



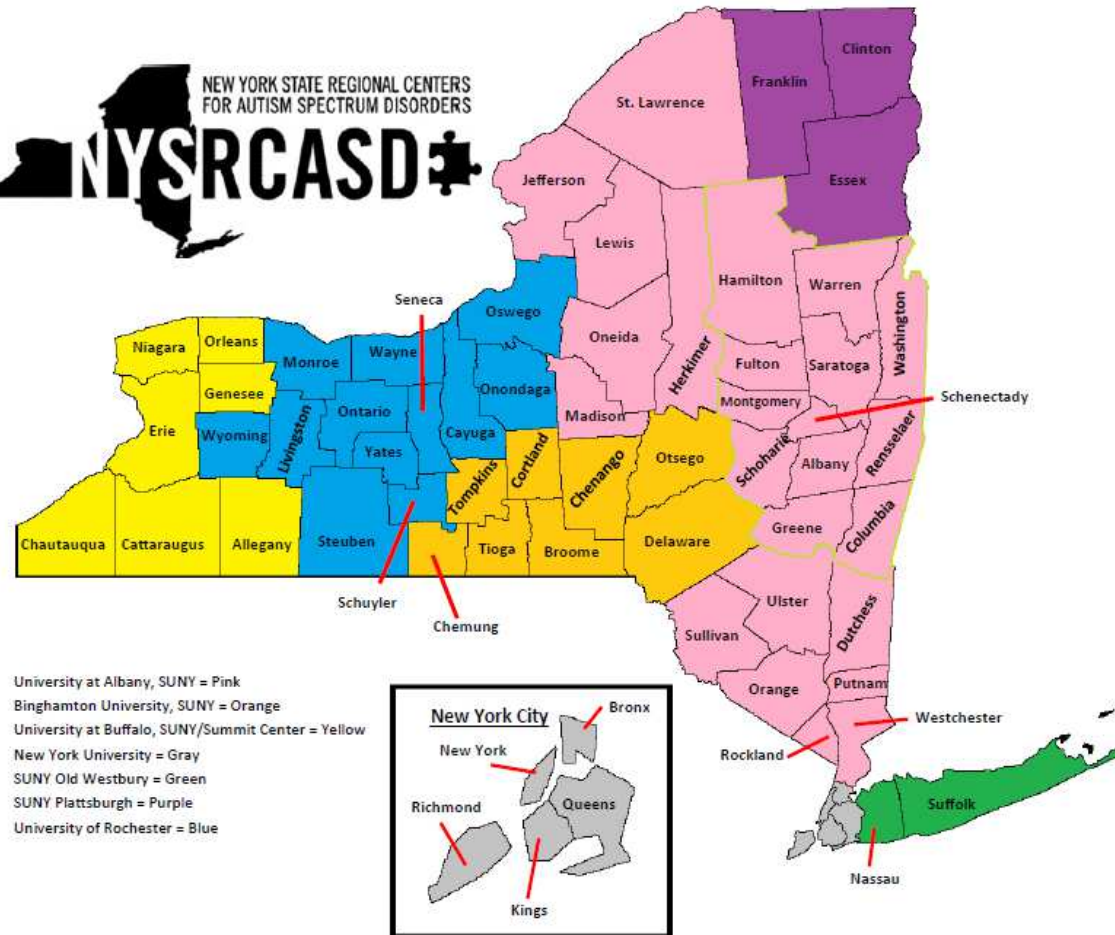
Behavioral Assessment and Intervention for Self-Injurious Behavior

David McAdam, Ph.D., BCBA-D

Rochester Regional Center for Autism Spectrum Disorder
Strong Center for Developmental Disabilities

MEDICINE *of* THE HIGHEST ORDER





RRCASD Webinar Series

Get Started on Your Path to Employment

Kaitlyn Richardson, M.P.P.

Wednesday, March 14, 2018

3:00-4:00 p.m.

Register at www.scdd.urmc.edu/rrcasd

MEDICINE *of* THE HIGHEST ORDER



UNIVERSITY *of*
ROCHESTER
MEDICAL CENTER



UNIVERSITY of
ROCHESTER
MEDICAL CENTER

David B. McAdam, PhD, BCBA-D

University of Rochester School of Medicine

Department of Pediatrics

Strong Center for Developmental Disabilities

Warner School of Education and Human
Development

February 2018

Rochester Regional Center for Autism Spectrum
Disorder



Learning Objectives

- Increase understanding of...
 - Understanding of challenging behavior and SIB
 - Risks associated with SIB
 - Why persons with developmental disabilities engage in SIB
 - The behavioral assessment of SIB
 - Interventions for SIB that can be implemented by parents and service providers
 - Understanding of situations which suggest that parents and professional without specific training require additional help

Emerson (2005) defined challenging behavior as:

“...culturally abnormal behaviour of such intensity, frequency or duration that the physical safety of the person or others is placed in serious jeopardy, or behaviour which is likely to seriously limit or deny access to the use of ordinary community facilities...”

What is missing from this definition?

Types of Challenging Behavior Displayed by Persons with ASD

- Self-injurious behavior (SIB)
- Aggression
- Stereotypic Behavior
- Tantrums (non-compliance paired with negative vocalizations, and aggression)
- Property Destruction
- Feeding Problems (only eating a small number of foods)
- Pica
- Rumination

Definitions of Self-injurious Behavior

Self-injurious behavior (SIB), displayed by individuals with autism and intellectual disabilities, involves the occurrence of behavior that results in physical injury to one's own body (Kennedy Krieger Institute).

SIB is defined as behaviors that result in physical injury to an individual's own body (Center for Autism Research; The Children's Hospital of Philadelphia) .

Common forms of SIB

- Head Banging
- Punching oneself
- Hitting oneself
- Hand Arm Biting
- Picking skin or sores
- Pica (swallowing non-edible items or objects)
- Excessive skin rubbing or scratching
- Rumination

Characteristics of persons with intellectual disabilities who display SIB:

- Gender:
 - Males=57%
 - Female 43%
- Level of Mental Retardation:
 - 71% with severe or profound mental retardation
- Negative relationship between I.Q. and probability of displaying SIB.

Secondary Diagnoses

- Visual impairments (14%)
- Autism (10%)
- Hearing impairments (6%)

Kahng et al. (2002)



Topographies of Self-injury

- Head hitting
- Hair pulling
- Biting self
- Eye poking
- Hand mouthing
- Pinching self
- Body hitting
- Kicking Self (e.g., knee to head)
- Pica
- Rumination



Potential Detrimental Consequences of SIB

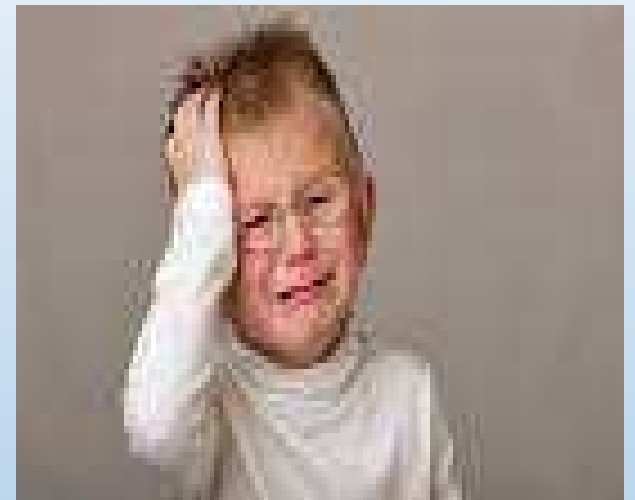
- Interferes with learning (i.e., reduced rate of learning)
- Increases monetary cost of serving a person in his or her lifetime.
- Frequently results in placement in more restrictive settings
- Often result in referral to specialist (for example, a BCBA-D or licensed psychologist with specific training in self-injurious behavior)

Causes/Theories of SIB

Why Do Individuals with Autism Engage in SIB?

