminal justice professionals' experiences and perceptions concerning familial DNA testing.

The study included interviews with 12 criminal justice professionals who have leadership experience in criminal justice. Pre-existing literature was also collected to compare the results of the collected population and sample data. Collecting pre-existing literature provided insight that cannot be observed or noted in another way (United States Department of Agriculture, 2012). This research study was conducted to identify ethical factors including civil rights and civil liberties according to The U.S. Constitution and The Bill of Rights. These ethical factors may negatively affect criminal justice professionals' processes and procedures when performing familial DNA testing. This qualitative, single case study explored the perceived effectiveness of proposed measures criminal justice professionals could use to incorporate guidelines addressing possible ethical concerns in familial DNA testing

The literature provided a basis for intellectual discourse concerning the use of familial DNA testing. The literature also provided an avenue for viewing ethical implications and concerns that involved criminal justice professionals and families affected by familial DNA testing. This qualitative, single case study disclosed how the use of familial DNA testing is of worldwide importance because no one is exempt from familial DNA searches; if a person

commits a crime, the entire family may be affected and some within the family may be susceptible to familial DNA testing. This research study of familial DNA testing provided a foundation for understanding the need for concrete guidelines addressing familial DNA searching and testing in the criminal justice field.

Studying the literature provided insight into the relevance of the development of DNA and the historic use of DNA and criminal justice procedures to its current state. The study of literature indicated the impact and relationship familial DNA testing has on criminal justice professionals' practices and the environment affected by familial DNA testing. The purpose of this literature review was to demonstrate a familiarity with a body of knowledge and establish credibility. In addition, the literature indicated the trail of former research and how the current project is connected. The literature review integrated and summarized what is known in an area. Finally, a literature review allowed individuals to learn from others while motivating new ideas (Neuman, 2006). This literature review allowed people to learn about and build on what others have done concerning familial DNA testing and relate the literature to the need for addressing ethical concerns in the use of familial DNA testing (Neuman, 2006).

Title Searches, Articles, Research Documents, and Journals

An extensive search was conducted for the examination of literature in Chapter 2. The literature review included sources accessed through University of Phoenix's Library, ProQuest, EBSCOhost, multiple articles from electronic journals, and the Google Internet research database. Pertinent literature was identified through the use of keywords, such as DNA, familial DNA, crime, criminal justice, law, law enforcement, forensics, investigation, police officers, ethics, dilemma, DNA databases, court system, civil rights, civil liberties, U.S. Constitution, and The Bill of Rights. The literature review provided an exploration of issues concerning the

aspects of familial DNA testing and the ethical concerns familial DNA testing may pose. The literature review addressed ethical concerns that included fairness, privacy, equality, governmental liberty, and civil rights and civil liberties.

The literature review focused on the historic view of criminal justice elements that included the criminal justice system. A historic view of forensic science, DNA, and the United States' national DNA database, known as Combine DNA Index System (CODIS), is also addressed. Essential lessons can be learned from historical experiences because they render context and direction for criminal justice professionals today (Law Enforcement Intelligence, 2005). The literature review included current findings and studies that addressed familial DNA testing. Further, the literature review identified specific advantages and disadvantages of familial DNA testing and the gaps the literature revealed. Finally, the literature review addressed the gap in literature by recommending clear guidelines for conducting ethical DNA testing procedures for criminal justice professionals.

Historical Overview

The historical overview started with a dialogue concerning the evolution of the criminal justice system. The overview continued with a discussion of forensic science and DNA testing. The additional discussion of the overview included CODIS and familial DNA testing. The historical overview discussion emphasized the importance of the development of the criminal justice system and DNA testing and its relevance in the creation of familial DNA testing in the criminal justice system.

Criminal justice system. The criminal justice system involves a series of organizations created to apprehend, prosecute, defend, sentence, and jail individuals involved in crimes (Dictionary, 2012). Perpetrators are apprehended, tried, and punished by process of a loose

confederation of agencies at all levels of government (Bureau of Justice Statistics, 2012). Justice for the American system emerged from the English common law into complicated stages of methods and determinations. The justice system is established on the idea that crimes against a person are crimes against the State. The justice system prosecutes and those individuals are treated like they have persecuted society (Bureau of Justice Statistics, 2012). The definition of criminal justice covers a broad area that includes the way criminal behavior is investigated, evidence gathered, arrests made, charges brought, defenses raised, trials conducted, sentences rendered, and punishment carried out (U.S. Legal, 2012). The criminal justice system consists of the police, the courts, and corrections. The criminal justice system has historic roots and influences from English customs and laws (Anthem Education, 2012).

Police forces are a major component of the criminal justice system. Modern police forces are traced back to Alfred the Great. Alfred the Great was an English king who ruled in the seventeenth century (Anthem Education, 2012). Families organized patrols in their regions because they swore allegiance to Alfred the Great. The families appointed an official to supervise the patrols. The patrols expanded to large alliances. The “reeve” of the shire, later called a sheriff, led the alliances (Anthem Education, 2012). When William the Conqueror ruled, a change occurred that had kings assign sheriffs to secure allegiance to the monarch (Anthem Education, 2012). The early New England colonist elected or appointed sheriffs to uphold overall peace. New York, Boston, and Philadelphia created night watches by 1700. In 1705, Philadelphia formerly created 10 patrol areas (Anthem Education, 2012).

A growing population and industrialization triggered the development of municipal police departments during the century amid the American Revolution and Civil Wars (Anthem Education, 2012). In the 1830s, Philadelphia developed an independent, 24-hour police force.

New York developed day and night forces in the 1840s. The initial sheriff system followed the national expansion west. Today, many sheriff systems still exist (Anthem Education, 2012). Functions in the police and sheriff departments today are virtually identical. The difference is police chiefs are appointed by local governments and sheriffs are elected (Anthem Education, 2012). Included in the criminal justice system are courts.

The foundation for pre-revolutionary courts in America followed the laws of Great Britain (Anthem Education, 2012). In 1787, the United States Constitution mapped out the American court system. The Sixth Amendment and the Eighth Amendment of the Constitution address criminal justice (Anthem Education, 2012). The Constitution's Fifth Amendment guarantees due process to any individual accused of a crime. Due process describes a person who receives notice there is a matter regarding him or her before a court. The accused has the opportunity to hear the accusation and construct a defense (Anthem Education, 2012). Just as important as the court system and law enforcement are corrections.

The British penal system was the guide for corrections during Colonial times (Anthem Education, 2012). The British penal system depended largely on punishment and execution. More states changed to offender imprisonment instead of execution, whipping, or the stockade during the 1800s. The idea of reforming criminals became popular during the turn of the following century. Reflections of Quaker thought took hold through the creation of penitentiaries. This was a Quaker reflection. Penitentiaries were intended to be places where criminals could work and do his or her penitence (Anthem Education, 2012).

Reformers lost patience with the notion of reform by the mid-1800s (Anthem Education, 2012). Reformers began to focus on deterrence and rehabilitation. A variety of penitentiaries became reformatories. A system of inmate classification and parole was created by New York

reformatory superintendent, Zebulon Brockway (Anthem Education, 2012). Brockway's system is instrumental with today's criminal justice programs and systems that focuses on rehabilitating offenders who will be eventually released (Anthem Education, 2012).

All sections of the criminal justice system are vital. Law enforcement is a vital element in the criminal justice system. Law enforcement personnel further enforce their trade by use of criminal investigations. To complete criminal investigations, law enforcement personnel do not work alone. Law enforcement personnel rely heavily on a variety of technical and professional specialists. One particular profession vital to the duties of law enforcement personnel are forensic specialists who perform different forensic tests.

Forensic science and DNA testing. In regard to forensic science:

The term forensic comes from the Latin word *forensis*: public; to the forum or public discussion; argumentative, rhetorical, belonging to debate or discussion. This definition is a small step toward the modern definition of forensic as belonging to, used in or suitable to courts of judicature, or to public discussion or debate. Forensic science is science used in public, in a court, or in the justice system. Any science used for the purposes of the law is a forensic science. (Forensic Sciences Foundation, 2012, p. 1)

The historical timeline of forensics goes back to 44 BC when the stabbing and assassination of Julius Caesar occurred. Caesar's physician determined out of the 23 wounds suffered, only one stab wound was fatal (Forensic Science, 2012). In the 5th century AD, German, and Slavic civilizations were thought to be the first to utilize medical professionals to determine the cause of death. In 1248 AD, the first written explanation of medical knowledge used to solve criminal cases is credited to the Chinese book titled *His DuanYu* written by Song Ci. His DuanYu is translated as *Washing Away of Wrongs* (Forensic Science, 2012). One account of Ci's ancient science techniques was the case of an individual murdered with a sickle. This case was solved by a death examiner when he advised everyone to bring his or her sickle to one area. The death examiner concluded a sickle was the murder instrument by examining

multiple blades on an animal carcass and comparing the injury. Flies gathered on a sickle because of their smell and attraction to the blood. After witnessing this demonstration by the death investigator, the murderer confessed (Forensic Science, 2012). Another account from Ci's book was advice on how to tell the difference between a drowning as a result of water in the lungs. There was advice on strangulation based on broken neck cartilage. Ci also wrote about evidence from examining corpses to determine the cause of death; whether the death was caused by murder, suicide, or a mishap (Forensic Science, 2012).

The 16th century was the first documentation of pathology reports. European university and Army medical practitioners started gathering information pertaining to the cause and manner of death (Forensic Science, 2012). French Army surgeon Ambroise Par'e systematically studied the effects of violent death on internal organs. Italian surgeons Fortunato Fidelis and Paolo Zacchia laid the foundation of modern pathology by studying changes that occurred in the structure of the body as the result of disease (Forensic Science, 2012).

Swedish chemist Carl Wilhelm Scheele created a way to detect arsenous oxide, simple arsenic in dead bodies, in 1776. German chemist Valentin Ross expanded Scheele's investigation in 1806. Ross learned to recognize poison in the walls of a victim's stomach. James Marsh also expanded Scheele's investigation by using chemical processes to validate arsenic as the reason for death in an 1836 murder trial (Forensic Science, 2012).

Cases of two English legal proceedings using forensic science illustrated the growing use of rationale and process in criminal investigations. John Toms was tried and found guilty in 1784 for the murder of Edward Cutshaw. The examination of Cutshaw's body showed a pistol wad found in his head perfectly matched a torn newspaper found in Toms' pocket (Forensic Science, 2012). Also in 1816, a farm worker was tried and found guilty of killing a young maid

servant who was drowned in a shallow pool. The maid servant's body had the markings of a violent attack. Police used footprints, an impression from a corduroy cloth, and scattered grains of wheat and chaff found near the pool as evidence. This evidence was compared to a farm laborer who was threshing wheat nearby. The examination of both areas corresponded exactly. This proved the farm laborer's guilt (Forensic Science, 2012).

Swiss physician Friedrich Miescher was the first to isolate DNA in 1869 (News Medical, 2012). Miescher detected a microscopic element in the pus of abandoned surgical bandages. This resulted in the nuclei of cells (News Medical, 2012). Miescher realized he discovered a novel molecule made up of a white, slightly acidic chemical (University of Delaware, 2004). Because Miescher isolated the novel molecule from the cells' nuclei, he named it nuclein. The name nuclein is sustained in today's designation deoxyribonucleic acid (Dahm, 2007).

In winter 1868/1869, Miescher performed experiments on the chemical configuration of leukocytes (Dahm, 2007). Leukocytes are white blood cells; a cellular component of the blood that lacks hemoglobin and has a nucleus. Leukocytes are capable of sensitivity, and they fend off infection and disease in the body by ingesting foreign materials and cellular debris. Leukocytes defend the body by extinguishing contagious agents and cancer cells or by generating antibodies (Encyclopedia Britannica, 2012). In subsequent work, Miescher suggested that the abundance of nuclein in tissues may be related to their physiological position (Dahm, 2007). Miescher speculated that nuclein may have a role in the transmittal of hereditary traits. Miescher's experiments on leukocytes led to the discovery of DNA (Dahm, 2007).

Rodolphe Archibald Reiss established the first school of forensic science in the world in 1909. The school was referred to as *Institut de police scientifique* at the University of Lausanne in Switzerland (Forensic Science, 2012). In 1910, the first police department crime laboratory

was established by Edmund Locard. Frenchwoman Rosella Rousseau was convicted of murder in one of the initial legal cases ever concerning hairs. The conviction of Rousseau occurred because of French forensic professors Victor Balthazard and Marcelle Lamber published the first all-inclusive analysis on hair in 1910. In 1912, Balthazard was also responsible for the discovery that machine devices used to construct gun barrels never leave identical markings. Balthazard discovered that all gun barrels leave a separate set of indentations on each bullet fired from a gun (Forensic Science, 2012). Phoebus Levene identified the base, sugar, and phosphate nucleotide unit in 1919 (News Medical, 2012). Levene advocated DNA consisted of a string of nucleotide units linked through the phosphate groups (News Medical, 2012).

The first police department crime laboratory in the United States was established by the Los Angeles Police Department in 1923 (Forensic Science, 2012). In 1930, University of California medical student John Larson invented the prototype of the present-day polygraph. William Astbury created the first X-ray diffraction patterns that revealed DNA had a natural architecture in 1937 (News Medical, 2012). Frederick Griffith offered the first luminous proposal that DNA transported hereditary information. Griffith suggested this when he discovered that characteristics of the polished framework of the pneumococcus could be shifted to the rugged form of that same bacteria by blending killed smooth bacteria with the live rugged form (News Medical, 2012). In 1952, DNA's role in heredity was confirmed when Alfred Hershey and Martha Chase showed that DNA is the genetic material in the T2 phage. Also known as T2 bacteriophage, T2 phage is a bacteria composed of DNA and proteins (Life Sciences Foundation, 2013).

A major scientific breakthrough came when American scientist James Watson and British researcher Francis Crick worked together at the University of Cambridge in England (University

of Delaware, 2004). Watson and Crick discovered the legendary double helix. The double helix is the architecture of DNA; the molecule of life (University of Delaware, 2004). On April 25, 1953, Watson and Crick wrote, “We wish to suggest a structure for the salt of deoxyribose nucleic acid (DNA). This structure has novel features of considerable biological interest” (as cited in University of Delaware, 2004, p. 1). In 1962, Watson and Crick earned the Nobel Prize for solving one of science’s long-specified puzzles of unearthing the configuration of DNA (University of Delaware, 2004).

The FBI launched the National Crime Information Center (NCIC) in 1967. In 1974, technology was created to identify gunshot residue at the United States Aerospace Corporation (Forensic Science, 2012). The first DNA fingerprinting and profiling methods were produced in 1984 by British geneticist Sir Alec Jeffreys. DNA profiling was introduced for the first time in a U.S. criminal court in 1987. This DNA profiled case occurred when Tommy Lee Andrews was found guilty of a number of sexual attacks in Orlando, Florida (Forensic Science, 2012). These listed achievements in the history of forensic science note some of the major accomplishments contributed to the field and study of forensics.

The United States Human Genome Project. The United States Human Genome Project was created in 1990 (Human Genome Project Information, 2011). The Human Genome Project was a 13-year effort synchronized by the U.S. Department of Energy and the National Institutes of Health. The goals of the Human Genome Project are to pinpoint all the genes in human DNA, to figure out the sequences of the 3 billion chemical base pairs that make up human DNA, and to store human DNA in databases (Human Genome Project Information, 2011). The Genome Project also improves tools for data analysis, transfers associated technologies to the

private sector, and address ethical, legal, and social affairs that may emerge from The Genome Project (Human Genome Project Information, 2011).

The history of DNA was and is significant to DNA testing in the criminal justice system. DNA evidence may have the most influence at the investigative and post-conviction stages of the criminal process rather than the trial phase (Lazer, 2004). Forensic DNA investigation exemplifies an essential theoretical advance for the criminal justice system (Koehler, 2001). Eventually, the technological advancements that emerged because of DNA's utility made it necessary to create a method of storing the collected samples. Thus, the Combine DNA Index System (CODIS) was created (Pattock, 2011).

Combine DNA Index System (CODIS). After the DNA of an individual is collected, it is run through a national DNA database. This national DNA database is known as CODIS and CODIS functions as a DNA matchmaker. In 1990, the FBI created the CODIS program as a pilot program in crime-solving (Pattock, 2011). The CODIS system operates on a national, state, and local level. The National DNA Database or National Data Index System (NDIS) is a coordination of DNA profile records input by criminal justice agencies (DNA Initiative, 2012). The State Database Index System (SDIS) is the state maintained database and the Local Database Index System (LDIS) is the locally maintained database (Suter, 2010).

Each lower tier database index must communicate with the higher tier database index. The DNA Identification Act of 1994 created the national program NDIS (Pattock, 2011). NDIS dictated the indexes created and also defined requirements for participating laboratories regarding quality assurance, privacy, and expungement. The indexes entered into CODIS include convicted offender, forensic, arrestees, missing persons, unidentified human remains, and biological relatives of missing persons. DNA collected for each of these indexes is stored

and available to law enforcement agencies pending approval (Pattock, 2011). As noted, traditional DNA testing relies on an exact match. An exact match does not always occur in DNA testing. Sometimes DNA testing produces a partial match. Making use of partial matches is part of the reason familial DNA testing was developed.

Familial DNA testing. In the criminal justice system, forensics refers to the study of evidence found at a crime location and used in a court of law. Forensic DNA testing offers the criminal justice system a powerful tool for convicting the guilty and vindicating the innocent (DNA Initiative, 2012). Scientists can use forensic DNA to develop a DNA profile of an individual using samples from blood, bone, hair, and other body tissues and products. Generating a DNA profile involves retrieving samples from crime-scene evidence and a suspect, extracting the DNA, and examining the sample for the existence of particular DNA markers in criminal cases (DNA Initiative, 2012).

Familial DNA testing is also used to convict or exonerate suspects based on their association to the evidence. Familial DNA testing concentrates on the partial match of DNA database searches. The ideal situation, when a DNA sample is entered into the CODIS system, is identification of an exact match. Unfortunately, often an investigator is provided with a sample that returns no exact matches (Pattock, 2011). When the investigator experiences no exact match, another, more controversial option is available. This option is to run the DNA through the CODIS system to search for a partial match. This process is considered a familial DNA search. The partial match may indicate that the DNA sample put into the system and a DNA sample already located in CODIS reveal two sources are biologically related (Pattock, 2011).

In familial DNA testing, after a close match is identified, investigators focus on family members of the near or partial DNA match. Investigators attempt to rule if the relative is liable

for the offense (Cantrell, 2010). Distinguishing between partial DNA matches and database searches is important in familial DNA testing. A partial DNA match refers to an unintended match that occurs during a regular, introductory criminal database search. The database search concerning familial DNA involves a deliberate follow-up search. This premeditated follow-up search normally follows an initial search that failed to single out a perfect match from the criminal database (Cantrell, 2010). Familial DNA testing is a process that permits indirect identification of blood relatives through his or her genetic similarity to a profiled offender (Seringhaus, 2009). Familial searching relates to the comparison of a crime scene profile with suspect and convicted offender profiles in a DNA database. The process of familial DNA testing looks for relatives to the crime scene profile (Rushton, 2010).

In the beginning, familial DNA testing was limited to the individual guidelines of each state. This means the identifying information concerning an offender in one state's database was prohibited for release to another state. The release of the identifying information was not prohibited if the offender's DNA was an identical match (Cantrell, 2010). However, in 2006 the rule concerning the release of identifying information to other states was changed.

In 2006, Denver's District Attorney identified a local case relating to a similar match. This close match was located in the middle of evidence seized from the location of a rape in Denver to convicted felons in California, Oregon, and Arizona (Cantrell, 2010). Evidence showed that the match revealed the perpetrator was possibly related to the unidentified convicted felons. Denver's District Attorney contacted the FBI and persuaded them to revise procedures concerning familial DNA searching. This modification allowed Denver investigators to perform the familial DNA test. The familial DNA search revealed none of the profiles from California, Oregon, or Arizona was related to the Colorado rapist. Although there was no success in this

search, the search created new FBI guidelines that leave it up to each state to decide if they want to report any partial matches to intra-state investigators (Cantrell, 2010). Further, Denver's District Attorney remains a huge supporter of familial DNA testing and has a Website advocating his support for familial DNA testing. On this Website, Denver's District Attorney reports 44 cases in which familial DNA was used to convict offenders (Cantrell, 2010).

In contrast to the Denver District Attorney's unsuccessful use of familial DNA testing, a successful use of familial DNA testing occurred in California. This success was the apprehension of the alleged "Grim Sleeper" killer (Murphy, 2010). Investigators began using familial DNA testing after California adopted familial DNA testing guidelines. After 10 unsuccessful attempts of familial DNA testing in the Grim Sleeper case, in April 2010, a second search in the case disclosed a potential match to a newly convicted offender. This potential match was thought to be the Sleeper's son. During a sting operation, police officers surreptitiously retrieved a piece of pizza the suspect threw away. Further tests revealed a match of DNA crimes scene samples and the suspect. Subsequently, the suspect was arrested (Murphy, 2010). The use of familial DNA in this case was successful because of finding a relative and arresting the suspect. The case was also successful because it produced a public record of the sequence of the follow-up investigation (Murphy, 2010).

Familial DNA testing was also instrumental in apprehending 21 year-old Elvis Garcia in March of 2011(Templeton, 2011). Authorities took Garcia into custody in Santa Cruz, California. Garcia was charged with sexual assault, robbery, and false imprisonment. Garcia's arrest stemmed from the DNA of his father. Advocates of familial DNA testing allege Garcia's case is one illustration of the potential of familial DNA testing (Templeton, 2011).

In contrast, individuals who challenge familial DNA testing question its dependability (Dobson, 2011). Customarily, DNA documentation is perceived as exceptionally accurate. However, in 2011, research analysts communicated reluctance concerning the extent of distinction occasionally needed. Periodically it is necessary for scientists to make a decision about when a match is determined or when an offender cannot be eliminated based on DNA evidence (Dobson, 2011). Sometimes samples involving DNA from two or more anonymous individuals create significant threats for forensic labs. These threats occasionally cause lab technicians to make judgment calls and the lab technicians sometimes arrive at conclusions that may not be fully valid (Dobson, 2011). According to Dobson (2011), the absence of national specifications is somewhat the cause of faulty DNA analysis.

Specifically, the first familial DNA search was conducted in the United Kingdom (Pattock, 2011) that led investigators to the son of a serial rapist from the 1970s. The United Kingdom (UK) performed deliberate familial DNA searches since 2002. The practice of familial searches has led to 18 matches and 13 convictions at a 10% success rate. The UK leads other nations in the use of DNA technology in law enforcement (Rushton, 2010).

