Brain Science and the Criminal Law: Application of the Rules of Evidence

Christopher Slobogin

Milton Underwood Professor of Law
Vanderbilt University

American Psychology-Law Webinar
June 3, 2014
Professor Christopher Slobogin, J.D., LL.M.

Milton R. Underwood
Professor of Law
Director, Criminal Justice Program
Vanderbilt University
# of Cases Discussing Defense-­‐Proffered Neuroscience, 2005-­‐2012

<table>
<thead>
<tr>
<th>DOCTRINE</th>
<th>NUMBER OF CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insanity/Involuntary Act</td>
<td>300</td>
</tr>
<tr>
<td>Lack of Mens  Rea</td>
<td>300</td>
</tr>
<tr>
<td>Mitigation at Sentencing</td>
<td>900</td>
</tr>
</tbody>
</table>
Evidentiary Framework (4 issues)
Evidentiary Framework (4 issues)

- **Materiality (Rule 401)**—Is there a logical relationship between the evidence and a proposition in the case?
Evidentiary Framework (4 issues)

• **Materiality** (Rule 401)—Is there a logical relationship between the evidence and a proposition in the case?

• **Probative value** (Rule 401, 702, *Frye, Daubert*) —is the evidence valid?
Evidentiary Framework (4 issues)

• Materiality (Rule 401)—Is there a logical relationship between the evidence and a proposition in the case?

• Probative value (Rule 401, 702, Frye, Daubert)—is the evidence valid?

• Helpfulness (Rule 702)—does the evidence add to the factfinder’s knowledge?
Evidentiary Framework (4 issues)

• **Materiality (Rule 401)**—Is there a logical relationship between the evidence and a proposition in the case?

• **Probative value (Rule 401, 702, *Frye, Daubert*)**—is the evidence valid?

• **Helpfulness (Rule 702)**—does the evidence add to the factfinder’s knowledge?

• **Prejudicial impact (Rule 403)**—does the evidence nonetheless distract or confuse?
Mr. Oft and Mr. Chiesa
Mr. Oft and Mr. Chiesa

• Mr. Oft
  – Charged with child molestation
  – Expert will testify that when Mr. Oft is tumor-free his pedophilic urges disappear
Mr. Oft and Mr. Chiesa

• Mr. Oft
  – Charged with child molestation
  – Expert will testify that when Mr. Oft is tumor-free his pedophilic urges disappear

• Mr. Chiesa
  – Charged with first degree murder of two individuals
  – Expert will testify that:
    • CAT and PET scans revealed damage to Mr. Chiesa’s prefrontal cortex
    • This frontal lobe damage (FLD) undermines his ability to control his impulses
Materiality—Legal Fit
Materiality—Legal Fit

• At trial—Possible defenses include:
Materiality—Legal Fit

• At trial—Possible defenses include:
  – Involuntary act—both actors had conscious control
Materiality—Legal Fit

• At trial—Possible defenses include:
  – Involuntary act—both actors had conscious control
  – Lack of mens rea—both actors intended their act
Materiality—Legal Fit

• At trial—Possible defenses include:
  – Involuntary act—both actors had conscious control
  – Lack of mens rea—both actors intended their act
  – Insanity—mental disease plus:
Materiality—Legal Fit

• At trial—Possible defenses include:
  – Involuntary act—both actors had conscious control
  – Lack of mens rea—both actors intended their act
  – Insanity—mental disease plus:
    • Cognitive impairment (e.g., M’Naghten): both actors appreciated the wrongfulness of their conduct
Materiality—Legal Fit

- At trial—Possible defenses include:
  - Involuntary act—both actors had conscious control
  - Lack of mens rea—both actors intended their act
  - Insanity—mental disease plus:
    - Cognitive impairment (e.g., M’Naghten): both actors appreciated the wrongfulness of their conduct
    - Volitional impairment (e.g., irresistible impulse)
      - Oft: Yes, but defense not recognized in many jurisdictions
Materiality—Legal Fit

• At trial—Possible defenses include:
  – Involuntary act—both actors had conscious control
  – Lack of mens rea—both actors intended their act
  – Insanity—mental disease plus:
    • Cognitive impairment (e.g., M’Naghten): both actors appreciated the wrongfulness of their conduct
    • Volitional impairment (e.g., irresistible impulse)
      – Oft: Yes, but defense not recognized in many jurisdictions
      – Chiesa: Causation is not compulsion (Morse)
Materiality—Legal Fit