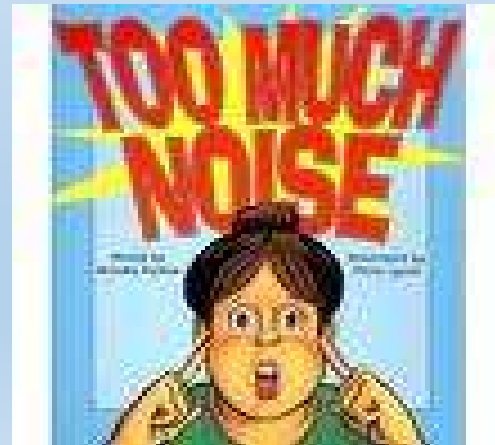
Biological Setting Events

- Pain due to:
 - Otitis Media
 - Headaches
 - Gastroesophageal Reflux Disease or other GI problems
 - Menstrual Pain
- Sleep Deprivation
- Mood
- Allergies (skin scratching)



Environmental Setting Events

- Noise
- Crowded situations
- Certain people or activities



Medical Causes

Some individuals with ASD are hypothesized to engage in SIB as a way to relieve pain. By stimulating pain in a controlled way (through engaging in SIB), a person may seek to mask another pain, such as an ear infection, toothache, headache, or constipation.

Genetic Predisposition

- Research studies have shown that some individuals' genes may make them more likely to engage in SIB. Genetic syndromes include:
 - Lesch-Nyhan
 - Prader-Willi
 - Smith-Magenis
 - Fragile X
 - de Lange

Operant Causes

- Social Positive Reinforcement
- Social Negative Reinforcement
- Non-social Reinforcement

Let's look at each of these in some detail

Social Positive Reinforcement

(positive reinforcement)

- Person with Autism engage in SIB in order to get attention from other people or access to a high preference item or activity
 - Attention may be from parent, teacher, peer, or only during specific situations (for example, two people talk to each other but not to the person)
 - To get a specific preferred item (for example, cookies, stuff animal, video game such as Mario Cart)

Example of Positive Reinforcement

John often hits himself in the head with his hand. Each time he hits himself he is reprimanded by his mother. John's frequency of SIB increases over time.

Social Negative Reinforcement (negative reinforcement)

- SIB allows a person to escape from an activity (for example, math, brushing your teeth)
- SIB allows a person to avoid a situation that they find aversive

Example of Negative Reinforcement

When asked to complete activities of daily living, such as brushing her teeth, Susan often bites herself on the hand. Susan's teachers typically stop prompting her to complete the task. Susan's frequency of biting her hand increases over time.

Automatic Reinforcement

- SIB is maintained by non-social factors
- SIB is not mediated by the actions of other people
- SIB should be as likely to occur when an individual is alone as in the presence of other people

Example of Automatic Reinforcement

John is alone in the front room of his group home. John is seated in a chair and occasionally hits himself in the head.

Arousal Theory

Individuals may engage in SIB to increase their arousal level or to counteract feeling over aroused. SIBs may be an attempt to release tension or relieve anxiety

Note: Arousal theory has been very difficult to demonstrate convincingly and current level of supporting evidence is not great.

Functional Communication and SIB

- Many individuals with ASD have some form of communication difficulty. SIB is seen most frequently in individuals with ASD who lack functional communication skills to express their wants and needs. The inability to communicate one's wants and needs sets the occasion for SIB.

Discussion of the Assessment of SIB

How Often is SIB Socially Maintained versus Automatically Maintained?

- About 60% of SIB is socially maintained
- Approximately about 40% of SIB is non-socially maintained

Why do we want to collect data?

- To be sure that the behavior in question is really a problem
- To be sure that the change in behavior really happened
- To make sure that all team members agree on the desired behavior change
- To serve as a source for functional assessment

Functional (Behavioral) Assessment

- IDEA 1997 mandated that a functional behavioral assessment is part of any written behavior plan
- Overarching goal of functional assessment is to determine why the behavior occurs
- Takes into account medical, genetic, and biological factors as well as environment
- Today's best practices in assessment and intervention of problem behavior includes an FBA

Why should we care about the function of a problem behavior?

- When you know “WHY” a person is displaying SIB, you can better help a person decrease the behavior
- We usually try and find out why a person engages in SIB before we develop an intervention

Three Types of Functional Assessments

- Questionnaires:
 - Questions About Behavior Function (QABF)
 - Motivational Assessment Scale (MAS)
 - FAST (Functional Analysis Screening Tool)
- Direct observation:
 - ABC Analysis
 - Scatter Plot
- Experimental or Functional Analysis

Questionnaires (MAS; QABF, FAST)

Advantages: Easy to use and do not require much formal training

Disadvantages: Often do not provide a clear answer. Might result in the development of a treatment that is less likely to be effective

Type of Questions Contained on Indirect Measures

- Engages in behavior to get attention (QABF)
- Engages in behavior when peer has something that he/she wants (QABF)
- Does the behavior seem to indicate to you that he/she is not feeling well? (QABF)
- Does the behavior seem to occur in response to your talking to other persons in the room? (MAS)
- Does the behavior occur whenever you stop attending to the person (MAS)
- Does the behavior occur when you take away a favorite toy, food, or activity (MAS)

MAS=6 point scale QABF=5 point scale

Direct Observation

Direct observation in daily environment

- Focuses on observable antecedents and consequences of behavior; can also get information about time of day, duration, and frequency of problem behavior
- Can be done by outside observers for a specific interval of time
- Data can also be collected by parents, teachers, or staff throughout the day



