

# Autism and Self-Injurious Behavior (SIB)

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### The authors have nothing to disclose that would create a conflict of interest



### Unable to comment about specific cases or situations

### Graphic images of self-injury



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- Increase familiarity with <u>definition</u>, forms, <u>&</u>
   <u>prevalence</u> of self-injury in the ASD population
- Increase understanding of <u>risk factors for and</u> <u>potential causes of</u> self-injury
- Increase knowledge of <u>behavioral</u> <u>assessment &</u> <u>treatment of self-injury</u>
- Appreciate the value of an <u>interdisciplinary approach</u>





#### www.spiritofautism.org

# **Self-Injury Defined**



A class of behaviors an individual inflicts upon himself/herself that can lead to physical injury, particularly tissue damage (internal damage can also occur) (Minshawi et al., 2014).

Often consists of forceful, intense, and repetitive contact with specific body sites (Summers et al., 2017).

# **Self-Injury Defined (Cont)**



Can be highly repetitive (e.g., multiple hits/minute) and frequent or episodic. Intensity can vary.

Distinct from suicidal attempts or Non-Suicidal Self-Injury (NSSI) that may be seen in certain psychiatric conditions (e.g., cutting, burning, binging, purging, substance abuse, etc).

# **Forms of Self-Injury**



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- Head Banging/Hitting
- Biting
- Scratching
- Arm Banging
- Punching
- Joint dislocation
- Hair Pulling
- Skin Picking
- Eye Gouging
- Pica

May co-occur & co-occur

with other behaviors



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# **Physical Risks of Self-Injury**



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- Bruising
- Scarring
- Infection
- Concussion
- Fractures
- Eye or dental trauma
- Bowel obstruction
- Permanent physical malformation
- Premature death (Summer et al., 2017)



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# **Consequences of Self-Injury**



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- ER Visits
- Hospitalizations
- Surgeries
- Restrictive tx (holds, restraints, etc)
- Reduced learning opportunities
- Social isolation
- Reduced housing
- High caregiver stress (Minshawi et al., 2014)



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# **ASD and Self-Injury**



- <u>Common</u>: 50%+ lifetime prevalence, 25% point prevalence
- Higher in ASD than other populations (ID, language impairment, visual or auditory impairment, seizures, headaches, "typically developing") (Baghdadli et al., 2003).
- <u>Chronic</u>: Often emerges in childhood and continues into adulthood (84% of cohort with ASD & ID continued at 20-yr follow-up; Taylor et al., 2011)

# **General Risk Factors**



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https://www.business-reporter.co.uk/2017/07/27/risk-factors-top-five-threats-company/#gsc.tab=0



Severity ASD symptoms (IS; compulsive; repetitive)
 Degree of intellectual impairment
 Degree of communication impairment
 Social skills deficits
 Sleep disturbances
 Early stereotypies (before age 3)
 Early history of self-injury

(McClintock et al., 2003, Rohjan, 2008, Minshawi et al., 2014; Summers et al., 2017)

#### **Understanding & Treating Self-Injury**



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- SIB is just "part of autism"
- *All* SIB is due to biomedical issues AND biomedical issues do not contribute to SIB
- If you ignore SIB it will go away
- All SIB is communicative



### **Psychiatric Illness**



- Increased rates in individuals with ID & ASD
  - ~50% (Reeves, 2011; Maddox et al., 2016)
- What is the relationship between SIB and psychiatric illness



- Lots of opinions
  - Behavioral Equivalent (atypical presentation of psych illness)
  - More severe behaviors = more likely to have comorbid psychiatric diagnosis
  - Strong association between depression, anxiety, and challenging behavior (Moss, 2000)

Physical Illness

- Several studies indicating the cause of self-injury may be secondary to undiagnosed medical condition and/or side effects from medications
- Person with ASD may "feel" but not "show" pain in same ways
- Lack of education of health care providers
- Look for sudden changes in behavior

### DIAGNOSTIC OVERSHADOWING

'The person has ASD.. .that is why he/she is acting that way'





### Physical Illness

# **Common Medical Conditions:**

- GI
- Infections
- Seizures
- Dental
- Sleep Disturbance
- Fractures
- Pneumonia
- Hearing and Visual Impairments

### **Genetic Disorder**



- 1. PKU/HA (metabolic disorder)
- 2. Prader-Willi Syndrome
- 3. Chromosome 15q11.2-13.1 Duplication
- 4. Rubinstein-Taybi
- 5. Smith Magenis
- 6. Fetal Alcohol Syndrome
- 7. Tuberous Sclerosis Complex
- 8. Down Syndrome
- 9. Fragile X
- 10. 22q Deletion syndrome
- 11. Angelman Syndrome
- 12. Williams Syndrome
- 13. \*Lesch-Nyhan Disorder