The UK's process involves prioritization of match results that rank nominals on a matrix (Rushton, 2010). The matrix is used to incorporate profile similarity, age, and geographic proximity. After the completion of ranking, UK police identify individuals based on familial relationships for further investigation. The UK investigators are urged to re-run the matching periodically if the initial search is not productive. Re-running the matches is performed to check for new possibilities with 40,000 new profiles added to the UK database monthly (Rushton, 2010).

The UK criminal database is concerned about human rights in familial DNA searches. Officials in charge of the UK criminal database expressed the possibility of a potential impact of familial searching on human rights. Because of this potential impact, database officials' note there is a need to exercise discretion to minimize intrusion on the lives of people. The possibility of a potential impact causes the UK database officials to restrict familial DNA searches to the most serious crimes (Rushton, 2010).

In comparison, Delaware County's Republican majority leader introduced State Senate Bill 775 (Templeton, 2011). State Senate Bill 775 includes broadening offenses where DNA samples may be obtained; granting familial DNA testing. The Republican majority leader believes this Bill will save an enormous amount of money in criminal inquiries. Also, this Republican majority leader affirms familial DNA testing will aid in the capture of individuals who commit serial offenses (Templeton, 2011). However, a federal public defender for the Western District of Pennsylvania notes familial DNA testing is new; until the courts announce familial DNA testing's constitutionality, familial DNA testing is not (Templeton, 2011).

Different states have different views and approaches concerning familial DNA testing. California was the first state to create familial searching guidelines. Maryland, the single state with state legislation on familial searches, prohibits familial DNA practices (Cantrell, 2010). The District of Columbia also bans familial DNA testing. Some people support the use of familial DNA testing, and some individuals oppose the use of familial DNA testing. All sides give definitive perspectives on the advantages or disadvantages of using familial DNA testing in the criminal justice system.

Specific Familial DNA Testing Considerations

CODIS has aided in more than 121,900 investigations by producing more than 124,800 hits (Pattock, 2011). Hits mean there is some type of match, exact or partial, when comparing crime scene DNA samples and DNA samples located in CODIS. These hits provide investigators with the ability to solve crimes. The ability to solve crimes aids in keeping society safe. Solving crimes also clears suspects of crimes they did not commit (Pattock, 2011). Although CODIS has its advantages, critics of CODIS suggest storing personal information in a database will end eventually in a breach of privacy. Critics also note if DNA is contained in the DNA database, the possibility of identifying a certain individual's propensity to disease, illness, or addictions will evolve. As a result, critics fear the maintenance of DNA in a nationwide database may lead to critical abuse of the system (Pattock, 2011).

Supporters of familial DNA testing claim that society benefits from practicing familial DNA testing (Pattock, 2011). First, the use of familial DNA testing and identifying partial matches may aid in deterring crime. The act of DNA testing has proven to have a specific deterrence in solving crimes because prior offenders are aware that DNA assists in solving crimes and prosecuting suspects. This deterrence may work because offenders are aware of the DNA database and that their DNA is stored in CODIS if they have been arrested or convicted of a crime (Pattock, 2011). However, CODIS may not be as much of a deterrent for first-time offenders. Currently, CODIS does not provide investigators with access to the DNA of first-time offenders. If investigators want to obtain the DNA of first-time offenders suspected of committing a crime, the first-time offender would have voluntarily gave their sample. To obtain the DNA of the first-time offender, police officers must approach the individual with a warrant and collect the DNA sample. Without the warrant, police have no way to connect the DNA left

at the crime scene to any individual who has not previously been convicted of a crime (Pattock, 2011).

According to proponents of familial DNA testing, this procedure increases the rate of accuracy in identifying suspects (Pattock, 2011). Familial DNA testing may give law enforcement personnel more confidence in identifying suspects than they currently have with traditional methods. Law enforcement personnel can identify individuals related to the criminal and thus quickly narrows the suspect pool. The familial DNA testing process may offer law enforcement personnel a better chance at identifying exactly who they should or should not be investigating. Thus, individuals more likely to be found guilty become the focus of a criminal investigation. Individuals not likely to be guilty are spared the stressful investigation process (Pattock, 2011). Although this advantage holds merit, there is a challenge of testing family members of offenders because family members become suspects just because of their relationship to the offender.

Privacy advocates suggest that familial DNA can turn family members tested because of their relationship to the offender into genetic informants (McCarthy, 2011). Privacy advocates believe the regular use of familial DNA searches will subject hundreds of thousands of innocent people to genetic scrutiny because they are relatives of individuals in the FBI database (McCarthy, 2011). Testing family members of offenders also raises constitutional arguments. One constitutional argument raised concerns the Fourth Amendment that safeguards:

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized. (Law Revision Counsel, 2004, p. 1)

The argument is familial DNA searches are an unreasonable search of the offender's relatives. In contrast, a proponent of familial DNA testing strongly suggests that understanding

how familial DNA testing actually works dismisses false assumptions (Chamberlain, 2012). According to Chamberlain (2002), genetic scrutiny is deceptive regarding familial DNA testing. Relatives of offenders in DNA databases are not under genetic surveillance; the relatives of offenders are not in any DNA directory. The government does not own family members' genetic code (Chamberlain, 2002). Law officials do not retain the genetic code of criminals who have profiles in DNA databases. Specifically, in California, before familial DNA testing is started, law enforcement has no idea whether an offender has family members (Chamberlain, 2002). Authorities have no idea if individuals in the database have family members or if any person in the database is a relative of the offender. Family members of the database perpetrator will not be added to a DNA database because of familial DNA testing (Chamberlain, 2002). Chamberlain (2002) adds, according to California's familial DNA testing, familial searching is a skillfully calibrated process of using convicted perpetrator's DNA samples that already lawfully exist in the state database (Chamberlain, 2002).

A tremendous advantage of using family DNA testing was the identification and confirmation of the death of Osama bin Laden (Perez, 2011). American investigators used DNA from bin Laden's sister to confirm he was the individual killed (Perez, 2011). Melnick (2011) notes reports indicate the United States gathered DNA samples from many of bin Laden's relatives during the decade since the terrorist attacks of September 9, 2011. One of those samples belonged to bin Laden's sister who succumbed to brain cancer in 2011 at Massachusetts General Hospital (Melnick, 2011). After the death of bin Laden's sister, reports indicate government officials took some of the brain tissue from bin Laden's sister for genetic testing. The genetic testing led to a DNA match that led to the identification and confirmation of bin Laden's death (Melnick, 2011).

In the United Kingdom, familial DNA testing receives greater acceptance. The United Kingdom's "Shoe Rapist" is the most acclaimed familial DNA testing case that made headlines around the world; familial DNA testing proved an effective tool in apprehending a violent serial offender (Dobson, 2011). Because of familial DNA testing, the "Shoe Rapist," James Lloyd, was identified due to a partial DNA match with sister (Dobson, 2011). In South Yorkshire, United Kingdom, a serial rapist attacked women who wore stiletto shoes between 1983 and 1986. The United Kingdom DNA lab ran the perpetrator's DNA as a familial search and the search resulted in a hit. The DNA search matched the rapist sister's DNA from a 2000 DUI offense arrest of Lloyd's sister (Moreau-Horwin, 2013). Results from cases such as the "Shoe Rapist" lead individuals to believe if predators remain at large in the United States, familial DNA testing may continue to gain support in this country (Dobson, 2011).

The American Civil Liberties Union (ACLU) of Illinois disputes familial DNA testing (Schwartz, 2011). The three fundamental concerns the ACLU has with familial DNA testing are infiltration of medical privacy, intrusion of bodily virtue, and racial disparate impact (Schwartz, 2011). The ACLU's argument concerning medical privacy is that DNA contains our hereditary blueprint. Forecasting can be made about an individual's physical and mental health through DNA. The ACLU believes the DNA may be used by employers, insurers, and others for defamatory genetic bigotry; defamatory genetic discrimination against the person who provided the DNA, and also his or her immediate family members who have comparable DNA (Schwartz, 2011). The ACLU notes supporters of familial DNA testing may argue the prevalent Illinois law does not allow DNA databases to be used for medical forecasts about specific individuals. The ACLU's concerns are these present restrictions may be lifted in the future by reshaping the Illinois statute. In the case of the breach of medical privacy, the ACLU refers to words

contained in the federal Privacy Act that are “the opportunities for an individual to secure employment, insurance, and credit, and his right to due process, and other legal protections are endangered by the misuse of certain information systems” (Schwartz, 2011, p. 3).

The ACLU has a concern about familial DNA testing and the physical infringement of bodily integrity (Schwartz, 2011). The ACLU’s consensus is the government customarily inserts a buccal swab in a person’s mouth without his or her consent. If the person refuses the test, force may be used. This process demonstrates the government taking a piece of a person’s body away from him or her. The ACLU noted, “The Illinois Constitution’s guaranty of the right to privacy includes strong protection from compelled surrender and testing of a part of one’s own body, above and beyond the significant protections of the U.S. Constitution” (as cited in Schwartz, 2011, p. 1). The ACLU added that investigators might obtain DNA from a discarded soda can or food. In this case, the ACLU supports strict legal limits on the practice of investigators obtaining discarded DNA samples. Allowing investigators to obtain discarded DNA samples will open the door to the government seizing the DNA of anyone because people regularly discard DNA in public involuntarily and unknowingly (Schwartz, 2011).

Moreover, the ACLU has a general concern about racial disparate impact. This concern refers to the arrest, prosecution, and conviction, often wrongly, of African Americans and Hispanics at a much higher rate than Caucasians are (Schwartz, 2011). This practice of arrest, prosecution, and conviction disparately impacts racial minorities. The ACLU also references a study that focused solely on disparate incarceration. The study concluded that 17% of the African American population is linked to a person in the DNA database (Schwartz, 2011). This 17% is compared to 4% of the White population incarcerated (Schwartz, 2011). This means an

African American person is four times more prone to be subject to a criminal investigation than a White person because of familial DNA testing (Schwartz, 2011).

Another concern of the ACLU is the disruption of family relationships. Family relationships may be disturbed because of criminal investigations that follow familial DNA testing. A disruption may occur because some families may not be aware of their biological relationships. According to the ACLU, an assessment among genetic advisors is that 5% of men on birth certificates are not biological fathers of children (Schwartz, 2011). The knowledge of this new biological information may cause considerable disruption in family relationships.

In contrast, Gallagher (2013) warns that dangerous offenders may elude justice because of a recent United Kingdom, government decision to eliminate six million DNA samples. This could mean law enforcement may no longer use familial DNA testing in the United Kingdom. A United Kingdom police team specialist argues that destroying these DNA samples will make some cases unsolvable (Gallagher, 2013). According to Gallagher (2013), without having familial DNA testing as a key investigative tool, individuals who committed appalling historic crimes have a good chance of never being captured.

Ironically, the ACLU does support using DNA to defend the falsely implicated and exonerate the wrongfully convicted. The ACLU reveals safeguarding the innocent from criminal punishment is an extremely important civil liberty. The ACLU salutes the efforts of the Center of Wrongful convictions (Schwartz, 2011). Part of the Center on Wrongful Convictions' mission is to identify and remedy wrongful convictions along with other miscarriages of justice. The Center on Wrongful Convictions' faculty and staff, collaborating outside attorneys, and Bluhm Legal Clinic students investigate potential wrongful convictions. They also represent imprisoned clients who claim innocence (Northwestern Law, 2006).

Individuals who support and do not support familial DNA testing present thought-provoking arguments. The evidence proved there is no particular or conclusive answer to substantiate supporters or non-supporter's arguments. There will always be a difference of opinion concerning familial DNA testing. However, the study did suggest familial DNA testing requires the attention of law makers and criminal justice professionals. Familial DNA testing possesses ethical concerns that need to be addressed.

Current Findings

The research focused on criminal justice professionals from a variety of geographical locations. The criminal justice professionals are involved in an endeavor to study the stated problem that there are no specific guidelines for criminal justice professionals to refer to when considering civil rights and civil liberties concerning familial DNA testing. This section included an examination of literature pertaining to the stated research question. The current findings included a discussion on contemporary information related to familial DNA testing and familial DNA testing in the criminal justice system. Specifically, the discussion involved considerations for guidelines addressing ethical issues regarding familial DNA testing in the criminal justice system.

Conducting Ethical Familial DNA Testing in the Criminal Justice System

The evidence in this qualitative, single case study literature review suggested there is reason to be concerned about ethical guidelines for familial DNA testing in the criminal justice system. Thus, this study revealed a gap in the literature because ethical guideline concerns in familial DNA have not been thoroughly addressed; no clear guidelines exist for conducting ethical familial DNA testing. The results of this study provided a basis for recommendations to

law makers and criminal justice professionals regarding creation of measures to incorporate guidelines that address ethical concerns in the use of familial DNA testing in the criminal justice system.

A guideline that might aid criminal justice professionals in performing familial DNA testing ethically includes familial DNA testing should include a judicial warrant. The judicial review acts as checks and balances that regard civil liberties and civil rights concerns (Schwartz, 2011). Courts should consider the following stipulations when regarding a judicial review. Courts should be ready to decide if the past crime is major. Courts should know if the danger of the crime is adequately significant. Courts should also know if other investigative leads have been sufficiently drained. This method of judicial review should not be ponderous because familial DNA testing should be rare, according to the preconditions noted (Schwartz, 2011).

A formal familial DNA testing guideline might consist of a “no inclusion of arrested persons” clause (Schwartz, 2011). This means the DNA databases used in familial DNA testing should be confined to DNA collected from individuals convicted of felonies. Familial DNA testing should not be extended to DNA collected from persons simply arrested (Schwartz, 2011). The drawback of obtaining DNA from convicted felons only is that thousands of innocent people are unjustifiably arrested every year and are never charged or announced guilty. Another reason for restricting the DNA databases to convicted felons only is that arrests might be based on an individual police officer’s outcome occasionally unchecked and are not examined. Arrests based on police officers conclusions are not like convictions. Convictions are based on a suspect’s plea of guilt or a judge or jury’s decision of guilt (Schwartz, 2011). A third guideline for addressing the ethical use of familial DNA testing should include a supervisory review. This means there should be no application to a court for a warrant to implement DNA familial searching without

the uppermost level of managerial inspection. The supervisor's review helps curtail the risks to civil rights and liberties (Schwartz, 2011).

Another consideration for inclusion into familial DNA guidelines is to protect the investigated relatives. This means the relative's DNA should not be collected without their knowledge unless there is a judicial warrant based on probable cause (Schwartz, 2011). A protection of investigated relatives should also have a provision in guidelines that the relative's DNA immediately be tested if possible. Immediate testing eliminates a criminal investigation hanging over the head of the relative because of DNA labs' backlog. Another consideration in protecting investigated relatives is if a relative's DNA is obtained, and they are not convicted, police should destroy promptly his or her DNA. This includes destroying the relative's database profile (Schwartz, 2011).

All recommendations are considerations for criminal justice professionals when considering ethical familial DNA testing guidelines in the criminal justice system. The suggestions for inclusion in familial DNA testing guidelines are an effective start to addressing the literature. Evidence suggested there are a variety of benefits to familial DNA testing. Evidence also shows there are concerns in familial DNA testing that should be addressed in the criminal justice system.

Conclusion

The literature review provided a historical view of the criminal justice system, forensic science, DNA, and CODIS. The purpose and importance of providing a historical view was important lessons might be learned from historical experiences. A historical view provided context and guidance for today's criminal justice professionals (Law Enforcement Intelligence,

2005). Context and guidance aids criminal justice professionals in measuring the validity of familial DNA testing in the criminal justice system.

Current findings and studies of familial DNA testing were presented. The findings started by showing the importance of CODIS in familial DNA testing. Next the findings revealed how familial DNA testing is based on partial DNA matches and database searches. The difference between partial DNA matches and database searches are described as unintentional (partial DNA matches) and intentional (database searches). The findings reported familial DNA testing rests on the DNA testing of the relatives of an offender who has DNA stored in CODIS. The findings also showed how Denver's District Attorney aided in the change of familial DNA guidelines concerning sharing DNA tests between states. The successes and failures of familial DNA testing were also addressed.

Also included in the literature review were different perspectives coming from opponents and proponents of the use of familial DNA testing in the criminal justice system. The literature review exposed a gap in the literature. A gap in the literature is because of the vacancy of clear guidelines addressing ethical concerns of familial DNA testing in the criminal justice system. Since the United Kingdom started performing familial DNA testing in 2002, an extensive literature review was performed to include all available literature from 2002 to the current date. All theories were compared, contrasted, and evaluated to explain the gap in literature. The literature also recommended measures that may be included in guidelines concerning the ethical use of familial DNA testing in the criminal justice system.

Summary

The purpose of this qualitative case study was to explore criminal justice professionals' perceptions on whether clear guidelines are necessary for conducting familial DNA testing in the

criminal justice system. The purpose included exploring criminal justice professionals' perceptions of what guidelines are necessary if deemed clear guidelines are needed for conducting ethical familial DNA testing. The study explored ethical concerns related to familial DNA testing in the criminal justice system. Perceptions from opponents and proponents of familial DNA testing were considered as a basis for the ethical concerns of familial DNA testing. The qualitative, single case study design results provided a basis for recommendation of guidelines that addressed ethical concerns in familial DNA testing. The literature in Chapter 2 provided a focus in relation to the research questions.

Chapter 3 provides a discussion of the presentation of the research design used to collect and analyze the data. The data provided a better understanding of the case under investigation. Chapter 3 also presented a description of the research instrument that was used and rationale for using the selected instrument. The research methodology for this study will be described in Chapter 3.

CHAPTER 3

METHOD

The purpose of this qualitative case study was to explore criminal justice professionals' perceptions on whether clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system. This purpose included exploring criminal justice professionals' perceptions of what guidelines are necessary if deemed clear guidelines are needed for conducting ethical familial DNA testing. The results of this study significantly contributed to the criminal justice system. The study's contribution helped criminal justice leaders understand, consider, and possibly implement more ethical processes when considering the use of familial DNA testing. The results of this study added to the existing body of literature on DNA and familial DNA testing. The results of this study were a motivational instrument for criminal justice professionals when considering and performing familial DNA testing processes (Hanrahan, 2011).

The purpose of Chapter 3 was to discuss the research methodology for this study. The chapter elaborated on the discussion of the justification for the research method and research design. Included in this chapter was the rationale for why the qualitative, single case study achieved the study objectives. This chapter justified why the qualitative, single case study was the best choice for the study.

Included in this chapter is a more defined explanation of the population, sampling information, data collection procedures and rationale, and instrumentation. The quality of the research design was addressed by discussing internal and external validity. Following the quality of research design is a discussion of data analysis identification. Rationalization for choice of technique followed data analysis identification. A summary of main points concluded Chapter 3.

Research Method

This qualitative case study involved exploring criminal justice professionals' perceptions regarding familial DNA testing guidelines and if familial DNA testing poses ethical concerns. The qualitative method was more fitting for this study rather than the quantitative method. This section provided a discussion of the logic for choosing the qualitative research method. This section also revealed why the qualitative method is more applicable for this study than the quantitative method.

The qualitative research approach involves exploring the research problem that familial DNA testing may raise ethical concerns (Murphy, 2010). Specifically, the qualitative research approach explored the absence of clear guidelines for criminal justice professionals' to reference when conducting ethical familial DNA testing in the criminal justice system. The qualitative research method was used because the study explored criminal justice leaders' and law enforcement personnel's perceptions related to familial DNA testing. Qualitative research is also appropriate because the study focuses on gaining a better understanding of a complex situation and will address the studied problem. The qualitative research method approach involves describing, explaining, exploring, interpreting, and analyzing criminal justice professionals' perceptions of familial DNA testing. Obtaining the perspectives of participants to gain an understanding of their perspective is a specific in qualitative research (Murphy, 2010).

The quantitative research method differs from the qualitative method and is not appropriate for this study. Quantitative research method focuses on measurement issues (Neuman, 2006). Measurement is treated as a specific step in the quantitative research process. The quantitative method process materializes prior to data collection. During this process,

special vocabulary and techniques are developed (Neuman, 2006). Quantitative methods use a deductive approach. The qualitative approach often takes on an inductive approach where concepts are created as a part of meaning (Neuman, 2006).

The qualitative research method was appropriate for investigating this study's research problem. This study's research problem required exploration into ethical concerns and possible civil right and civil liberty intrusions familial DNA testing may cause. The exploration in this study involved the analysis of patterns and themes of criminal justice professionals' perceptions regarding familial DNA testing in the criminal justice system. The case study involved describing the significance of familial DNA testing for individuals who are affected by familial DNA testing. The qualitative research method provided an investigation into understanding the research problem.

This qualitative study focused on the perspectives of criminal justice professionals concerning familial DNA in the criminal justice system. Harwell (2005) explained part of qualitative research methods target disclosing and understanding the perspectives and thoughts of participants. Focusing on the criminal justice professionals' perspectives concerning familial DNA testing explores meaning, purpose, or reality (Harwell, 2005). This exploration provided insight into the advantages, disadvantages, and ethics of familial DNA testing. Denzin and Lincoln (2005) added the qualitative research method locates the observer in the world. The qualitative approach consists of a set of interpretive, material practices that make the world visible. The qualitative approach attempts to make sense of or translate phenomena in terms of the definitions individuals convey to them (Denzin & Lincoln, 2005). The qualitative approach was required in this study because criminal justice professionals offered their perspectives. The criminal justice professionals' point of view offered an interpretive, naturalistic approach to the

world of familial DNA testing while trying to make sense of or interpret familial DNA testing according to their meaning (Denzin & Lincoln, 2005).

Integral to the quantitative research method approach is the intention that a researcher will separate his or her perceptions. Quantitative methods are also portrayed under the assumption there is a single truth and is autonomous of human perception (Harwell, 2005). The quantitative approach was not appropriate for this study because it focuses on objectivity, control, clear-cut measurement, and quantification of data. The qualitative approach concerns the subjective experience and aims to describe or understand a phenomenon within the context that it occurs (Whittemore & Melkus, 2008).

The qualitative research method fitted the purpose of this study and the questions presented in the study. The questions in this study aimed to reveal the nature of the multiple participants' perspectives whether familial DNA requires clear guidelines for ethical familial DNA testing in the criminal justice system (Leedy & Ormrod, 2010). The interview questions were also general and open. This encouraged participants to offer their perspectives willingly. The quantitative research would eliminate the participants' perspectives because this method tries to control or eliminate the human factor (Neuman, 2006).