Conducting a Functional Analysis

Done when still don't know the function to the problem behavior

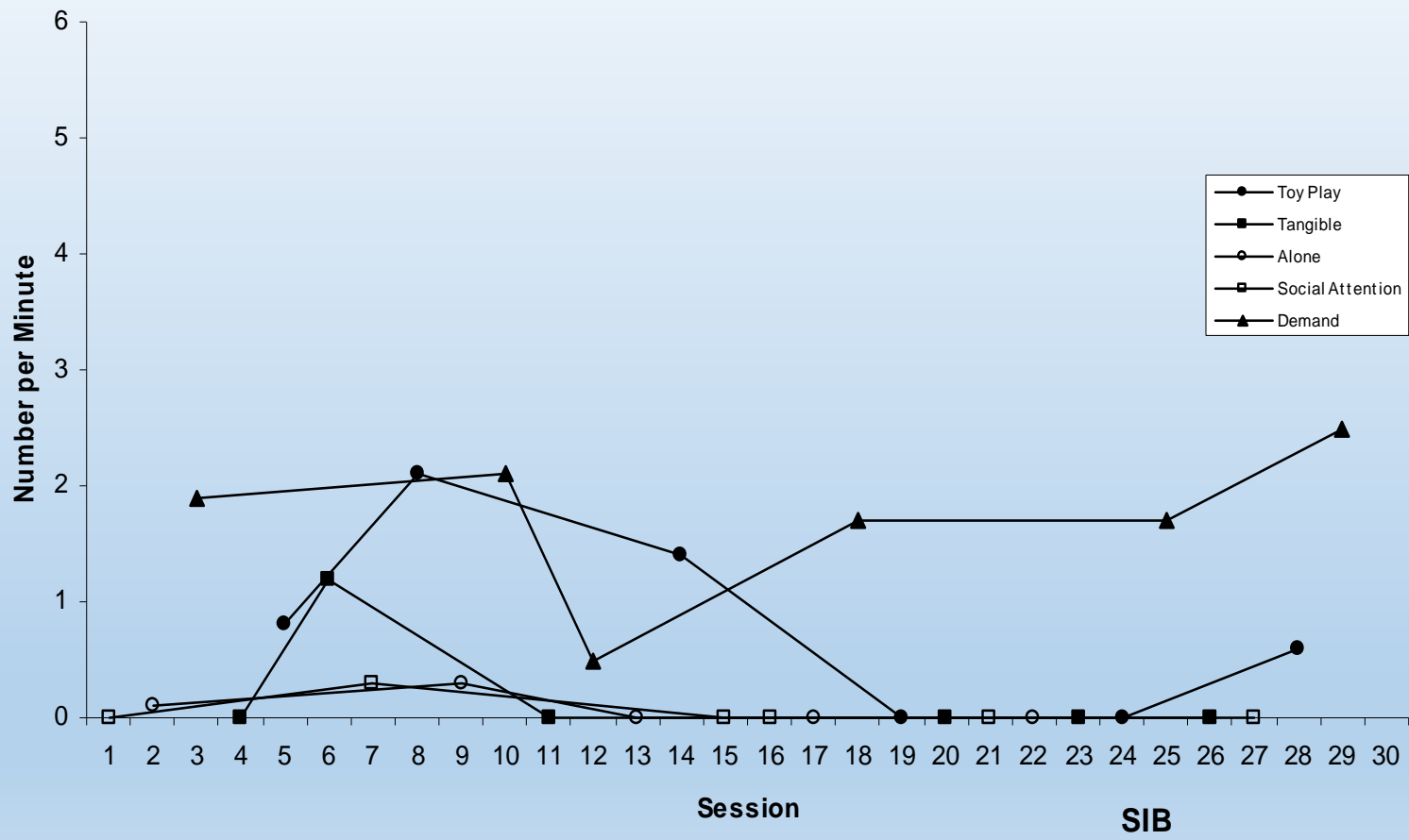
Involves directly manipulating the antecedents and consequences for behavior

Sometimes called an Experimental analysis or an Analog Functional Analysis

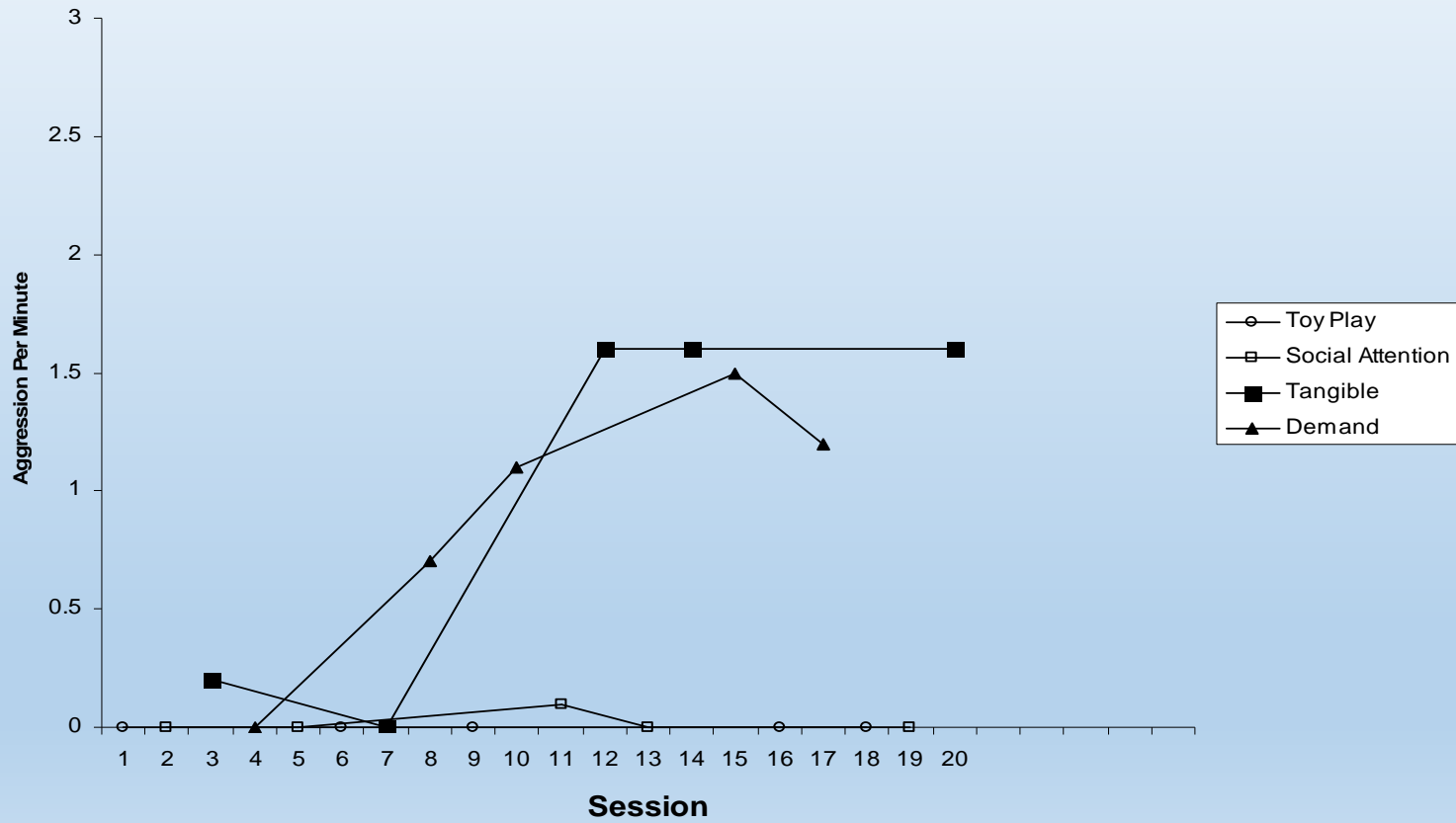
Needs to be done by someone with experience in doing them (a BCBA or Behavior analyst)

Typical Functional Analysis Conditions

- Negative Reinforcement (Demands)
- Positive Reinforcement (Tangible items or Social Attention)
- Automatic Reinforcement (Alone or Ignore)
- Control or Toy Play



Functional Analysis



Interventions for SIB Based on Behavioral Function

Developing a Hypothesis

Once a functional assessment has been conducted, a hypothesis is developed regarding the function or purpose the behavior serves

Use this hypothesis to develop an intervention

Can intervene at many levels:

- Modify the setting event/establishing operation
- Modify the antecedent
- Change or add reinforcement to affect the consequence of behavior
- Provide the same or similar source of sensory (automatic) reinforcement

Antecedent-based Interventions

Antecedent Environmental Manipulation-Altering aspects of an individual's surrounding that may serve as a discriminative stimulus (cue or signal for SIB) for SIB, that will in turn may modify the SIB in some way.

