"Resolving Latent Conflict: What Happens when Latent Print Examiners Enter the Cage?"

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Resolving Latent Conflict: What Happens When Examiners Enter the Cage?

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A Couple of Background Facts

• Prior research has shown:
  • ACE research (Ulery, et. al., 2011 and 2013; Swofford, et. al., 2011)
    • False positive rate of 0.17% to 0.68%
    • False negative rate of 7.5 to 7.88%
  • PCAST, 2016
    • False positive frequency ranges from 0 to 2.4%
  • ACE-V research (Langenburg, 2009)
    • Verifiers caught all false positive results
      • False positive rate of 0%
    • No change in false negative rate – not discovered by verifiers
So...What Happened?
Objectives

- Study case processing of the latent print section of HFSC
  - Step 1: Gather basic information about case flow
    - Baseline information regarding types of cases and impressions examined
    - Frequency of verifications
    - Frequency with which verification lead to changes to the original conclusions
    - Frequency of conflict resolution
    - Examiner differences
  - And later...Step 2: Potential interventions
    - Implementation of blinding procedures for verification
      - Task irrelevant information
    - New procedures for conflict resolution
Case Volume and Analytical Conclusions
Case Volume

• Examination of 2 years of data (July 1, 2014 – June 30, 2016)

• **Total: 2,536 cases included**
  • Completed by 12 CLPE with experience ranging from 6 to 28 years
    • 1 manager
    • 1 supervisor
    • 5 Senior LPE
    • 5 LPE

• Exclusion of:
  • Cases of AFIS only examinations
  • Casework completed by examiners assigned to the AFIS section
  • Cases missing files or documentation scanned/housed in LIMS
  • Rejection reports

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Case by Offense Type

- Burglary, 36%
- Robbery, 20%
- BMV, 17%
- Auto Theft, 8%
- Theft, 3%
- Murder, 6%
- Other, 7%
- Robbery, 20%
- Theft, 3%
- BMV, 17%
- Auto Theft, 8%
- Theft, 3%
- Murder, 6%
- Other, 7%

• Aggravated Assault, 1%
• Criminal Mischief, 1%
• Possession CS, 1%
• Outside Auto Theft, 1%

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Latent Print Analysis Break-Down

Relative Proportion of Value and No Value Impressions

- Prints of Value: 56%
- Prints of No Value: 44%

Impressions of Value by Type

- Fingerprints: 71%
- Palm Prints: 26%
- Joint: 1%
- Impression: 2%

Total analyzed: **12,363**
Total latent prints of value: **5,430**

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Latent Print Distribution

• Range: 1-153 latent prints of value
  • Mean: 8.50
  • Median: 4.00
  • Mode: 1

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Verification
Verification Procedures

• Primarily performed based on case type
  • All identifications require verification
  • 100% verification on person crimes
  • Policy changes = 100% verification for all crime types
    • Later, no verification for cases deemed no value

• Disagreements documented in consultation
  • If unresolved, proceed to conflict

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Consultation and Conflict
But...
Consultation

• A *significant* interaction between examiners regarding one or more impressions
  • That which impacts either examiners analysis, comparison or evaluation decision regarding the impression
  • Must be documented
    • Date
    • Consulting Examiner
    • Subject of the Consultation (latent #)
    • Outcome
Consultation Occurrence

- Occurred in 82 cases affecting 132 prints
  - Represents 7% of all cases verified in this study
- Most consultations occur in person crime cases (63%)

Consultation by Offense Type

- Robbery
- Burglary Habitation
- Murder
- Rape
- Auto Theft
- BMV
- Capital Murder
- Arson
- Bomb Threat
- Burglary Building
- Officer Discharge Firearm
- Possession Narcotics
- Theft
- Unlawful Carry of Weapon

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Consultation Results

• Verifier conclusions typically reigned supreme compared to the original conclusion of the case analyst
  • Case analysts changed their conclusions 72% of the time when confronted

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Consultation - Value Analysis

<table>
<thead>
<tr>
<th>Conclusion (Case Analyst vs. Verifier)</th>
<th>Frequency</th>
<th>Latent of No Value Remains (Case Analyst Conclusion)</th>
<th>Conclusion Changed During Consultation (Verifier Conclusion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latent of No Value → Latent of Value</td>
<td>21</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>Latent of Value → Latent of No Value</td>
<td>22</td>
<td>8</td>
<td>14</td>
</tr>
</tbody>
</table>