• At trial—Possible defenses include:
  – Involuntary act—both actors had conscious control
  – Lack of mens rea—both actors intended their act
  – Insanity—mental disease plus:
    • Cognitive impairment (e.g., M’Naghten): both actors appreciated the wrongfulness of their conduct
    • Volitional impairment (e.g., irresistible impulse)
      – Oft: Yes, but defense not recognized in many jurisdictions
      – Chiesa: Causation is not compulsion (Morse)

• At sentencing—Mitigation:
  – Non-capital (FSG § 5K2.13): Only if non-violent crime and actor was “significantly impaired” in ability to control
Materiality—Legal Fit

• At trial—Possible defenses include:
  – Involuntary act—both actors had conscious control
  – Lack of mens rea—both actors intended their act
  – Insanity—mental disease plus:
    • Cognitive impairment (e.g., M’Naghten): both actors appreciated the wrongfulness of their conduct
    • Volitional impairment (e.g., irresistible impulse)
      – Oft: Yes, but defense not recognized in many jurisdictions
      – Chiesa: Causation is not compulsion (Morse)

• At sentencing—Mitigation:
  – Non-capital (FSG § 5K2.13): Only if non-violent crime and actor was “significantly impaired” in ability to control
  – Capital: Material, but beware the double-edged sword
Materiality—Empirical Fit
Materiality—Empirical Fit

- The G2i issue (Faigman, Monahan & Slobogin, 2014)
Materiality—Empirical Fit

• The G2i issue (Faigman, Monahan & Slobogin, 2014)
  – Bryant study: how many violent people have FLD?
    • 110 prisoners, 55 who committed violent crimes, 55 who committed non-violent crimes
    • Those who committed violent crimes were 2 ½ times more likely (73%/28%) to have (FLD) than a nonviolent offender!!!
Materiality—Empirical Fit

- The G2i issue (Faigman, Monahan & Slobogin, 2014)
  - Bryant study: how many violent people have FLD?
    - 110 prisoners, 55 who committed violent crimes, 55 who committed non-violent crimes
    - Those who committed violent crimes were 2 ½ times more likely (73%/28%) to have (FLD) than a nonviolent offender!!!
    - But only addresses the cause of an effect, not the effect of a cause
Materiality—Empirical Fit

• The G2i issue (Faigman, Monahan & Slobogin, 2014)
  – Bryant study: how many violent people have FLD?
    • 110 prisoners, 55 who committed violent crimes, 55 who committed non-violent crimes
    • Those who committed violent crimes were 2 ½ times more likely (73%/28%) to have (FLD) than a nonviolent offender!!!
    • But only addresses the cause of an effect, not the effect of a cause
  – Prevalence data: how many people with FLD are violent?
    • The estimated violence prevalence rate among those with FLD is only 10% higher than for non-FLD people
Materiality—Empirical Fit

• The G2i issue (Faigman, Monahan & Slobogin, 2014)
  – Bryant study: how many violent people have FLD?
    • 110 prisoners, 55 who committed violent crimes, 55 who committed non-violent crimes
    • Those who committed violent crimes were $2 \frac{1}{2}$ times more likely (73%/28%) to have (FLD) than a nonviolent offender!!!
    • But only addresses the cause of an effect, not the effect of a cause
  – Prevalence data: how many people with FLD are violent?
    • The estimated violence prevalence rate among those with FLD is only 10% higher than for non-FLD people
    • The base rate for violence of non-FLD people is 2%, so for FLD people it’s 2.2%!
Materiality—Empirical Fit

• The G2i issue (Faigman, Monahan & Slobogin, 2014)
  – Bryant study: how many violent people have FLD?
    • 110 prisoners, 55 who committed violent crimes, 55 who committed non-violent crimes
    • Those who committed violent crimes were 2 ½ times more likely (73%/28%) to have (FLD) than a nonviolent offender!!!
    • But only addresses the cause of an effect, not the effect of a cause
  – Prevalence data: how many people with FLD are violent?
    • The estimated violence prevalence rate among those with FLD is only 10% higher than for non-FLD people
    • The base rate for violence of non-FLD people is 2%, so for FLD people it’s 2.2%

• External validity
  – Size and nature of sample can limit generalizability
Materiality—Empirical Fit

• The G2i issue (Faigman, Monahan & Slobogin, 2014)
  – Bryant study: how many violent people have FLD?
    • 110 prisoners, 55 who committed violent crimes, 55 who committed non-violent crimes
    • Those who committed violent crimes were 2 ½ times more likely (73%/28%) to have (FLD) than a nonviolent offender!!!
    • But only addresses the cause of an effect, not the effect of a cause
  – Prevalence data: how many people with FLD are violent?
    • The estimated violence prevalence rate among those with FLD is only 10% higher than for non-FLD people
    • The base rate for violence of non-FLD people is 2%, so for FLD people it’s 2.2%!