Interventions – Antecedents

Modify antecedents for behavior by removing or modifying the things that “set off” behavior

- Eliminate specific tasks
- Go from easy to difficult tasks
- Embed tasks
- Change the prompts (the way you provide directives or instructions)
- Change the way that materials are presented
- Break down activity into discrete steps and (using task analysis)

Reinforcement-Based Interventions

- Contingent Reinforcement
- Non-contingent reinforcement
- Differential reinforcement

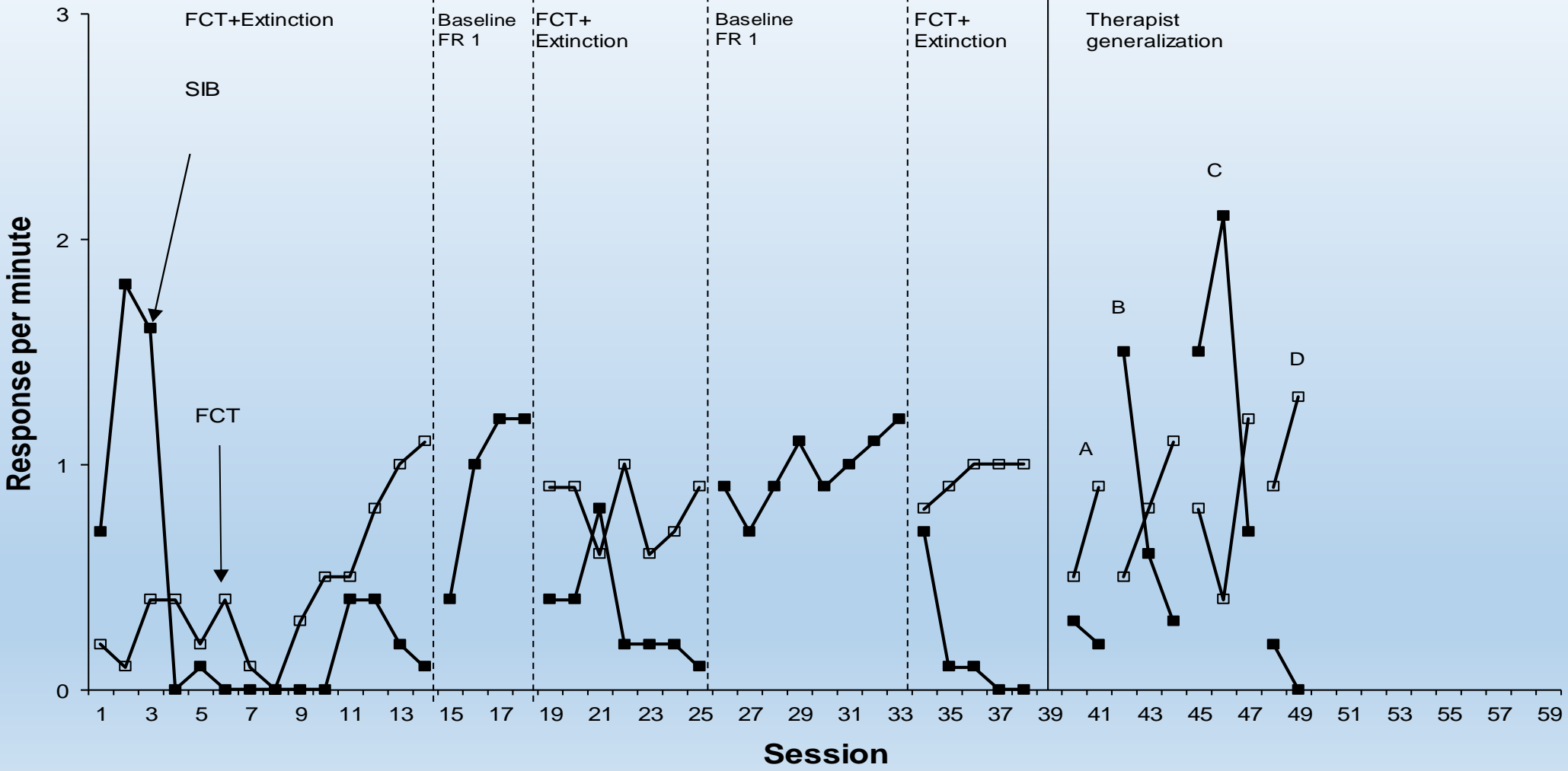
Differential Reinforcement Procedures

- DRO-a reinforcement procedure in which an individual or group receives a reinforce for completely refraining from a specific behavior for a specified period of time regardless of other behaviors demonstrated
- DRA-Reinforcing a more appropriate form of a behavior than the one that the person is currently engaged in (functional communication training, engagement in a specific activity)
- DRL-delivering reinforcement when the number of responses in a specified period of time is less than or equal to a prescribed limit. This maintains a behavior at a predetermined rate, lower than at its baseline or naturally occurring frequency

Functional Communication Training

Teaching a verbal or non-verbal communication skill to gain access to desired items/activities or to avoid non-preferred activities in a pro-social manner, so that it replaces SIB that had been used for the same purpose

