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# Exploring the Perception Towards Enhancing Credentials by Certification of Latent Fingerprint Examiners in the Southern United States

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# Exploring the Perception Towards Enhancing Credentials by Certification of Latent Fingerprint Examiners in the Southern United States

by

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## Abstract

With several applications of forensic processes coming into question, becoming a reputable expert witness in a court of law can be dire. This pilot study explores the professional opinions of latent fingerprint examiners employed by state criminal investigation departments. Research was geared towards measuring the notion that gaining certification through institutions such as the International Association for Identification (IAI) aids in the perception of latent fingerprint examiners' credibility and confidence as expert witnesses. The sample population of latent fingerprint examiners (LFPEs) was gathered using a digital survey issued to the forensic laboratories and divisions housed within state criminal investigation units. The results found a majority of LFPEs who were certified exercising more perceptive levels of credibility and confidence than those without certification. There were also minute differences between the ideologies of credibility versus confidence. Further research is requested to gather larger sample sizes of latent fingerprint examiners in order to explore more variables related to latent print examiners' field of forensic science.



Key Words: The University of Southern Mississippi, Latent Fingerprint Examiners, LFPE, Certification Latent Print Examiner, CLPE, Credibility, Confidence, International Association for identification, IAI, Ron Smith & Associates, RS&A

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I would like to extend a huge thanks to Dr. Dean Bertram for helping me through this thesis. If it had not been for his enthusiasm in his teaching methods, I would have never had interest in the forensic science world.

Lastly, I would like to thank my mother, Debbie Angeloff. She has been my steadfast support system all throughout college. Now, as I enter in to graduate school, she will continue to be a rock of support throughout the rest of my schooling, as well as my life.

## Table of Contents

## List of Tables

## Introduction

> "Hair stylists… lawyers, doctors all require a person be certified before practicing their chosen field. However, as a fingerprint examiner, I am allowed to testify in a criminal trial without holding any type of certification to show I am qualified. My testimony has the power to convict, to set free, or even bring a death sentence and yet virtually no court system requires me to hold any type of certification."
>
> - Debbie Benningfield, CLPE

The fingerprint. The idea has spawned several scientists and theorists who studied its uniqueness. It was not until 1788, when a German doctor, J. C. A. Mayer, claimed that no two fingerprints, down to the friction skin ridges, would ever be completely identical (Holder, Robinson, & Laub, 2011). Mayer stated, "Although the arrangement of skin ridges is never duplicated in two persons, nevertheless the similarities are closer among some individuals. In others the differences are marked, yet in spite of their peculiarities of arrangement all have a certain likeness" (Cummins & Midlo, 1943, pp 12-13). Mayer's hypothesis since then has proven very useful in a court of law. Throughout my forensic science classes, I have learned that fingerprinting evidence is almost as important as DNA evidence when comparing the two to arrests and suspect identification (Roman et al., 2008). Thus, latent fingerprint evidence is one of the top two choices of evidence to be collected at a crime scene (Roman et al., 2008).

The world of impression evidence is an ever-expanding science. Specifically, the phenomenon of fingerprint impressions has been used for identification purposes for many occasions in history, such as for documents, money, and property. Some prehistoric uses of fingerprints include, for example, Ancient China using fingerprints on clay seals as a means to verify an individual's documents (Holder et al., 2011). On one side of the

clay surface, the author's name would be pressed on to the surface, usually by stamp (Holder et al., 2011). Then, the person's fingerprint would be on the other side (Holder et al., 2011). They believed that having both the individual's name and fingerprint rendered the document valid (Holder et al., 2011).

The science, application, and credibility of fingerprints in a court of law have begun to grow in the areas of scholarly research. As the science and technology of fingerprint processing cultivate, so do the requirements of comprehending the knowledge of fingerprint history, development, and data. Fortunately, institutions such as the International Association for Identification (IAI), for example, have training and certification opportunities for candidates interested in the forensic science field of latent fingerprints (International Association for Identification [IAI], 2012). The demand for more educated latent print analysts is increasing.

By recognizing and understanding the importance of fingerprint impressions, my thesis began to take shape. I began to explore the professional outlooks of latent fingerprint examiners in the southeastern region of the United States, which is defined by the United States government as the following states: Alabama, Arkansas, Delaware, the District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia (Editors of Encyclopedia Britannica, 2014). The IAI has already taken great strides in keeping a database of certified latent print examiners, or those who have taken the standardized test given by the IAI for the history, embryology, and morphology of fingerprints and have passed (IAI, 2012). There remains, however, no national record of those without certification. My focus is on employed latent fingerprint examiners with

and without certification. What follows is an exploratory pilot study unveiling the demographics of fingerprint analysts and their attitudes regarding the effective capacity the IAI's Latent Print Certification Test has on individual perception of credibility and confidence.