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Consultation – Evaluative Conclusions

<table>
<thead>
<tr>
<th>Conclusion (Case Analyst vs. Verifier)</th>
<th>Frequency</th>
<th>Case Analyst Conclusion Prevails</th>
<th>Conclusion Changed During Consultation (Verifier Conclusion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion → Identification</td>
<td>22</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Exclusion → Inconclusive</td>
<td>16</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Identification → Inconclusive</td>
<td>27</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Inconclusive → Identification</td>
<td>14</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Inconclusive → Exclusion</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>
Conflict Resolution

• Any conflict – differences in conclusion - not resolved during consultation proceed to conflict resolution
  • Cases are given to the section supervisor
    • Can render a decision or send to the group for consensus
    • Reporting the consensus opinion
      • Unless the case of exclusion changed to identification
        • Case is reassigned
Conflict by Case Type

- Occurs rarely
  - 8 cases, 10 latent impressions
  - Represents 0.07% verified cases included in this study
- Most conflicts occur in property crime offenses (63%)
- 50% case analyst conclusion prevails
- 50% change in opinion (verifier prevails)

Conflict by Offense Type

- BMV: 25%
- Murder: 13%
- Arson: 12%
- Unlawful Carry of Weapon: 12%
- Auto Theft: 25%
- Rape: 12%
## Conflict Resolution Results

<table>
<thead>
<tr>
<th>Conclusion (Case Analyst vs. Verifier)</th>
<th>Frequency</th>
<th>Case Analyst Conclusion Prevails</th>
<th>Conclusion Changed During Consultation (Verifier Conclusion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latent of Value → Latent of No Value</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Latent of No Value → Latent of Value</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Identification → Inconclusive</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Inconclusive → Identification</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Exclusion → Inconclusive</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

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Consult/Conflict by Examiner Classification

Consultation - Examiners Involved
- LPE and LPE: 58%
- LPE and SLPE: 18%
- SLPE and SLPE: 24%

Conflict Resolution – Examiners Involved
- LPE and SLPE: 90%
- SLPE and SLPE: 10%
## Examiner Differences

<table>
<thead>
<tr>
<th>Domain</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of Experience</td>
<td>6-28</td>
</tr>
<tr>
<td>Cases Verified</td>
<td>19-166</td>
</tr>
<tr>
<td>Consultations</td>
<td>3-40 (Mean = 13.2)</td>
</tr>
<tr>
<td>Decisions Changed During Consultation</td>
<td>3-38 (Mean = 10.5)</td>
</tr>
<tr>
<td>Conflict Resolution</td>
<td>0-2 (Mode = 0)</td>
</tr>
</tbody>
</table>

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Conclusions

• Baseline understanding of processing through the latent print section
  • Frequency of impressions examined
  • Frequency of conclusions
  • Frequency of consultation and conflict initiation
    • And related case-types
  • Frequency in which consultation and conflict resulted in the primary analyst changing his/her conclusion

• Useful for:
  • Identifying prioritization schema for verification
  • Identifying situations where review useful or challenging
  • Assist in development of consultation and conflict procedures
Conclusions Continued

• Consultation occurred in about 8% of cases examined, conflict in 0.07%
  • Limited by documentation contained within the casefile
    • Changing SOPs, misunderstanding of the meaning of significant interaction could have resulted in lower reported numbers
    • Exclusion of AFIS section likely reduced the number of consultations
  • Most debated conclusions resulted in the primary case analyst changing his/her opinion
  • Most opinion differences occurred regarding evaluative conclusions
  • Frequency of consultation and conflict was highest in the delineation between SLPE and LPE

• However, ...
We Need More Data

• What is the impact of print quality?
  • Introduction of a quality/complexity scale in LIMS for future analysis

• Why do some analysts change their opinion more often than others? Why does consultation/conflict occur between certain pairs of examiners more often than others?
  • Interview examiners, perform analysis

• Is there an impact of bias?
  • Implementation of blinding procedures

• Implementation of new consultation/conflict procedures to mitigate these findings
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Questions?