Only applied to socially-maintained challenging behavior

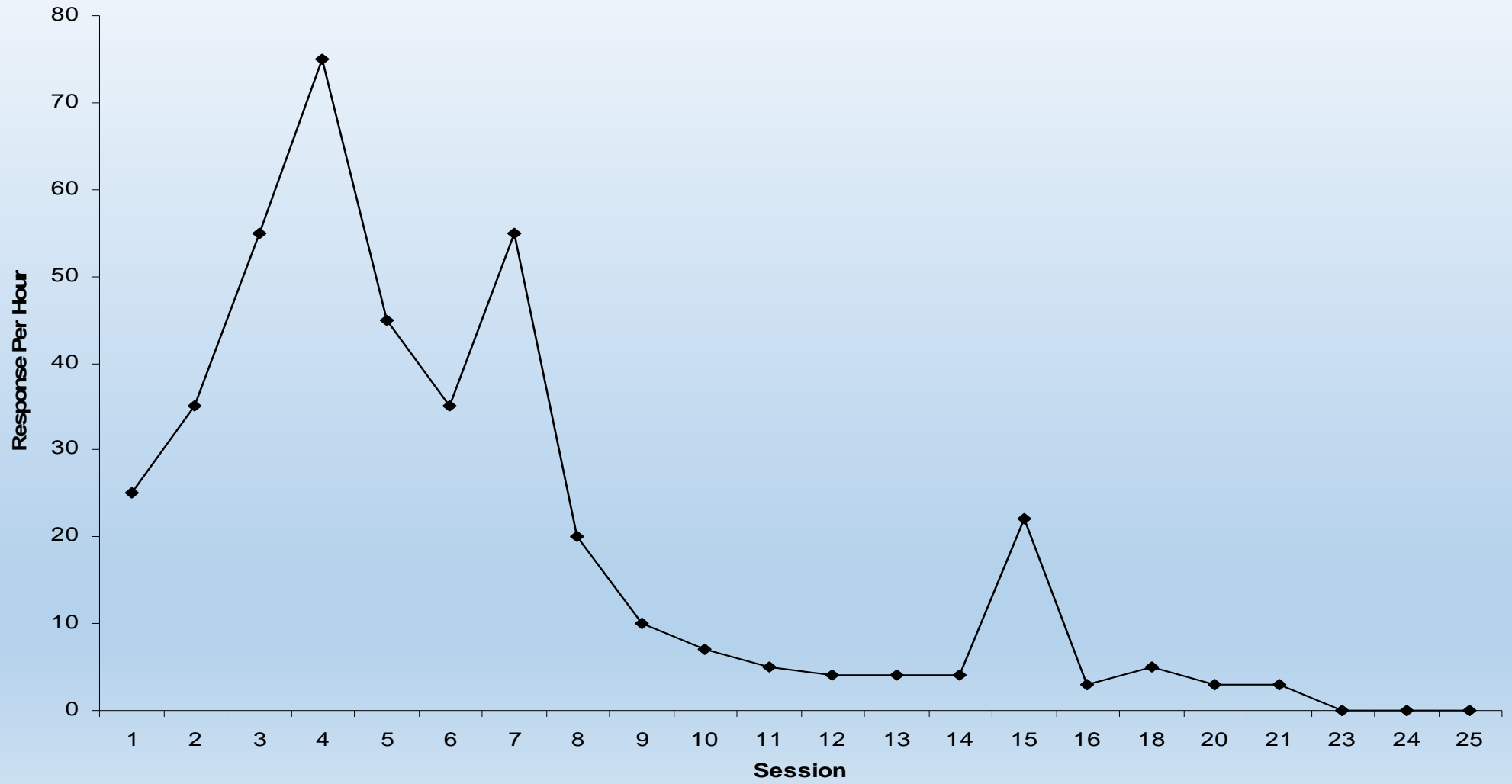


Extinction (Planned Ignoring)

- Withholding the reinforcer that is maintaining SIB(e.g., attention from other people)
- May not be treatment of choice with severe SIB
- Very difficult to implement consistently across all people and settings
- Possibility of extinction burst
- Always a good idea to minimize attention for behavior you do not want



Extinction



Punishment-based Interventions

A consequence that decreases the probability of the subsequent occurrence of the behavior it follows (Arzin & Holz, 1966)

Contingent Aversive Stimuli That Have Been Used to Treat Self-Injury

- Facial or Visual Screen
- 30-second Basket-hold
- Response Cost
- Overcorrection
- Time-out

Time-out

Time-out is the withdrawal of the opportunity to earn positive reinforcement or the loss of access to positive reinforcers for a specified period of time contingent on the occurrence of a targeted behavior

Response Cost

A punishment-based procedure in which the lost of a specific amount of reinforcement occurs, contingent on the display of a targeted behavior (Cooper, Heron, and Heward, 1987)

Unexpected Side effects of Punishment

- Avoidance of problem situations and problem people
- Does not teach replacement behavior
- Is a poor model for the individual
- Shouldn't be a first choice for intervention and only done combined with reinforcement procedure
- Self-restraint – treatment can be difficult



Interventions for Automatically Maintained Challenging Behaviors

Why do interventions for socially maintained challenging behavior look very different than interventions for automatically maintained challenging behavior?

McCord, B. E., Grosser, J. W., Iwata, B.
A., & Powers, L. A. (2005)
Response Blocking

