



## **An Empirical Model for Individualized Assessment and Treatment of Two Types of Elopement: Bolting and Wandering**

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## **Autism and Childhood Schizophrenia**

- ❑ Once thought to be a form of schizophrenia**
- ❑ Differs from schizophrenia in terms of symptoms, age of onset, family history, etiology, and response to treatment**



## Definition of Autism

**□ markedly abnormal or impaired development in:**

1. social interaction
2. Communication

**□ and markedly restricted repertoire of activities and interests.**



## Definition of Autism

**□ Definitions are cheap, but explanations are dear, and we must be careful not to confuse them.**

» David Palmer, 2004



## Autism Spectrum Disorders

❑ Neurological disorders characterized by "severe and pervasive impairment in several areas of development"

- Autistic Disorder
- Asperger's Disorder
- Childhood Disintegrative Disorder (CDD)
- Rett's Disorder
- PDD-Not Otherwise Specified (PDD-NOS)



## Prevalence of Autism

- ❑ Typically diagnosed within first three years
- ❑ Recent estimate indicate that the prevalence of ASD is between 1 in 91 and 1 in 150
- ❑ Four times more prevalent in boys than girls



## **Recurrence Risk for Siblings**

**□ If an older sibling has an autism spectrum disorder, the risk for a**

**Younger brother is 1 in 4**

**Younger sister is 1 in 11**

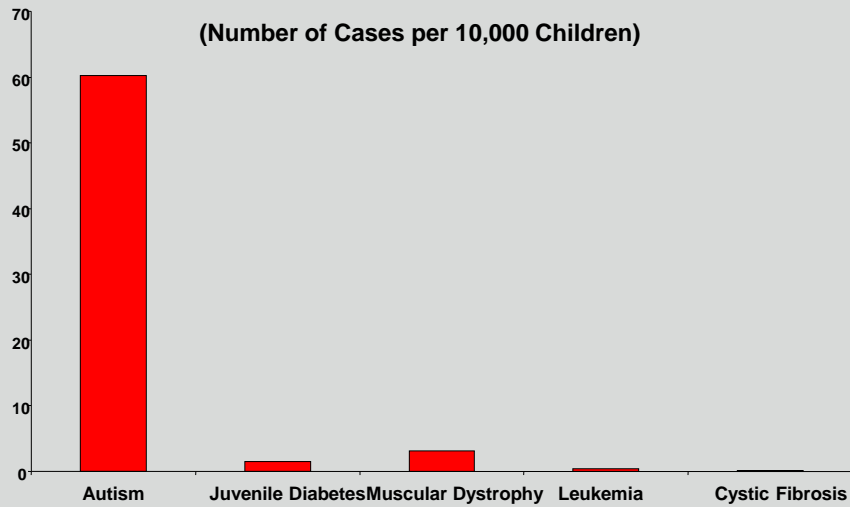


## **NIH Research Dollars Devoted to Autism**

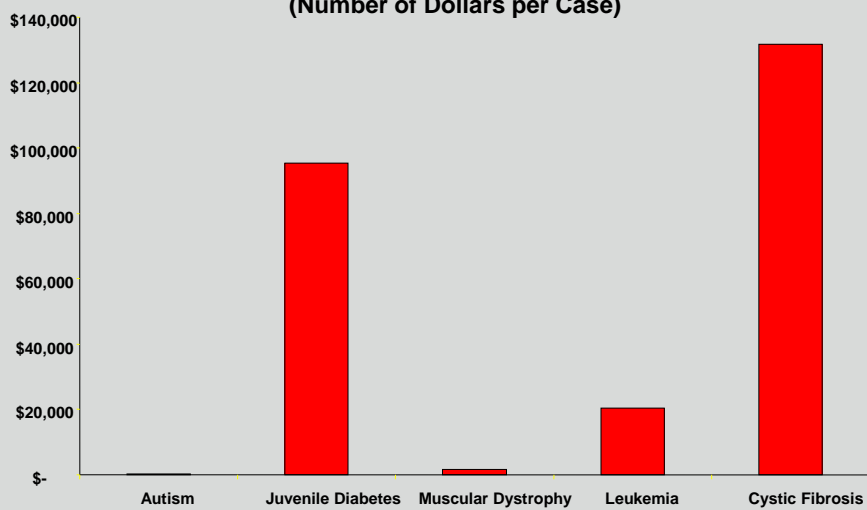
**□ When Compared with Other Serious Childhood Conditions, Autism is Much More Common, but Fewer Dollars Per Case are Spent on Autism.**



**Prevalence of Autism and Other Conditions**  
(Number of Cases per 10,000 Children)



**NIH Research Dollars for Autism and Other Conditions**  
(Number of Dollars per Case)





*Unfortunately, you have what we call “no insurance.”*



## Demographics of Autism

- ❑ Affects all racial, ethnic, and national groups
- ❑ Family income, lifestyle, and educational levels do not affect the chance of autism's occurrence
- ❑ Diagnosis of autism is growing at a rate of 10-17 percent per year (U.S. Department of Education, 2002)



## Assessment and Diagnosis of Autism

- ❑ No medical tests for diagnosing autism
- ❑ Accurate diagnosis is based on observation of the individual's communication, behavior, and developmental levels.
  - ❑ Autism Diagnostic Interview-R (ADI-R)
  - ❑ Autism Diagnostic Observation Schedule (ADOS)
  - ❑ Home and/or school observation
  - Video analysis of behavioral observation



## Social Behavior Generally Requires Little or No Training





## Assessment and Acquired Autism

- ❑ Autism is most often diagnosed between 2 and 5 years of age.
- ❑ Thus, it is natural for parents to look for environmental events occurring shortly before this time that may have caused the autism, such as childhood vaccines.



## MMR Vaccines and Autism

- ❑ 10 of the original 13 authors of the investigation that started the controversy have retracted the study's interpretation, as has the journal, The Lancet
- ❑ Prevalence rates of autism are equivalent in children who have and have not been vaccinated.
- ❑ Increases in the prevalence of autism did not abate when thimerosal was removed from vaccines.
- ❑ Regression in autism is no more likely in the months after the MMR vaccine than in the months before the vaccine.



## Identifying the Genetic Bases of Autism Spectrum Disorders

- ❑ Etiologic Workups Identify Specific Genetic Causes for Autism in About 20% of Cases.
- ❑ At the Munroe Meyer Institute, Shaefer and Colleagues (2006) have developed a 3-Tiered Approach that Identifies Genetic Causes in 40% of Cases.