Research Design

This study included the case study research design. A single case study was relevant for this study because a particular individual, program, or event was studied thoroughly for a certain period (Leedy & Ormrod, 2010). Specifically, this related to studying and analyzing familial DNA testing within the criminal justice system and how criminal justice professionals perceive the use of the familial DNA testing process. This study involved an empirical inquiry that explored a contemporary phenomenon within real-life circumstances (Yin, 1984). The

phenomenon investigated in this study was how familial DNA testing affects individuals within a real-life context. Using a case study approach in this research was relevant because the boundaries between phenomenon and context are not clearly evident (Yin, 1984). Familial DNA testing is a fairly new process in the criminal justice system. The case study was useful for learning additional information concerning a little-known or poorly understood situation (Leedy & Ormrod, 2010). Other important qualitative research designs include grounded and phenomenological studies.

Appropriateness of Design

Although the grounded research method may be suitable for this study, the case study was better suited because the process focuses on discovering how the case relates to the larger context of society (Hancock, 2002). Grounded research focuses on what theory or explanation comes from analysis of the data. The grounded theory approach concentrates on methods for creating theory grounded in collected, analyzed data. The case study was advantageous for this study; it discovered what can be learned from examining the case being studied (Hancock, 2002). The examination of the process and the perspectives of criminal justice professionals concerning familial DNA testing offered a procedure that determines the ethical use of familial DNA testing in the criminal justice system. The examination of this study also offered support for new policies and procedures regarding familial DNA testing.

The phenomenological study seeks to understand the meaning, structure, and nature of lived experiences by individuals or a group of individuals (Hancock, 2002). The goal of the phenomenological study is to obtain a view into the participant's life and world.

Phenomenological research aims to understand the participants' meanings constructed from lived experiences (Hancock, 2002). The phenomenological study was not suitable for this study. This

study sought the perspectives of criminal justice professionals; many of the participants have not lived the experiences of the familial DNA testing process. Some participants possessed expert knowledge of familial DNA testing. Case studies are prevalent in areas, such as medicine, education, sociology, and law (Leedy & Ormrod, 2010). This is important because the foundation of this study relied on forensics and criminal justice professionals.

Population and Sampling Rationale

The population group of the study was criminal justice professionals geographically located in California, Colorado, Florida, New York, Virginia, Maryland, District of Columbia, and Washington, D.C. Specifically, the study involved interviewing 10 to 19 criminal justice professionals from a variety of geographic locations that include FBI agents, police officers, commonwealth's attorney, prosecutors, defense attorneys, and one judge (this judge is a former prosecutor and expert on DNA). Studies also came from Homeland Security, a member of the Virginia Forensic Science Board, a National District Attorney Association member, and Virginia's Chief Deputy Director of Forensic Science. Also members of the Virginia Attorney General Office, Virginia Crime Commission, the Denver, Colorado, District Attorney, a member of the Washington, D.C. Innocence Project, and the Prince William County, Virginia Department of Forensic Science were studied. Specific geographic locations included California, Colorado, Florida, New York, Virginia, Maryland, District of Columbia, and Washington, D.C. These geographic areas were chosen because of the locations of particular criminal justice professionals who possess specific knowledge, experience, and expertise.

The study involved convenience and judgment sampling of 10 to 19 leaders and professionals in criminal justice agencies. The criminal justice leaders and professionals ranged from law enforcement, prosecution, defense, forensic science, homeland security, a judge, the

Innocence Project, and crime commission. Criminal justice professionals were the best candidates to offer insight into the advantages and disadvantages of familial DNA testing in the criminal justice system. The criminal justice professionals' background and experience in law provided insight into the intricacies of familial DNA testing. Many of the criminal justice professionals selected for this study already offered their perspectives in existing literature, on the effects of familial DNA testing in the criminal justice system.

The justification for using professionals from various areas in the criminal justice system was based on their criminal justice experience. The criminal justice professionals possessed knowledge vital to understanding how the use of familial DNA testing affects the criminal justice system. This group of participants was also able to describe and explain individuals who are affected by the familial DNA testing process. The criminal justice professionals were in a position to give their perceptions regarding criminal justice practices and procedures. The criminal justice professionals are significant players in administering the law. Thus, criminal justice professionals can analyze, determine, implement, and administer laws concerning the ethical use of familial DNA in the criminal justice system. Defining the population of criminal justice professionals aided in inclusion and exclusion precedent and clarifies to criminal justice professionals that the outcome of the study can be generalized (Whittemore & Melkus, 2008).

The criminal justice professional participants were on a voluntary basis. Participants were strategically chosen because of their background and experience in criminal justice or DNA. Extensive literature was used to analyze and determine individuals equipped with criminal justice and DNA knowledge. Individuals were also contacted who could suggest participants who fit the profile of the study.

The study involved soliciting participants via in-person, e-mail, or telephone. E-mail solicitation included a brief outline of the research study located in Appendix A. Participants eligible for the study had an extensive background or experience in the criminal justice system. The study involved convenience and judgment sampling of 10 to 19 leaders and professionals in criminal justice agencies. Twenty-five participants were solicited to ensure 10 to 19 participants were reached and involved in the study. The 10 to 19 participants were chosen according to the extent their experience related to criminal justice and DNA techniques. This study required the participants be descriptively accurate and explicit and interpretively rich and innovative (Polit & Beck, 2004). Out of all participants who volunteered for the study, the strategy was to choose participants who would enhance the validity of the study at the time of sampling, data collection, and data analysis (Polit & Beck, 2004; Whittemore et al., 2001).

The intent of the study was to interview a purposive sample of 10 to 19 criminal justice professionals. Kerlinger (1986) explained purposive sampling is indicated by the use of judgment and an intentional attempt to retrieve representative samples by, including typical areas or groups in the sample. Criminal justice professionals rely on criminal justice procedures that involve the law, and this includes DNA techniques. The sample was representative of the population under study. The study used human judgment and logic by obtaining the perspectives of the criminal justice professionals (Key, 1997). The participants were selected because of their knowledge of familial DNA procedures. The participants possessed knowledge of DNA testing and had experience in evaluating DNA testing in the criminal justice system. The study involved soliciting participants from different areas of the criminal justice system. Particularly, the study included soliciting criminal justice professionals who had knowledge of DNA and familial DNA testing procedures. This sampling plan identifies specific groups of people who possess

characteristics and live in circumstances significant to the social phenomenon of familial DNA testing (Whittemore & Melkus, 2008). Convenience and judgment sampling was used because of those willing to volunteer and the deliberate choice of samples.

Informed Consent

Informed consent refers to a voluntary agreement to participate in research and is a process when the subject in the study has an understanding of the research (Ortiz, Hagemann, Mestaz, & Rose (2009). Informed consent also involves advising the subject about his or her rights, the purpose of the study, the procedures, and the potential risks and benefits of participation. Providing adequate facts so that a participant can make an informed decision about whether or not to participate in a study or continue participation is the goal of informed consent (Ortiz et al., 2009). In this study, before each interview, participants signed an informed consent form (see Appendix B). If a participant decided to withdraw from the study, he or she must contact the researcher. The decision to withdraw from the study may be expressed in person, by phone, or written via email, or U.S. postal system.

Each participant received a signed copy of the informed consent form. This ensured he or she understood the procedure of confidentiality. The researcher received permission from the participant if the interview was audio tape-recorded. Each participant was offered a review of his or her copy of the interview transcript. The research material was stored in the researcher's home and only the researcher has access to the research material. The electronic data was stored on the hard drive of the researcher's home laptop. The electronic files required passwords for access. Only the researcher knows the file passwords.

Data Collection

Qualitative research data sources normally consist of field observation, interviews, and document analysis (Whittemore & Melkus, 2008). The research questions and methodology of this qualitative, single case study directed what sources would be used and the specific data collection procedures (Whittemore & Melkus, 2008). The research in this study involved gathering information from participants, through open-ended questions (see Appendix C) in face-to-face, e-mail, or telephone interviews. Data collected was recorded by using a voice recorder, computer input notes, and handwritten notes.

According to Kvale (1996), interviewing is a tool used to collect data and to gain knowledge from individuals. The interview is a valuable data collection method for this study because of the exchange of views between two or more people on an issue of shared interest. For the study, interviews are regarded as the heart of human interaction for knowledge production. The interview accentuates the social concept of the research data (Kvale, 1996). The researcher used open-ended questions in the study. The researcher was aware his or her view about the topic is not of importance. The participants are the primary data for the study (Kvale, 1996). Participants can discuss his or her perception and interpretation regarding familial DNA testing in the criminal justice system. The interview is the participant's expression from his or her point of view (Kajornboon, 2005).

Interviews were the main focus of the study's data collection process. For this study, the interview was essential because interpersonal contact is important. The interview provides opportunities for follow-up of interesting comments or when the topic is complex and requires explanation and interaction (United States Department of Agriculture, 2012). The study benefitted from the use of interviews as a data collection method because the researcher assumed

the participants' perspectives were meaningful and knowable (United States Department of Agriculture, 2012). Qualitative data was collected to add depth and a fuller understanding of the familial DNA process (United Stated Department of Agriculture, 2012).

The interview data collection instrument benefitted from an interview guide. The interview guide is an essential component for conducting interviews (Kajornboon, 2005). The researcher constructed an interview guide that contained a list of questions, topics, and issues the researcher wants to cover during the interview (Kajornborn, 2005). The interview instrument was appropriate because the interview questions gave insight into criminal justice perceptions concerning familial DNA testing in the criminal justice system. Participants' perceptions disclosed information regarding ethical use of familial DNA testing in the criminal justice system. Information obtained from the interviews benefitted the research question if criminal justice professionals perceive whether ethical familial DNA testing required clear guidelines. According to California State University (2014), the participants' world that is perceived is the world that is behaviorally imperative.

Validity: Internal and External

Winter (2000) disclosed Hammersley's (1987) cited definition of validity as, "An account is valid or true if it represents accurately those features of the phenomena that it is intended to describe, explain or theories" (p. 69). The qualitative case study concerns analyzing the data collected to understand the ethical use of familial DNA in the criminal justice system. Validity in the study ensures that an instrument measures what it expects to measure (Black & Champion, 1976). The internal validity of the study is concerned if the study investigates what the study claims to investigate (Garza, 2005).

Transferability focuses on if the insights reached in a specific investigation will hold true in contexts other than the initial context (Garza, 2005). Replicability describes the capability to produce the same result in various applications of the method and measures used in a study (Garza, 2005). The case study was transferable and replicable because the research focused on a wide range of perspectives in the criminal justice field. These wide range of perspectives covered points-of-views across the world. The study used triangulation to support the validity of the findings (Leedy & Ormrod, 2010). The vast range of perspectives used in the study aided in comparing different data origins in search of common themes (Leedy & Ormrod, 2010). This research addressed external validity because it generalized the study to other people and other situations (John Jay College, 2012).

Appendix D provides interview questions proposed for use in data collection from participants. The validity of these questions was tested in a pilot study prior to being used for collection of data for the study. The pilot study validated the study questions prior to conducting the data-collecting interviews. Three criminal justice professionals with the same competence as the participants in the actual study answered questions in the pilot study. The pilot study of the interview tested clarity and understanding of the interview questions and interview process. Pilot study participants received a list of the interview for reference purposes. The participants' comments and suggestions for improvement in the questions were used to improve question clarity prior to using the questions in the data collection for the proposed study.

Data Analysis

Data analysis refers to systematically administering statistical, logical techniques to the process of assigning meaning in deciding conclusions, significance, and implications of data findings (Responsible Conduct in Data Management, 2013). Analyzing qualitative data consists

of arranging the data into similar themes or categories. This qualitative case study involved exploring criminal justice professionals' perceptions of familial DNA testing in the criminal justice system. The primary research question explored whether or not criminal justice professionals perceived ethical familial DNA testing in the criminal justice required clear guidelines. Analysis of the data consisted of data coding, clustering of the codes, and drawing and confirming conclusions (Whittemore & Melkus, 2008). Additionally, the data analysis involved counting, comparing codes written across participants, and annotating patterns and themes. An examination of the relationship between codes completed the data analysis (Whittemore & Melkus, 2008).

The nature and research focus of the study required qualitative content analysis as the data analysis method. Qualitative content analysis is “an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytic rules and step by step models, without rash quantification” (Mayring, 2000, p. 2). According to Zhang and Wildemuth (2011), qualitative content analysis accentuates a unified view of speech/texts and their definitive contexts that involve a set of systematic and clear procedures for processing data. These systematic and transparent procedures support valid and reliable inferences (Zhang & Wildemuth, 2011). This study incorporated the following stage model according to Zhang and Wildemuth, (2011):

Step 1-prepare the data; this means transcribe the interviews.

Step 2-define the unit of analysis by identifying the basic unit of text to be classified during the content analysis. Individual themes will be used as a unit for analysis; a code will be assigned to a chunk of text that represents a single theme or issue of relevance to the study's research questions (Zhang & Wildemuth, 2011).

Step 3-develop categories and a coding scheme. The categories and coding scheme will evolve from the data. A coding manual will be developed consisting of names, definitions, and rules for assigning codes and examples (Weber, 1990).

Step 4-test the coding scheme of a sample of text. This process will continue until sufficient coding consistency is completed (Weber, 1990).

Step 5-code all the text. This includes checking the coding repeatedly (Zhang & Wildemuth, 2011).

Step 6- assess the coding consistency. One reason for this step is the element of human error may result in more mistakes as coding proceeds.

Step 7-draw conclusions from the coded data.

Step 8-report the study's findings (Zhang & Wildemuth, 2011).

The computer program NVivo 10 was used as a tool to support the qualitative content analysis. NVivo 10 assisted the researcher in organizing, managing, and coding the qualitative data from the study. The NVivo 10 computer program supported text editing, note taking, coding, text retrieval, and category administration (Zhang & Wildemuth, 2011). The NVivo 10 computer program provided a visual presentation that allowed the researcher to see the liaison between categories more distinctly (Zhang & Wildemuth, 2011).

The use of qualitative content analysis was appropriate for this single case study research design. This data analysis technique provided a focal point on the research question and offered insight into the intricacies of familial DNA testing. This qualitative content analysis technique approach aided the researcher in understanding social reality in a subjective but scientific manner. The outcome of qualitative content analysis supported evolving new theories and

models concerning familial DNA testing in the criminal justice system (Zhang & Wildemuth, 2011).

Summary

The purpose of the qualitative case study was to explore criminal justice professionals' perceptions on whether clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system. The purpose of this study included exploring criminal justice professionals' perceptions of what guidelines are necessary if deemed clear guidelines are needed for conducting ethical familial DNA testing. This chapter included reasons for choosing the qualitative research method and disclosed why the qualitative method was better suited than the quantitative method for this study. The chapter also revealed why the single case study was the appropriate research design for the study. Population, sampling, and data collection procedures were discussed according to the nature of the study. Also included in the chapter were validity and data analysis procedures. Chapter 4 includes an analysis of the data collected. In Chapter 4 there is a discussion of the data collection technique. Included in the chapter are data descriptions collected. Chapter 4 also contains a description of the technique used to analyze the data and an all-inclusive analysis.

CHAPTER 4

RESULTS

The purpose of this qualitative, single case study was to explore criminal justice professionals' perceptions about whether clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system. The purpose of this study included exploring criminal justice professionals' perceptions of what guidelines are necessary if deemed clear guidelines are needed for ethical familial DNA testing in the criminal justice system. The intent was to explore what ethical familial DNA testing guidelines should include. Specifically, this qualitative, single case study was designed to answer the following research question:

RSQ: What do criminal justice professionals perceive ethical familial DNA testing guidelines should include?

The sampling focused on criminal justice professionals geographically located across the United States. Specifically, 10 to 19 criminal justice professionals constituted the sampling. The interviews focused on exploring themes surrounding ethical familial DNA testing in the criminal justice system. Criminal justice professionals were interviewed who were familiar with familial DNA testing. Three individuals were interviewed in a pilot study. Subsequently, a purposeful sample of 12 participants was interviewed in the research study for the purpose of answering the research question.

Chapter 4 provides results of a thorough analysis of the 12 participants interviewed. Interviewees provided understanding and responses to interview questions that supported the data analysis. NVivo 10 software was used to transcribe data collected and empirically analyzed interview data. Cumulative perceptions were gauged with themes and trends of the participants' perspectives of familial DNA testing in the criminal justice system.

Sample Population Recruitment and Informed Consent Procedures

The sample population recruitment and informed consent procedures, discussed in Chapter 3, were significant in achieving the study results. The sample population and the importance of informed consent became more relevant as the study progressed. The process of the sample population and informed consent procedures are re-emphasized to indicate how procedures were carried out to obtain the study data, to conduct the analysis, and to determine the results to the research question.

Sample Population

The study's population consisted of criminal justice professionals across the United States. Sampling included selecting individuals from a population of interest. Solicitation to participate in the study was e-mailed to all criminal justice professionals through my personal and judiciary e-mail listserv. Willing participants accepted the invitation via my personal e-mail. Participants were sent a comprehensive letter pertaining to interview procedures and requirements (see Appendix B).

Obtaining Informed Consent

Before engaging in the study, possible participants were sent an informed consent form. Reading and signing the informed consent was required by each participant in both the pilot and final study, before he or she could participate in the study (see Appendix B). A written and verbal statement was issued to each participant stating his or her participation was voluntary and he or she could withdraw at any time from the study. This written and verbal statement included withdrawing from the study after the collection of data; withdrawing from the study involved

notifying the researcher by telephone or e-mail. Signed consent forms were stored in a folder, locked in a desk drawer in the researcher's home.

Maintaining Confidentiality

Participants were provided with an explicit guarantee that any information offered to the researcher was confidential. This guarantee included any information provided by the participant would not be attributed back to the participant. Also, participants were given the assurance that non-researchers would not discover the participant's identity. Additionally, an active effort was made to eliminate any indication of participant identities from records (Jamison, 2007). See Appendix F for Confidentiality Statement.

Four face-to-face interviews were conducted in the Office of the Richmond, Virginia, Commonwealth's Attorney Office's Conference Room for consenting participants. The remaining eight interviews were conducted by e-mail for consenting participants. Interviewees were briefed that they did not have to give their names during the interview. A coded lettering system was executed before the interviews to reinforce confidentiality of the interview process. Interviews were posted in Microsoft Word. After completing each interview, the paperwork was printed and stored in a folder and locked inside a desk drawer in the researcher's home. Interviews were also stored on the researcher's security coded computer. The data from the interviews were then digitally downloaded and stored in electronic data folders on the researcher's hard drive for successive analysis. Data analysis involved the use of NVivo 10 software and a comprehensive, meticulous review of all interviews by the researcher; data analysis involved the continuous comparing and contrasting of participant responses. To help insure confidentiality, participants' identities were inconspicuously, alphabetically coded.

Participants also received transcripts of their interviews. The use of transcripts aided in the participants' confidence that the study results were trustworthy.

Pilot Study

A pilot study was conducted to gauge the clarity of wording for understanding by the target population. Results from the pilot study indicated there were no problems with the interview questions. However, one respondent noted that interview question number five was a double edged question; the answer could be a yes or no response. Still, the respondent noted there was no problem with giving a clear and concise response to the question. The question was not revised.

The pilot study was conducted with three individuals who were all former Maryland police officers. Former police officers' perceptions were necessary to understand how prior law enforcement personnel view the fairly new concept of familial DNA testing in the criminal justice system. How the former police officers viewed past law enforcement techniques was used to compare to what may possibly become a standard tool for criminal justice professionals; familial DNA testing. The perceptions of the three police officers helped to gauge the importance of ethical familial DNA testing in the criminal justice system.

Each interview question was explained in detail. Because all three respondents resided in a different state, the three participants e-mailed clear responses to my secure, home computer. Data collected for the pilot study was not included in the final research data set. Transcriptions of each interview were stored in an electronic folder using Microsoft Word. Transcriptions of each interview were also stored in a locked desk drawer in my home.

Interview Protocol

The instrument was pilot tested with the objective of intensifying the integrity and reliability of the questions asked. Participants of the pilot study probed the instrument before its use to identify conceivable revisions. Participants had no recommended changes to the interview questions. The pilot questions were used in the final research study interviews.

Data Analysis

This study incorporated the following qualitative content analysis stage model according to Zhang and Wildemuth (2011):

- (1) Burnard, Gill, Stewart, Treasure and Chadwick (2008) noted computer-assisted qualitative data analysis software is available to help manage and analyze qualitative data; the computer assisted programs make handling of the data easier. However, it is the job of the researcher to analyze the data (Burnard et al., 2008). When the interviews were completed, questions and open-ended answers were implanted in the NVivo 10 software program.
- (2) Data was classified by coding text through NVivo 10 software.
- (3) Themes were manually broken down into more feasible codes and themes. The technique of coding was necessary to assemble the data by theme.
- (4) From the themes, node trees were developed to look for materializing patterns and ideas. According to QSR International (2014), a node is a compilation of references about a distinct theme, place, person, or other area of significance. References are gathered by coding sources, such as interviews. In working with NVivo 10, nodes were essential for understanding the dynamics of the data. Nodes were significant because they allowed me to assemble associated material in one place to look for developing patterns and ideas. I constructed and organized nodes for themes or cases,

such as people or organizations. Creating nodes were also beneficial for gathering evidence about the relationships among items in the study (QSR International, 2014).

- (5) The coding was checked repeatedly.
- (6) An assessment was made to check coding consistency.
- (7) Conclusions were made from the coded data.
- (8) Study findings were reported.

Figure 1 describes node trees used to search for patterns and ideas.

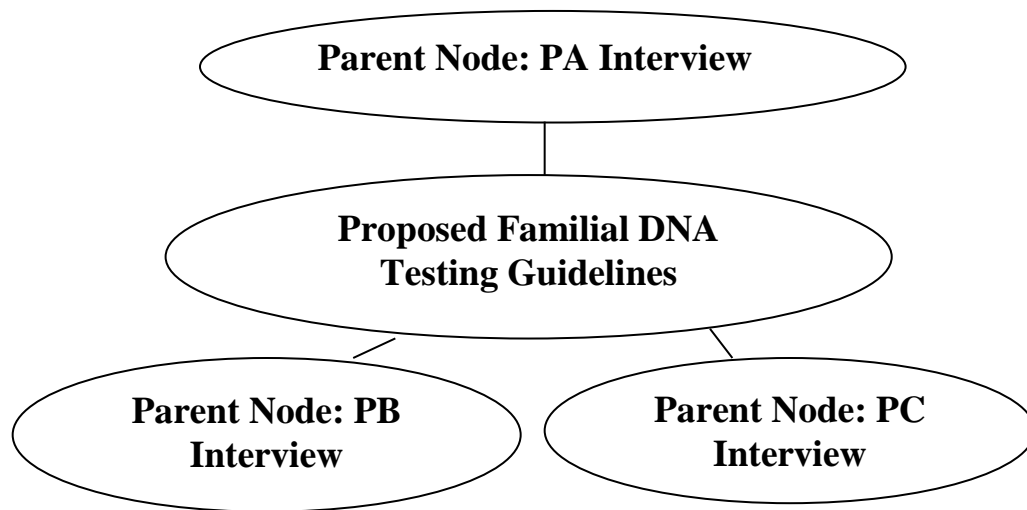


Figure 1. Node trees were developed to look for materializing patterns and ideas. PA, PB, and PC indicate inconspicuous, alphabetically-designated coding of participants.