## Literature Review

### Definitions and Institutions

Generally, there are three types of print impressions: latent, patent and plastic (Holder et. al., 2011). The classification that is of concern in this research is latent fingerprints. Latent prints are those found at a crime scene that have to be developed by the examiner through some revealing technique (i.e. fingerprint powder and ultraviolet light) (Holder et al., 2011). Regarding the quote in the introduction, the courts do not require an expert witness (i.e. a properly trained, educated professional) in the field of latent fingerprint examination to be certified. Ergo, there are generally two classifications of analysts that the International Association for Identification (2012) has defined: latent fingerprint examiners (LFPEs) and certified latent print examiners (CLPEs). Individuals can earn certification for latent fingerprint examination through the International Association for Identification (2012) Latent Print Certification Board (LPCB). The LPCB was the first certification board to be established by the IAI (IAI, 2012). The IAI created the board for the purposes of validating a LFPE's practice through a demanding testing process in hopes of improving the quality of an LFPE's examination, processing, and expert testimony of latent prints (IAI, 2012). As a result, the IAI states that CLPEs relish in copious amounts of praise through their certification since this measure of distinction is supposed to set a higher level of fingerprinting standard for all fingerprint experts (IAI,

2012). My research, however, dives into questioning the individual minds of those who have yet to take the certification test, are currently studying for the certification test, have taken the test but have not satisfactorily passed, and/or have taken the test and passed, satisfactorily.

The IAI (2012) was established in 1915 for the purposes of promoting any and all areas of forensic science (e.g. "areas" including fingerprinting, shoe impression, DNA analysis, etc.). Since then, the organization has grown both nationally and internationally, holding their annual conferences in places such as Canada, Cuba, Bermuda, and England. The IAI (2012) provides many different services, including distributing biweekly journals, notifying members of training sessions, and, most recently for college students, offering undergraduate membership and scholarship opportunities. Today, its top priority is continuing to encourage development among the areas of forensic science through education. One of the main organizations where professionals can receive training from forensic specialists is through Ron Smith and Associates (RS&A) (2010). Officially, RS&A is the exclusive home of training and education sponsored by the IAI, which houses the certification board that was created in 1977 for latent fingerprint examination. RS&A offers a very wide range of services, as well. Within its training division, RS&A offers a curriculum of six various forensic disciplines with classes ranging from two to five days (Ron Smith and Associates, 2010). RS&A also has consulting services for both police stations and private sectors that seek to improve areas of their departments. RS&A has experts in all fields of forensic science, but they can also improve paper work issues. Problems such as backlog, which, in this case, is an accumulation of work and files that

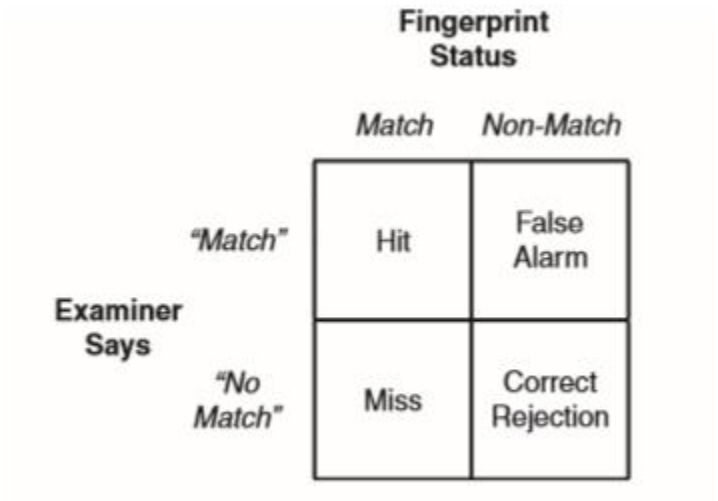
have yet to be reviewed and processed, are issues that RS&A promise to solve (RS&A, 2010).

**Examiner Expertise**

In the world of forensic science, high standards are necessary in order to protect the integrity of both the science and the law. The courts rely heavily on forensic analysts in order to fulfill their mission to "convict the guilty and protect the innocent" (Thompson, Tangen, & McCarthy, 2013, pp 1519). In the past couple of years, beginning in the early 2000s, the science of fingerprinting has gone under major scrutiny. Many critics argue whether forensic fingerprint identification was valid and reliable since many claim that there is no scientific community for fingerprint examiners (Thompson et al., 2013). Others doubt that fingerprint identification even required "experts," which prompted an experiment known as the "Identifying Fingerprint Expertise Experiment" (Thompson et al., 2013, pp 1521). The experiment called for thirty-seven fingerprint experts against thirty-seven undergraduate students who were asked to compare thirty-six latent prints to a "suspect" print, measuring the accuracy rate of both groups (Thompson et al., 2013).