• External validity
  – Size and nature of sample can limit generalizability
  – Operational definitions can vary (e.g., of FLD or of violence)
• Brain scan (MRI)

• Brain imaging (fMRI)
Probative Value (*Daubert*)
Probative Value (*Daubert*)

- Testing procedures & error rates
- Standards, peer review, and general acceptance
Probative Value (Daubert)

• Testing procedures & error rates
  – Brain scans: How was lobe damage measured? When was lobe damage measured?

• Standards, peer review, and general acceptance
Probative Value (*Daubert*)

- Testing procedures & error rates
  - **Brain scans**: How was lobe damage measured? When was lobe damage measured?
  - **fMRI**: How was neuronal activity measured?
  - Were confidence intervals, effect sizes calculated?
- Standards, peer review, and general acceptance
Probative Value (*Daubert*)

- **Testing procedures & error rates**
  - *Brain scans*: How was lobe damage measured? When was lobe damage measured?
  - *fMRI*: How was neuronal activity measured?
  - Were confidence intervals, effect sizes calculated?

- **Standards, peer review, and general acceptance**
  - Were scans and fMRIs conducted according to standard and accepted practices?
  - Were error rates calculated in accepted ways?
Helpfulness and Prejudice

• Helpfulness—incremental validity
Helpfulness and Prejudice

- Helpfulness—incremental validity
  - If lobe damage or activation data is all that is presented, arguably it is immaterial, and therefore not helpful
  - If behavioral information is added to the data, is neuro-evidence redundant or is it useful in corroborating counterintuitive assertions?
Helpfulness and Prejudice

A

B

CAN YOU UNN N N N?

C

D

I AM HAPPY THAT MY TUMOR WAS REMOVED.
Helpfulness and Prejudice

• Helpfulness—incremental validity
  – If lobe damage or activation data is all that is presented, arguably it is immaterial, and therefore not helpful
  – If behavioral information is added to the data, is neuro-evidence redundant or is it useful in corroborating counterintuitive assertions?

• Prejudice
  – Potential for misunderstanding the relevant statistics (e.g., base rates, effect sizes)
Helpfulness and Prejudice

• Helpfulness—incremental validity
  – If lobe damage or activation data is all that is presented, arguably it is immaterial, and therefore not helpful
  – If behavioral information is added to the data, is neuro-evidence redundant or is it useful in corroborating counterintuitive assertions?

• Prejudice
  – Potential for misunderstanding the relevant statistics (e.g., base rates, effect sizes)
Lessons for Experts, Researchers and Lawyers
Lessons for Experts, Researchers and Lawyers

• Materiality:
  – Do not draw conclusions about the effect of a cause from research about the cause of an effect, unless significant corroborating evidence exists.
Lessons for Experts, Researchers and Lawyers

• Materiality:
  – Do not draw conclusions about the effect of a cause from research about the cause of an effect, unless significant corroborating evidence exists.
  – If addressing effect of a cause, have prevalence data
Lessons for Experts, Researchers and Lawyers

• Materiality:
  – Do not draw conclusions about the effect of a cause from research about the cause of an effect, unless significant corroborating evidence exists.
  – If addressing effect of a cause, have prevalence data

• Probative value: Be prepared, at the least, to explain why the methods and calculations you used are standard, well-accepted practice.
Lessons for Experts, Researchers and Lawyers

• Materiality:
  – Do not draw conclusions about the effect of a cause from research about the cause of an effect, unless significant corroborating evidence exists.
  – If addressing effect of a cause, have prevalence data

• Probative value: Be prepared, at the least, to explain why the methods and calculations you used are standard, well-accepted practice.

• Helpfulness/Prejudice: Do not depend on picture images; be ready to explain the results verbally.
Bibliography