NVivo 10 software aided in navigating recurring codes, such as ethical, perception, privacy, protection, policies, safeguards, guidelines, and constitutional. Word frequency and text searches within the NVivo 10 software were used to guide and reveal the predominant themes. These themes were valuable for discerning criminal justice professionals’ perceptions of what ethical familial DNA testing guidelines should include. A specific node was created for this study titled “Proposed Ethical Familial DNA Testing Guidelines.” This node proved essential

when comparing criminal justice professionals' perceptions of proposed familial DNA testing guidelines in the criminal justice system.

Examining the data was essential for reaching a comprehensive impression of the data. To get more detailed themes, participants' responses were analyzed to explore the data manually. Further analysis of the responses was necessary to ensure themes were fully implemented in narrative form. Grouping of specific key comments, code words, or themes enabled the understanding of how many participants were saying similar or the same things. This allowed for translating the importance of each comment needed for answering the research question. For example, when an interviewee used the key word "policy" in his or her response to an interview question, this became a code word or part of the theme. Further, there was the grouping together of this response with other responses that used the same word "policy" for the interview question. Further analysis of the responses from the general themes in NVivo 10 was classified to establish prevailing themes.

Initial coding of interview transcripts produced the identification of 152 nodes arranged by interview question. The nodes were cross-referenced and compared between interview questions to identify repeated or lost data. In multiple cases, research participants discussed information connected to a preceding interview question while discussing a successive interview question. Data were transported between nodes, as suitable to combine and group related data. Reduction and removal of data resulted in the initial 152 nodes being decreased to 31 nodes to increase study uniformity.

Themes evolved from the final data analysis derived from the 12 participants' data. Every response was weighed for applicability to each commanding theme. All 12 participants were current criminal justice professionals within the criminal justice system and were familiar

with DNA testing in the criminal justice system. Results of the pilot study were applied to the interview protocol for transparency and better understanding by the participants.

Data clustering involved grouping and combining consistent components of perception themes. Data from the questions were scrutinized and grouped into related themes. Core themes emerged from the clusters and elements of common perceptions. All information was substantiated by an in-depth analysis from the researcher.

Twenty-five criminal justice professionals were contacted. These individuals were contacted as a proposed sample to reach 10 to 19 participants for the case study. Various proposed respondents noted they were not comfortable with participating in the study because of their unfamiliarity of the familial DNA testing concept in the criminal justice system. However, 12 participants agreed to participate in the study. The 12 participants were more than an adequate number as evidenced by data saturation. Data saturation was apparent when analysis of the data continued to reveal repetitive nodes that emerged into similar, comparable themes. Data saturation occurs when the compilation of new data does not reveal additional information about the subject under analysis (Mason, 2010). See Table 1 for sample population demographics.

The objective of this case study was to gather data from as many respondents as possible who could provide their experience and knowledge of the criminal justice system. Respondents could use his or her experience and knowledge to perceive and explore familial DNA testing in the criminal justice system. This qualitative case study method allowed the researcher to collect comprehensive information from the participants that corresponded with the five interview questions. Individual participants were identified alphabetically by the letter "P," signifying participant followed by alphabetical designation A through L; a letter A through L was assigned to each of the 12 participants according to specific order of interview.

Table 1

Sample Population Demographics

*Number of Proposed Participants Contacted	
25	
Participants in Study	Occupation of Participants
12	
Participant 1	Prosecuting attorney
Participant 2	Judge and former legal analyst
Participant 3	Supervisor of a forensic biology section, Department of Forensic Science
Participant 4	Chief attorney for a forensics division of an office of the public defender
Participant 5	Defense attorney and former prosecutor
Participant 6	Staff attorney, American Civil Liberties Union (ACLU)
Participant 7	Prosecutor and former defense attorney
Participant 8	Law student who is a ten year veteran of a sheriff's office
Participant 9	Criminal defense attorney and member of the National Association of Criminal Defense Lawyers
Participant 10	Defense attorney
Participant 11	Prosecutor
Participant 12	Attorney who is a former police officer

**Note.* Thirteen members of the proposed sample contacted, responded with different reasons why they could not participate in the study. Examples of reasons included unfamiliarity of the familial DNA concept and time schedules. Twelve individuals agreed to participate in the study.

Table 2 indicates participants' alphabetical, designated coding.

Table 2

Participants Alphabetical Designated Coding

Participant	Participant Designated Code
Interviewee 1 = A	Participant PA
Interviewee 2 = B	Participant PB
Interviewee 3 = C	Participant PC
Interviewee 4 = D	Participant PD
Interviewee 5 = E	Participant PE
Interviewee 6 = F	Participant PF
Interviewee 7 = G	Participant PG
Interviewee 8 = H	Participant PH
Interviewee 9 = I	Participant PI
Interviewee 10 = J	Participant PJ
Interviewee 11 = K	Participant PK
Interviewee 12 = L	Participant PL

Based on the feedback from the participants in the study and the coding of the data, grouping of the data was incorporated into the initial following categories: *valuable tool, strong safeguards, privacy, insufficient rules, public review process, policies, concern of fair and ethical practice, guidelines, training, protection, probable cause, ethics, beneficial in cold crimes, potential for misuse, educating, strict limitations, traditional police work, investigative*

leads, last resort tool, constitutional, underutilized tool, search warrant, safeguards, DNA databank, unfair, profiling, most serious crimes, law enforcement, and DNA testing. Grouping of the categories was most indicative of the node “Proposed Ethical Familial DNA Testing Guidelines.” This was extremely relevant because of the ultimate focus of answering the research question, “What do criminal justice professionals perceive ethical familial DNA testing guidelines should include?”

Specifically, the most relevant nodes that emerged from participant responses for Interview Questions 1–5 were: *privacy, insufficient rules, ethical and safeguards, public review process, law enforcement, tool, guidelines, probable cause, safeguards, fair and ethical, traditional police work, unfairness, constitutional, cold cases, unsure, search warrant, policy, and DNA databank, and DNA testing.* The University of Texas at Austin (2011) reported codes are not always mutually absolute. One part of text might include designated various codes. Because of the variety of participant responses, focused coding was also used in the study. Focused coding involved erasing, integrating, or dividing coding classifications and looking for recurring ideas and bigger themes that link codes (The University of Texas at Austin, 2011).

Study Findings

The research question that guided the study was: What do criminal justice professionals perceive ethical familial DNA testing guidelines should include? The five questions used for the interviews were created to gather and assess the perceptions of criminal justice professionals’ meaning and impression of ethical familial DNA testing in the criminal justice system. The interview questions in the study included:

- (1) What is your perception of familial DNA testing in the criminal justice system?
- (2) Do you think that familial DNA testing is ethical? Why or why not?

(3) Do you believe there should be guidelines for any agency performing familial DNA testing?

(4) If you had to create guidelines for familial DNA testing, what would be some of the elements contained in the guidelines?

(5) Is there anything you would like to add concerning familial DNA testing?

Findings linked to the research question were secured in five representative nodes along with the emerging and corresponding theme. Themes are also known as parent nodes. Four subthemes, and 18 nodes, also known as child nodes, were also secured. Each representative node was constructed from a key word(s) found in the corresponding interview question that included perception, ethics, guidelines, elements in guidelines, and additional information. The representative node summarized what each question represented and aided in classifying and introducing themes and participant responses. Characteristic individual textural descriptions were furnished for each representative node, theme, subtheme, and node examined.

Theme Results Summary

Perception

Theme 1: Perception of Familial DNA Testing. The first question inquired of 12 research participants was: “What is your perception of familial DNA testing in the criminal justice system?” One hundred percent of the 12 criminal justice professionals interviewed for the case study responded to Interview Question 1 and revealed unique responses. A total of 32 perceptions were coded during analysis of transcripts. Six nodes were singled out as having the highest number of responses noted: (a) privacy, (b) tool, (c) fair and ethical, (d) cold cases, (e) safeguards, and (f) insufficient rules. Each node is examined in subsequent paragraphs. Table 3

includes a specification of the theme, the representative node, and a number of participants who conveyed the nodes based on the overall number of perceptions coded for Theme 1.

Table 3

Interview Question 1 Representative Node: Perception Themes

Representative Node	Theme 1 and Nodes	Total Items Coded	Number of Participants Coded
Perception	Perception of Familial DNA Testing	32	18
	Privacy	9	3
	Tool	10	5
	Fair & Ethical	6	3
	Cold cases	2	2
	Safeguards	3	3
	Insufficient Rules	2	2

Privacy. Three participants expressed privacy to be relevant when perceiving familial DNA testing in the criminal justice system. A total of nine privacy items were coded relating to perceptions.

(PJ) “Familial DNA testing raises some privacy concerns among folks who were never convicted of anything.”

(PB) “I think it’s a groundbreaking technique that can be used to identify suspects as long as there are proper safeguards in place to protect the privacy of family members and other people who are not suspects and whose DNA might be used to find a suspect.”

PB’s perception of familial DNA testing in the criminal justice system indicated key coding data that included safeguarding, privacy, and protection. These are specific words noted in the data coding categories and signified possible components of ethical familial DNA testing guidelines.

(PD) At least since the onset of forensic DNA data banking, the ability of a DNA profile to reveal familial relationships, and the necessity of protecting privacy interests implicated when DNA profiles are stored by the government for law enforcement purposes, have been apparent but, unfortunately; not well-recognized due to the misleading analogy of a DNA profile to a fingerprint.

Both PD and PB emphasized his or her concern for privacy and protection when practicing familial DNA testing. PD focused on how current policies seek to protect privacy interests of individuals not in DNA databanks; PD’s interest focused on whether privacy and protection is possible in familial DNA testing. Safeguarding privacy and protection materialized as important to participants.

Tool. Five participants perceived familial DNA testing to be a tool for use in the criminal justice system. A total of 10 items were coded representing perception. PJ and PE perceived familial DNA testing is a valuable and powerful investigative tool for law enforcement.

(PJ) “I’m leaning on the side that it’s a valuable tool for law enforcement; it helps solve crimes that could not otherwise be solved.”

(PE) “Familial DNA testing provides a powerful investigative tool to law enforcement.”

PI and PA reported familial DNA testing is probably an underutilized investigative tool.

(PI) “It is probably an underutilized investigative tool.”

(PA) “Familial DNA searching is an underutilized tool in the criminal justice system.”

(PC) “I think familial DNA testing is one of numerous tools now available to law enforcement. It’s a tool, not the answer to all the investigations that are out there but it can be helpful.”

Participants perceived familial DNA testing is a beneficial tool available for use by law enforcement personnel.

Fair and ethical. Three participants alluded to fair and ethical, touching on constitutional, as relevant when perceiving familial DNA testing in the criminal justice system. A total of six items were coded relating to perceptions.

(PJ) The guidelines for each state or national guidelines that we come up with should focus on whether familial DNA testing is practiced fairly and ethically.

(PE) The question arises whether the use of familial DNA to develop suspects is constitutional and ethical.

(PD) Clearly this poses serious issues of privacy and fairness.

Participants perceived familial DNA testing poses fair and ethical concerns.

Cold cases. Two participants noted the importance of familial DNA testing being used for cold cases when practiced in the criminal justice system. A total of two items were coded regarding perceptions. PH and PC perceived familial DNA testing could be beneficial in cold cases.

Safeguards. Three participants explained using safeguards are important in perceiving familial DNA testing in the criminal justice system. Three items were coded concerning the relevance of safeguards.

(PF) “If used properly, with strong safeguards against overuse of misuse, familial searching can be a valuable part of the criminal justice system.”

(PB) “As long as there are proper safeguards in place to protect the privacy of family members and other people who are not suspects.”

(PE) “Specific guidelines should be in place to limit and guide the use of familial DNA testing and results so there is a safeguard against unfettered use.”

Participants reported safeguards are necessary to protect the misuse of familial DNA testing.

Insufficient rules. Two participants perceived familial DNA testing in the criminal justice system did not possess sufficient rules. Two items were coded representing insufficient rules.

(PF) “If used properly with strong safeguards against overuse of misuse, familial searching can be a valuable part of the criminal justice system. But, there are currently insufficient rules to govern its use and ensure that the public understands how it is being used.”

(PD) “Familial DNA testing has insufficient rules in part because the potential for misuse is heightened when the executive branch is permitted, without legislative oversight or judicial approval, to engage in the practice of familial searching.”

Participants revealed guidelines that include safeguards are necessary to avoid misuse in familial DNA testing. The data analysis implied the consensus of participant perceptions is that familial DNA testing is a tool that might require further sufficient rules, but could benefit cold cases.

Participants also perceived privacy, fairness, ethics, and the need for safeguards to prevent misuse are sufficient concerns in familial DNA testing.

Ethics

Theme 2: Is familial DNA testing Ethical? The second question covered in the interviews asked 12 research participants: “Do you think that familial DNA testing is ethical? Why or why not? A total of 26 ethics were coded during analysis of transcripts with four responses: (a) *yes*, (b) *no*, (c) *unsure*, and (d) *general responses*, represented if participants perceived familial DNA testing was ethical in the criminal justice system. Subthemes were used for further clarification and classification of participant responses; to distinguish yes, no, and unsure responses. Two nodes were also noted: ethical and safeguards, and constitutional indicated the most relevant nodes of why or why not criminal justice professionals perceive familial DNA testing is ethical in the criminal justice system. Each subtheme and node is examined in subsequent paragraphs. Table 4 includes a specification of themes, the representative node, subthemes, and a number of participants who conveyed the nodes based on the overall number of perceptions coded for Theme 2.

Table 4

Interview Question 2 Representative Node: Ethics Themes

Representative Node	Theme 2 and Subthemes	Nodes	Total Items Coded	Number of Participants Coded
Ethics	Is Familial DNA Testing Ethical?		19	12
	Yes	Ethical and Safeguards	3	5
		Constitutional	6	2
	No	Ethics	2	2
	Unsure		2	2
	General Responses	Constitutional	6	1

Subtheme, yes. Seven of the respondents believed familial DNA testing in the criminal justice system is ethical; PK, PH, PC, PA, PB, PE and PI. Perceptions of why participants

believed familial DNA testing is ethical in the criminal justice system was coded into the top two, most prevalent nodes: ethics and safeguards. Example textural narratives of ethical and safeguards and constitutional are referenced in the following paragraphs.

Ethical and safeguards. Five participants commented on ethics regarding familial DNA testing being ethical in the criminal justice system. One participant emphasized the importance of safeguards that aids in ethical familial DNA testing. Two items were coded as to the perception of safeguards. Example textural narratives include:

(PH) “Yes. There is nothing inherently unethical about the use of familial DNA testing.”

(PC) “I think the ethical handling on behalf of law enforcement to understand that the name that they are getting is not the perpetrator and that looking at the familial relationships that the family members may have nothing to do with the crime either.”

(PA) “Familial DNA searching is done ethically in the UK, New Zealand, the Netherlands Colorado, California, Virginia, Texas, and Wyoming.”

(PB) “I do think it’s ethical with the proper safeguards.”

(PE) “Familial DNA testing seems to be ethical for the following reason: state and federal repositories of individual DNA profiles are typically compiled once an offender has been convicted of a felony. The state and federal government have the right to know the DNA profile of such serious criminal offenders.”

Constitutional. Two participants noted constitutional as one of the reasons why familial DNA testing is ethical in the criminal justice system. A total of six items were coded as to the perception of ethics. Example textural narratives include:

(PE) “Familial DNA comparison is not only ethical, but also constitutional.”

(PI) “Yes. It is no more than a means of identifying an investigative lead that does not

violate the constitution.”

Subtheme, no. Two of the respondents believed familial DNA testing in the criminal justice system is not ethical; PG and PD. Perceptions of why participants believed familial DNA testing is not ethical in the criminal justice system had no general coding or theme however two instances of ethics were reported in the responses.

Ethics. PD simply believed familial DNA is not ethical.

(PG) “I do not think it is ethical. I find the intrusion into one’s most personal information, without more than being a relative of someone in the DNA data bank, is excessive.”

Subtheme, unsure. Three participants were unsure if familial DNA testing in the criminal justice system was ethical and gave general responses: PJ, PF, and PL. One participant, PL, emphasized the node “constitutional” as part of his or her perception of ethics for familial DNA testing in the criminal justice system. As noted, a total of six items were coded as “constitutional” regarding the perception of ethics. The remaining two perspectives from participants concerning “unsure” and the response concerning “constitutional” are noted in the following example textural narratives

Subtheme, general responses. Three participants added a general response regarding whether familial DNA testing is ethical. The node Constitutional was highlighted in this subtheme because the participant repeated the response more than once in their response.

(PJ) “DNA as a science works. It’s accurate. We know that there are some privacy issues. I think it all depends on the guidelines.”

(PF) When it is used to solve very serious crimes where all other methods have tried and failed, it may be ethical. However, if it is used more broadly than that it will exacerbate

the racial and class disparities that already afflict our criminal justice system as people whose family members have been arrested or convicted are, accurately or inaccurately, arrested or prosecuted for many crimes, while people whose family members do not have samples in the database may commit the same crimes but never be caught.

Constitutional. (PL) “I believe it is ethical as long as “ALL” Constitutional protections are given to any “suspect” who may be identified through the use of the technology.

When courts encounter this technology, suspects should be granted the most liberal use of all Constitutional protections.”

Participants revealed ethics, safeguards, and constitutional rights were significant concerns when determining whether familial DNA testing is or is not ethical. Overall, most participants revealed familial DNA testing is ethical.

Guidelines

Theme 3: Should familial DNA testing have guidelines? The third question covered in the interviews asked 12 research participants: “Do you believe there should be guidelines for any agency performing familial DNA testing.” One hundred percent of the 12 criminal justice professionals interviewed for the case study responded to Interview Question 3. Eleven participants replied “yes,” there should be guidelines for any agency performing familial DNA testing in the criminal justice system. One participant did not believe there should be guidelines because he or she believed familial DNA testing should be banned in the criminal justice system. Seventeen references to guidelines were coded during analysis of transcripts with one specific node that singled out guidelines. Each theme and node is examined in subsequent paragraphs. Table 5 includes a specification of the representative node, the theme, subthemes, and a number

of participants who conveyed the nodes based on the overall number of perceptions coded for Theme 3.

Table 5

Interview Question 3 Representative Node: Guidelines Themes

Representative Node	Theme 3 and Subthemes	Node	Total Items Coded	Number of Participants Coded
Guidelines	Should Familial DNA Testing Have Guidelines?		18	8
	Yes (11)	Guidelines	17	7
	No (1)		1	1

Subtheme, yes. Eleven participants replied “yes,” there should be guidelines for any agency performing familial DNA testing in the criminal justice system. “Guideline” was singled out as the most relevant node.

Guidelines. Seven participants supplemented responses with the node “guidelines” when responding to Question 3. Example textural narratives include:

(PJ) “There has to be guidelines. The states that are performing familial DNA testing or using guidelines; every state is going to be different. I do not think the FBI is doing guidelines on a national level, but yes, there should be guidelines on a state level.”

(PC) “Yes, there should be guidelines for any agency performing such testing.”

(PH) “Yes, there should be strict codified policies and procedures that dictate when and how this process can be used, as with any other police procedure. Strict guidelines and written procedures are critical to avoid abuse and ensure the integrity of any investigative tool.”

(PC) “I do. I think these guidelines need to be written. They need to be made public so that everyone understands what the capabilities are and what the expectations are.”

(PA) “There are guidelines for every law enforcement agency that currently performs familial DNA searching in the world.”

(PE) “Clearly there should be guidelines for agencies performing familial DNA testing.”

(PB) “Yes; very stringent guidelines.”

Subtheme, no. All but one participant perceived familial DNA testing should contain guidelines. PD remarked, “No, the better course is to ban the practice.”

Elements in Guidelines

Theme 4: Guideline elements. The fourth question covered in the course of the interviews inquired of 12 research participants: “If you had to create guidelines for any agency performing familial DNA testing, what would be some of the elements contained in the guidelines?” One hundred percent of the 12 criminal justice professionals interviewed for the case study responded to Interview Question 4. However, one participant, PL, requested to be asked about familial DNA testing guidelines in about two months. PL revealed he or she needed to contemplate the question for a while. A total of 32 perceptions of guideline elements were coded during analysis of transcripts with 5 significant child nodes because of having the highest number responses noted: (a) traditional police work, (b) search warrant, (c) DNA databank, (d) public review process, and (e) probable cause. Each node is examined in subsequent paragraphs. Table 6 includes a specification of the representative node, theme, and a number of participants who conveyed the nodes based on the overall number of perceptions of elements in guidelines coded for Theme 4.

Table 6

Interview Question 4 Representative Node: Guidelines in Elements Theme

Representative Node	Theme 4 and Nodes	Total Items Coded	Number of Participants Coded
Elements in Guidelines	Guideline Elements	14	11
	Traditional Police Work	3	2
	Search Warrant	4	4
	DNA Databank	3	2
	Public Review Process	2	1
	Probable Cause	2	2

Traditional police work. Two participants expressed traditional police work to be relevant when perceiving guideline elements for familial DNA testing in the criminal justice system. A total of three items were coded relating to traditional police work. PH offered, “Used only as a method of developing investigative leads which must then be followed up on and verified using traditional police investigative methods.” PE added, “Familial DNA testing should be limited to legitimate law enforcement investigative purposes.”

Search warrant. Four participants noted search warrants as significant when perceiving guideline elements for familial DNA testing. A total of four items were coded. PJ, PK, and PH disclosed a search warrant should be included in familial DNA testing guidelines.

(PE) “Familial DNA testing should be limited to those profiles developed for the federal and state convicted felons, or individuals who have voluntarily submitted their DNA sample (without coercion), and also individuals whose profiles were developed as a result of a properly issued search warrant.”

DNA databank. Two participants referred to the DNA data as relevant when perceiving guideline elements for familial DNA testing in the criminal justice system. A total of three items were coded relating to DNA databank. Example textural narratives include:

(PG) “If the DNA taken from the family member is not a match from to the DNA from the crime scene etc., it should be immediately deleted from any data bank. The sample should be destroyed.”