The data was organized by using categories of outcomes similar to that of a Punnett Square. When comparing a print, there were four possibilities: a hit, a false alarm, a miss, and a correct rejection (Thompson et al., 2013). A hit occurred when the fingerprint examiner correctly matched the fingerprint; a false alarm occurred when the examiner matched a print that did not match; a miss occurred when the examiner declared a non-match between two prints when they actually did; a correct rejection occurred when the examiner correctly declared a non-match (see the figure below) (Thompson et

al., 2013). In regards to a court of law, there were two positive identifications and two negative identifications (Thompson et al., 2013). When the fingerprint examiner matched two exact prints correctly (a hit), or the examiner declared a correct non-match between two prints, the examiner had a positive identification (Thompson et al., 2013). Negatively, if the examiner declared a match between two fingerprints that did not match (a false alarm), he was wrongful in his comparison and would have been, hypothetically, convicting an innocent man (Thompson et al., 2013). Likewise, if the examiner declared a non-match between two prints that did match, he was wrong again and would have been releasing a guilty man back into society (Thompson et al., 2013).




(Thompson et al., 2013, pp 1523)

The results were outstanding: 92.12% of fingerprint experts correctly identified matching fingerprints (hits) (Thompson et al., 2013). Of the prints that did not match (false alarms), 0.68% of experts matched the fingerprints incorrectly, which is still significantly better than the 55.18% of undergraduates who had false alarms (Thompson et al., 2013). This experiment correctly shows the importance and significance of latent

fingerprint training among fingerprint experts. The one category that the experiment did not show (rather, did not explain) was whether or not the experts had any type of certification. Due to the results of this experiment, I predict that not only will we observe positive results among those examiners without certification regarding their perception of credibility and confidence, but we will see higher positive outcomes from those who have taken the IAI's Latent Print Certification Test.

**Fingerprint Validation**

Before examining the perceptions of individual latent fingerprint examiners, we must first examine the general blanket attitude of latent print evidence and its historical influence in a court of law. In 1993, the well-known *Daubert v. Merrell Dow Pharmaceuticals* case (1993) set the standard (known as the Daubert Standard) for forensic scientists by requiring scientific testimony in court be generally accepted by the scientific community, able to be peer-reviewed, and able to be tested. By specifically addressing the criteria towards fingerprint examiners, the Daubert Standard required said testimony to be appropriately reinforced by validation (*Daubert v. Merrell Dow Pharmaceuticals,* 1993). Cole (2006) questioned these validation studies, which labeled fingerprint testimony an almost infallible science. What he found were explanations of fingerprints' infallibility by several different scientists that wrongly interchanged the concepts of validity and reliability (Cole, 2006). One of the scientists, Giannelli (as cited in Cole, 2006), noted that when the courts label testimony as "reliable" and "consistent," they often are suggesting the same meaning as that of "valid" and "accurate" when, in fact, this is not the case. Validity is the measure of how close the results are to correction conclusions (i.e. accuracy), while reliability is the measure of how close the results are to

each other with each test that is executed (i.e. consistency) (Cole, 2006; Thompson et al., 2013). Validity may sometimes contain reliable conclusions, but the reverse is not always true (Cole, 2006). Under the Daubert Standard, a validation study is required, which is the measurement of a scientific technique's accuracy (as cited in Cole, 2006).

In the case of latent fingerprint examiners, the claim stands that LFPEs can achieve a phenomenon known as individualization, or the process of matching an unknown ("latent") print to a known print and eliminating all other possibilities (Cole, 2006). Since this concept is impossible to measure quantitatively because of the subjectivity of print matching, there is no way to truly prove the claim that all fingerprints are unique, posing a legal problem to examiners. Some even argue that fingerprint evidence should be excluded as valid testimony in courtroom proceedings (Cho, 2002). This doubt extends from the concerns researchers (as well as judges and members of the bar) have of the ambiguous nature of fingerprint testimony. Once the courts deem a specific scientific technique valid, there is no monitoring of what the examiner *says* in court (Garrett & Neufeld, 2009). Incorrect opinions of latent print examiners can often lead to false alarms (as mentioned above), which could convict innocent individuals such as Stephen Cowans. He was falsely accused of killing a police officer by the comparisons of fingerprints and was eventually exonerated by DNA evidence (Thompson et al., 2013; Garrett & Neufeld, 2009).