## **Lesch-Nyhan Disorder**



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The ABC three-term contingency is the basis for understanding SIB

Setting events and variables of the organism = variables that change an individual's threshold for problem behavior (e.g., sleep, medications, hunger, pain)

Antecedent – what comes before a response Behavior (SIB) Consequence – what follows the response



# Broad Social Reinforcement Categories SIB may occur for...

- 1. Attention
- 1. Preferred items/activities ("tangible")
- 1. Escape/avoidance of something aversive



### Automatically-Maintained SIB

- 1. Automatic Positive Reinforcement
- Often observed under low stimulation conditions
   Ex: Eye poking in individuals with visual impairment
- 2. Automatic Negative Reinforcement
- Often directly related to biomedical conditions, OCD, tic disorders
- Ex: Head hitting during ear infections

#### **Functional Assessment of SIB**



How do we test for	Antecedent (establishing operation)	Consequence for SIB (putative reinforcer)				
Attention function	Withhold attention • No demands • Toys/activities are still available	Provide brief attention				
Tangible function	Restrict preferreds and offer lower preferred • No demands • Attention is still available	<i>Return the preferreds for 30 seconds</i>				
Escape function	<ul> <li>Present a demand</li> <li>Attention is still available</li> <li>Preferreds are present but not accessible</li> </ul>	Provide a break from the work for 30 seconds				
Automatic function	Individual is alone • Minimal items/activities	No social consequence				
Control Condition (Free Play)	<ul> <li>No demands</li> <li>Attention is available</li> <li>Preferreds are available</li> </ul>	No consequence				





Iwata et al. (1994)



Three types of treatment strategies for socially mediated SIB:

#### 1. <u>Extinction</u> – SIB behavior is no longer reinforced

- 1. <u>Reinforcement-based strategies</u> applying a consequence to a (different/more desirable) behavior to increase likelihood of (different/desirable) behavior or removing and aversive contingent upon the (different/desirable) behavior
- 1. <u>Punishment-based strategies</u> applying or withdrawing a consequence when SIB occurs in order to decrease the likelihood it will occur again

#### **Extinction**



**Treatment** 

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#### Reinforcement



### DRCommunication + Extinction of problem behavior

Treatment **Baseline** Antecedent Behavior Consequence







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#### **Punishment**



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### Contingent demands

**Baseline** 



Consequence







#### **Treatment**







#### **Automatically Maintained SIB: Auto Positive**





### **Treatment Effectiveness**





Christiansen, (2009); Kahng et al. (2002)



- There is not a medication specifically indicated for self-injurious behavior
- Atypical antipsychotics are used for irritability in ASD and have been used for SIB (in ASD and other disorders)
- Other strategies target symptoms as possible precursors of SIB



	Age Range (Years)												
	5	6	7	8	9	10	11	12	13	14	15	16	17
aripiprazole[4, 5]													
asenapine[6]													
olanzapine[7]													
paliperidone[8]													
quetiapine[9]; quetiapine XR[10]													
risperidone[11]													
schizophrenia 📕 bipolar I disorder: manic or mixed 📕 irritability with autistic disorder													
🔲 Tourette's disorder 📗 bipolar I disorder: depressive episodes; adjunct therapy													

Figure 1. FDA-Approved Pediatric Age Ranges and Indications for Atypical Antipsychotics

https://www.cms.gov/Medicare-Medicaid-Coordination/Fraud-Prevention/Medicaid-Integrity-Education/Pharmacy-Education-Materials/atyp-antipsych-education.html



- Anxiety/Rigidity
  - SSRIs
    - Prozac (fluoxetine), Zoloft (sertraline), Lexapro (escitalopram)
- ADHD/Impulsivity
  - Stimulant medications
    - Adderall (mixed amphetamine salts) and Ritalin (methylphenidate) families
  - Non-stimulants
    - guanfacine/clonidine
    - Strattera (atomoxetine)



- Others loosely targeting aggression
  - Beta Blockers
    - propranolol
  - Mood stabilizers/Anti-seizure medications
    - Depakote (valproic acid)
    - lithium
- Medications targeting repetitive behavior
  - naltrexone

### **Targeting Comorbidities**



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- Sleep
  - melatonin
  - trazodone

### **Silos Belong on Farms**



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https://en.wikipedia.org/wiki/Silo



- Consider medical, environmental, and psychiatric conditions that can result in pain, upset, and discomfort
- Use tools that are validated for the population
- Teach communication skills to "replace" SIB with functionally equivalent behavior
- Avoid diagnostic overshadowing
- Improve interdisciplinary communication