(PD) Fair information practices would require notice to the persons implicated by such searches whether a partial match occurs or not) that they are under genetic surveillance because a related person is included in the databank, and be provided an opportunity to challenge the inclusion of the family member’s DNA profile in the databank.

Strict limitations on whose DNA may be included in a databank. Crime victims, elimination samples voluntarily submitted, “suspect” samples, and other “lawfully obtained” (re: surreptitiously collected “abandoned” DNA) samples should not be permitted in the databank. There should be comprehensive reporting of whose DNA is contained in the databank, the expanded reach of the databank due to familial searching, the racial demographics of the records in the databank and the percentage of the population groups by race and class impacted by the practice.

Public review process. One participant (PB) significantly indicated a public review process as relevant when perceiving guideline elements for familial DNA testing in the criminal justice system. A total of two items were coded relating to DNA databank. This response was highlighted because the participant’s response mirrored multiple nodes discussed throughout the analysis.

(PB) “I would make sure that the guidelines have a public review process, some community input in creating the guidelines.”

Probable cause. Two participants expressed probable cause is relevant when perceiving guideline elements for familial DNA testing in the criminal justice system. A total of two items were coded. Both PJ and PD agreed the element probable cause should be included in familial DNA testing guidelines.

(PD) “Familial searches should only be done on an individual basis when there is probable cause to believe that the person in the databank is related to the perpetrator of a crime.”

Participants perceived ethical familial DNA testing guidelines should include a public review process and the need for probable cause and a search warrant. Also, participants revealed traditional police work and components of the DNA database should be considered when creating ethical familial DNA testing guidelines. All elements that participants perceived should be included in ethical familial DNA testing include some form of safeguard necessary to protect individuals’ rights. Safeguard appears to be an emerging theme throughout the data analysis.

Additional Information

Theme 5: Additional responses. The fifth question covered in the interviews asked research participants: “Is there anything you would like to add concerning familial DNA testing?” Nine participants responded with additional comments to Interview Question 5. A total of 15 perceptions were coded during analysis of transcripts with one compelling child node highlighted among participants: unfairness. The node unfairness is examined in subsequent paragraphs. Because, additional information from each participant was moderately unique, another node was added as “additional supplement” to note remaining perceptions. Table 7

includes a specification of the representative node, theme, subtheme, and a number of participants who conveyed the nodes based on the overall number of perceptions of additional information coded for Theme 5.

Table 7

Interview Question 5 Representative Node: Additional Information Themes

Representative Node	Theme 5, Subtheme, and Nodes	Total Items Coded	Number of Participants Coded
Additional Information		16	9
	Unfairness	5	2
	Additional Supplement: Policy, DNA Testing and Law Enforcement	11	
	<i>Policy</i>		3
	<i>DNA Testing</i>		2
	<i>Law Enforcement</i>		2

Unfairness. Two participants referred to unfairness as important when referring to additional information. A total of five items were coded. Example textural narratives include

(PJ) With the hypothetical, when should individuals be ordered to give their DNA? Even if I know I'm innocent, I still may not want to give my DNA. It's personal and all about privacy. Some parts of society are much more prevalent in the DNA databases. There is an issue of economic factors and breaking it down racially; there's probably about 80 percent African American in the DNA databases. That means that African Americans' relatives are more prevalent to be in the databases and other races not so much. Is that fair? If certain segments of the population are more prevalent in the current DNA database, doesn't that mean that more people in that population group will

come up as possible close matches even though they themselves have no criminal record?
Is that fair?

(PD) “When everyday individuals realize the scope and extent of familial searching, there is a powerful sense of unfairness because individuals who have done nothing wrong are nevertheless subject to the stigma of law enforcement surveillance.”

Subtheme, additional supplement. Seven participants added particular responses that directly related to perceptions concerning familial DNA testing in the criminal justice system. The importance of expressing additional information also aids in and links to answering the research question, “What do criminal justice professionals perceive ethical familial DNA testing guidelines should include?” An additional three nodes also connected directly to previous nodes presented in the study: policy, DNA testing, and law enforcement. A total of 11 items were coded. Example textural narratives include:

Policy. Three participants responded:

(PB) Policies need to be clearly written, trained and implemented to everyone so that they are held accountable. Make sure these individuals sign the policy and it is documented. There is absolutely no discretion; by the book on everything.

A nationwide policy is too difficult. The familial DNA policy should be by state and every state should be held accountable for their policy. It is easier to work this policy state-to-state legislation; things do and will change.

(PC) “One of the other guidelines is that there has to be a sense of public threat.”

(PE) “There should be strict oversight by independent agencies using double-blind research methods to ensure that the proper procedures are performed by the lab.”

DNA testing. Two participants responded:

(PG) “DNA is invaluable and to some extent, an infallible tool in making sure we get the person who committed the crime.”

(PB) “I believe in DNA. DNA has done a lot for investigation and prosecution of the right suspects. DNA is good for defendants because it eliminates the problems that you have with eyewitness identification, line ups and all those other things. DNA has a great deal of certainty as long as it is properly tested, collected and reported.”

Law enforcement. Two participants responded:

(PE) “Familial DNA testing should include ethical investigative methods are used by law enforcement.”

(PC) “There’s also a question of we may not have a sample of the person that perpetrated the crime and the police need to make some decisions as to whether we approach the person and interview the person or do we get an alternate avenue. Once that hurdle is gotten through and if there is a match, then law enforcement has probable cause to go to that person and say I have a warrant here for a sample or for an arrest.”

Participants believed a focus on the need for fairness, policy, law enforcement, and the importance of DNA testing were additional and essential aspects to consider regarding familial DNA testing. Table 8 describes the final analysis of themes and nodes (see Appendix H).

In Theme 1, participants perceived familial DNA testing as a tool that might require further sufficient rules, but could benefit cold cases. Participants also perceived privacy, fairness, ethics, and the need for safeguards to prevent misuse as sufficient concerns in familial DNA testing. Tool and privacy emerged as the most prevalent theme for Theme 1. For Theme 2, participants revealed ethics, safeguards, and constitutional rights were significant concerns when determining whether familial DNA testing is or is not ethical. Theme 3 acknowledged all but one participant perceived familial DNA testing as ethical.

In Theme 4, participants perceived ethical familial DNA testing guidelines should include a public review process and there is a need for probable cause and a search warrant in familial DNA testing. Also, participants revealed traditional police work and components of the DNA database should be considered when creating ethical familial DNA testing guidelines. The need for a search warrant prevailed as the emerging theme. Finally, in Theme 5, participants believed a focus on the need for fairness, policy, law enforcement, and the importance of DNA testing were additional and essential aspects to consider regarding familial DNA testing.

A compilation, comparison, and analysis of the data provided results to answer the research question. Participants perceived a need for ethical familial DNA testing guidelines, and inclusion of guidelines that ensure fairness, safeguards for privacy, and the protection of constitutional rights when performing ethical familial DNA testing. Participants perceived that ethical familial DNA testing guidelines should include a public review process, probable cause for testing, a search warrant, and provisions that protect information contained in the DNA database.

Data Analysis Summary

Themes were identified and meaning was derived from participant interview data. Interview data was coded using the NVivo 10 software instrument. Five interview questions were extracted from the research question: What do criminal justice professionals perceive ethical familial DNA testing guidelines should include? A pilot study was conducted with three participants. No changes were required to the wording of interview questions. The compiled pilot study information provided sufficient responses for addressing the research study question.

The objective of the research question was to determine and to understand what criminal justice professionals perceived ethical familial DNA testing guidelines should include. The five-

question interview contained representative nodes that included (a) perception, (b) ethics, (c) guidelines, (d) elements in guidelines, and (e) additional information. The five representative nodes aided in the emergence of embedded subthemes and nodes that helped answer the research question. The final analysis of themes resulted in (a) tool and privacy , (b) constitutional, ethical, and safeguards, (c) guidelines, (d) search warrant, and (e) unfairness, DNA testing, and law enforcement. A further analysis, discussion, and clarification of each theme follows:

Theme 1: Perception of familial DNA testing.

The primary perception participants expressed concerning familial DNA testing was that it is a tool used for investigative purposes. The next important element participants perceived about familial DNA testing is there should be concern for individual privacy. Other perceptions included were that the familial DNA testing process should be fair and ethical; familial DNA testing could benefit cold cases; there need to be safeguards in place to protect individuals and deter misuse by users; and, some participants believed familial DNA testing did not provide sufficient rules.

Six different nodes were identified during the analysis of perception. The latitude of the participants' perceptions revealed overall, unique responses with a variety of identical codes associated to familial DNA testing. The two emerging themes of perception expressed by participants were tool and privacy. Five participants perceived familial DNA testing as a tool. The analysis is that familial DNA is a valuable tool, not necessarily the first tool, for law enforcement. Participants noted, as a tool, familial DNA testing should not be the answer to all investigations. Participants perceived familial DNA testing may be an underutilized tool in the criminal justice system. Four participants expressed the need for privacy when performing familial DNA testing. Participants acknowledged familial DNA testing raises privacy concerns

and there should be safeguards in place that protect the privacy of innocent people. Study results found that participants regard privacy as a significant issue.

Although the emerging ideas of perception included tool and privacy, the research results established a mixture of responses that aligned with the perceptions of familial DNA testing. Three participants expressed “fair and ethical” should be a concern when perceiving familial DNA testing. Participants who revealed their concern of fairness and ethics of familial DNA testing in the criminal justice were parallel to Stahl (2007). Stahl (2007) reported opponents of familial DNA testing have concerns that familial DNA testing may pose ethical issues regarding civil rights and civil liberties’ violations. PJ specifically reported familial DNA testing guidelines should focus on fair and ethical practices. McConnell (2010) noted familial DNA testing raises fair and ethical concerns because not enough focus is placed on civil rights and civil liberties breaches. Fair and ethical are significant participant responses because ethics are the foundation of the criminal justice system (Gruber, 2013). Ethics are what help develop moral reasoning and how criminal justice professionals define criminal activity. Fairness and ethics are important considerations because the criminal justice system is most effective when it is operating in an ethical manner (Gruber, 2013).

When perceiving familial DNA testing, two participants revealed familial DNA testing should be used for cold cases. The United States Department of Justice (2002) revealed criminal justice professionals are discovering that advancements in DNA technology is resurrecting cold, or unsolved criminal cases. DNA is intended for use by criminal justice professionals for reviewing and investigating unsolved cases (United States Department of Justice, 2002). Familial DNA testing is advanced DNA technology and familial DNA testing has inspired criminal justice professionals to reevaluate cold cases for DNA evidence.

Three participants noted the importance of having safeguards when perceiving familial DNA testing in the criminal justice system. Additionally, two participants perceived familial DNA testing does not provide sufficient rules. As with any criminal justice tool, safeguards are necessary measures needed to prevent undesirable results; safeguards are necessary when ethical considerations are involved. Participants also perceived familial DNA testing does not possess sufficient rules.

Theme 2: Is familial DNA testing Ethical?

Seven out of 12 individuals perceived familial DNA testing is ethical. Two participants did not believe familial DNA testing is ethical and three participants were unsure whether familial DNA testing is ethical. Two themes emerged from ethics. Yes, no, unsure, and general responses were how participants responded to whether they perceived familial DNA testing was ethical; why or why not? Seven of the 12 participants believed familial DNA testing in the criminal justice system is ethical. Two participants were against familial DNA testing in the criminal justice system and three participants were unsure whether familial DNA testing is ethical. The overarching analysis is the majority of participants believed familial DNA testing is ethical. There was no one, consistent theme for why participants believed familial DNA testing is ethical. However, participants' were aware that safeguards aid in making familial DNA testing ethical. Business Dictionary (2014) defined safeguard as "precautionary or a counter measure available to an individual that enables it to protect itself or its interests" (p.1). The need for safeguarding individual's rights emerged throughout the data analysis.

Theme 3: Should familial DNA testing have guidelines?

Eleven out of 12 participants expressed the need for ethical, familial DNA testing guidelines. One participant did not believe there should be guidelines for familial DNA testing

because he or she expressed familial DNA testing should be banned. There were two subthemes for the guidelines; either yes or no. Eleven participants strongly suggested familial DNA testing should have guidelines. Again, there was no one, consistent theme that emerged from guideline other than participants communicating the word “guideline” consistently in his or her responses. Participants believed because familial DNA is a fairly new process, consistent rules should be applied. The majority of participants were adamant that strict, written policies and procedures are vital for any investigative tool; especially investigative tools that involve DNA. Also, three participants gave a significant response in his or her “yes” response regarding education and training. Participants responded that anyone involved with the familial DNA testing process should be educated and trained, especially law enforcement personnel. Out of the 12 participants, one participant perceived that familial DNA testing should be banned.

The literature revealed (Kim et al., 2011), in the United States, multiple states have made policy decisions concerning whether and how to use familial DNA testing of the Combined DNA Index System database in criminal investigations. Murphy (2012) announced the most troubling concern regarding familial DNA testing is the scarcity of formal, legal guidelines governing the familial DNA testing process. Forensic Genetics Policy Initiative (2014) revealed legislation and policies can only safeguard privacy and rights and prevent miscarriages of justice if there is adequate inspection of whether guidelines are being properly implemented. However, the literature and study results revealed familial DNA testing policies exist for the United Kingdom, California, Colorado, Virginia, New Zealand, the Netherlands, and Texas that are posted as of 2012 (Morrissey, 2012). These policies are listed in Appendix G and include an introduction to familial searching issues for consideration (Morrissey, 2012).

Theme 4: Guideline elements

Search warrant. The need for a search warrant was the major theme that emerged from participants as an element to be included in familial DNA testing guidelines. Study results disclosed participants perceived familial DNA testing should be performed only after a properly issued search warrant has been executed. Casillas (2011) noted, when an individual is investigated by law enforcement personnel, exclusively because they are a close relative of a convicted person who closely matches DNA at a crime scene, law enforcement personnel should need a search warrant. Cassillas (2011) added law enforcement personnel should need a search warrant based on probable cause to seize the investigated individual's DNA. However, participants believed that traditional police work, focusing on the DNA databank, a public review process, and probable cause were also important elements that should be included in familial DNA testing guidelines.

Five different nodes were identified during the analysis of elements in guidelines. From the analysis, search warrant emerged as a major theme. Four participants perceived a search warrant is absolutely necessary when conducting familial DNA testing and should be included in familial DNA testing guidelines.

Probable cause, DNA database, public review process, and traditional police work.

Outside of the major theme, probable cause, DNA database, public review process, and traditional police work were equally mentioned; each element was noted by two participants as an important element in familial DNA testing guidelines. Because the major theme involved only four of the participants, it was relevant to mention other significant nodes. Probable cause was perceived as extremely relevant to the theme search warrant. Krimsky (2014) noted, familial DNA testing requires law enforcement personnel to have probable cause or a prevailing interest.

Participants also perceived there should be specific safeguards concerning the DNA database and familial DNA testing. Epstein (2009) noted, clear-cut legislation is needed in light of statutory language authorizing extensive DNA collection and retention processes by law enforcement agencies. The retention of DNA samples and profiles is now the focus of familial DNA testing investigations (Epstein, 2009). One participant expressed individuals should be notified if they are implicated by familial DNA testing; individuals should have the opportunity to challenge the inclusion of the family member's DNA profile in the databank. Additionally, participants perceived there should be strict limitations on whose DNA may be included in a databank and there should be comprehensive reporting of whose DNA is contained in the databank. Simoncelli (2005) added, at least the government could destroy DNA profiles from individuals who were never convicted of a crime or who were convicted on a non-violent crime.

Additionally, participants expressed how important performing traditional police work is before and after considering practicing familial DNA testing in the criminal justice system. According to Rushton (2010), police investigation before making contact with family members and the use of discretion, should be a priority and put into protocol. Guidelines could determine how police follow up familial DNA testing leads regarding exposure of the search (Rushton, 2010). Participants perceived familial DNA testing would be most effective when used only as a method of developing investigative leads and must be followed up on and verified using traditional police investigative methods. Also, participants perceived familial DNA testing should be limited to legitimate law enforcement investigative purposes.

The study revealed the theme and four sub-themes regarding "elements in guidelines" may be equally important; it was tedious work coding and pinpointing which element should be the major theme. Recurring ideas in Themes 1 through 4 were that familial DNA testing should

be regarded only as tool for investigative purposes. There was the recurring idea that privacy should be considered as significant when performing familial DNA testing. The prevailing ideas in Themes 1 through 4, applicable to the research question was the need for probable cause and a search warrant in familial DNA testing,

Theme 5: Additional Responses

Finally, 9 out of 12 participants responded with additional information regarding familial DNA testing. The major theme that developed from additional information was unfairness because two participants reiterated concern about whether or not familial DNA testing is fair. Regarding whether familial DNA testing is fair or not, one participant was concerned about when individuals should be ordered to give their DNA; the participant perceived it is personal and all about privacy. In the literature (Katsanis, 2008), it is noted there are two types of privacy interests that emerge in familial DNA testing for the criminal justice system. One, privacy issues are raised by governmental intrusion. Two, privacy issues are raised by the government's retention of the biological sample (Katsanis, 2008). One participant also perceived an issue of economic factors and broke it down racially. Is it fair that African Americans' relatives are more prevalent to be in the databases and other races not as much? Another participant expressed once individuals realize the scope and extent of familial DNA testing, there is a powerful sense of unfairness because individuals who have done nothing wrong might be subject to the stigma of law enforcement surveillance.

In a supplement to additional information, three participants also perceived focusing on policy is vital. Two participants noted a focus on law enforcement and how they respond to familial DNA testing is significant. Two participants revealed how valuable DNA testing is for

the criminal justice system. Overall, the study revealed participants perceived familial DNA testing should regard ethics when creating familial DNA testing guidelines.

Four nodes were identified during the analysis of additional information. Nine participants responded with supplemental information to the theme. Most compelling in the analysis of additional information was the diverse responses to this question. There was no specific theme to this question. However, the most significant response was unfairness. Two participants perceived the concept of fairness might be a concern regarding familial DNA testing. One participant revealed families of African Americans may have a higher risk of prevalence in DNA databases. Another participant believed individuals who have done nothing wrong may be stigmatized because of law enforcement surveillance.

“Additional supplement” was added as a node to possibly draw out further themes from participants. Again, there was a myriad of perceptions from the participants. Seven participants gave additional information in more general responses. Three participants emphasized the importance of policy. Two participants reiterated how important DNA testing is for the criminal justice system. According to the literature (Katsanis, 2008), in history, DNA testing may be law enforcement’s most extraordinary crime-fighting tool. Additionally, two participants relayed the importance of law enforcement and familial DNA testing. Simoncelli and Krimsky (2007) added there should be a suitable balance between law enforcement and civil liberties. The basis of balance should guide where and when familial DNA testing may be used by law enforcement personnel (Simoncelli & Krimsky, 2007).

The compelling conclusion is all themes were considered for interpreting the most prevalent perceptions of participants. Special attention was paid to Theme 4, Elements in Guidelines: If you had to create guidelines for familial DNA testing, what would be some of the

elements contained in the guidelines? This was necessary because Interview Question 4 directly related to answering the research question: What do criminal justice professionals perceive ethical familial DNA testing guidelines should include? Theme 1 revealed how participants felt about familial DNA testing. This opened up discussion and allowed participants to focus on what familial DNA testing is about. Theme 2 afforded participants the opportunity to evaluate and compare ethics versus familial DNA testing. In Theme 3, participants revealed whether they perceived guidelines to be necessary in familial DNA testing. Themes 1 through 3 prepared participants for Theme 4, Elements in Guidelines. Participants were prepared because they had the opportunity to reflect on their responses to perception, ethics, and guidelines. Reflecting on perception, ethics, and guidelines allowed participants to perceive what ethical familial DNA guidelines should include. Theme 5 enhanced the implication analysis for further clarification and results.

Consolidation of the themes helped to describe criminal justice professionals' perceptions of familial DNA testing regarding perceptions, ethics, and guidelines; what criminal justice professionals perceived are necessary elements for inclusion in familial DNA testing guidelines. Criminal justice leaders who use and are considering using the familial DNA testing technique should consider ethical concerns involving familial DNA testing. A closer assessment of familial DNA testing may present an opportunity for criminal justice professionals to create more effective and ethical leadership approaches to familial DNA testing.

Results of Data Analysis: Research Question

The overarching research question is: "What do criminal justice professionals perceive ethical familial DNA testing guidelines should include?" After a thorough analysis of the participants' responses to perceptions, ethics, guidelines, elements in guidelines, and additional

information, the study revealed what criminal justice professionals perceived ethical familial DNA testing guidelines should include. Participants perceived ethical familial DNA testing should be regarded as a powerful tool that could be used by law enforcement personnel after all traditional police work has been conducted, particularly for cold cases or the most severe crimes. Specifically, participants perceived ethical familial DNA testing should be guided by a policy that focuses on fairness and the safeguarding of the privacy and the constitutional rights of individuals being tested. Also, participants expressed that ethical familial DNA testing guidelines could include a public review process while highlighting the need for probable cause and a search warrant when performing familial DNA testing. Additionally, ethical familial DNA testing guidelines should focus on the safeguarding of the information contained in the DNA databank.

All elements identified in the data represent possible safeguards when creating ethical familial DNA testing guidelines. However, the study results concluded participants perceived familial DNA testing should be used as a tool. Participants also perceived ethical familial DNA testing guidelines should include tools necessary to ensure fairness, safeguarding privacy, and the protection of constitutional rights when performing ethical familial DNA testing.

Participants disclosed ethical familial DNA testing guidelines should include a public review process, probable cause, a search warrant, a focus on the role of law enforcement, and provisions that protect information contained in the DNA database. Table 9 displays study findings that reveal the answer to the research question.