## Early Screening for Autism (NICHD)

- ❑ Does not babble or coo by 12 months
- ❑ Does not gesture (point, wave, grasp) by 12 months
- ❑ Does not say single words by 16 months
- ❑ Does not say two-word phrases on his or her own by 24 months
- ❑ Has any loss of any language or social skill at any age



## Early Screening for Autism (CHAT)

- ☐ Does not display pretend play (e.g., pretending to drink from a toy cup)
- ☐ Does not point at objects to indicate interest
- ☐ Does not show interest in other children
- ☐ Does not enjoy peek-a-boo hide-and-seek or other social games
- ☐ Does not bring and show objects to parents



## Associated Disorders

	Autism	ASD
<input type="checkbox"/> Mental Retardation	50%	15%
<input type="checkbox"/> Seizure Disorder	35%	10%
<input type="checkbox"/> Self-Injury, Aggression	50%	
<input type="checkbox"/> Tourette Disorder		
<input type="checkbox"/> Bipolar Disorder		



## Associated Etiologic Diagnoses

- ☐ Fragile-X syndrome
- ☐ Tuberous Sclerosis
- ☐ Williams syndrome
- ☐ Landau-Kleffner syndrome
- ☐ Congenital Rubella
- ☐ Smith-Magenis syndrome
- ☐ Neurofibromatosis



## Genetics and Twin Studies

- ☐ Autism runs in families
- ☐ Heritability for autism is about 90%
- ☐ Monozygotic twin concordance, 60%-100%
- ☐ Dizygotic twin concordance, 10%
- ☐ Associated with abnormalities on chromosomes 7q, 2q, and 15q



## **Applied Behavior Analysis (ABA)**

- ☐ **What is ABA?**
- ☐ **How is it different from other approaches?**
- ☐ **How is it Done?**



## **Behavior Analysis**

- ☐ **Behavior analysis is a discipline devoted to the scientific study of behavior.**
- ☐ **Behavior Analysis has its own:**
  - 1. Philosophy**
  - 2. Scientific Methods**
  - 3. Applications**
  - 4. Journals**
  - 5. Organization, and**
  - 6. Credentialing board.**



## Behavior Analysis

**❑ The three major branches of behavior analysis are:**

1. Behaviorism, which focuses on philosophy;
2. Experimental Analysis of Behavior, which focuses on basic research and principles; and
3. Applied Behavior Analysis, which focuses on applied research and clinical applications. Individuals who become licensed behavior analysts would fall within this third branch.



## Major Tenets of Behavior Analysis

**❑ Behavior is the appropriate subject matter for our discipline (rather than the mind or psyche).**

**❑ Continuity between observable behavior (e.g., talking) and private events (e.g., thinking).**

1. “Thoughts and feelings do not explain behavior. They are more behavior to be explained”.

**❑ Primary goals are the prediction and control of the behavior of individuals (rather than groups).**



## Major Tenets of Behavior Analysis (cont.)

### □ Focused on environmental explanations of behavior:

1. Natural Selection (studied by biologists)
2. Operant Selection (studied by behavior analysts)
3. Cultural Selection (studied by anthropologists)





## Major Tenets of Behavior Analysis (cont.)

### □ Behavior analysis as natural science

1. Empiricism and objective study of behavior as a natural physical phenomenon
2. Principles derived from data rather than theory.

*“Change and be ready to change again. Accept no eternal verity.” B.F. Skinner*



## Evolving Concept of Behavior Based on New Findings

### □ Early definitions of behavior focused on its physical or topographical characteristics:

1. “...thought processes are really motor habits in the larynx...” (J. B. Watson, 1913, p. 177).

□ Skinner (1938) provided a much broader definition of behavior and introduced the concept of the three-term contingency (antecedent-behavior-consequence) that defines “operant behavior”.



## Evolving Concept of Behavior (cont.)

❑ The finding that operant behavior is sensitive to both molecular and molar patterns of reinforcement (e.g., Herrnstein, 1969) formed the basis of “Teleological Behaviorism”, which provides a behavioral account of complex forms of behavior like building a house or falling love.

1. Hammering > Fastening two boards together > Building a floor > Building a house > Protecting the family



## Evolving Concept of Behavior (cont.)

❑ Research on emergent stimulus relations has shown that teaching or reinforcing certain stimulus relations results in the emergence of many additional relations that have not been directly trained.

1. Teach “Mike is faster than Bill; Bill is faster than Sam”.

2. Emergent relations include: “Sam is slower than Mike”;  
If Bill is too slow to catch a rabbit, Bill and Sam also cannot catch it.”

❑ Behavior analysts believe that emergent relations are fundamental to generative language and reading.

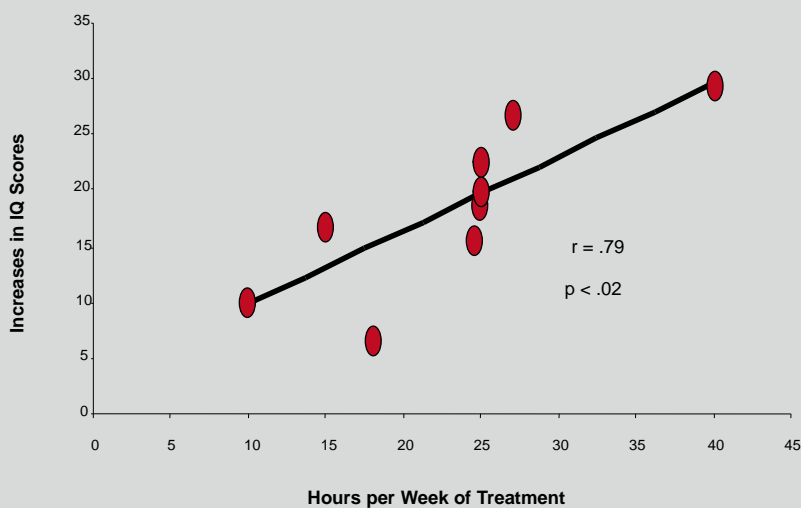


## How Effective is ABA for Autism?

□ About 50% of Children with Autism and no More than Mild Mental Retardation who Receive Early Intervention with ABA Attain Normal IQs and are Educated in Regular Classrooms with Minimal Assistance.



Outcomes of ABA for Autism





## How Effective is ABA for Autism?

### ☐ **Early Intervention of Autism using ABA has been recommended by:**

1. New York State Dept. of Health
2. U.S. Surgeon General
3. National Research Council
4. Association for Science in Autism Treatment
5. National Autism Project



## Why is ABA Effective with Autism?

- ☐ **Comprehensive:** Teaches all skills (e.g., sitting, attending, imitating, direction following, language, social skills, self-help skills).
- ☐ **Goal and Data Driven:** The focus on objective measurement and analysis of behavior provides ongoing feedback on progress and setbacks.



## Why is ABA Effective with Autism (cont.)?

- ❑ ***Empirical Emphasis:*** Treatments are based on principles and procedures supported by research.
- ❑ ***Intensity Level:*** 25 to 40 hours per week for 3 years.



## Intensive ABA for Autism

- ❑ **Average Lifetime Cost for a Person with Autism is over \$4 million**
- ❑ **Average cost of Early, Intensive ABA is \$150,000 over about 3 years**
- ❑ **Average Lifetime Savings from ABA Treatment is Between \$1.6 and \$2.7 million**



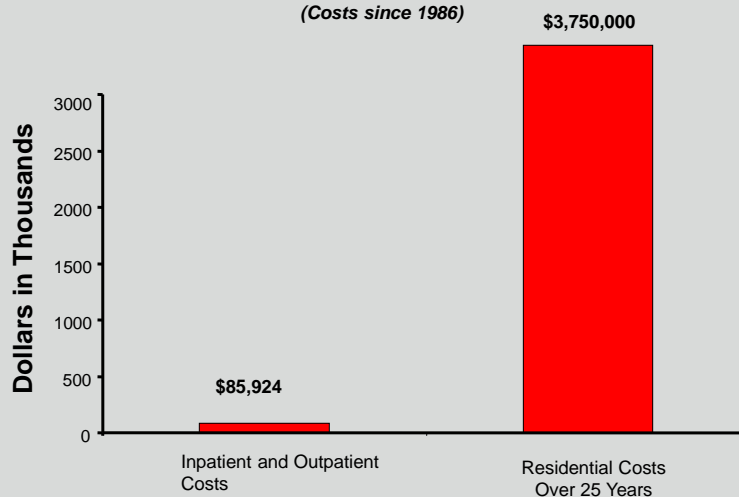
## Cost-Benefit Analysis of ABA treatment for Severe Behavior Disorders

- ❑ Children with Autism and Severe Destructive Behavior Cost \$8 million over a lifetime.
- ❑ Keeping just one child out of chronic care pays for treatment of hundreds more.
- ❑ Our treatment approach has over an 80% success rate.



