Neuroprediction in Forensic Contexts: Legal and Ethical Implications

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Overview

• Why prediction?

• Present 3 studies involving forensic neuroscience

• Identify the legal and ethical issues associated with using neuroscience to inform assessments and decision making within the legal system
What are we trying to predict?

Not

But
Recidivism

Recidivism is a LARGE category of DIFFERENT types of behavior

- general recidivism/nonviolent crime
- violent crime
- sexual crime
- sexually violent crime

Different outcome variables that are assessed with different methods and predicted with varying levels of accuracy
Risk assessment

- What is the general goal of risk assessments?

- To place individuals into one of three categories of risk
Why Neuroscience?
Because of the information we can get from neuroscience...

Does neuroscience data add predictive utility?

Studies to date suggest that it does.
2011
Neuroprediction of recidivism

• Question: Can brain activity predict which offenders would be rearrested after release?

• Results: Yes.

• Conclusion: These results suggest a potential neurocognitive biomarker for persistent antisocial behavior.

Neuroprediction of tx completion

- **Question:** Can brain activity predict who would successfully complete a 12-week substance abuse treatment program?

- **Results:** Yes.

- **Conclusion:** These results may help in the development of individualized therapies, which could lead to more favorable, long-term outcomes.

Vaughn R. Steele et al. Brain potentials measured during a Go/NoGo task predict completion of substance abuse treatment. 76(1) *Biological psychiatry* 75-83 (2014).
Question: Are there structural brain differences between adolescent offenders that had committed homicide and those that had not?

Results: Yes.

Conclusion: Brain data may help identify those at the highest risk for committing serious violent offenses.

Neuroprediction: Legal & Ethical Implications
## “Risk triage”

<table>
<thead>
<tr>
<th>Predicted Risk ➔</th>
<th>Low Supervision/Treatment</th>
<th>High Supervision/Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>True risk ↓</td>
<td>Correct rejection</td>
<td>False alarm = Civil liberties Near-term waste</td>
</tr>
<tr>
<td>Low Risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Risk</td>
<td>Miss = Public safety cost, long-term waste</td>
<td>Hit</td>
</tr>
</tbody>
</table>
Neuroprediction: Legal issues

Constitutional implications of (biologically based) risk assessments:
4th, 5th, and 8th Amendments

- Testimonial or physical evidence
- Due process
- Equal protection
- Liberty interests and mandated treatment
Neuroprediction: Ethical issues

Ethical considerations regarding linking brain structure & function variables to high-risk behavior:

• Individual vs. Group relevance
• Privacy/confidentiality
• Access to treatment and care
• Implications for treatment
• Stigmatization/Discrimination
• False positives and false negatives
• Over-interpretation/"Genetization"
• Self-fulfilling prophecy
• Eugenics
Neuroprediction: Use Responsibly

“The real challenge for the future is to use neuroscience as a precise tool that may facilitate predictions of future dangerousness and not as a means to further deprivations of liberty, dictated by the accentuated societal need for security, under the pretext of treatment and rehabilitation.”

Neuroprediction: Goals

• Advance understanding of neurobiological risk factors for a variety of outcomes

• Improve our ability to assess these factors

• Develop targeted treatments and ways to mitigate the risks

• Improve outcomes
Thank you

Questions and feedback welcome:

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