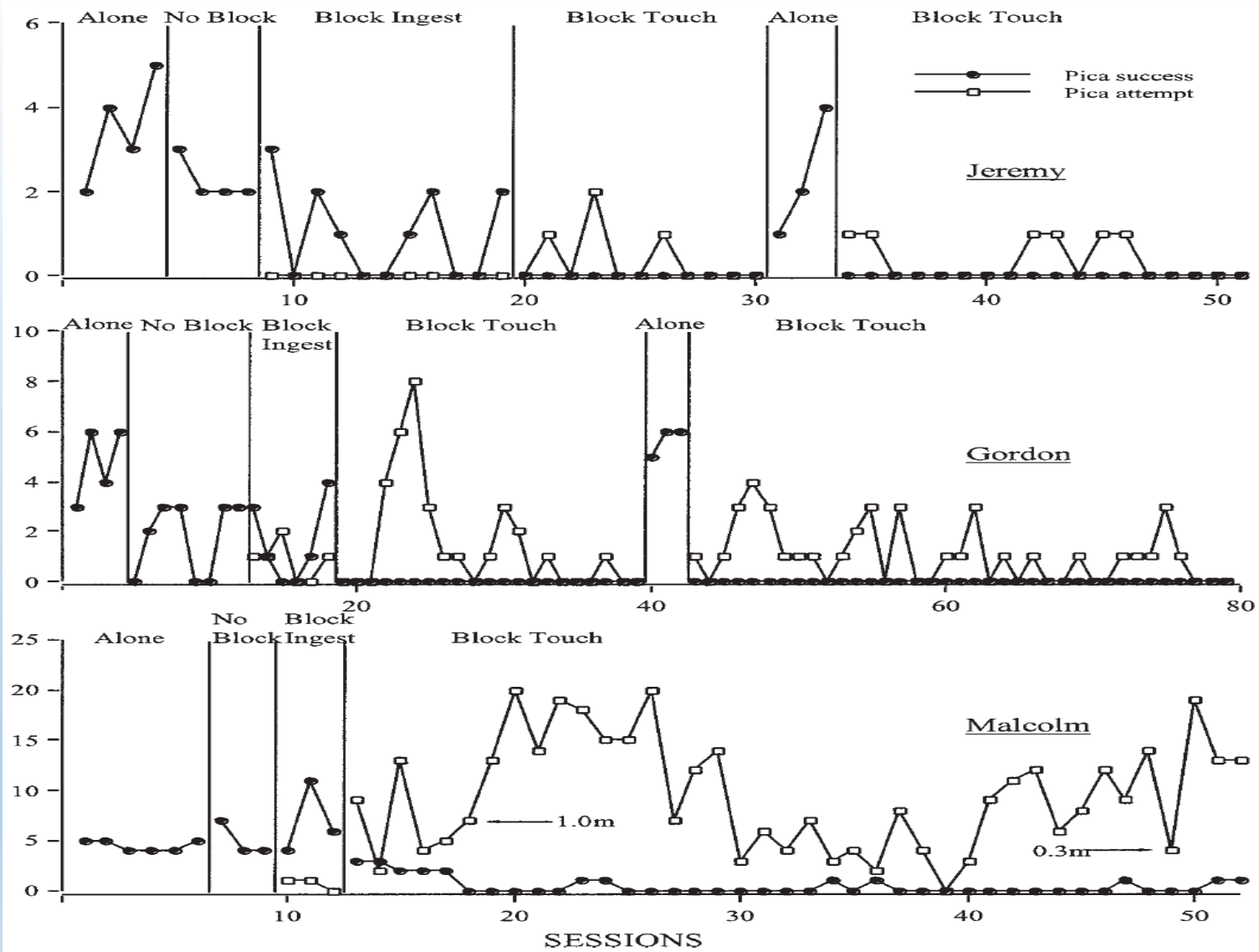
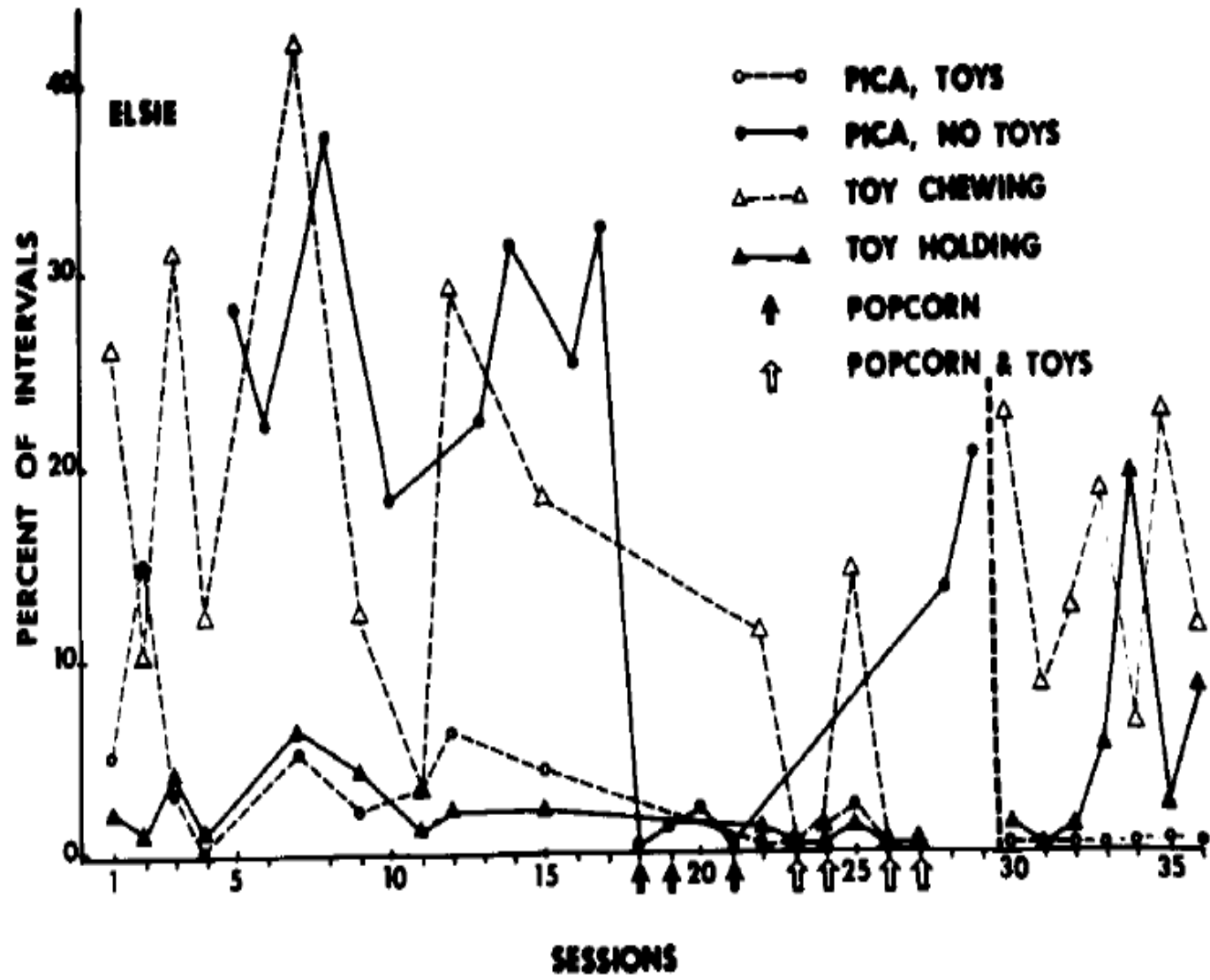


Figure 1. Number of pica successes and attempts during baseline and blocking conditions.