### Case Example

(Costs since 1986)





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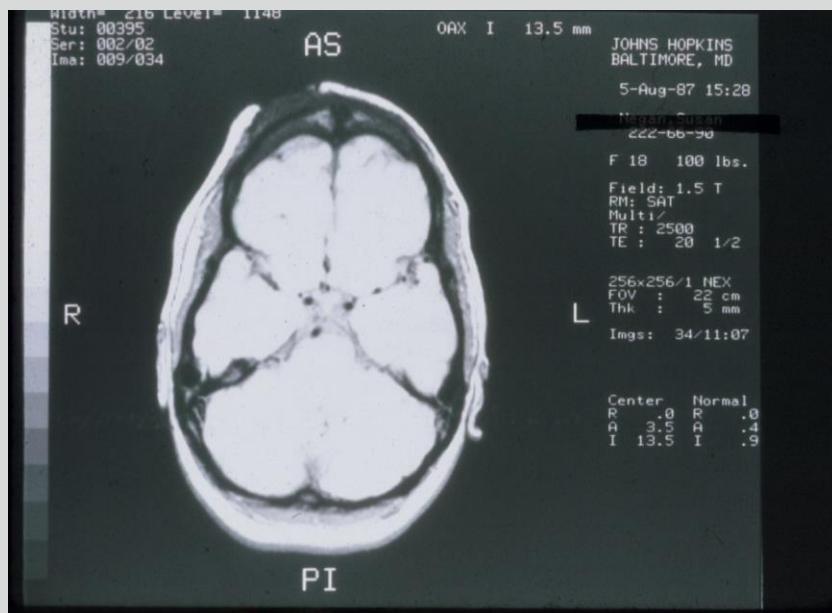


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### HOT ON THE BLOG

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Dawson**

Chief Science Officer, Autism  
Speaks

## 10 Things We That We Didn't

Posted: 04/02/2013 8:21 am

Follow > Autism, Autism Awareness  
Awareness Month, Autism F  
Autistic Children, Children V

for parents:

1. High-quality early intervention for autism spectrum disorder (ASD) can do more than improve behaviors, it can improve brain function. [Read more.](#)
2. Being nonverbal at age 4 does NOT mean children with autism will never speak. Research shows that most will, in fact, learn to use words, and nearly half will learn to speak fluently. [Read more.](#)
3. Though autism tends to be life long, some children with ASD make so much progress that they no longer meet the diagnostic criteria for autism. High quality early-intervention may be key. [Read more.](#)
4. Many younger siblings of children with ASD have developmental delays and symptoms that fall short of an autism diagnosis, but still warrant early intervention. [Read more.](#)
5. Research confirms what parents have been saying about wandering and bolting by children with autism: It's common, it's scary, and it doesn't result from careless parenting. [Read more.](#)
6. Prenatal folic acid, taken in the weeks before and after a woman becomes pregnant, may reduce the risk of autism. [Here's the story.](#)
7. One of the best ways to promote social skills in grade-schoolers with autism is to teach their classmates how to befriend a person with developmental disabilities. [Read more.](#)
8. Researchers can detect presymptom markers of autism as early as 6 months -- a discovery that may lead to earlier intervention to improve outcomes. [Read more.](#)
9. The first medicines for treating autism's core symptoms are showing promise in early clinical trials. [Read more.](#)
10. Investors and product developers respond to a call to develop products and services to address the unmet needs of the autism community. [Read more.](#)



# Functional Analysis and Treatment of Aberrant Behavior



## Structural vs. Functional Diagnosis

### ☐ Structural Approach

1. How often a particular set of symptoms or responses cluster or covary.

### ☐ Functional Approach

1. Whether and which environmental variables influence the response.



## Functional Analysis

- ☐ Identifies the environmental contexts in which aberrant behavior is likely and unlikely.
- ☐ Identifies the consequences that reinforce and maintain the behavior.
- ☐ Used to prescribe effective treatments.



## Functional Analysis Quiz

- ☐ What is the most common parental or teacher reaction to problem behavior?

Answer: Verbal disapproval



## Functional Analysis Quiz

☐ What is the most commonly used behavior modification procedure?

Answer: Time out



## Functional Analysis Quiz

☐ How are verbal disapproval and time out likely to affect problem behavior?

Answer: It depends



## Functional Analysis Quiz

☐ **Social attention in the form of verbal disapproval significantly worsens self-injury in about one-fourth of cases.**



## Functional Analysis Quiz

☐ **Time out significantly worsens self-injury in about one-third of cases.**



## Common Functions of SIB

- ☐ **Social Positive Reinforcement  
(Attention, Tangible items)**
- ☐ **Social Negative Reinforcement  
(Escape)**
- ☐ **Automatic Reinforcement (e.g.,  
Sensory Stimulation)**



## Differentiating Analysis v. Assessment

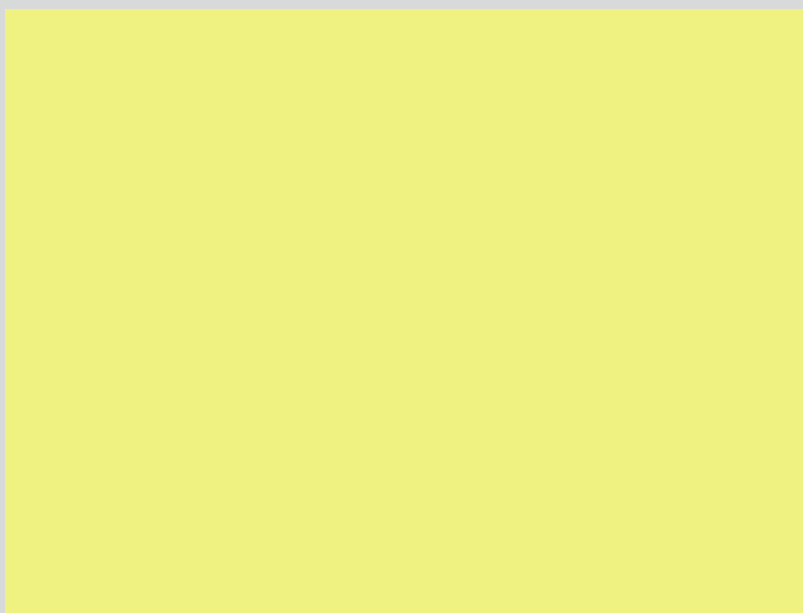
- ☐ **Broadly defined, functional analysis and behavior analysis are one and the same.**
- ☐ **“The analysis of a behavior ... requires a believable demonstration of the events that can be responsible for the occurrence or non-occurrence of that behavior.”**

» Baer, Wolf, & Risley, 1968



## **Functional Assessment is Broader than Functional Analysis**

- ☐ **Indirect Assessments**
- ☐ **Direct Observation Assessments**
- ☐ **Functional Analyses**





## Essential Features of Functional Analysis Conditions

☐ Unique discriminative stimuli that signal the availability of a specific reinforcer

☐ Establishing operation (EO) that increases motivation for the specific reinforcer

1. An EO is an environmental condition that momentarily increases the effectiveness of a reinforcer and that evokes responses that have produced that reinforcer in the past.