Table 9

Final Data Analysis: Research Question and What Criminal Justice Professionals Perceive Ethical Familial DNA Testing Guidelines Should Include

Representative Nodes	Research Question: What do criminal justice professionals perceive ethical familial DNA testing guidelines should include?
<p>Perception, Ethics, Guidelines, Elements in Guidelines & Additional Information</p> <p>Final Nodes for Themes 1-5</p> <p>Theme 1: Tool and privacy Theme 2: Constitutional, ethical, and safeguards Theme 3: Guidelines Theme 4: Search warrant, probable cause, DNA database, public review process, and traditional police work Theme 5: Unfairness, DNA testing, and law enforcement</p>	<p>Participants perceived familial DNA testing should be used as a tool. Participants also perceived ethical familial DNA testing guidelines should include tools necessary to ensure fairness, safeguarding privacy, and the protection of constitutional rights when performing ethical familial DNA testing; constitutional rights that safeguard an individual’s civil rights and civil liberties. Specifically, participants disclosed ethical familial DNA testing guidelines should include a public review process, probable cause, a search warrant, a focus on the role of law enforcement, and provisions that protect information contained in the DNA database.</p>

Summary

The purpose of this qualitative, single case study was to explore criminal justice professionals’ perceptions on whether clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system. The purpose of this study included exploring criminal justice professionals’ perceptions of what guidelines are necessary, if deemed clear guidelines are needed for ethical familial DNA testing in the criminal justice system. The intent was to increase knowledge of what criminal justice professionals perceived ethical familial DNA testing guidelines should include. After a favorable pilot study was conducted, 12 criminal justice professionals from Arizona, California, Colorado, District of Columbia, Florida, Maryland, and Virginia agreed to participate in the case study and answer the five interview

questions. The population of criminal justice leaders and professionals included a chief attorney for a forensics division of an office of the public defender; an attorney who is a former police officer; a prosecuting attorney; defense attorney and former prosecutor; staff attorney, American Civil Liberties Union (ACLU); prosecutor and former defense attorney; an Arizona law student who is a 10 year veteran of a sheriff's office; criminal defense attorney and member of the National Association of Criminal Defense Lawyers; judge and former legal analyst; supervisor of a forensic biology section, Department of Forensic Science; defense attorney; and a prosecutor. The 12 criminal justice professionals agreed to engage in the case study and answered the five interview questions. The goal was to gain data from as many criminal justice professionals as possible because of their leadership, knowledge, experience, and contributions to the field of criminal justice, forensic science, and DNA testing; to construct the most comprehensive case study possible.

The use of a qualitative, single case study approach allowed for the collection of in-depth grouping of the information gathered after transcribing and coding the data, to explore and compare the different responses from participants; the number of similar or same responses for each question. Exploring and comparing the data developed into the fundamental theme for each interview question. Exploring and comparing the data determined the relevance of the comment to answering the research question.

The study revealed participants perceived familial DNA testing should be used as a tool and ethical familial DNA testing guidelines should include tools necessary to ensure fairness, safeguarding privacy, and the protection of constitutional rights when performing ethical familial DNA testing; constitutional rights that safeguard an individual's civil rights and civil liberties. Specifically, participants disclosed ethical familial DNA testing guidelines should include a

public review process, probable cause, a search warrant, a focus on the role of law enforcement, and provisions that protect information contained in the DNA database. Tables and figures were designed to furnish a visual portrayal of the assembled and coded data. Chapter 5 discusses the results of this research study and offers conclusions and recommendations.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

Familial DNA testing is a fairly new concept in the criminal justice system and does not come without some controversy, such as the issue of ethics. Although there are advocates of familial DNA, opponents of familial DNA testing in the criminal justice system express concern whether familial DNA testing is ethical. When individuals elect to accept accountability and make a determination regarding ethical decisions, they are faced with an individual ethical predicament (Banks, 2004). Ethical issues are significant in the criminal justice system and criminal justice professionals are frequently faced with making determinations that involve ethical matters (Banks, 2004). Criminal justice professionals now face the determination of what are appropriate approaches when conducting familial DNA testing in the criminal justice system. The intent of Chapter 5 is to present a greater meaning of the data collected and presented in Chapter 4.

The current study involved documenting the perceptions of 12 criminal justice professionals. The problem under study is there are no clear guidelines for conducting ethical familial DNA testing in the criminal justice system. The specific focus of this qualitative, single case study was to explore criminal justice professionals' perceptions about whether clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system and to explore criminal justice professionals' perceptions of what guidelines are necessary if deemed clear guidelines are needed for ethical familial DNA testing. Chapter 5 includes a discussion of conclusions drawn from the research findings, implications for leadership and practitioners, and a description of the limitations of the study. Following the

limitations of the study is a presentation of the recommendations for leaders, significance to the field of leadership, and recommendations for future research.

The perceptions of 12 criminal justice professionals were the focus of the current study. The criminal justice professionals' perceptions of familial DNA testing and what ethical familial DNA testing guidelines should include emerged in the study findings. The words and the meaning of the themes were also applicable to the research question. The following research question guided the study:

RQ: What do criminal justice professionals perceive ethical familial DNA testing guidelines should include?

The analysis of the transcripts from interviews with the research participants led to the emergence identification and identification of five themes. The themes emerged from the core of perceptions of what criminal justice professionals believed ethical familial DNA testing guidelines should include. From each theme, the perceptions of the participants emerged and included: (a) tool and privacy; (b) ethical, safeguards, and constitutional; (c) guidelines; (d) traditional police work, search warrant, DNA databank, public review process, and probable cause; and (e) unfairness, policy, DNA testing, and law enforcement. The following discussion of the conclusions drawn from the participants' emerging perceptions is arranged by theme supported with combined descriptions of findings and previous literature. The following discussion also focuses on the study's theoretical framework to show how study results fit together, support, or are related to the theoretical framework--civil rights and civil liberties. Civil rights and civil liberties' concerns in this study were based on the Declaration of Independence, the United States Constitution, and the Bill of Rights Amendment 4 and Amendment 14 that involve individual privacy issues (Advanced Placement Program, 2013).

Just as the founding fathers of the United States were concerned with defining and protecting rights and liberties (Advanced Placement Program, 2013), the participants in this study were concerned whether familial DNA testing is ethical and what guidelines were necessary to ensure ethical familial DNA testing in the criminal justice system.

Conclusions

Results of the Analysis

A variety of articles focused on familial DNA testing and how familial DNA testing relates to or affects the criminal justice system. Haimes (2006) explored social and ethical issues in the use of familial searching in forensic investigations. Grimm (2007) studied the demographics of genetic surveillance regarding familial DNA testing and the Hispanic community. Murphy (2010) researched familial searches of DNA databases. Another article by Simoncelli and Krimsky (2007) involved familial DNA testing and the criminal justice system. This study explored a new era of DNA collections and how familial DNA testing may affect civil liberties. Additionally, Suter (2010) focused on privacy and familial DNA searching. Each article or study mentioned disclosed information concerning how familial DNA testing affects the criminal justice system. However, there appears to be no research that focuses on what criminal justice professionals, from a variety of geographical locations, perceive familial DNA testing guidelines should include.

This profession-focused research study compared the perceptions of various criminal justice professionals to help guide criminal justice leaders in making ethical familial DNA testing decisions. The participants in this study are very similar to the group of individuals that make up The Crime Scene Investigation Working Group (United States Department of Justice, 2002). The Crime Scene Investigation Working Group is a multidisciplinary organization of

criminal professionals from across the United States who service urban and rural areas (United States Department of Justice, 2002). The Crime Scene Investigation Working Group affiliates were recommended and chosen for their knowledge in the area of criminal investigation and evidence collection; criminal investigation and evidence collection from the viewpoints of law enforcement, prosecution, defense, the forensic laboratory, and victim assistance (United States Department of Justice, 2002).

The current study provided a qualitative, methodological outlook that produced socially significant and relevant information for criminal justice professionals. Consequently, this study focused on what criminal justice professionals' perceived ethical familial DNA testing guidelines should include. The interview questions used to guide the data collection extracted full discovery of the research participants' perceptions. Five themes, identified from the collected data, provided understanding of what participants perceived ethical familial DNA testing guidelines should include. Although each theme has specific nodes, the nodes appear to be interchangeable between all five themes because each theme supports the objective of the study in answering the research question. The five representative nodes of perception, ethics, guidelines, elements in guidelines, and additional information are descriptors for each corresponding theme.

Because familial DNA testing in the criminal justice system is still a fairly new process, the number of opponents and advocates of familial DNA testing continue to grow. Both opponents and advocates of familial DNA persist in giving their views on whether familial DNA testing poses civil right and civil liberty concerns. The following discussion includes insights from familial DNA testing advocates and opponents. Insight from familial DNA testing advocates and opponents, combined with the theoretical framework of the study, supports the

analysis and the interpretation of the results. Conclusions drawn from each theme are discussed in the following paragraphs.

Theme 1: Perception of familial DNA testing. As identified in the study findings, 100% of research participants expressed their perceptions of familial DNA testing in the criminal justice system. The depth of the criminal justice professionals' perceptions were that familial DNA testing should be used as a tool with a high regard for privacy. The research participants' perceptions of tool and privacy are consistent with Cantrell (2010). As a tool, familial DNA testing has been embraced by law enforcement in Great Britain and eagerly supported by a few prosecutors in the United States. However, familial DNA testing has been criticized by many in the legal and academic fields because of privacy rights concerns (Cantrell, 2010). Tool and privacy are also consistent with Steinhauer (2010) who reported familial DNA testing is a practice that prosecutors and law enforcement consider a vital tool in catching otherwise evasive criminals, but that privacy authorities criticize as a threat to civil liberties (Steinhauer, 2010). How participants perceived familial DNA testing in the criminal justice system was important when addressing what ethical familial DNA testing guidelines should include. Participants' perceptions of familial DNA testing opened up an analysis of whether or not familial DNA testing is ethical. Discussion of conclusions drawn from this theme is organized under the descriptors *tool* and *privacy*.

Tool. Five participants perceived familial DNA testing be used as a tool. There is no doubt that familial DNA testing is a tool regarded as an important scientific advancement (Cantrell, 2010). The participant's response that familial DNA is a valuable tool, not necessarily the first tool for law enforcement, coincides with The Federal Bureau of Investigation (2014). The FBI revealed, familial DNA testing is a supplemental search of a law enforcement DNA

database conducted after a routine search has been completed and no profile matches are identified during the process (FBI, 2014). The study revealed participants regard familial DNA testing as a tool that should not be the answer to all investigations. The participants' responses suggested that familial DNA testing should not be used for routine offenses. Specifically, participants perceived familial DNA testing will prove beneficial for the most heinous crimes that include cold cases, serial rapists and killers, and murder offenses.

Participants also revealed familial DNA testing may be an underutilized tool in the criminal justice system. According to Dimond (2011), familial DNA testing advocates question why most of the 50 United States are not using the powerful crime fighting tool of familial DNA testing. Participants added, as a tool, familial DNA testing would prove beneficial in cold cases. Participants perceived when considering ethical familial DNA testing guidelines, familial DNA testing should be regarded as a beneficial tool for law enforcement purposes.

Privacy. Four participants expressed the need for privacy when performing familial DNA testing. DNA is a crime prevention tool that was initially designed to pinpoint the most dangerous convicted felons, on a case-by-case basis. Familial DNA testing is a technique that may pose significant privacy and civil rights concerns to every citizen (Council for Responsible Genetics, 2014). Participants in this study acknowledged familial DNA testing raises privacy concerns and there should be safeguards in place that protect the privacy of innocent people. Participants believed privacy in familial DNA testing means information in the DNA databanks should be exceedingly guarded. Murphy (2010) noted that all individuals are legally entitled to the full privacy safeguards of the Fourth Amendment. Study results indicated participants regard privacy as a significant issue which is worthy of comparison to Simoncelli and Krinsky (2007). Simoncelli and Krinsky noted the availability and use of familial DNA testing seriously violate

the acceptable expectations of privacy held by law-abiding citizens concerning their DNA and implies breaches in an individual's civil liberties (Simoncelli & Krimsky, 2007). Participants revealed safeguards must be put in place to protect individual's privacy rights regarding familial DNA testing.

Understanding participants' perceptions of familial DNA testing as a tool with regard for privacy was essential because it opened up dialogue and reflection about the ethical issues related to familial DNA testing. The knowledge of the participants was valuable in discerning what ethical familial DNA guidelines should include. As criminal justice professionals, the participants' perceptions and knowledge was beneficial because they have an ethical duty to preserve the constitutional safeguards that are the cornerstone of our legal system (Pollock, 2010).

Theme 2: Is familial DNA testing ethical? The study results disclosed 100% of the participants responded to whether or not they perceived familial DNA testing as ethical. The majority of study participants believed familial DNA testing is ethical. Seven of the 12 participants believed familial DNA testing in the criminal justice system is ethical. Two participants were against familial DNA testing in the criminal justice system and three participants were undecided whether familial DNA testing is ethical. The participants' responses to whether familial DNA testing is or is not ethical, also revealed suggestions of what they perceived ethical familial DNA testing guidelines should or should not include.

Participant responses. The most significant reasons participants perceived familial DNA testing is ethical were revealed in the descriptors ethical, safeguards, and constitutional.

Participants who perceived familial DNA testing is not ethical or were unsure whether familial

DNA testing is ethical gave general responses that did not indicate one specific descriptor.

Participant responses are noted in the following section.

Ethical and safeguards. The most significant reason participants revealed familial DNA *is* ethical is because they perceived safeguards are in place for performing familial DNA testing. One participant perceived familial DNA testing is ethical because state and federal repositories of individual DNA profiles are typically compiled once an offender has been convicted of a felony and the state and federal government have the right to know the DNA profile of such serious criminal offenders; therefore, familial DNA testing *is* ethical. Morrissey (2010) revealed familial DNA testing must be performed in a legal and constitutional way. The objective is to always supply investigators with a lead while addressing privacy interests (Morrissey, 2010). Suter's (2010) view also coincided with study participants; if familial DNA testing is conducted responsibly, with the proper safeguards, it is legitimate in particular circumstances (Suter, 2010). Participants who disclosed familial DNA testing is ethical perceived there is nothing inherently unethical about the use of familial DNA testing. Participants revealed familial DNA testing is simply another investigative tool that can be used to generate leads. However, Alsplen (Lawless, 2013) does see channels for abuse in DNA testing. "There is an argument to be made that because biological samples exists, the government could go back and do other things with it that are not authorized by the law" (Lawless, 2013, p. 1). Other than participants' perception that law enforcement personnel demonstrates ethical handling, there was no other specific reason, provided by participants, that safeguards are in place for ethical familial DNA testing.

Constitutional. Two participants noted *constitutional* as one of the reasons they perceived familial DNA testing is ethical. Morrissey (2010) revealed jurisdictions that perform familial DNA address the issues of privacy through carefully constructed practices. Participants

who perceived familial DNA testing as ethical disclosed familial DNA comparison is not only ethical, but also constitutional and familial DNA testing is no more than a means of identifying an investigative lead that does not violate the constitution. Participants provided guidelines and references for Virginia familial DNA testing and one participant revealed familial DNA searching is done ethically in the United Kingdom, New Zealand, Netherlands, Colorado, California, Virginia, Texas and Wyoming. Another participant offered references, guidelines, and policies for each of the previous-mentioned jurisdictions practicing familial DNA testing in the criminal justice system (see Appendix G).

Two participants perceived familial DNA testing is *not* ethical. These participants revealed familial DNA testing is not ethical and familial DNA testing is an intrusion into one's most personal information. Katsanis (2008) revealed the Fourth Amendment to the United States Constitution is the lens through which the legal system analyzes the validity of government interference into the personal lives of citizens. The Fourth Amendment ensured, "The right of people to be secure in their persons against unreasonable searches and seizures" (as cited in Katsanis, 2008, p. 2). The participants responses are supported by Murphy (2012) who noted familial searches should not be allowed at all, specifically highlighting the ethical concerns. However, according to Pattock (2011), "Familial DNA testing has been hotly contested across the country, but its usefulness in helping law enforcement officials catch and prosecute criminals is well established" (p. 1).

Three participants were *unsure* whether familial DNA testing is ethical or not and they voiced pros and cons in their responses. One participant revealed when familial DNA testing is used to solve very serious crimes, where all other methods have tried and failed, it may be ethical. However, this participant perceived if familial DNA testing is used more broadly than

that it will exacerbate the racial and class disparities that already afflict our criminal justice system. This participants' perception related to Lazer (2008) who noted the ethical concerns of familial DNA testing have to do with the balance between the benefits of using a current resource to produce beneficial leads for investigations and the potential negative effects on individuals, groups, and society (Lazer, 2008).

Participants' skepticism centered on the possibility that racial and class disparities may be intensified. The participants were uncertain whether Constitutional protections are provided in familial DNA testing. One participant clearly perceived ethical familial DNA testing depends on the guidelines. Michael Chamberlain, legal advisor for an attorney general, offered a thought when considering whether or not to adopt familial DNA practices: "If a state failed to follow up on an encouraging partial match, possibly a serial killer, lives could be lost from not following up on that partial match" (as cited in Dolan & Felch, 2008, p. 1). Participants who were unsure revealed ethical familial DNA testing guidelines must address racial and class issues while adhering to the guaranteed protections of the United States Constitution.

Participants' perceptions of whether familial DNA testing is or is not ethical signifies their understanding or definition of ethics. Perceiving whether or not familial DNA testing is or is not ethical heightened the participants' awareness of what ethical familial DNA testing guidelines should include; it also gave participants an impression of whether familial DNA testing should include guidelines.

Theme 3: Should familial DNA testing have guidelines? Eleven out of 12 participants' perceived agencies performing familial DNA testing should have guidelines. The majority of participants expressed, clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system. One participant revealed familial DNA testing

should not contain guidelines. The participant who revealed familial DNA testing should not contain guidelines revealed familial DNA testing should be banned.

Out of the 11 participants who perceived familial DNA testing should contain guidelines, one participant revealed there are guidelines for every law enforcement agency that currently performs familial DNA testing. The consensus from participants who perceived familial DNA testing should contain guidelines believed guidelines aid in supporting the protection and rights of others. The protections and right of others is in support of The Declaration of Independence, which is based on the beliefs that governments are responsible for protecting the “unalienable rights of life, liberty, and the pursuit of happiness” (Advanced Placement Program, 2013, p. 1). Participants noted familial DNA testing guidelines should contain strict, codified policies and procedures that dictate when and how this process can be used. Participants perceived strict guidelines and written procedures are critical to avoid abuse and ensure the integrity of any investigative tool. The founding fathers of the United States believed people are clearly capable of abusing the natural rights of others. The goal of The Declaration of Independence is that the government protects the rights of their citizens (Advanced Placement, 2013). The belief that the government protects the rights of their citizens corresponds with the characteristics of criminal justice professionals. Criminal justice professionals entail a public trust that involves power over others (Pollock, 2010). Individuals who possess such power must be perceptive to the ethical issues that may arise in his or her professional life (Pollock, 2010).

In support of ethical familial DNA testing requiring guidelines, participants also stressed the importance of including state guidelines. Participants perceived every state is different and each state has different needs; a nationwide policy would be too difficult. In addition, one participant revealed guidelines need to be made public so that everyone understands the

capabilities and expectations of familial DNA testing. Since 99% of participants perceived familial DNA testing should include guidelines, it is only natural that participants would want to address what these guidelines should include. When participants revealed familial DNA testing should contain guidelines, most participants directly addressed what familial DNA testing guidelines should include. Study results revealed participants deemed it necessary for ethical familial DNA testing to include clear guidelines.

Theme 4: Guideline elements. One hundred percent of the study participants responded to what ethical familial DNA guidelines should include. With the support of data from Themes 1, 2, 3, and 5, Theme 4 directly answered the research question of what criminal justice professionals perceived ethical familial DNA testing guidelines should include. The need for a search warrant was the prevailing response to what participants perceived ethical familial DNA testing guidelines should include. The need for probable cause, regard for the DNA database, a public review process, and traditional police work also emerged as relevant components for inclusion in ethical familial DNA testing guidelines. Suter (2010) revealed familial DNA testing lawmakers must examine the right or wrong aspects of fulfilling one commitment over competing commitments in any singular circumstance. Lawmakers must fulfill these commitments rather than conclude that any of these obligations should prevail over the other (Suter, 2010). A discussion follows of conclusions drawn from this theme and are organized under the descriptors search warrant, probable cause, DNA database, public review process, and traditional police work.

Search Warrant. Multiple participants perceived ethical familial DNA testing guidelines should include a search warrant provision. The Fourth Amendment of the U.S. Constitution guarantees “the right of the people to be secure in their persons, houses, papers, and effects,

against unreasonable searches and seizures” (as cited in Legal Information Institute, 2012, p. 1). Participants noted familial DNA testing guidelines should include a search warrant and at least probable cause; a response that is almost identical to Simoncelli and Krimsky (2007). A search customarily requires probable cause and a judicial warrant, or at least individualized suspicion (Simoncelli & Krimsky, 2007).

According to De Vogue (2013), the Supreme Court is revisiting the crossroad of privacy and evolving science. The Supreme Court is considering whether law enforcement officials can take DNA without a warrant (De Vogue, 2013).

The courts have repeatedly determined that the taking of DNA constitutes a “search” under the Fourth Amendment” and “substantial questions surround the constitutionality of compelled DNA seizures from people who have not been convicted of crimes. The issue has yet to be definitively determined by the courts. (Council for Responsible Genetics, 2014, p. 1)

Participants perceived search warrant as a beneficial safeguard that should be included in ethical familial DNA testing guidelines.

DNA database. Two participants referred to the DNA database as relevant when perceiving guideline elements for ethical familial DNA testing in the criminal justice system. These participants revealed their concern of particular contents being maintained in the DNA database. The use of forensic DNA databases by law enforcement around the world is increasing at a rate that should be of tremendous concern to civil libertarians (Council for Responsible Genetics, 2014). One participant perceived there should be comprehensive reporting of whose DNA is contained in the databank, the expanded reach of the databank due to familial searching, the racial demographics of the records in the databank and the percentage of the population

groups by race and class impacted by the practice. This perception is in conjunction with Generations Ahead (2012) who revealed African Americans and Latinos have a greater and unequal expectation of having their DNA gathered and stored. Given the current racial bias in other facets of the criminal justice system, familial DNA testing policy-makers need to guarantee DNA databases do not unfairly and disproportionately affect people of color (Generations Ahead, 2012). The Fourteenth Amendment mentioned, “Certain divisions in society, such as sex, race, and ethnicity are suspect categories and that laws that make distinctions that affect these groups will be subjected to especially strict scrutiny” (as cited in Advanced Placement Program, 2013, p.1). Still, few would disagree about the ability of DNA to capture criminals and vindicate the innocent (Lawless, 2013).

Public review process. One participant perceived a public review process is extremely relevant when considering guideline elements for familial DNA testing. This participant’s response was highlighted because it mirrored multiple elements throughout the data analysis. The participant believed a public review process would be beneficial because it involves community input in creating ethical familial DNA guidelines. Generations Ahead (2012) revealed that it is critical for the government to participate in a vigorous public dialogue regarding how to use familial DNA testing technology. Engaging in public dialogue will keep from having repeated mistakes. Engaging in public dialogue will also help establish that familial DNA testing contributes to, and does not obstruct, effectiveness, efficiency, and justice (Generations Ahead, 2012).