In order to satisfy the Daubert Standard and its definitions as outlined above, the best way the measure the accuracy of an LFPE is to observe the amount of times he/she can replicate correct identification conclusions (Cole, 2006). The IAI has taken measures of enhancing the credentials of LFPEs in hopes of reducing their error rate by creating the

Latent Print Certification Test (IAI, 2012). As mentioned, the exam contains sections of the history, morphology, and embryology of fingerprints, as well as a full section of conclusive fingerprint matching (IAI, 2012). If a LFPE fails any part of the first half of the test (e.g. history, morphology, embryology), not including the matching section, then the examiner has to wait six months in order to retake the exam (IAI, 2012). Moreover, if an examiner fails the matching section of the exam, then he/she has to wait a full year in order to retake the test (IAI, 2012). Lastly, according to the IAI, the passing rate of the examination has been below 50% (IAI, 2012). Due to the extensive, stringent nature of the examination process, I expect my results to be influenced by the aforementioned factors. For those examiners who have taken the IAI Latent Print Certification Test, I predict that I will see higher results of credibility and confidence among those who have achieved certification as opposed to the perceptions of LFPEs without certification.

**Credibility**

There are ongoing debates about whether or not latent fingerprint analysis is an actual science. Cole (1998) examined the methodology LFPEs developed that allowed them to declare their findings as a matter of fact. Cole (1998) was mainly concerned with how LFPEs created an atmosphere of certainty among jury members with images of latent prints that are technically interpreted only by a trained eye. Ultimately, he concluded that LFPEs have two "winning" dispositions concerning latent fingerprint evidence in a court of law. For one, the fingerprints in comparison are so similar that even the amateur eyes of jury members can identify analogous ridge detail on the fingerprints; therefore, this scenario would alleviate the pressure on the fingerprint expert to persuade members of the jury. Alternatively, the fingerprint examiner can override the

jurors' final decision through his/her use of fingerprinting expertise to provide another explanation of the evidence (Cole, 1998). The two preceding outlooks demonstrate how discernibility of impression evidence is based on the fingerprint examiner's ability to identify extreme level of detail. Cole (1998) observed latent fingerprint examination compared to other areas of forensic science, and was interested in whether or not LFPEs were seen as "scientists" or "technicians." Cole (1998) defines LFPEs as having a scientific mindset with behaviors like that of technicians, which sacrifices their credibility status. This identification calamity is an issue I hope to explore through the data collected. Does the IAI Latent Print Certification test improve the mindset and confidence of latent print examiners as its design intends?

The research done by Cole indirectly emphasizes the need for the highest standard of training for LFPEs due to Cole identifying the ambiguity among LFPE's level of confidence. The results of this study will determine the legitimacy of the belief that CLPEs enjoy more confidence and credibility than LFPEs with no certification. The readers also should take into account that the article itself was written in 1998, and that the technology and methodology of fingerprinting have improved over the years. Cole (1998) points out, too, that LFPEs face controversy in interpreting latent fingerprint evidence due to the total subjectivity of the science. Latent fingerprint examiners have the potential to improve their credibility with proper training and certification. By enhancing the skills of the LFPE through the certification test, fingerprint examiners can possibly convince jurors to continue to believe their expert testimony.

## Methodology

This paper focuses on gathering statistical data in the southeastern region of the United States on the attitudes of latent fingerprint examiners regarding the IAI's Latent Print Certification Test. The data for my research includes examiners in the state criminal investigations unit, the education of each examiner (high school, undergraduate, and/or graduate), the location of where persons received their tertiary education, the examiner's status and perception of the IAI Latent Print Certification Test, and the approximate caseload they process per week. The purpose of this study is to expose the sentiments of fingerprint examiners in "the South," and explore their attitudes regarding the IAI Latent Print Certification test. By presenting the professional opinions of latent fingerprint examiners regarding certification, my research can assess the perception of confidence and credibility of examiners. This research also has the possibility to pinpoint under-skilled or understaffed departments of the country that may need more training or certification in the area of forensic fingerprinting. Unveiling the reality of personnel who have not taken the fingerprint certification test could be very advantageous to non-profit training institutions, such as RS&A, to know which areas need the most educational services. From a court's perspective, lawyers will most often rely on the credibility of an examiner in order to satisfy the jury's need for valid and reliable testimony. Simply put, the better training and credentials of a fingerprint analyst, the more reputable his/her case will be in the criminal justice system.