Favell, McGimsey, & Schell, 1982

Environmental Enrichment/Non-Contingent
Reinforcement/Competing items



Hagopian et al. 2011

Differential Reinforcement

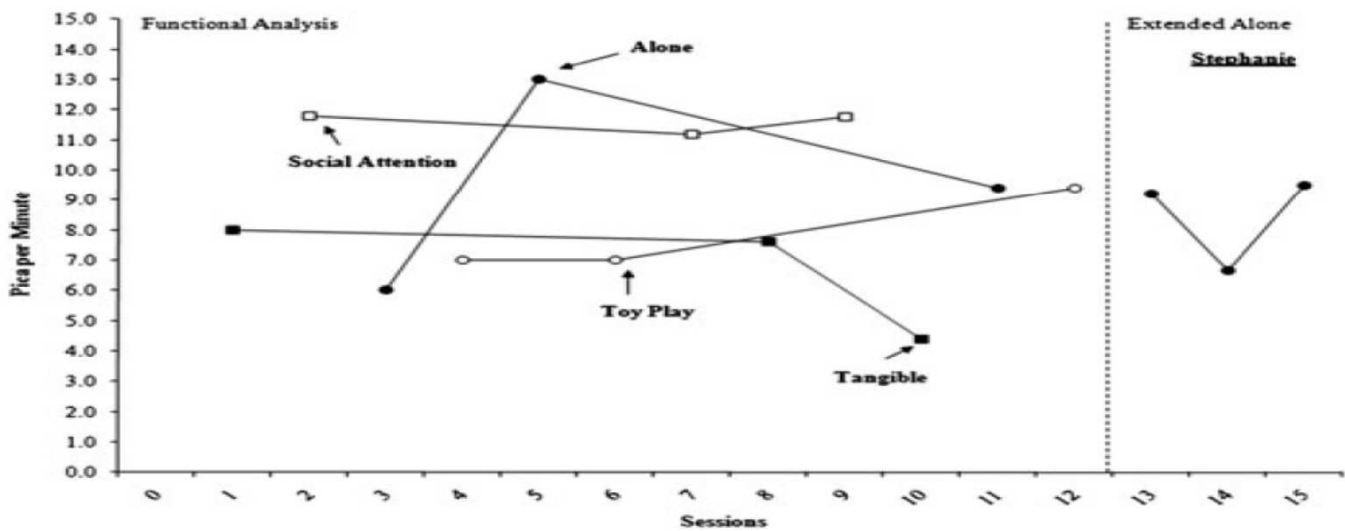
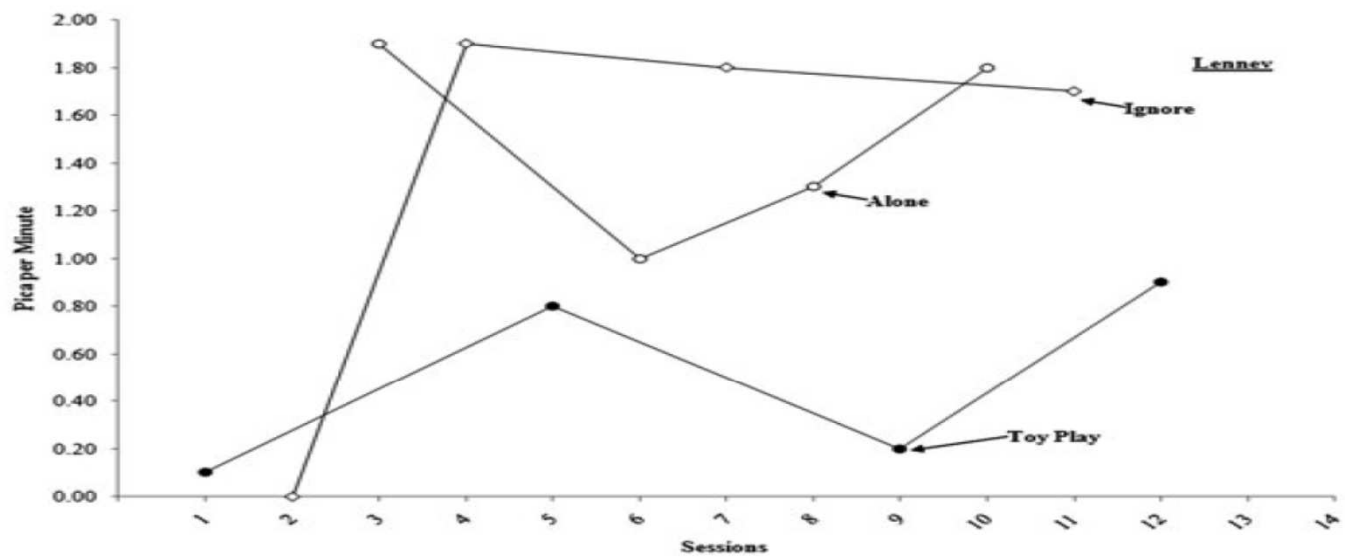
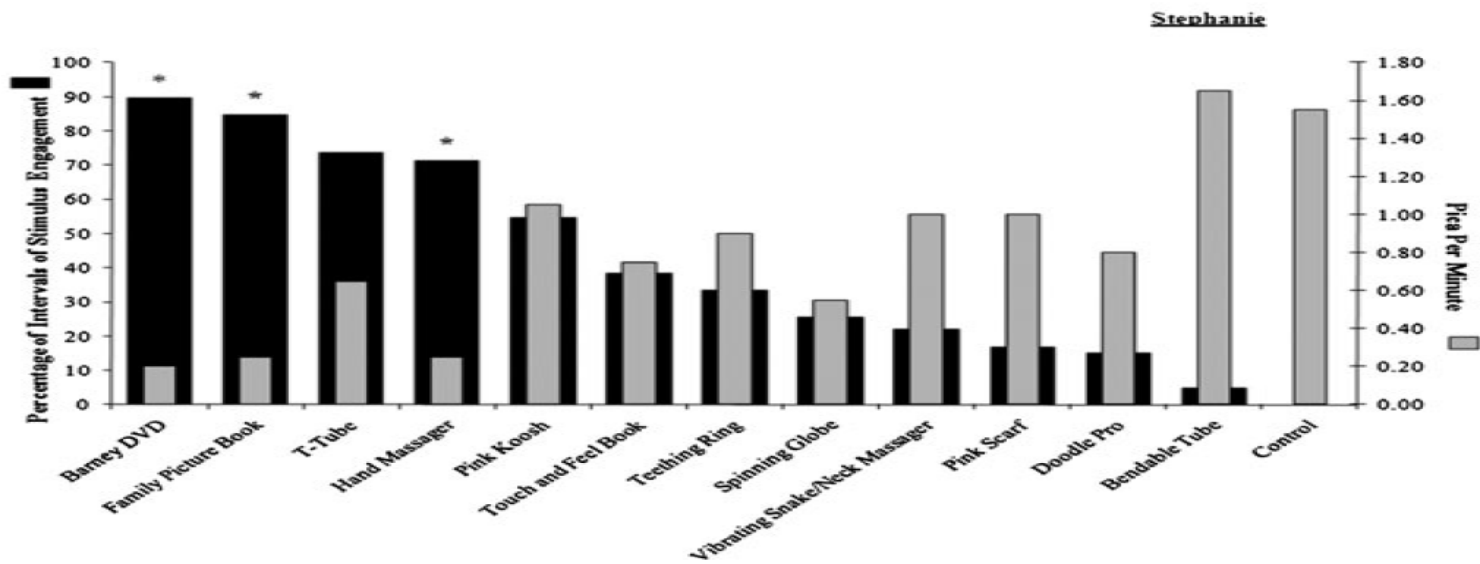
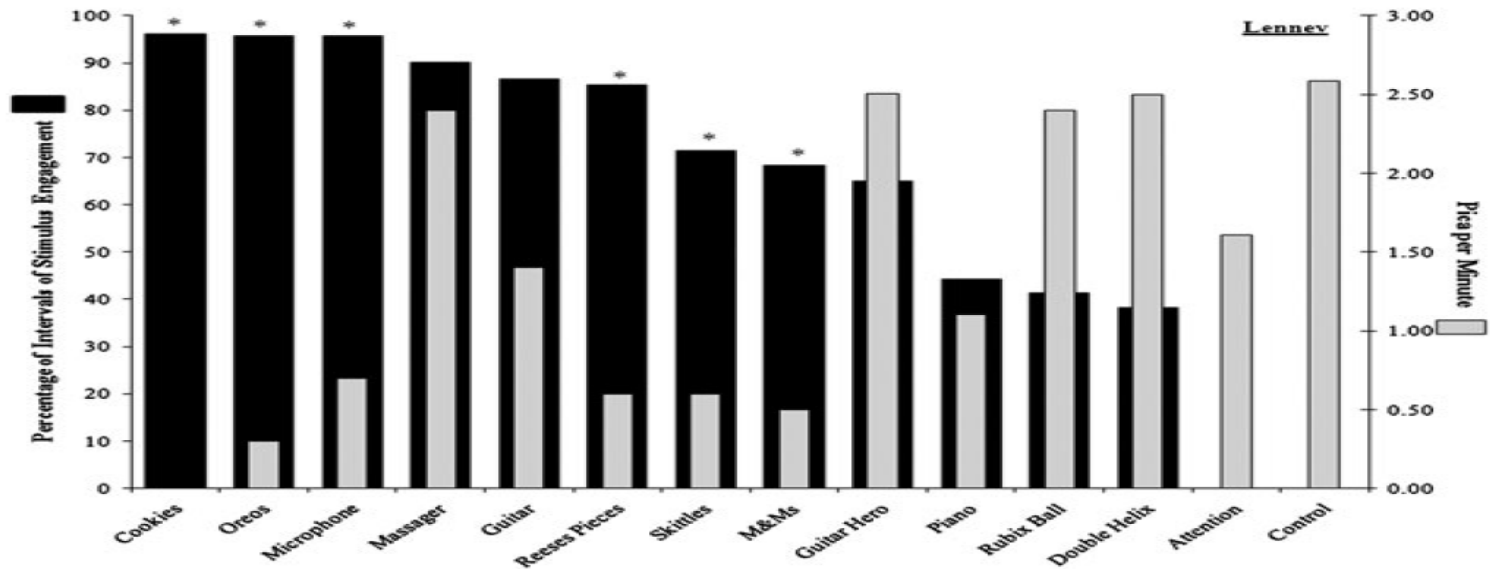
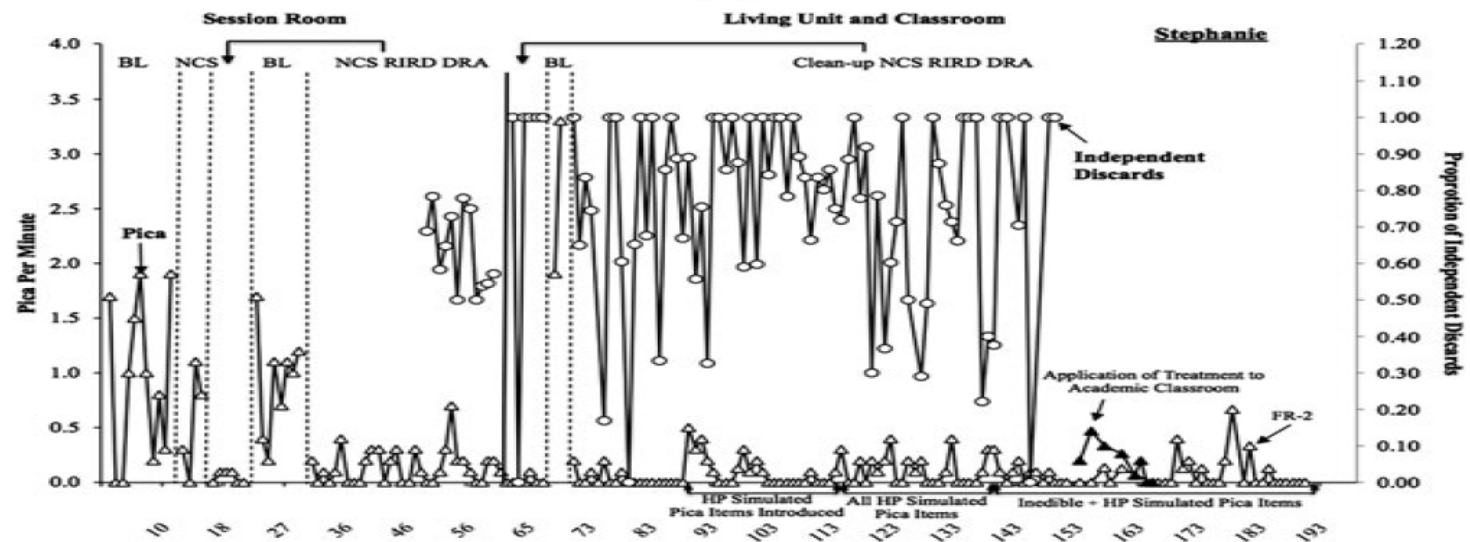
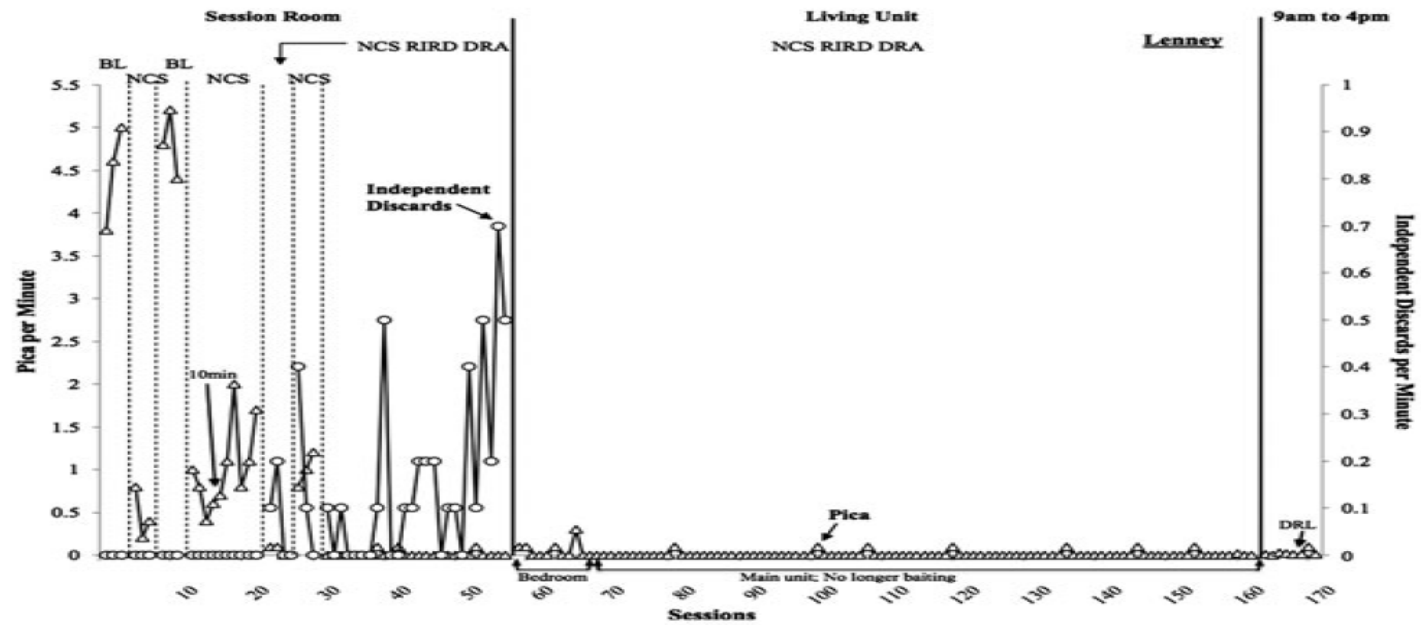


Figure 1. Pica per minute during the functional analysis.





Medication-Based Treatment

- Some Data that support the use of medications for SIB, particularly SIB maintained by biological or internal variables (i.e., automatic reinforcement). For example, Risperdal, Abilify.
- People generally follow least-restrictive alternative model

Thanks for Attending!!

Questions, Discussion, and
Problem Solving

Contact information:
David_Mcadam@urmc.rochester.edu