Another participant revealed ethical familial DNA testing guidelines should be made public so that everyone understands what the capabilities and expectations include in familial DNA testing. Simoncelli and Krimsky (2007) revealed creating technology, rather than

constitutional scrutiny and informed public decision making, is driving further growth of DNA databanks. Neglected to date has been an accountable, national discussion leading to an understanding of the concerns that could result in a societal consensus about the multiple uses of DNA testing (Simoncelli & Krinsky, 2007). Additionally, Chamberlain (2012) noted, all should take part in continuing discussions of familial searching in forums such as public debate. The attention of public debate cannot help but to bolster government transparency and responsibility; in the end, this benefits us all (Chamberlain, 2012).

Probable Cause. Two participants expressed probable cause is relevant when considering guideline elements for familial DNA testing. The participants perceived familial searches should only be done on an individual basis when there is probable cause to believe that the person in the databank is related to the perpetrator of a crime. The legal system investigates the legality of government interference into the personal lives of its citizens (Katsanis, 2008). The Fourth Amendment ensures “the right of people to be secure in their persons . . . against unreasonable searches and seizures” (as cited in Katsanis, 2008, p. 1). To be reasonable, customarily, a search must be supported by a warrant based on “probable cause” – reasonable belief that a crime has been committed by the individual whose person or property is searched or seized (Katsanis, 2008, p. 1). Participants noted that a search warrant in conjunction with probable cause, are safeguards that should be included in familial DNA testing guidelines.

Traditional police work. Two participants expressed traditional police work is relevant when perceiving guideline elements for ethical familial DNA testing. Familial DNA testing symbolizes a stable first step based on biology, statistics, and genetics, which in partnership with traditional police work, can result in solving crime (Rosen, 2010). The ability of DNA to exonerate the innocent is also of equal importance to law enforcement. Familial DNA testing

and the traditional investigation those searches yield, must be administered in a legal and constitutional way. The intention is always to present investigators with a scientifically-grounded lead while addressing privacy interests (Rosen, 2010). Participants perceived familial DNA testing should be used only as a method of developing investigative leads which must then be followed up on and verified using traditional police investigative methods; limited to legitimate law enforcement investigative purposes. Participants perceived a search warrant, regard for information contained in the DNA database, a public review process, probable cause, and the use of traditional police work are important safeguard considerations for inclusion in ethical familial DNA testing guidelines.

Theme 5: Additional responses. Nine participants felt the need to respond with additional perceptions concerning familial DNA testing. Law enforcement, unfairness, and DNA testing emerged as the most significant responses regarding additional feedback.

Law Enforcement. Two participants commented that familial DNA testing guidelines should include that ethical investigative methods are used by law enforcement. Guidelines regarding familial DNA testing need to calibrate a suitable balance of civil liberties and law enforcement needs (Simoncelli & Krinsky, 2007). Pollock (2010) revealed law enforcement face ethical difficulty in many areas of the criminal justice system. Law enforcement must follow ethical codes created to identify and portray ethical behavior in the criminal justice system. All criminal justice professionals have an ethical duty to preserve the constitutional safeguards that are the keystone of our legal system (Pollock, 2010).

Unfairness. Two participants revealed unfairness is another important element to considerer when creating ethical familial DNA testing guidelines. Participants expressed there is a powerful sense of unfairness because individuals who have done nothing wrong are

nevertheless subject to the stigma of law enforcement surveillance. Similarly, Washington University Law Professor Jeffrey Rosen noted, “The idea of holding people responsible for who they are rather than what they’ve done could challenge deep American principles of privacy and equality. Although the legal issues aren’t clear, the moral ones are vexing” (as cited in McDonough, 2008, P. 1). Specifically, one participant perceived some parts of society are much more prevalent in the DNA databases. Advanced Placement Program (2013) elaborated and revealed:

There is an issue of economic factors and breaking it down racially; there’s probably about 80 percent African American in the DNA databases. That means that African Americans’ relatives are more prevalent to be in the databases and other races not so much (Advanced Placement Program, 2013, p. 1).

DNA Testing. Two participants felt the need to elaborate on DNA testing in regards to familial DNA testing. One participant revealed DNA is an invaluable and to some extent, an infallible tool in making sure we get the person who committed the crime. Lazer (2008) reported DNA testing has the potential to expand the number of criminal investigative leads produced by existing DNA databases in the United States (Lazer, 2008). The second participant disclosed DNA has done a lot for investigation and prosecution of the right suspects. This participant believed forensic scientists and police analysts who used familial DNA testing swear by its efficiency.

Implications and Recommendations

Results of this study depicted various implications presented in the literature review. Suter (2010) revealed familial DNA testing drives jurisdictions to examine suitable limits of the uses of DNA databases and DNA profiling. Research results revealed there was not one specific

element that participants perceived should be included in familial DNA testing. However, study results revealed the need for a search warrant emerged as the most prevalent component to be included in ethical familial DNA testing guidelines. Epstein (2009) noted a complete verdict of challenging familial DNA testing needs and concerns may be unattainable. A carefully packaged approach to familial DNA testing serves the end result (Epstein, 2009). Participants revealed a variety of elements that should be included in ethical familial DNA testing guidelines. Murphy (2010) acknowledged the goal of familial DNA testing is to minimize intrusiveness, increase efficiency, and ensure legality.

The implications revealed in the qualitative case study disclosed participants regard familial DNA testing as a powerful tool; familial DNA testing is a powerful tool that requires well-written guidelines to address ethical concerns. Participants perceived familial DNA testing may prove useful when convicting criminals as well as to exonerate wrongly accused individuals. However, as a tool, participants revealed familial DNA testing should only be used after all traditional law enforcement methods have been pursued. Also, participants believed familial DNA testing would prove effective in the most heinous or cold case crimes. Most important, participants disclosed although familial DNA is a powerful tool, there must be elements included in familial DNA testing to prove the process is ethical.

Participants implied, for familial DNA testing to be most useful and considered ethical, the inclusion of specific components are necessary that support fair and ethical practices; fair familial DNA testing practices that will aid in safeguarding and protecting an individual's civil rights and civil liberties. Participants believed the protection of privacy is essential for ethical familial DNA testing and that a well-written policy that provides guidelines for ethical familial DNA testing use is essential. Specifically, participants reported ethical familial DNA testing

should include a public review process, probable cause, a search warrant, a focus on the role of law enforcement, and provisions that protect information contained in the DNA database; participants disclosed what criminal justice professionals perceive ethical familial DNA testing guidelines should include. Detailed implications derived from emergent themes and associated recommendations for action are provided in the following paragraphs.

Tool. Participants perceived it is important that familial DNA testing be regarded as a tool; as a supplemental tool when all other investigative methods have been exhausted. Perhaps familial DNA testing would serve most beneficial for crimes that would otherwise go unsolved (Kim et al., 2011).

Well-written policy. The implications of this study indicated that participants perceived ethical familial DNA testing should include clear guidelines; guidelines that consist of a well-written policy. Leaders, managers, and supervisors who have worked in the same organization for many years may think they understand policies. Relying on understood policies could lead to misunderstandings (Michigan Municipal League, 2006). The literature review did not specifically reveal how criminal justice professionals address the concerns of ethical familial DNA testing. Templeton (2011) suggested that until the courts announce familial DNA testing's constitutionality, familial DNA testing is not constitutional. The results from this research study provided criminal justice professionals and leaders valuable information that should be examined when creating ethical familial DNA testing guidelines. In the literature review, Barca (2013) revealed there is no national accord regarding the nature or extent of an offense where familial DNA testing technology may be used.

Participants implied well-written policies should outline ethical familial DNA testing guidelines that address procedures and ethical concerns. Inconsistent understanding of familial

DNA testing or any criminal justice guideline could result in misunderstandings, grievances, and even lawsuits (Michigan Municipal League, 2006). To foster consistency, a well written, rigid policy is necessary for ethical familial DNA testing guidelines. Leaders of criminal justice professionals should be inclined to read current policies of agencies that perform familial DNA testing and determine whether they perceive the guidelines to be ethical. From existing guidelines, criminal justice leaders can determine what they do or do not want to take from the existing guidelines. Criminal justice leaders should learn how to evaluate ethical implications and assess practical technologies pertaining to familial DNA testing. Acknowledging current policies may aid criminal justice leaders in addressing ethical concerns that might affect social, privacy, political, and civil familial DNA testing concepts; concepts concerning legislation, authorization, financial support, and judicial endorsement (Williams & Johnson, 2006).

A well-written policy may benefit from state-to-state guidelines. Participants' implied ethical familial DNA testing guidelines may benefit from state-to-state guidelines and that a nationwide policy would be too difficult to monitor. Lazer (2008) noted familial DNA testing would need to be executed solely at the state level because the national level is a much larger scope to oversee. States could refer to The National DNA Database Ethics Group. The National DNA Database Ethics Group oversees all human rights and ethical concerns regarding familial DNA testing (Kim et al., 2011). The literature did not address the specifics on the scope of familial DNA testing; however, a state-to-state policy would allow states to be held accountable for their jurisdictions. Situations change constantly and a state-to-state policy would be more manageable for jurisdictions when they have to consider ethical familial DNA testing concerns. Cantrell (2010) revealed that in 2006, Denver's District Attorney persuaded the FBI to revise

familial DNA testing procedures. The FBI created new guidelines that leave it up to each state to decide whether to report partial matches to intra-state investigators (Cantrell, 2010).

Search warrant and probable cause. Participants also expressed search warrant and probable cause provisions should be included in ethical familial DNA testing guidelines. The inclusion of a search warrant emerged as the most significant element to be included in ethical familial DNA testing guidelines. Probable cause refers to the requirement found in the Fourth Amendment to the Constitution and law enforcement personnel must prove probable cause before making an arrest, conducting a search, or obtaining a warrant (Charters of Freedom, 2012). Proving probable cause is how law enforcement personnel obtain a search warrant. Law enforcement officers must show there is probable cause to believe a search is justified (Legal Information Institute, 2012).

Including the need for a search warrant and probable cause in familial DNA testing guidelines could prevent law enforcement personnel from violating an individual's constitutional rights. Participants recommended a search warrant should be included in familial DNA testing guidelines. Similarly, Schwartz (2011) indicated that the inclusion of a judicial warrant should be included in ethical familial DNA testing guidelines. According to Schwartz (2011), a judicial review acts as checks and balances that regard civil liberties and civil rights concerns. A judicial warrant should include provisions that courts be ready to decide if the past crime is major; courts should know if the danger of the crime is adequately significant; and courts should also know if other investigative leads have been significantly drained (Schwartz, 2011). A judicial warrant is a significant component to be considered as a part of ethical familial DNA testing. The need for a search warrant, when performing familial DNA testing, is an extremely reasonable concept to continue exploring.

DNA database. Participants also expressed concern about what type of information is maintained in the DNA database regarding familial DNA testing. A recommendation is that there should be comprehensive reporting of whose DNA is contained in the databank. Also, when familial DNA searches and testing prove inconclusive, a *destruction of DNA* provision may prove beneficial in ethical familial guidelines. Destruction of DNA from databases may aid in alleviating privacy concerns of those individuals or family members who are affected by familial DNA testing.

Public review process. Participants implied the inclusion of a public review process in familial DNA testing guidelines may prove beneficial. Similar to a public review process, Schwartz (2011) revealed the importance of a judiciary review. Additionally, Schwartz (2011) noted that conducting a supervisory review before conducting familial DNA testing may be advantageous. As noted in the study findings, but not specifically mentioned in the literature review, a public review process involving community input could play an important role in conducting ethical familial DNA testing. Community involvement may reduce fear individuals have of the familial DNA testing process, especially since familial DNA could affect everyone. Community involvement in the public review process may offer significant feedback from individuals regarding ethical familial DNA testing concerns. Kim et al. (2011) referred to the National DNA Database Ethics Group (also referenced in recommendation for state-to-state guidelines). Criminal justice leaders could refer to the National DNA Database Ethics Group for guidance if considering a public review process. Also, California created a Familial Search Committee that provides legal and ethical checkpoints for familial search requests. This committee consists of law enforcement, attorneys, and scientists (Kim et al., 2011), very much like the composition of participants in this research study.

Also, conducting a judicial review would allow the courts to decide if the past crime is major and if the danger of the crime is moderately significant. A judicial review would also reveal if other investigative leads have been exhausted (Schwartz, 2011). Additionally, a supervisory review would be beneficial because supervisors could help reduce possible civil right and civil liberty violations (Schwartz, 2011). According to Schwartz (2011), including a supervisory review would be beneficial because there can be no application to a court warrant to implement familial DNA testing without a higher level of managerial consent. The consideration of a public review, judicial review, and supervisory review are all compelling recommendations when considering a public review process and deciding what ethical familial DNA testing guidelines should include.

Protection of privacy. Participants suggested ethical familial DNA testing guidelines should include elements that protect the privacy of individuals investigated. Protecting privacy supports participants' perceptions that ethical familial DNA testing guidelines should include tools necessary to ensure fairness, safeguarding privacy, and the protection of constitutional rights. Familial DNA testing has been questionable because of privacy concerns (Green, 2013). Privacy includes making sure information in the DNA database is vastly guarded. Suter (2010) noted that the obligatory accumulation of DNA from condemned offenders increases multiple privacy and civil freedom issues because of long-term holding of hereditary material and all the personal data contained within. By expressing the need for privacy when performing familial DNA testing, participants implied the need for privacy to be included in ethical familial DNA testing guidelines.

Participants also expressed how protecting the privacy of individuals is relevant to protecting individuals' Constitutional rights. The literature revealed there are concerns that

familial DNA testing information could be used in cases that threaten an individual's privacy and rights, including the rights of their families (Forensic Genetics Policy Initiative, 2014). Murphy, (2012) noted, even if a state approves familial DNA testing, particular laws must endure constitutional scrutiny. The most distinct challenge comes from the Fourth Amendment (Murphy, 2012). Casillas (2011) expressed all forensic DNA databases raise privacy and civil rights concerns; familial DNA testing raises even more concern that include further aggravating racial disparities in the criminal justice system and arbitrarily creating two classes of people (Casillas, 2011). Additionally, participants expressed concern that African Americans' relatives are more prevalent to be in the databases and other races, not as much.

If a family member is found innocent and to protect the privacy of that individual, disposing of a tested relatives' DNA might prove beneficial. If law enforcement personnel are authorized to perform familial DNA testing on a relative, and the relative is not convicted, the relative's DNA testing should be destroyed (Schwartz, 2011). Simoncelli and Krimsky (2007) reported a lawsuit from Michigan and one from Louisiana evolved because of denied requests to have DNA returned to people who volunteered their DNA. Schwartz (2011) also indicated the need for a guideline that protects the privacy of individual's being investigated. Although participants revealed the importance of protecting individual privacy and recommended multiple safeguard measures, study results did not produce a guaranteed solution on how individuals' privacy could be protected in the use of familial DNA testing.

Law enforcement and traditional police work. Participants' perceptions that educating and training law enforcement personnel is important also supports participants' perceptions that ethical familial DNA testing guidelines should include tools necessary to ensure fairness, safeguarding privacy, and the protection of constitutional rights. The literature review did not

provide a particular discussion on the importance of educating and training law enforcement. However, Banda (2010) revealed, according to the Colorado Bureau of Investigation, law enforcement personnel must go through training for familial DNA testing. Study results revealed participants perceived law enforcement personnel play a vital role in familial DNA testing; law enforcement personnel collect DNA from crime scenes. Also, participants perceived traditional police work should be used before familial DNA testing is considered for criminal justice purposes.

The study revealed an added emphasis on the need for educating and training law enforcement personnel is necessary. An element of Colorado's familial DNA policy is crime investigators are expected to try and certify familial relations through background checks of the partial match of individual and family members, via public resources (Kim et al., 2011). Public resources available to crime investigators might include criminal history checks, jail and court records, or investigative reports (Kim et al., 2011); this is in line with participants' perceptions that traditional police work should be a first consideration before applying the familial DNA testing concept. Colorado's policy requires authentication of familial relationships through public records before questioning suspects disclosed in the familial search (Kim et al., 2011). In a sense, law enforcement is the heart of familial DNA testing and they create the initial stages of the familial DNA testing process; law enforcement personnel are the first individuals at the crime scene. Education and training for law enforcement personnel involving familial DNA testing grants officers the opportunity to gain valuable knowledge of the familial DNA process. A recommendation is continued education for law enforcement personnel because continued education reiterates the importance of practicing ethics in familial DNA testing.

Limitations

As far as limitations, there were a few concerns. The first limitation was the potential bias of participants; those participants who favored familial DNA testing and those who may be against familial DNA testing. Again, the researcher believes participants in this study refrained from bias in their analysis and feedback. Another limitation consideration for the researcher was the openness of participants. Participants in the study were more open with their feedback than the researcher anticipated. The third limitation considered was the extent of criminal justice professional's and law enforcement personnel's knowledge of the concept of familial DNA testing. As stated, all but one respondent had knowledge of familial DNA testing. Although this respondent had knowledge of DNA testing and DNA testing in the criminal justice system, the respondent gained knowledge of the familial DNA testing in the criminal justice system prior to responding to the study. This respondent read several articles to gain knowledge and understanding of the familial DNA testing process prior to answering interview questions. Also, some participants acknowledged he or she had to brush up on the practice of familial DNA testing because it is a fairly new concept and only a handful of states are currently using the familial DNA testing technique.

Significance to Criminal Justice, Leadership, and Private Citizens

Significance to Criminal Justice System

Criminal justice professionals are regularly pursuing measures to improve law enforcement and criminal justice performance. The varied utilizations of DNA analysis support a binding union between law enforcement services and forensic sciences that changed the justice system in a way no other investigative tool has done previously (Prime & Newman, 2007). The significance of this study to criminal justice personnel is the opportunity to examine what

criminal justice professionals' perceived ethical familial DNA testing guidelines should include. In familial DNA testing, clear instruction is essential because familial DNA testing is not as decisive as typical DNA searches (Barca, 2013).

According to Barca (2013), there should be conformity of processes across federal and state lines that clearly frame rules and limits for familial DNA testing. Therefore, it is necessary for criminal justice professionals to gain a better understanding of how to progress ethically in performing familial DNA testing in the criminal justice system. Familial DNA testing may begin to play a more significant role in helping criminal justice professionals identify individuals suspected of committing crimes. The concern critics have regarding civil rights and civil liberties need to be addressed.

Significance to Criminal Justice System Leaders

This study gives leaders in the criminal justice profession an opportunity to view what their colleagues', supervisors', employers', or lawmakers' perceptions are regarding ethical familial DNA testing. The perceptions of criminal justice professionals, from a variety of criminal justice professions, are valuable. The study results revealed what criminal justice professionals perceived should or should not be considered in ethical familial DNA testing guidelines. As criminal justice leaders, states, and the federal government ponder ethical familial DNA testing guidelines, it is essential that careful and distinctive attention be given to the delicate issues (Murphy, 2010). Criminal justice professionals are experts in criminal law. The study results offer criminal justice leaders an opportunity to analyze the perceptions of practicing criminal justice professionals. Because of the study results, criminal justice leaders have the opportunity to examine perceptions other than those coming from familial DNA testing lawmakers.

Study results provide criminal justice leaders with information necessary to contemplate what ethical guidelines mean to them, not only for their jurisdiction, but for others. For instance, the recommendation of a state-to-state policy gives criminal justice leaders the opportunity to consider accountable measures when regarding ethical familial DNA testing guidelines. The significance to criminal justice leaders is that the study provides references to what ethical familial DNA testing guidelines might include when considering a jurisdiction policy. Additionally, what criminal justice professionals perceived ethical familial DNA testing should include can provide criminal justice leaders important information for guiding ethical familial DNA testing decision-making.

Pollock (2010) revealed the power of criminal justice professionals should be used fairly and in an equitable manner. Familial DNA testing is a powerful tool available to law enforcement and criminal justice professionals. Study results can provide criminal justice leaders information on how to teach personnel and proceed with performing familial DNA testing ethically. The power of criminal justice professionals includes equal protection that is not decided by the color of our skin, our gender, nationality, or the religion we practice (Pollock, 2010). The protection of laws extends to all. Although evidence indicates different treatment exist, equal protection is a necessary component of our legal system and criminal justice ethics. Equal protection must be an operating fundamental for each person working in the criminal justice profession (Pollock, 2010). This study reaffirms to criminal justice authorities the need to lead according to the protections that the “equal clause protection” of the Fourteenth Amendment requires. The study opens up multiple considerations that criminal justice professionals need to consider when implementing or performing ethical familial DNA testing.

The study provides new knowledge about criminal justice professionals’ perceptions

concerning how to implement more ethical familial DNA testing. Proposed guidelines and current guidelines are beneficial for leaders to compare what may or may not work for administering ethical familial DNA testing. Guidelines focus on policies that include statements of principles and practices (Industrial Relations, 2013). Guidelines are structures that define how organizations deal with multiple aspects including legislation, regulation, and codes of process. Guidelines should be reasonable (Industrial Relations, 2013). This study highlighted a range of perceptions from criminal justice professionals who reside in different geographical locations. Considering the variety of perceptions may help criminal justice leaders view proposed or current, ethical familial DNA testing guidelines in a more unanimous and ethical neutrality.

Significance to Private Citizens

Study results revealed private citizens are also an important consideration when it comes to familial DNA testing and ethical guideline recommendations. Familial DNA testing not only affects criminal justice professionals and law enforcement practices, but may significantly affect all private citizens. The government has the right to control and punish, but citizens have rights protections against capricious or unlawful use of that power that include civil right and civil liberty protections (Pollock, 2010). Private citizens' could be affected by familial DNA testing because at some point in time, one or more of their relatives may become someone who has DNA in criminal databases. Also, each private citizen is susceptible to being testing because of familial DNA testing provisions. Ethics in criminal justice involves issues or dilemmas that include social questions; familial DNA testing is one such issue (Monroe College, 2014). Social inquiries frequently contain the government's social control devices and the impact on those governed. Criminal justice professionals discover ethical issues that revolve around serious and difficult concerns that affect individuals' lives in paramount ways (Monroe College, 2014).

Almost all criminal justice professionals are public servants and they have an obligation to provide exclusive services to the public they serve (Monroe College, 2014). Public officials need to know how to approach familial DNA testing ethically. Hammond (2010) suggested that the reward forensic science investigation brings to criminal justice also brings challenges. Leaders need to be prepared to deal with these challenges; challenges that include private citizens.

Contemplating what ethical guidelines should include is important because familial DNA testing could possibly affect everyone. Because familial DNA testing is also relevant to private citizens, the concept of a public review process is important for educating the public. A public review process might result in beneficial feedback from the community. The community might offer feedback that is advantageous in practicing ethical familial DNA testing. A public review process might also reduce the fear individuals have for the familial DNA testing technique. Considering private citizens is necessary when determining what ethical familial DNA testing guidelines should include.