### Procedures

Phone calls were made to state criminal investigation departments (n = 16) according to the information collected by the National Public Safety Bureau (2013). The

National Public Safety Bureau has an extensive directory of all major and minor law enforcement agencies across the nation (National Public Safety Bureau, 2013). The 2014 National Directory of Law Enforcement Administrators is the databank I used for contact data collection. The directory is separated by regions one (1) through five (5). I collected agency information from region three (3) (which contains state information from the District of Columbia, Florida, Georgia, Kentucky, Maryland, North Carolina, Tennessee, Virginia, and West Virginia) and region four (4) (which contains state information from Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, and Texas) (National Public Safety Bureau, 2013). After being redirected to each state department's crime scene unit/laboratory via phone, I obtained the e-mails of latent print examiners by requesting permission to do so by the latent print supervisor/division leader. The data was collected through the distribution of a survey.

After approval from the Institutional Review Board (IRB), there were two notifications sent out via e-mail to the latent print examiners: an initial informative e-mail explaining the actual survey, and then a follow-up e-mail with the survey link attached. The survey was created by a third-party website, SurveyMonkey. The questionnaire was composed of four sections. The first page of the questionnaire acted as a consent form for the survey: by clicking "Continue" to the next page of the survey, the participants agreed to the terms and conditions of the survey. As a formality in accordance with IRB standards, the second page asked whether or not the participant was over eighteen (18) years of age. If a participant answered "No," the survey was discontinued. The third page of the survey requested informative and opinionated responses from the latent fingerprint examiners regarding the IAI and its certification.

Participants were first asked whether or not they have heard about the IAI, its Certification Board and the Latent Print Certification Test. The questionnaire then asked if the participant had taken the test and if they had passed. The next two questions asked to what degree certification would support the participant's confidence and credibility in court. Finally, I requested the caseload of each latent fingerprint examiner to see how many prints they observe and process per week. The fourth page included demographic information, including the level of education of each participant, the institution where they received their education (Bachelor's degree and above), and the name of their department/agency.

**Risks and Benefits**

There were no risks or benefits by taking and completing the survey. The initial information letter informed the fingerprint examiners of the study's purpose as well as what participation in the study entailed. The survey also informed participants of the confidentiality and anonymity of the information that was received. The survey informed the participants that they may stop at any time without any penalty. The only inconvenience the specialists experienced is the three (3) to five (5) minutes completing the survey.

**Population**

This survey requested participation from sixteen state criminal investigation departments in the Southern United States. The sample was composed of forty-five latent fingerprint examiners from seven different state criminal investigation departments, with four incomplete surveys that were discarded.

## Results

From analyzing the results gathered from the survey, I was able to observe the discrepancy in opinions among latent fingerprint specialists who have taken the Latent Print Certification Test and those who have not. All of the graphs used percentage values for each question measured. *Table 1* shows the percentage of individuals who have taken the certification test.

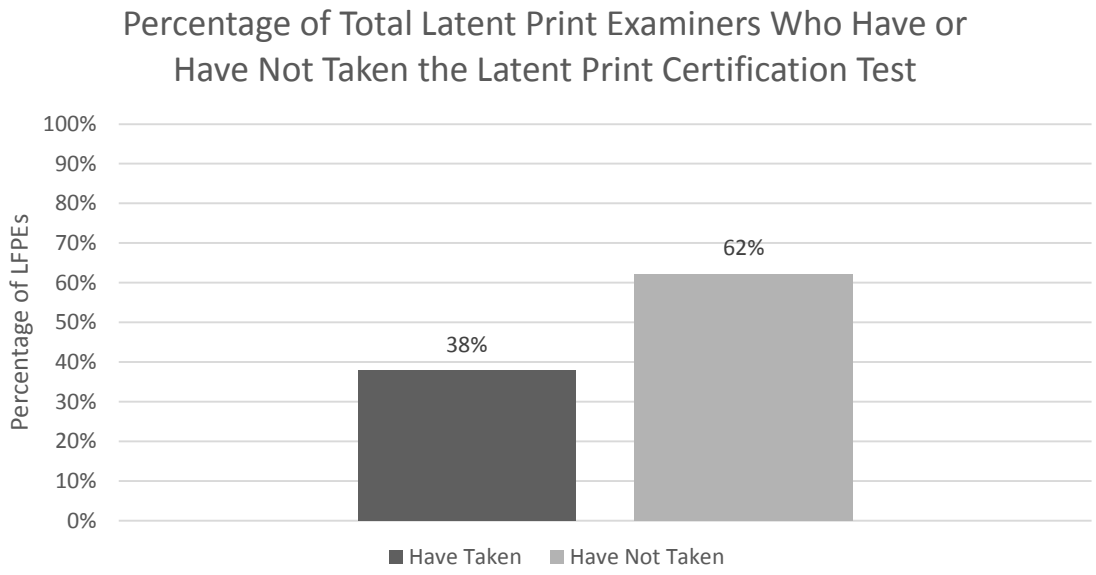



*Table 1*

*Table 1* shows that out of forty-five participants, 17 individuals (38%) have taken the Latent Print Certification test (all the participants in this study passed – 100%) and 28 individuals (62%) have not taken the certification test.