☐ Contingency between the target behavior and the specific reinforcer



## Identifying the Essential Features of Functional Analysis Conditions

☐ See if you can identify the discriminative stimulus, the establishing operation, and the reinforcement contingency in each of the following functional analysis conditions.



## Attention Condition

- ☐ **Adult is busy reading. Child is expected to play quietly with toys.**
- ☐ **Adult attention shifts to child following SIB (e.g., “Please don’t hit yourself”).**
- ☐ **Determines whether adult attention functions as reinforcement for SIB.**



## Essential Features of the Attention Condition

- ☐ **Discriminative Stimulus: Adult is seated in a chair reading a book.**
- ☐ **EO: Attention is unavailable.**
- ☐ **Contingency: SIB produces attention.**



## Tangible Condition

- ☐ **Adult takes preferred toys or leisure materials from the child and returns them following SIB.**
- ☐ **Determines whether access to preferred items functions as reinforcement for SIB.**



## Essential Features of the Tangible Condition

- ☐ **Discriminative Stimulus: Adult takes and holds the preferred tangible item at the start of the session.**
- ☐ **EO: Tangible item is unavailable in the absence of SIB.**
- ☐ **Contingency: SIB produces the tangible item.**



## Demand Condition

- ☐ Child is prompted to complete non-preferred tasks by an adult.
- ☐ The task is removed and the child is given a short break following SIB.
- ☐ Determines whether termination of non-preferred activities functions as reinforcement for SIB.



## Essential Features of the Demand Condition

- ☐ **Discriminative Stimulus:** Instructional materials and demands are presented.
- ☐ **EO:** Nonpreferred demands are presented.
- ☐ **Contingency:** SIB results in temporary removal of the demands.



## Alone Condition

- ☐ **Child is placed in a room alone without toys or materials.**
- ☐ **Indirectly assesses whether SIB may be maintained by automatic reinforcement (e.g., sensory stimulation).**



## Essential Features of the Alone Condition

- ☐ **Discriminative Stimulus: Absence of another individual or materials.**
- ☐ **EO: Alternative sources of stimulation are unavailable.**
- ☐ **Contingency: SIB produces self-stimulation.**



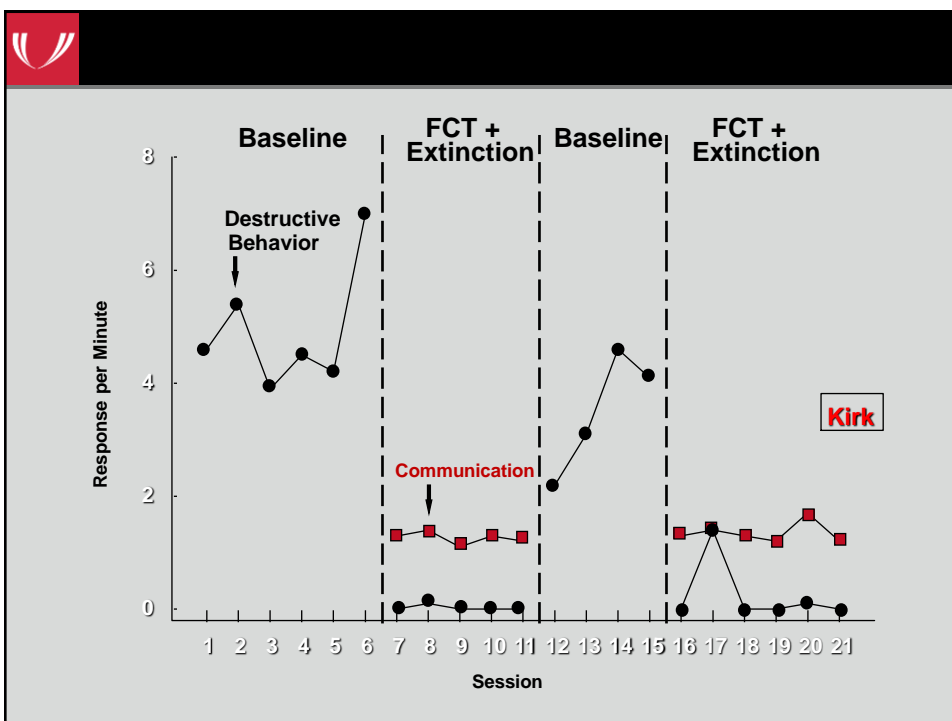
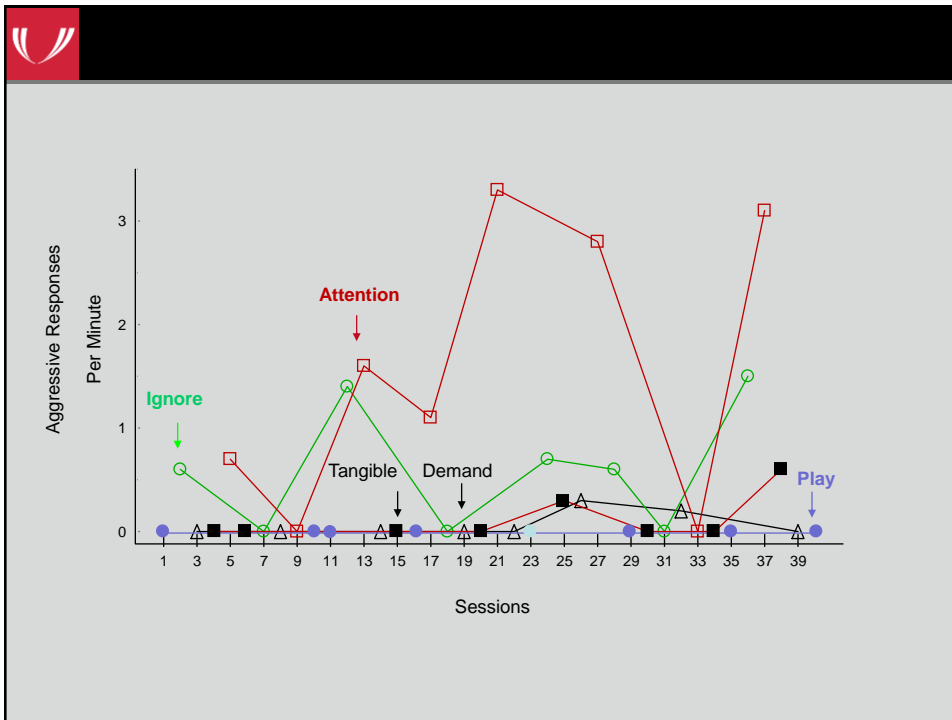
## Toy Play Condition

- ☐ Child and adult play together with preferred toys or leisure items.
- ☐ Adult delivers praise about once every 30 seconds for the absence of SIB.
- ☐ Designed to be an analogue of an “enriched environment”, which serves as a control condition.