Future Research

Given that familial searching only began in earnest in 2002 in the United Kingdom, it is perhaps not altogether surprising that discussion of the practice in the academic literature both as a matter of empirical inquiry and legal study has only recently begun. (Murphy, 2010, p. 303)

Future researchers could consider studying an agency that currently practices familial DNA testing. A specific study might include doing a study on the United Kingdom because this jurisdiction was the first, nationwide, to practice familial DNA testing. The United Kingdom (UK) has the most knowledge administering familial DNA testing of their national DNA

database. Since 2003, the UK has handled nearly 200 familial searches that aided in solving relatively 40 serious offenses including cold cases (FBI, 2014). Studying an agency that currently practices familial DNA testing could disclose a thorough focus on why familial DNA testing works for that jurisdiction. This approach might answer how a practicing agency handles the ethical concerns of familial DNA testing. The interview questions would probably have to be adjusted to fit the research question and outcome of the study.

Another future study consideration might include studying police officers only; studying police officers' perceptions of ethical familial DNA testing in the criminal justice system. Because police officers are the individuals who collect DNA from the crime scene, researchers could analyze what police officers perceive ethical familial DNA testing processes should include. The data collection and interview questions for police officers could remain the same. Another study, focusing specifically on criminal judges may also prove advantageous. Criminal judges' duties include determining whether evidence attorneys want to use is illegal or improper, apply laws and standards to cases being decided, and determine facts and renders decisions in cases (United States District Court Northern District of Florida, 2014). A qualitative case study focusing on criminal judges' perceptions could open up further insight concerning interpretation of the law and credible evidence regarding ethical familial DNA testing.

A future research consideration may involve focusing on proposed state-to-state guidelines versus national familial DNA testing guidelines. Also, a specific study on search warrants and how they affect familial DNA testing would be extremely beneficial. Study results revealed that including search warrants in familial DNA testing might decrease ethical concerns. Additionally, a study focusing on private citizens or a study focusing on a national familial DNA testing advisory committee and how they deal with ethical issues may prove helpful.

Future researchers could consider the use of multiple-case studies and mixed method designs. The use of multiple-case studies would allow researchers to explore multiple familial DNA concerns, such as The Fourth Amendment, privacy, civil liberties, disproportionate targeting, and more. Data collection could remain the same; the analysis and findings could offer additional insights into how familial DNA concerns effect ethical testing.

A mixed methods research design using quantitative and qualitative analysis involving study considerations mentioned above is another future research consideration. Even though the mixed methods design uses different methods, the same research question is required for data collection and for conducting counterpart analysis (National Institutes of Health, 2014). The mixed methods research could grant the researcher a chance to focus on research questions that call for real-life contextual understandings, multi-level perspectives, and cultural influences. The mixed methods research could employ rigorous quantitative research and assess the magnitude and frequency of constructs; rigorous qualitative research can explore the meaning and understanding of constructs. Perhaps the researcher could use a slightly different approach and reassemble the research question. The researcher might also add more interview questions. Adding more questions would aid the mixed method research in integrating quantitative and qualitative methods to draw on the strength of each. In mixed method research, a survey could be presented to additional criminal justice professionals outside of the participants interviewed. The survey might form a baseline analysis that is dependent on what approach the researcher wants to take.

Summary

The purpose of this qualitative, single case study was to explore criminal justice professionals' perceptions on whether clear guidelines are necessary for conducting ethical

familial DNA testing in the criminal justice system. The purpose of this study included exploring criminal justice professionals' perceptions of what guidelines are necessary if deemed clear guidelines are needed for ethical familial DNA testing in the criminal justice system. Twelve criminal justice professionals from Arizona, California, Colorado, District of Columbia, Florida, Maryland, and Virginia were interviewed via e-mail and face-to-face in support of the research question; What do criminal justice professionals perceive ethical familial DNA testing guidelines should include? The face-to-face interviews were audio recorded. All interviews, face-to-face and e-mail, were transcribed once completed. The transcribed interview data was integrated into the NVivo 10 qualitative software program for analysis. Interview data was coded and placed into nodes that secured emerging themes related to each of the five interview questions. The five interview questions addressed the representative nodes of (a) perception, (b) ethics, (c) guidelines, (d) elements in guidelines, and (e) additional information. Thus, themes emerged from the representative nodes.

Implications were identified from the data analysis that also incorporated the research findings from the literature review conducted in Chapter 2. The research study implications disclosed participants do perceive ethical familial DNA testing guidelines are necessary in the criminal justice system. Additionally, the data collection and analysis revealed the majority of participants believed familial DNA testing is ethical. However, as noted in the literature review, the study revealed there still remain proponents and opponents of familial DNA testing. Participants perceived familial DNA testing should be used as a tool and a clear, well-written policy should be used to create ethical familial DNA testing guidelines. Although there were a variety of responses from participants concerning what elements ethical familial DNA guidelines should include, study results revealed participants perceived ethical familial DNA testing

guidelines should include a public review process, provisions for probable cause and search warrant, emphasis on the role of law enforcement, and provisions that protect information contained in the DNA database. Participants perceived these elements are necessary to ensure fairness, the safeguarding of privacy, and the protection of constitutional rights. Participants perceived that abiding by constitutional rights when performing familial DNA testing in the criminal justice system will protect an individual's civil rights and civil liberties. Thus, answering the research question, "What do criminal justice professionals perceive ethical familial DNA testing guidelines should include."

The qualitative case study contributed to the body of knowledge in the areas of criminal justice professionals' perceptions of familial DNA testing and the need for familial DNA testing guidelines in the criminal justice system. The case study indicated that criminal justice professionals regard familial DNA testing as a powerful tool that should only be used when ethical guidelines steer the familial DNA testing process. The results of this qualitative, single case study offered understanding and insight into what criminal justice professionals perceived ethical familial DNA testing guidelines should include. Implications from the research revealed the gap in literature is narrowed because the study symbolized a forum for criminal justice professionals from various fields, to have a voice on what is important in performing their jobs ethically; how criminal justice professionals perceive ethical familial DNA testing. The study did not provide a complete or universal resolution, which was also found in literature review results; the evidence might prove there is no particular or conclusive answer to substantiate supporters or non-supporter's arguments. However, impressive suggestions are offered from the study regarding what ethical familial DNA testing guidelines may include for familial DNA testing in

the criminal justice system. The case study research results provided data points to assist other researchers in clarifying clear concerns regarding familial DNA testing.

Study results revealed familial DNA testing offers law enforcement a compelling tool in combating crime. However, criminal justice professionals and leaders need to consider open questions concerning the impact of familial DNA testing policies on particular populations and how to reduce personal invasion on relatives of people whose DNA is maintained in the DNA database. Criminal justice professionals and the public might further understand societal impact as familial DNA testing policies emerge and jurisdictions create guidelines (Kim et al., 2011). The study established well-written guidelines are essential for any type of process that affects so many; familial DNA testing procedures are no exception. Ethics are also vital when considering any type of manipulation that has to do with the human element. For criminal justice professionals' perceptions of what ethical familial DNA testing guidelines should include, considering and implementing proper safeguards may be the significant determination when administering ethical guidelines.

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APPENDIX A

COMMUNICATION WITH SUBJECTS (Introductory E-mail)

Criminal justice professionals are needed to volunteer for participation in a Doctor of Management research study, *Criminal Justice Professionals' Perceptions of the Need for Familial DNA Testing Guidelines in the Criminal Justice System*. You were specifically chosen as a possible participant because of your experience and background in criminal justice practices and procedures. If you are interested, please contact Sherry A. O'Berry 717-577-0369 or email BrSug1@verizon.net.

APPENDIX B

INFORMED CONSENT FOR PARTICIPANTS 18 YEARS OF AGE AND (Older)

Dear Research Participant,

My name is Sherry A. O'Berry and I am a student at the University of Phoenix working on a Doctor of Management in Organizational Leadership degree. I am doing a research study entitled *Criminal Justice Professionals' Perceptions of the Need for Familial DNA Testing Guidelines in the Criminal Justice System*.

The purpose of the research study is to explore criminal justice professionals' perceptions about whether clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system. The purpose of the study includes exploring criminal justice professionals' perceptions of whether clear guidelines are necessary, and if so, what guidelines are needed for conducting ethical familial DNA testing.

Although your in-person interview is occurring at the Office of the Richmond Commonwealth's Attorney after hours, neither the City of Richmond nor the Office of the Richmond Commonwealth's Attorney, in any way, sponsors, supports, or otherwise sanctions this interview or the overall study.

Your participation will involve participating in a one-hour, audio-taped interview about your perceptions concerning familial DNA testing in the criminal justice system. Your participation in this study is voluntary. Once you start, you can withdraw from the study at any time without any penalty, ill-will, or negativity toward you. The results of the research study may be published but your identity will remain confidential and your name will not be made known to any outside party.

In this research, there are no foreseeable risks to you.

Although there may be no direct benefit to you, a possible benefit from your participation is that study results may influence leaders and criminal justice professionals in development of and use of clear guidelines related to ethical use of familial DNA testing in the criminal justice system.

If you have any questions about the research study, please call me at 717-577-0369 or email me at BrSug1@verizon.net.

As a participant in this study, you should understand the following:

1. You may decide not to be part of this study or you may want to withdraw from the study at any time. If you want to withdraw, you can do so without any problems.
2. Your identity will be kept confidential.
3. The participant verifies that Sherry A. O'Berry, the researcher, has fully explained the nature of the research study and has answered all of your questions and concerns.

4. Interviews may be recorded. If they are recorded, you must give permission for the researcher, Sherry A. O'Berry, to record the interviews. You understand that the information from the recorded interviews may be transcribed. The researcher will develop a way to code the data to assure that your name is protected.
5. Data will be kept in a secure and locked area. The data will be kept for 3 years, and then destroyed.
6. The results of this study may be published.

By signing this form, you agree that you understand the nature of the study, the possible risks to you as a participant, and how your identity will be kept confidential. When you sign this form, this means that you are 18 years old or older and that you give your permission to volunteer as a participant in the study that is described.

I accept the above terms. I do not accept the above terms. (CHECK ONE)

Signature of the interviewee _____ Date _____

Signature of the researcher _____ Date _____

APPENDIX C

DATA COLLECTION INTERVIEW QUESTIONNAIRE

Listed below are the interview questions for this qualitative, single case study:

1. What is your perception of familial DNA testing in the criminal justice system?
2. Do you think that familial DNA testing is ethical? Why or why not?
3. Do you believe there should be guidelines for any agency performing familial DNA testing?
4. If you had to create guidelines for familial DNA testing, what would be some of the elements contained in the guidelines?
5. Is there anything you would like to add concerning familial DNA testing?

APPENDIX D

VERBAL SCRIPT

Listed below is the script for participant interviews:

Good morning/afternoon. The title of this research is *Criminal Justice Professionals' Perceptions of the Need for Familial DNA Testing Guidelines in the Criminal Justice System*.

The purpose of this research study is to explore criminal justice professionals' perceptions on whether clear guidelines are necessary for conducting ethical familial DNA testing in the criminal justice system. This purpose includes exploring criminal justice professionals' perceptions of what guidelines are necessary if deemed clear guidelines are needed for conducting ethical familial DNA testing.

Here is a copy of the Informed Consent: Participants 18 Years of Age and Older. By signing this consent form, you understand and agree that your participation in this research study is voluntary and that you may withdraw from the interview at any given time. Here is a copy of the researcher's contact information that includes home phone number and address. Here is your copy of the signed informed consent.

The interview process will last approximately 1 hour. I will ask you a series of open-ended questions. I will tape record the interview with your permission and then transcribe the interview. I will offer you a copy of your interview transcript for review. I will assign an identification number to distinguish between participants and ensure anonymity. I will maintain the research documentation in a safe location under lock and key. The data will be held for a

period of 3 years and then destroyed by shredding. Do you have any questions about the process? I will now begin to interview:

Listed below are the interview questions for this qualitative case study:

1. What is your perception of familial DNA testing in the criminal justice system?
2. Do you think that familial DNA testing is ethical? Why or why not?
3. Do you believe there should be guidelines for any agency performing familial DNA testing?
4. If you had to create guidelines for familial DNA testing, what would be some of the elements contained in the guidelines?
5. Is there anything you would like to add concerning familial DNA testing?

We are now finished with the interview questions.

Now I will set up a meeting for you to review the transcript. We will meet on this date/time, at this _____ location. Thank you for your time. If you think of any questions, please contact me.

APPENDIX E



PREMISES, RECRUITMENT AND NAME (prn) USE Permission

Room 100 Conference Room, John Marshall Courthouse

Please complete the following by check marking any permissions listed here that you approve, and please provide your signature, title, date, and organizational information below. If you have any questions or concerns about this research study, please contact the University of Phoenix Institutional Review Board via email at IRB@phoenix.edu.

I hereby authorize Sherry A. O’Berry, a student of University of Phoenix, to use the premises (facility identified below) to conduct a study entitled Criminal Justice Professionals’ Perceptions of the Need for Familial DNA Testing Guidelines in the Criminal Justice System

I hereby authorize Sherry A. O’Berry, a student of University of Phoenix, to recruit subjects for participation in a study entitled Criminal Justice Professionals’ Perceptions of the Need for Familial DNA Testing Guidelines in the Criminal Justice System.

I hereby authorize Sherry A. O’Berry, a student of University of Phoenix, to use the name of the facility, organization, university, institution, or association identified above when publishing results from the study entitled Criminal Justice Professionals’ Perceptions of the Need for Familial DNA Testing Guidelines in the Criminal Justice System.

Signature

Date

Name

Title

Room 100 Conference Room

John Marshall Courthouse

400 North 9th St

Richmond, VA 23219

APPENDIX F



Criminal Justice Professionals' Perceptions of the Need for Familial DNA Testing
Guidelines in the Criminal Justice System
Sherry A. O'Berry

CONFIDENTIALITY STATEMENT

As a researcher working on the above research study at the University of Phoenix, I understand that I must maintain the confidentiality of all information concerning all research participants as required by law. Only the University of Phoenix Institutional Review Board may have access to this information. "Confidential Information" of participants includes but is not limited to: names, characteristics, or other identifying information, questionnaire scores, ratings, incidental comments, other information accrued either directly or indirectly through contact with any participant, and/or any other information that by its nature would be considered confidential. In order to maintain the confidentiality of the information, I hereby agree to refrain from discussing or disclosing any Confidential Information regarding research participants, to any individual who is not part of the above research study or in need of the information for the expressed purposes on the research program. This includes having a conversation regarding the research project or its participants in a place where such a discussion might be overheard; or discussing any Confidential Information in a way that would allow an unauthorized person to associate (either correctly or incorrectly) an identity with such information. I further agree to store research records whether paper, electronic or otherwise in a secure locked location under my direct control or with appropriate safe guards. I hereby further agree that if I have to use the services of a third party to assist in the research study, who will potentially have access to any Confidential Information of participants, that I will enter into an agreement with said third party prior to using any of the services, which shall provide at a minimum the

confidential obligations set forth herein. I agree that I will immediately report any known or suspected breach of this confidentiality statement regarding the above research project to the University of Phoenix, Institutional Review Board.

_____ Signature of Researcher	Sherry A. O'Berry Printed Name	1/8/15 Date
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_____ Signature of Witness	_____ Printed Name	_____ Date
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APPENDIX G

EXISTING FAMILIAL DNA TESTING GUIDELINES

California

Colorado

Netherlands

New Zealand

Texas

United Kingdom

Virginia

Go to http://www.denverda.org/DNA/Familial_DNA_Database_Searches.htm to view policies.

APPENDIX H

LIST OF TABLES

Table 1

Sample Population Demographics

*Number of Proposed Participants Contacted	
25	
Participants in Study	Occupation of Participants
12	
Participant 1	Prosecuting attorney
Participant 2	Judge and former legal analyst
Participant 3	Supervisor of a forensic biology section, Department of Forensic Science
Participant 4	Chief attorney for a forensics division of an office of the public defender
Participant 5	Defense attorney and former prosecutor
Participant 6	Staff attorney, American Civil Liberties Union (ACLU)
Participant 7	Prosecutor and former defense attorney
Participant 8	Law student who is a ten year veteran of a sheriff's office
Participant 9	Criminal defense attorney and member of the National Association of Criminal Defense Lawyers
Participant 10	Defense attorney
Participant 11	Prosecutor
Participant 12	Attorney who is a former police officer

**Note.* Thirteen members of the proposed sample contacted, responded with different reasons why they could not participate in the study. Examples of reasons included unfamiliarity of the familial DNA concept and time schedules. Twelve individuals agreed to participate in the study.

Table 2

Participants Alphabetical Designated Coding

Participant	Participant Designated Code
Interviewee 1 = A	Participant PA
Interviewee 2 = B	Participant PB
Interviewee 3 = C	Participant PC
Interviewee 4 = D	Participant PD
Interviewee 5 = E	Participant PE
Interviewee 6 = F	Participant PF
Interviewee 7 = G	Participant PG
Interviewee 8 = H	Participant PH
Interviewee 9 = I	Participant PI
Interviewee 10 = J	Participant PJ
Interviewee 11 = K	Participant PK
Interviewee 12 = L	Participant PL

Table 3

Interview Question 1 Representative Node: Perception Themes

Representative Node	Theme 1 and Nodes	Total Items Coded	Number of Participants Coded
Perception	Perception of Familial DNA	32	18

Testing		
Privacy	9	3
Tool	10	5
Fair & Ethical	6	3
Cold cases	2	2
Safeguards	3	3
Insufficient Rules	2	2

Table 4

Interview Question 2 Representative Node: Ethics Themes

Representative Node	Theme 2 and Subthemes	Nodes	Total Items Coded	Number of Participants Coded
Ethics	Is Familial DNA Testing Ethical?		19	12
	Yes	Ethical and Safeguards	3	5
		Constitutional	6	2
	No	Ethics	2	2
	Unsure		2	2
	General Responses	Constitutional	6	1

Table 5

Interview Question 3 Representative Node: Guidelines Themes

Representative Node	Theme 3 and Subthemes	Node	Total Items Coded	Number of Participants Coded
Guidelines	Should Familial DNA Testing Have Guidelines?		18	8
	Yes (11)	Guidelines	17	7
	No (1)		1	1

Table 6

Interview Question 4 Representative Node: Guidelines in Elements Theme

Representative Node	Theme 4 and Nodes	Total Items Coded	Number of Participants Coded
Elements in Guidelines	Guideline Elements	14	11
	Traditional Police Work	3	2
	Search Warrant	4	4
	DNA Databank	3	2
	Public Review Process	2	1
	Probable Cause	2	2

Table 7

Interview Question 5 Representative Node: Additional Information Themes

Representative Node	Theme 5, Subtheme, and Nodes	Total Items Coded	Number of Participants Coded
Additional Information		16	9
	Unfairness	5	2

Additional Supplement: Policy, DNA Testing and Law Enforcement	11
<i>Policy</i>	3
<i>DNA Testing</i>	2
<i>Law Enforcement</i>	2

Table 8

Final Analysis of Representative Nodes and Themes

Interview Questions/Representative Nodes/Themes	Responses for Interview Questions 2 and 3	Nodes	Further Breakdown of Nodes	Final Emerging Nodes
Question 1: <i>What is your perception of familial DNA testing in the criminal justice system?</i> - Representative Node: Perception Theme 1: Perception of Familial DNA Testing		Valuable tool, concern for fair and ethical practice, beneficial in cold case crimes, last resort tool, must have strong safeguards, guidelines, potential for misuse, constitutional, privacy, training, educating, underutilized tool, insufficient rules, and protection.	Privacy, tool, fair and ethical, cold cases, safeguards, and insufficient rules	Tool and privacy
Question 2: <i>Do you think that familial DNA testing is ethical? Why or why not?</i> Representative Node: Ethics Theme 2: Is familial DNA testing Ethical?	Yes, no, or unsure	Valuable tool, concern of fair and ethical practice, beneficial in cold case crimes, last resort tool, must have strong safeguards, guidelines, potential for misuse, constitutional, privacy, training, educating, and protection.	Constitutional, and ethical and safeguards	Constitutional, ethical, and safeguards
Question 3: <i>Do you believe there should be guidelines for any agency performing familial DNA testing?</i> Representative Node: Guidelines Theme 3: Should familial DNA testing have guidelines?	Yes or no	Valuable tool, concern of fair and ethical practice, beneficial in cold case crimes, last resort tool, must have strong safeguards, guidelines, potential for misuse, constitutional, privacy, training, educating, and protection.	Guidelines	Guidelines
Question 4: <i>If you had to create guidelines for familial DNA testing, what would be some of the elements contained in the</i>		Strict limitations, search warrant, public review process, probable cause, traditional police work, safeguards, policies,	Traditional police work, search warrant, DNA databank, public review process, and	Search warrant

<i>guidelines?</i>	protections, guidelines, ethics, investigative leads, DNA databank, and constitutional.	probable cause.	
Representative Node: Elements in Guidelines Theme 4: Guideline elements			
Question 5: <i>Is there anything you would like to add concerning familial DNA testing?</i>	Safeguards, policies, protections, guidelines, ethics, unfair, profiling, and constitutional.	Unfairness, additional supplement, DNA testing, and law enforcement	Unfairness, DNA testing, and law enforcement
Representative Node: Additional Information Theme 5: Additional responses	Search warrant, most serious crimes, investigative leads, traditional police work, training, privacy, law enforcement, DNA testing, and probable cause.		

Table 9

Final Data Analysis: Research Question and What Criminal Justice Professionals Perceive Ethical Familial DNA Testing Guidelines Should Include

Representative Nodes	Research Question: What do criminal justice professionals perceive ethical familial DNA testing guidelines should include?
Perception, Ethics, Guidelines, Elements in Guidelines & Additional Information Final Nodes for Themes 1-5 Theme 1: Tool and privacy Theme 2: Constitutional, ethical, and safeguards Theme 3: Guidelines Theme 4: Search warrant, probable cause, DNA database, public review process, and traditional police work Theme 5: Unfairness, DNA testing, and law enforcement	Participants perceived familial DNA testing should be used as a tool. Participants also perceived ethical familial DNA testing guidelines should include tools necessary to ensure fairness, safeguarding privacy, and the protection of constitutional rights when performing ethical familial DNA testing. Specifically, participants disclosed ethical familial DNA testing guidelines should include a public review process, probable cause, a search warrant, a focus on the role of law enforcement, and provisions that protect information contained in the DNA database.

APPENDIX I

FIGURE

Example of Node Coding Model