*Table 2* shows the percentage of latent fingerprint examiners who have taken the certification test who "strongly agree," "agree," "disagree," and "strongly disagree" of the notion that certification supports the credibility and confidence of an examiner acting as an expert witness in a court of law. The black bars of *Table 2* measure the opinion that certification will enhance the credibility of the individual, while the grey bar concerns the

perception of one's confidence. The majority of certified latent fingerprint examiners "strongly agreed" and "agreed" that becoming certified in latent prints will enhance the credibility and confidence when acting as an expert witness. None of the certified specialists "disagreed" with the goal of the IAI's certification exam; however, only one of specialist (2.2%) "strongly disagreed" with the exam's goal of enhancing credibility.

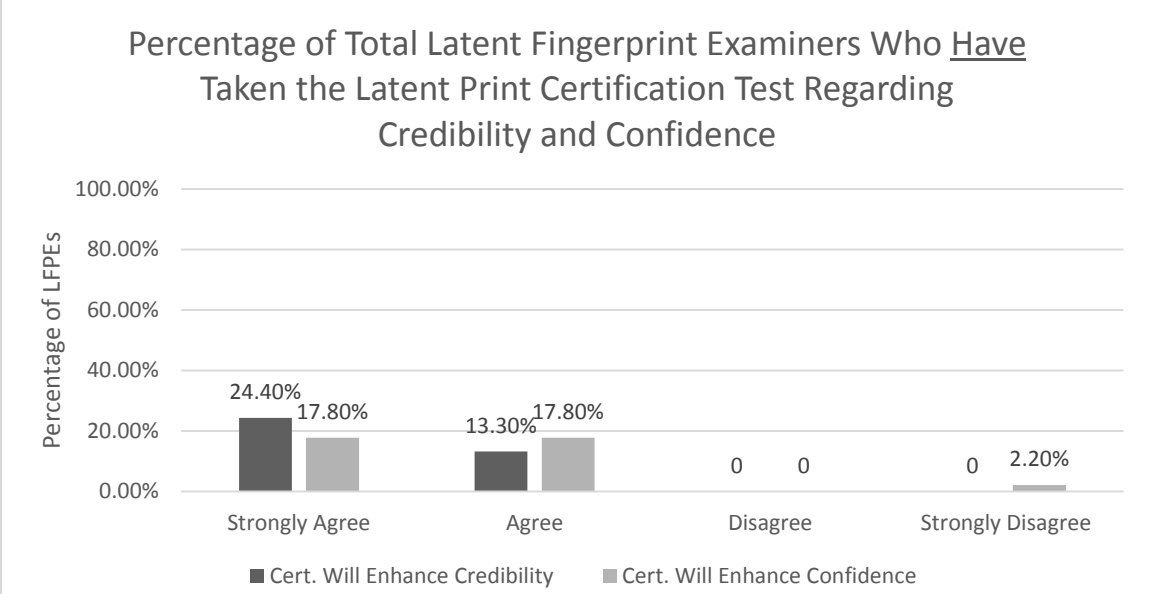



*Table 2*

*Table 3* represents the percentage of latent fingerprint examiners who have *not* taken the certification test while, again, using the template of "strongly agree," "agree," "disagree," and "strongly disagree" regarding credibility and confidence of certification. More variety is shown when questioning LFPEs without certification. Still, a majority of specialists "agree" that becoming certified in latent prints would, indeed, support a specialist on the stand acting as an expert witness; however, total of sixteen participants without certification "disagreed," and a total of five "strongly disagreed" that certification does not help in credibility and confidence as an expert witness, respectively.