## Toy Play Condition

- ☐ **Discriminative Stimulus:** Adult and toys are near the individual.
- ☐ **EO (or AO):** Attention and tangible items (toys) are freely available and no demands are presented.
- ☐ **Contingency:** SIB produces no consequence.





## **Functional Analysis of Covert Drug Ingestion**

### **☐ Three Operant Hypotheses Generated After Caregiver Interview and Chart Review**

- 1. Attention/Excitement From Medical Procedures**
- 2. Attention From Mother**
- 3. Escape From Work Activities**



## **Functional Analysis of Covert Drug Ingestion (cont.)**

- ☐ Sessions Conducted in a Classroom and an Adjoining Medication Room Baited With Placebos in a Pillbox.**
- ☐ Patient was Left Unsupervised in the Classroom With a Schoolwork Assignment.**



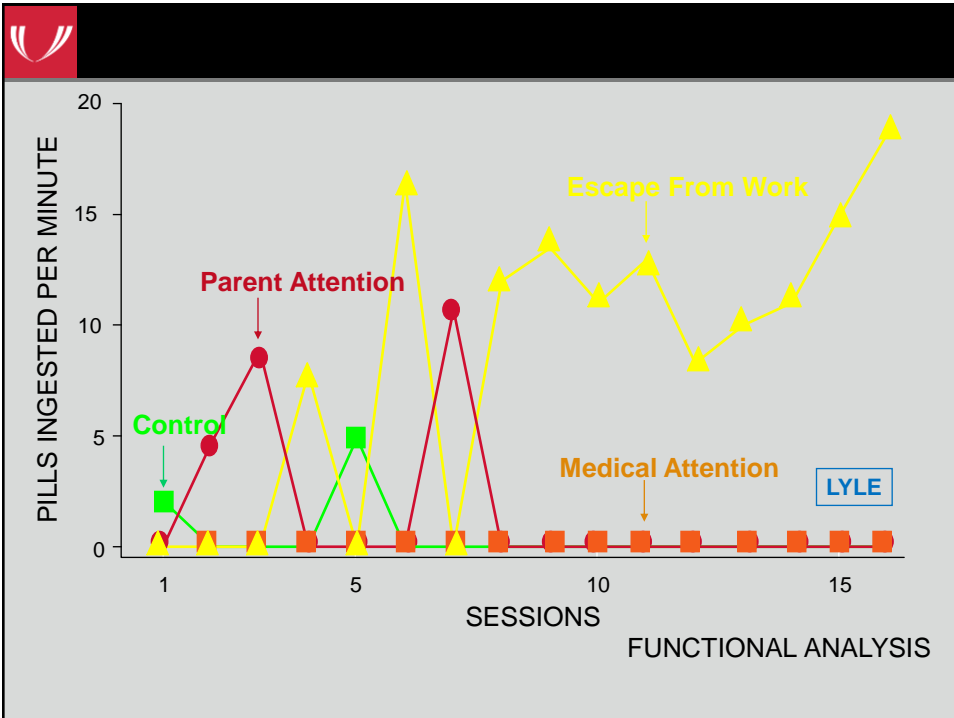
## **Functional Analysis of Covert Drug Ingestion (cont.)**

- ❑ In the Pillbox Were Four Pill Bottles Containing Placebos.**
- ❑ Each Pill Bottle had a Uniquely Colored Label.**
- ❑ Consuming Pills From Each Pill Bottle Produced a Specific Consequence.**



## **Functional Analysis of Covert Drug Ingestion (cont.)**

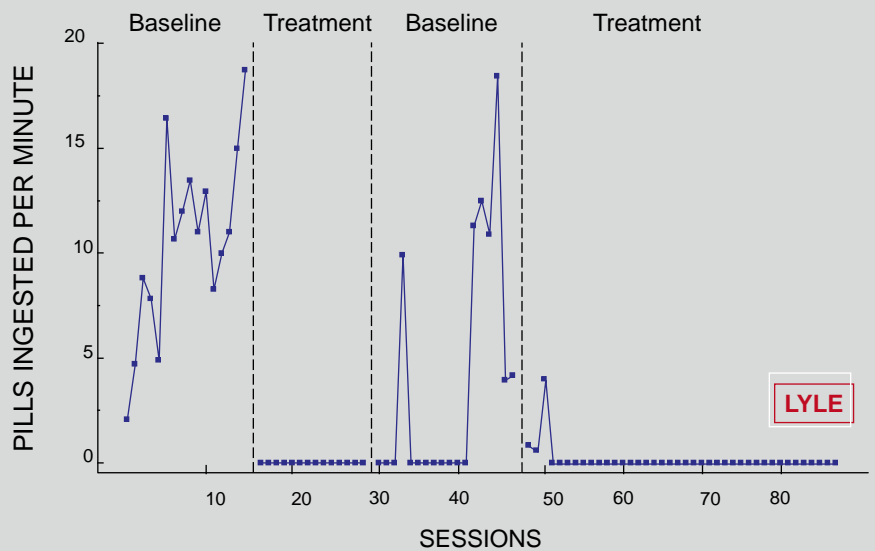
- ❑ Red = Medical Attention**
- ❑ Orange = Attention From Mother**
- ❑ Blue = Rest Period (Escape)**
- ❑ Yellow = Control (Ignore)**



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## Treatment of Escape-Maintained Drug Ingestion

- Lyle Earned Preferred, Nonwork Activities for Completing Scheduled Activities and Turning in Pills.
- He was Required to Complete His Least Preferred Work Activity (Shoe Polishing) if He Ingested Pills.



TREATMENT ANALYSIS



## Designing Interventions Based on Functional Analyses Results

**"Make everything as simple as possible, but not simpler." Albert Einstein**



## Potential Components of Function-Based Treatments

- ☐ Provide the functional reinforcer for an appropriate alternative behavior.
- ☐ Provide a competing reinforcer.
- ☐ Remove the EO for problem behavior.
- ☐ Remove the reinforcement contingency for problem behavior (Extinction).
- ☐ Remove the functional reinforcer contingent on problem behavior (Punishment).



## Choosing the Reinforcement Component

- ☐ Functional Communication Training (FCT) involves the delivery of the functional reinforcer contingent on a communication response.
- ☐ Noncontingent Reinforcement (NCR) involves the delivery of the functional reinforcer on a time-based schedule.
- ☐ Competing reinforcers can also be delivered contingently or on time-based schedules.



## Choosing the Reinforcement Component

- ❑ Is it possible to manipulate the contingency (e.g., automatic reinforcement)?
- ❑ Are there times when it is impractical to deliver the functional reinforcer?
- ❑ How dangerous is the behavior?
- ❑ Is teaching communication an important goal independent of problem behavior?



## Functional Communication Training (FCT)

- ❑ Functional communication training (FCT) is a treatment commonly prescribed when a functional analysis has shown that an individual's problem behavior is maintained by social consequences (e.g., Carr & Durand, 1985; Fisher et al., 1993; Horner, Day, Sprague, O'Brien, & Heathfield, 1991; Lalli, Casey, & Kates, 1995; Wacker et al., 1990).



## Functional Communication Training (FCT)

- ❑ With FCT, the individual is taught a communicative response that produces access to the reinforcer responsible for maintenance of the problem.
- ❑ For example, an individual whose problem behavior is maintained by escape from tasks might be taught to request a break by signing “finished” (e.g., Hagopian, Fisher, Sullivan, Acquistio, & LeBlanc, 1998).



