Exploring Brain-behavior Relationships to Disrupt the Cycle of Sexual Abuse

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- Understand the prevalence of adolescent sexual offending
- Discuss the need for more effective assessments & interventions for adolescents who sexually offend (ASOs)
- Summarize findings of a research study that used fMRI to explore brain-behavior relationships of childhood sexual abuse & sexual offending behaviors in adolescent males
- Discuss the implications for practice & future research related to the use of neuroimaging in the assessment & treatment of ASOs

*The speaker has no conflicts of interest to disclose.

Child sexual abuse & adolescent sexual offending

- 61,472 CSA cases reported in the US (2011)
- 42%-80% of adult sex offenders: sexually deviant interests & offenses began as adolescents
- Adolescent sexual offenders account for approx 30% of CSA cases against children
- As many as 12-19% sexually reoffend

Source: kathmanduk2.wordpress
Adolescents who sexually offend (ASOs):
• Less likely to have deviant sexual fantasies or arousals
• Do not meet the criteria for sexual predator or “pedophilia” as designated by the DSM-V
• Are more responsive to treatment (adolescence)
• Few (5%) demonstrate the same long-term tendencies to commit sexual offenses as adult sex offenders
• Non-sexual recidivism rates are higher for ASOs than adult sex offenders

Modus Operandi (MO)
• MOs can change
  • Babysitting approach most often used
  • Incest (opportunities), friends, strangers
  • Play, coercion, force…lying/manipulation is frequently part of their MO

The Cycle- Victim to Victimizer
• Not all victims become abusers

ASOs with personal history of sexual victimization:
• Multiple studies with varying rates, 0-86%

Meta-analysis of 50 studies of ASOs:
• Data included 9,957 ASOs
• Sexual victimization rate = 42.72%
• Residentially placed youth = 54.9%
The Cycle of Sexual Abuse
Many of sexually abused sexual offenders repeat what was done to them
• There are similarities between:
  • The relationship of the youth to their perpetrator(s) & to their victim(s)
  • The gender(s) of their perpetrator(s) & their victim(s) matches
  • The MO of their perpetrator(s) & their victimization(s)
  • Acts of their perpetrator(s) & the acts they committed against their victims

(significance=.05)

UAMS Brain Imaging Research Center
Adolescent girls with & without hx of assault
• Assault exposure associated with significantly greater activation of neural network responsible for fear & increased severity of PTSD sx
Adult women w/ exposure to early life stress (ELS)
• Neural connection patterns with ELS & resiliency
Adult males with cocaine dependence
• Decreased neural activity in regions responsible for impulse control
Adult women w/ PTSD, treated Repeated Exposure to Traumatic Memory, based on a fear extinction model
• Tx engaged & modified connectivity pathways of neural regions implicated in fear extinction

Previous Research related to CSA
Trauma victims
• Demonstrate greater activity in regions responsible for emotion & salience processing regions, & less activity in regions for executive function & cognitive control regions
Adult pedophiles
• A proposed psychobiological model of pedophilia correlates sexual victimization with the neurodevelopment of abnormalities in the temporal & frontal regions of the brain, which are responsible for sexual arousal & behavior inhibition

There have been no attempts to explore the neurobiology of ASOs
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A Pilot Study

- Using functional neuroimaging (fMRI) to explore the relationships between sexual victimization & juvenile sexual offending in adolescent males
- Study Aim: To define the shared & unique neural processing correlates that mediate core constructs in victims & offenders

Empathy & Emotion Regulation

- Constructs found to be significantly impaired in ASOs
  - Incorporated into tx
  - Used to evaluate outcomes
  - Assessed when classifying risk of recidivism

But, still controversial….
- No objective methods to assess effective treatment
- Difficulty with follow-up to evaluate recidivism

Study Population

- Juvenile males, ages 12-21
- 3 groups:
  - Control (−−)
  - Non-victimized ASOs (−/+)
  - Victimized ASOs (+/+)

- From state hospital, youth home, & treatment/correction facility
- Total: 51
- Preliminary Analysis: 45
Procedures: Interview & Questionnaires

Interview
- National Survey for Adolescents (NSA) Trauma Assessment: To assess for history of victimization
- Mini International Neuropsychiatric Interview for Children (MINI)
- Receptive One-Word Picture Vocabulary Test: Verbal Intelligence (IQ)
- UCLA PTSD Index
- Short Mood & Feelings Questionnaire
- Difficulties in Emotion Regulation Scale (DERS)
- Connor-Davidson Resilience Scale 10 (CD-RISC-10)

ASOs
- History of Sexual Offense: Self-report questionnaire (Burton)
- Therapist/Referring agency also complete brief offense collection form

fMRI
- Resting task
- Social empathy task
- Emotion regulation task

Results:
Controls vs. ASOs

ASOs had:
- Greater histories of major depressive episodes & suicidality (p=0.02)
- More current dx of conduct disorder (p<0.01) & oppositional defiant disorder (p=0.04)
- Experienced significantly more physical assault (p<0.01) & physical abuse (p=0.02)
- Higher median score on symptoms of PTSD (p<0.01), less resiilience (p<0.01), more current symptoms indicative of depression (p<0.01) & more difficulties with regulating emotions (p=0.01)
Results: Non-victimized vs. Victimized ASOs

Victimized ASOs
- Experienced significantly more physical abuse (p=0.02) & exposure to domestic violence (p<0.001)
- Higher median scores on symptoms of PTSD (p<0.01) with significantly higher scores on all subscales (exposure, re-experiencing, avoidance, & arousal)

Another interesting finding:
- 62% of victimized ASOs from correction/treatment facility
- CSA associated with greater treatment resistance?

There were no significant differences in their offenses
- # victims, coercion, MO, length of offending

fMRI results: Controls vs. ASOs

ASOs:
- Emotion regulation task: Greater activation in the bilateral insula
  - Involved in detecting biological salient stimuli & regulating negative emotions
  - Supports hypothesis of decreased ability to effectively regulate negative emotions

fMRI results: Controls vs. ASOs

ASOs
- Empathy Task: Less activation in the amygdala & temporal parietal junction (TPJ)
  - Amygdala: emotional engagement
    - Less activation consistent with decreased emotional engagement while empathizing
  - TPJ: ability to understand another’s perspective
    - Less activation consistent with decreased ability empathize
fMRI results: Non-victimized vs. Victimized ASOs

Victimized ASOs:
• Empathy Task: Even less activation in the TPJ
  • Greater deficits in the mechanisms of empathy
• Both tasks: greater activation in the bilateral middle frontal gyrus
  • Cognitive control & directing cognitive resources during decision-making tasks

Why use fMRI???

Neuroimaging provides a means to objectively assess & identify core neurobiological deficits that are specific to each individual

Could be used to:
• Help assess risk of recidivism
• Evaluate treatment efficacy
• Promote the development of interventions that can be tailored to address personal core deficits
  • If ASO demonstrates an intact empathetic response, but is deficient in emotion regulation, tx would focus less on empathy & emphasize emotion regulation skills

• Clinical Implications....

• Future studies...
References