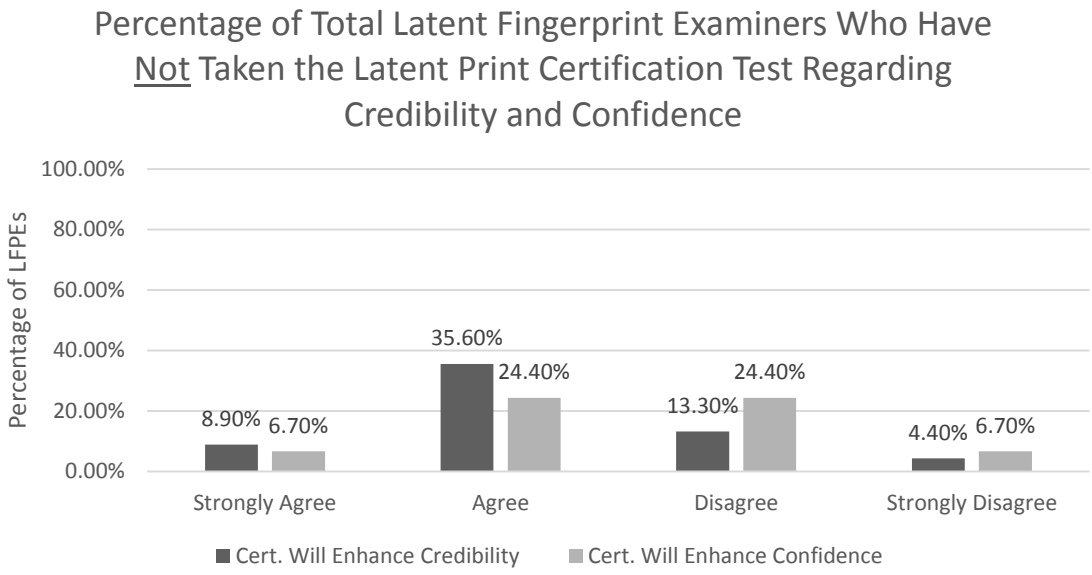



*Table 3*

## Discussion

In this section, I will discuss the implications and interpretations of the data. First, I will discuss the observations and explanations of the data that represents those who have become certified, their implications and limitations. Then, I will discuss the components of the data that represents those without certification.

The data proved to be interesting among participants who have taken and passed the Latent Print Certification Test. The point that only one (2.2%) of the latent print examiners with certification responded negatively with the notion that the test will aid in the examiner's perception of credibility and confidence unequivocally supports the mission that the IAI's certification test sets to exemplify: to identify those individuals who proclaim themselves as competent and disciplined latent fingerprint examiners (IAI, 2012). This interpretation of the data may suggest that their experiences within the courtroom have, indeed, improved their own perception of confidence and credibility; however, what I find most curious about the IAI's certification board is their claim

regarding the hiring processes of state departments. They assert that their certification test has become a part of several state forensic laboratories' qualification standards, when the data represents the opposite: 62% of those who took the survey had not taken the exam, yet are employed by state criminal investigation departments (IAI, 2012). I do recognize, however, the limitations of this suggested observation, including the small sample size, the reluctance of some LFPEs who did not take the survey, as well as the exclusion of states not involved in the South or Southeastern regions.

For those examiners who have yet to take the certification test, the observation in the variety of answers is apparent. Those who lack certification appeared less confident of their expectations of certification as compared to those who have achieved certification. Still, the majority "agreed" that certification would augment one's ability to feel self-assured in their credibility and confidence. Yet, delving further into the research, there is minute disparity between the measurements of the LFPEs' perceptions of credibility and confidence. In comparing the two factors (i.e. credibility and confidence) by the summation of the two graphs, a total of 33.3% of participants "strongly agreed," and a total of 48.9% of participants "agreed," that certification would improve individual *credibility*; likewise, a total of 24.5% of individuals "strongly agreed," and a total of 42.2% of individuals "agreed," that *confidence* would be enhanced with certification. There exists an 11.2% decrease among participants who answered "agree" when comparing credibility to confidence.

Along with the comparison, more uncertified examiners "disagreed" (24.4%) that certification would enhance confidence, as opposed to the 13.3% of uncertified participants who "disagreed" that certification would aid in credibility. This 11.1%

disparity shows the discrepancies between the two different ideologies of credibility and confidence. This correlation may suggest that becoming certified merely gives off the external appearance and knowledge of being believed in court, and may not necessarily reflect the same ideology internally. Confidence is a quality that is based on the individual whereas credibility comes, in this instance, in the form of a distinguishable title. Confidence, being very hard to measure as it is an abstract, internal characteristic, would require some psychological testing in order to be accurately measured; thus, confidence would be a suggested element for further research.

The final areas of exploration that I proposed a connection to the data was the amount of cases latent fingerprint examiners execute each week, along with individual levels of education. The caseloads of latent fingerprint examiners both with and without certification remained relatively constant, so no correlation was observed. The same is true for each analyst's level of education. The majority of latent fingerprint examiners with and without certification have Bachelor's degrees, with only a handful of analysts who have their Master's.

## Conclusion

This project has aimed to observe, record, and interpret the professional opinions of latent fingerprint examiners regarding the IAI's Latent Print Certification Test. Using the survey as a guide, I was able to see the difference between the opinions of LFPEs who have taken the certification test as opposed to those who have not. The data found that those who have become certified in latent prints enjoy and express a higher perception of credibility and confidence across the board as an expert witness in the courtroom. The two elements that should be under closer observation is the comparison

of credibility versus confidence. Of course, with the title of CLPE (Certified Latent Print Examiner), one would expect confidence to rise as titles given so often do; however, this is not the case with the above data. Shockingly, I expected more examiners who were certified would have been employed as the majority of state criminal investigation laboratories; however, this was not the case either. More encouragement from institutions such as the IAI and RS&A could be deployed to state criminal investigative departments as an initiative to have more latent fingerprint examiners who are certified working at the state level.