## Unique Features of FCT

- ❑ FCT is a DRA procedure that:
  1. specifies its reinforcer (i.e., a mand specifying the reinforcer that previously maintained problem behavior),
  2. requires minimal response effort,
  3. is reinforced on a dense schedule (e.g., FR 1),
  4. once taught, can recruit reinforcement across environmental contexts.



## Unique Features of FCT

- ❑ Because of the ease and consistency with which reinforcement can be obtained during FCT, some authors have suggested that the client “controls” the delivery of reinforcement (e.g., Carr & Durand, 1985).
- ❑ In addition, Carr and Durand suggested that “control over reinforcement,” contributed to the effectiveness of FCT.



## Unique Features of FCT

- ❑ Two investigations found that noncontingent reinforcement (NCR), which does not allow the client to control the schedule of reinforcement, and FCT, which does, produced equivalent reductions in problem behavior (Hanley, Piazza, Fisher, Contrucci, & Maglieri, 1997; Kahng et al., 1997).
- ❑ Nevertheless, we found that participants preferred FCT over NCR when given a choice (Hanley et al., 1997).



## Unique Features of FCT

❑ FCT may promote generalization and maintenance because the communication response may prompt both trained and untrained caregivers to deliver differential reinforcement appropriately (e.g., Durand & Carr, 1991).



## Limitations of FCT

- ❑ Teaching the FCT response may evoke problem behavior (particularly if it is maintained by escape).
- ❑ Individuals may display the FCT response at exceedingly high rates (e.g., requesting a break from every school task).
- ❑ Individuals may request reinforcement at times when it is impossible or inconvenient to deliver (e.g., caregiver tending to an infant sibling).



## Selecting a Communication Response

- ☐ The communication response should be simple.
- ☐ The communication response should produce the reinforcer identified during the functional analysis.



## Training the Communication Response

- ☐ When FCT first starts, the communication response should always produce the reinforcer.
- ☐ If the child cannot do the response independently, we help them and then deliver the reinforcer.



## Training the Communication Response

**□ The communication response matches the function of the child's problem behavior.**

1. Demand -> "Break please."
2. Attention -> "Play with me, please."
3. Tangible -> "Toy please."



## Training the Communication Response

**□ Children who do not speak are often taught to use a picture-exchange communication response.**

1. Attention -> Child hands over a picture of the adult and child playing together.
2. Demand -> Child hands over a picture of the child leaving a work table.



# **Training the FCT Response**



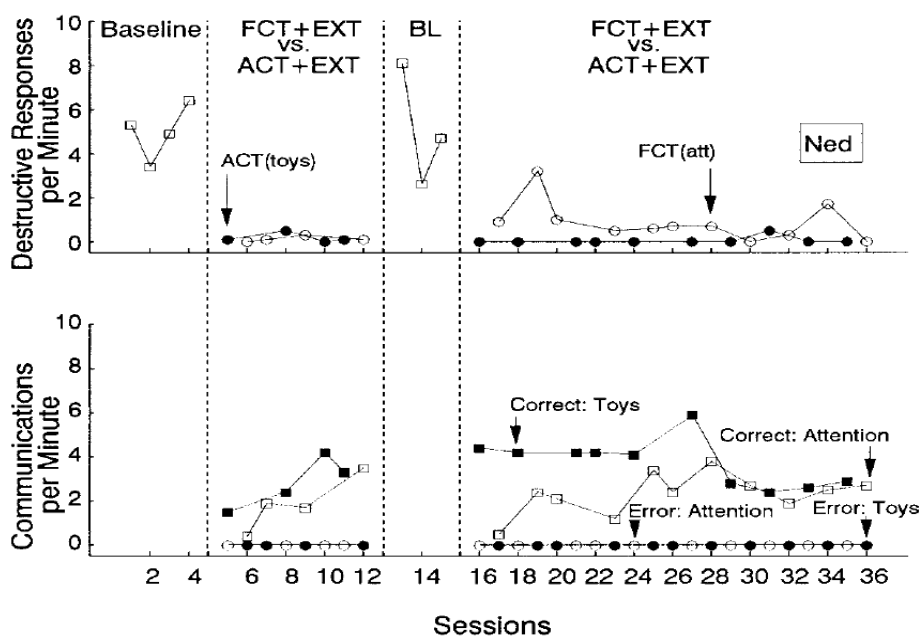
## **Function-Based Extinction**

- ☐ **EXT (Att): Attention no longer follows the target behavior**
- ☐ **EXT (Tang): Tangible item is longer presented following the target behavior**
- ☐ **EXT (Esc): Demands continue following the target behavior**
- ☐ **EXT (Auto): The sensory consequences of the target response are eliminated or the response is prevented.**



## Schedule Thinning During Functional Communication Training

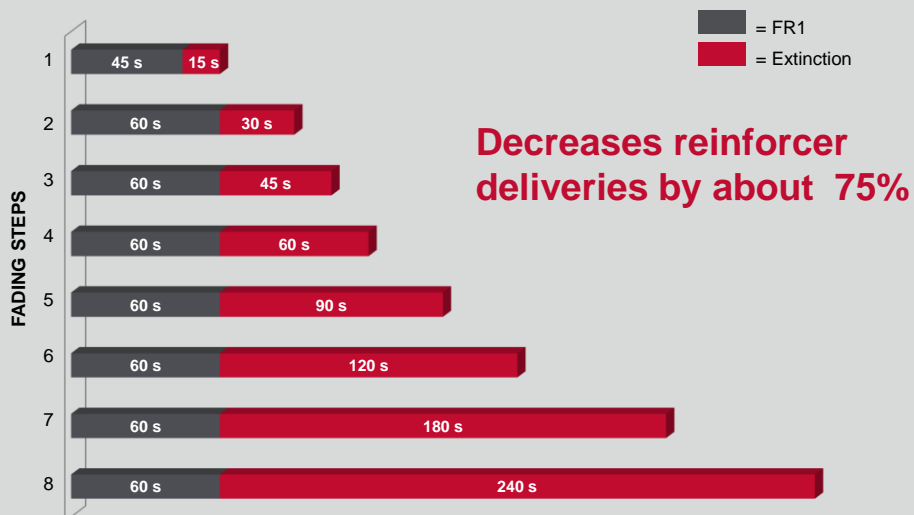
- ❑ Signaled and unsignaled delayed reinforcement (Vollmer et al., 1999)
- ❑ Activities or alternative reinforcers during the reinforcement delays (Fisher et al., 1998; 2000)
- ❑ Multiple schedules with reinforcement and extinction components (Fisher et al., 1998; Hanley et al., 2001)





## Typical Multiple-Schedule Training During FCT

- ❑ Quasi-random alternation between and FR-1 schedule and EXT for communication
- ❑ Each component correlated with a specific signal
- ❑ Initially, the duration of the reinforcement component is 3 to 4 times longer than the EXT component
- ❑ Gradually, the EXT component is lengthened relative to the SR+ component





## **Teaching the Child to Tolerate Periods of Non- Reinforcement**



### **Treatment Extension of Escape- Maintained Drug Ingestion**

- ❑ Lyle was Gradually Exposed to Different Settings where He was Observed and Supervised Less.**
- ❑ Detection Methods Were Faded From Direct Observation to Pill Bottles With Residue and Then to Weekly Tox Screens.**



## Types of Elopement

**□ Elopement generally comes in one of two forms:**

1. **bolting** (rapid, goal-directed movement from a supervising adult or protective area, such as a classroom) and
2. **wandering** (moving about without a clear course or destination).



## Elopement is Common in Autism

**□ Bolting and wandering are among the high-risk problems frequently reported by more than ½ of caregivers of children with autism**

- (e.g., Jang, Dixon, Tarbox, & Granpeesheh, 2011; Matson & Rivet, 2008).



## Research on Elopement is Uncommon

- ❑ No comprehensive treatment approaches to bolting and wandering have been empirically validated.
- ❑ Lang et al. (2009) identified just 10 published studies involving a total of 53 participants who received treatment for elopement.



## Treatment Research

### 1. Goal-directed

- Function-based interventions
  - (Lang et al., 2009; Lehardy, Lerman, Evans, Hovanetz, & LeSage, 2011; Perrin, Perrin, Hill & DiNovi, 2008; Piazza et al., 1997; Rapp, Vollmer, & Hovanetz, 2006; Tarbox, Wallace, & Williams, 2003)

### 2. Skill Deficit

- Ambulation training package
  - (Clements et al, 2011)



## Purpose

### **1. The purpose of the current study was to develop:**

- Conceptual model
- Behavioral assessment



## Participants

### **❑ 10 participants**

1. 3 – 12 years old
2. Early Intervention or severe behavior
3. Engaged in elopement within clinic or natural setting

### **❑ 1 participant**

1. Results of Behavioral Assessment suggested goal-directed bolting



## Target Problem Behavior

### ☐ **Bolting** (responses per minute)

1. Running or darting
2. Directly to a person or tangible
3. Directly following issuance of a demand

### ☐ **Wandering** (responses per minute)

1. Slowed pace
2. Continued movement during stop

### ☐ **Consumption of Reinforcement** (seconds)



## Pre-Assessments

### ☐ **Elopement Diary**

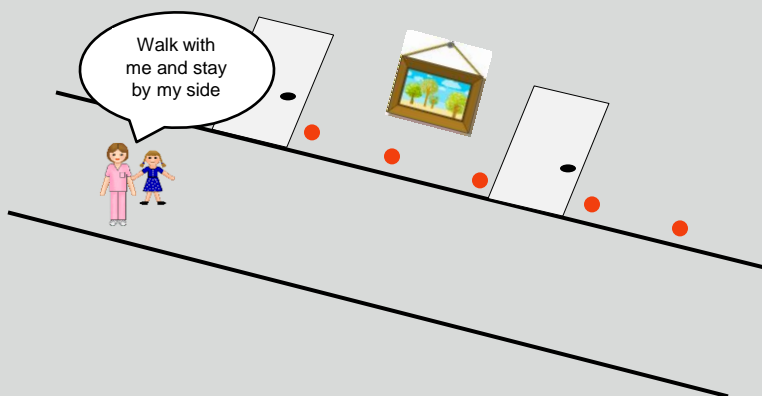
1. Description: 2 week account of elopement events (parent and teacher)
2. Purpose: Assess rate of elopement in natural environments

### ☐ **Functional Analysis Interview**

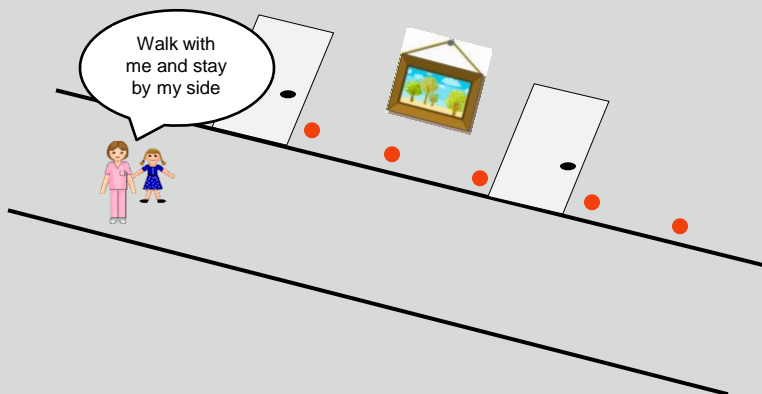
1. Description: Parent interview
2. Purpose: Inform materials and methods for behavioral assessment



## General Procedures



## Continuous Walking & Starts and Stops





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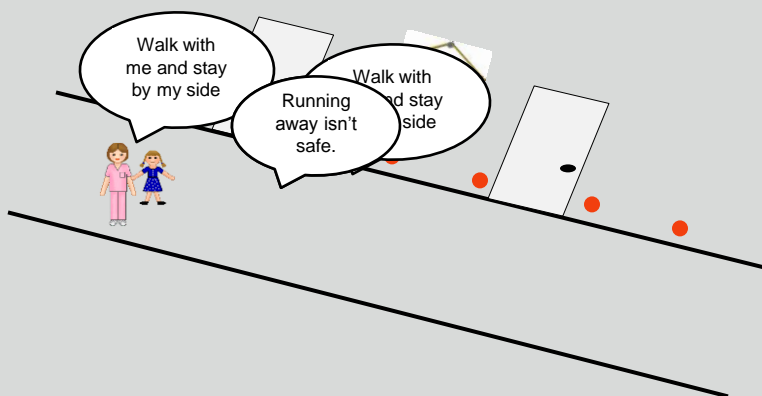


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## Goal-directed

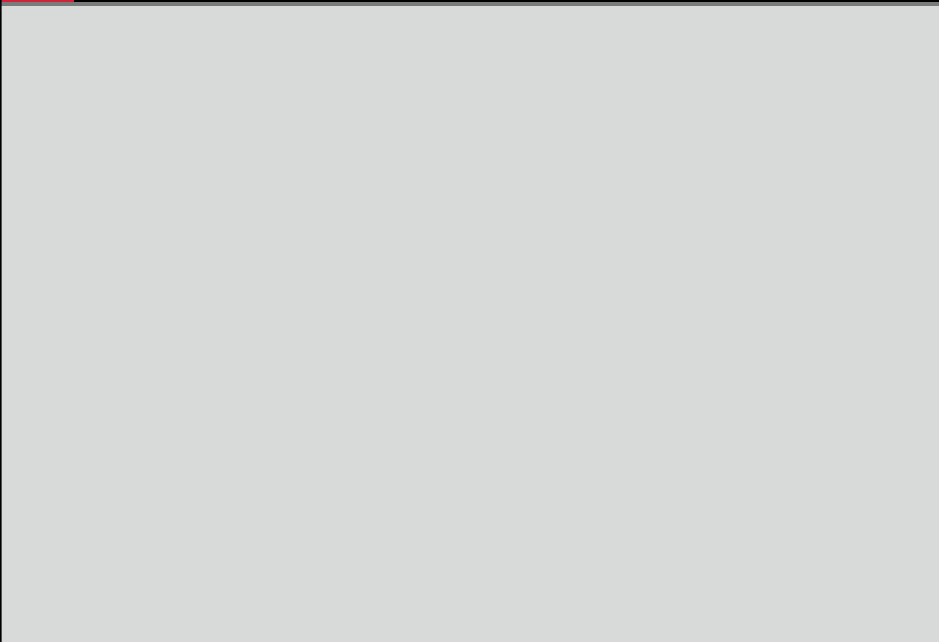




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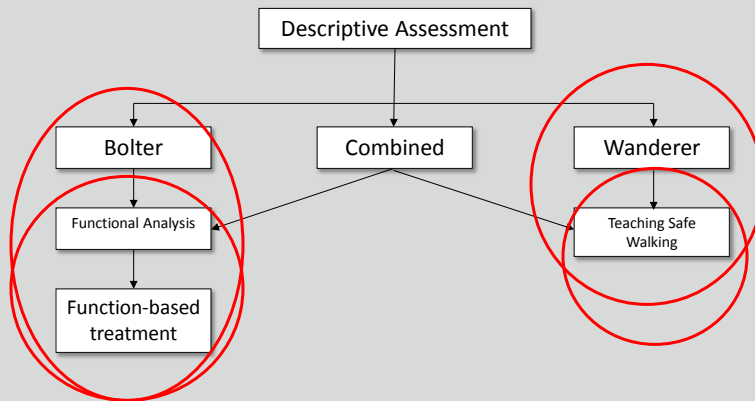