There were many questions that came about during the research, as well as improvements that could have been made. As a mere pilot study, more data could be explored in order to see if there are, indeed, more LFPEs who are not certified that work at the state level than opposed to those with certification. This can be explored by opening the data collection to more regions of the United States, even to all 50 states. Also, more questions could have been presented to the latent fingerprint examiners, such as reasons why those who do not have certification have not taken any form of qualification test. During my conversations with multiple departments, there were some who provided certification through their own department or agency. More time and consideration could be given to other forms of certification that are not standardized, such as the IAI's Latent Print Certification Test. Lastly, confidence does not have to always be measured in terms of acting as an expert witness . Confidence is also required for various verification processes within the department such as ACE-V (Analysis, Comparison, Evaluation, and Verification) Methodology (Holder et al., 2011). Questions then could be asked to latent print examiners regarding their confidence in other areas of their line of

work besides giving dispositions in court. Using these suggestions and techniques, the implications of latent fingerprint examiners could be further explored.

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## Appendix A: Survey Instrumentation

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

AUTHORIZATION TO PARTICIPATE IN RESEARCH PROJECT

To Whom It May Concern,

My name is Christopher Brewer, and I am an undergraduate researcher within the School of Criminal Justice at the University of Southern Mississippi. To better understand the demographics of latent fingerprint examiners, I am conducting research in the Southern region of the United States. The purpose of this study is to explore the opinions of latent print examiners regarding certification.

You will be asked to complete a survey per your convenience. The survey itself should take no longer than three (3) to five (5) minutes to complete. You will be asked questions regarding your education and opinion about the International Association for Identification (IAI) Certification Test. You will be asked to answer questions about the merit of the IAI Latent Print Certification in regards to your own personal feelings about whether or not becoming certified will contribute to your credibility and confidence as an expert witness.

This survey is completely voluntary and confidential. You will never be asked to provide a name or any other form of identification that would connect you with any particular survey. If at any time while participating in the survey you feel that you do not wish to continue, you can stop answering questions immediately without any penalty, prejudice, or loss of benefits.

The link to the survey will be provided in a follow-up e-mail. Per your convenience, the consent form will be the first page of the survey. If you wish to participate in this project, then your electronic signature will be required in order to indicate your consent for your participation. If you have any questions regarding this research project, please feel free to contact me at christopher.brewer@eagles.usm.edu or Dr. Dean Bertram at (601) 266-5124.

This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5116, Hattiesburg, MS 39406-0001, (601) 266-5997.

Thank you for your time and consideration of this request.
Sincerely,

Christopher Brewer
Undergraduate Researcher
School of Criminal Justice
The University of Southern Mississippi

**Sample Questionnaire**

1. Are you over 18?
2. Education (check all that apply): [] High school [] GED [] Some college [] Associates [] Bachelors [] Masters [] Professional [] Doctorate
3. Please type in the name of the institution where you received your:
    a. Bachelor's degree: [ ] (N/A)
    b. Master's degree: [ ] (N/A)
    c. Doctorate: [ ] (N/A)
4. Please type in the name of your department/agency: [ ] (Prefer not to answer)
5. Are you familiar with the International Association for Identification?
    a. If so, are you aware of its Certification Board?
    b. If so, are you aware of its Latent Print Certification test?
6. Have you taken the Latent Print Certification test?
    a. If so, have you passed?
7. Do you feel the Latent Print Certification test will aid individual credibility with expert testimony?
8. Do you feel the Latent Print Certification test will aid individual confidence with expert testimony?
9. What is your approximate case load per week?

## Appendix B: IRB Approval Letter

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

**INSTITUTIONAL REVIEW BOARD**
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

**NOTICE OF COMMITTEE ACTION**

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 14062301

PROJECT TITLE: Exploring the Perception Towards Enhancing Credentials by Certification of Latent Fingerprint Examiners in the United States

PROJECT TYPE: New Project

RESEARCHER(S): Christopher Brewer

COLLEGE/DIVISION: College of Science and Technology

DEPARTMENT: School of Criminal Justice

FUNDING AGENCY/SPONSOR: N/A

IRB COMMITTEE ACTION: Expedited Review Approval

PERIOD OF APPROVAL: 06/25/2014 to 06/24/2015

**Lawrence A. Hosman, Ph.D.**
**Institutional Review Board**