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## Decision Model



## Results (cont.)

Table 1

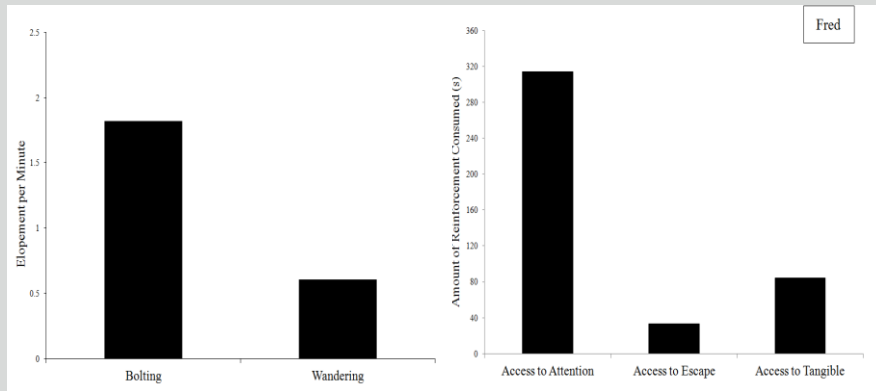
*Summary Results for the Rates of Bolting and Wandering*

Elopement per Minute											
Participant	Continuous Walking		Starts and Stops		Total Combined		Elopement Ratio (Bolt/Wander)	Amount of Reinforcement Consumed (s)			Designation
	Bolt	Wander						Attention	Escape	Tangible	
Horatio	0.00	0.00	0.98	1.57	0.62	0.99	5 : 8	13	0	117	Combined
Doug	0.00	0.00	0.00	1.13	0.00	0.74	N/A	0	20	102	Combined
Dirk	0.26	0.00	0.45	0.60	0.38	0.38	1 : 1	26	10	188	Combined
Ned	2.08	0.35	0.39	0.59	1.00	0.50	2 : 1	0	0	118	Combined
Sam	0.64	0.64	0.16	0.81	0.32	0.76	2 : 3	20	20	40	Combined
Fred	1.10	0.37	1.45	0.73	1.33	0.48	5 : 2	313	33	84	Bolter
Carl	2.19	0.55	2.03	0.41	2.10	0.47	4 : 1	17	5	78	Bolter
Napolean	3.14	0.82	0.96	1.28	2.49	0.96	5 : 2	156	16	423	Bolter
Dre <sup>1</sup>	0.39	0.00	1.03	0.00	0.81	0.00	N/A	19	0	10	Bolter
Jeff	0.00	0.68	0.41	1.85	0.25	1.40	1 : 3	11	0	0	Wanderer

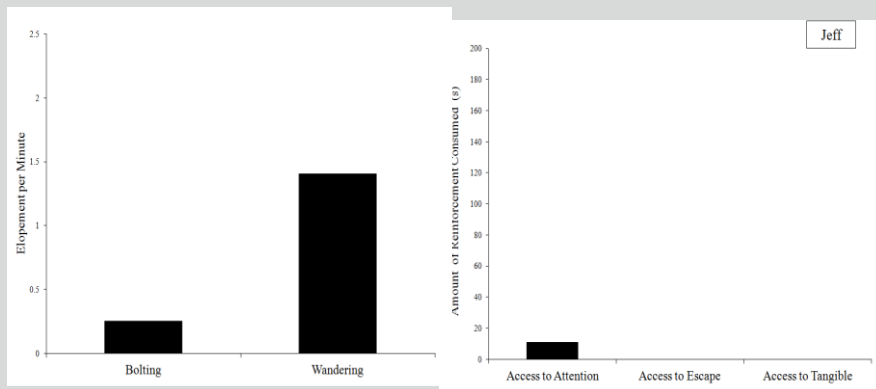
<sup>1</sup> A subsequent descriptive assessment was conducted for Dre with a therapist and rates of elopement were elevated compared to the caregiver conducted assessment



## Bolter

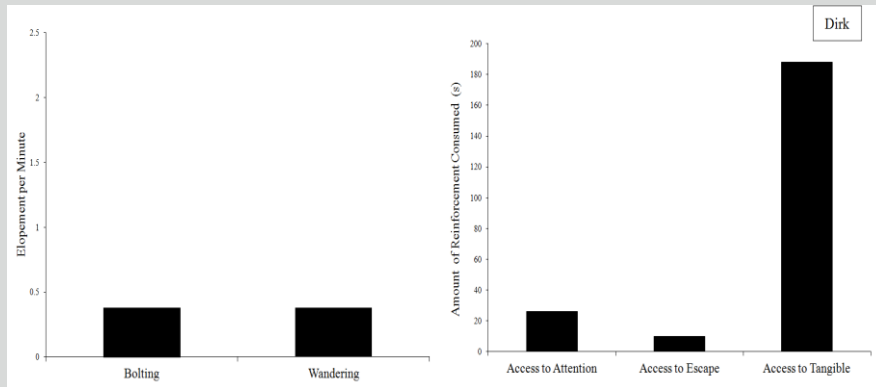


## Wanderer

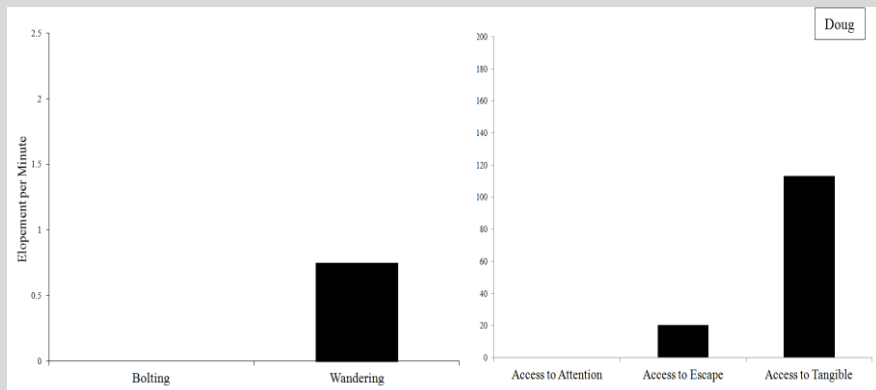




## Combined Bolter-Wanderer



## Combined Bolter-Wanderer (cont.)





## Results (cont.)

Table 1

*Summary Results for the Rates of Bolting and Wandering*

Elopement per Minute											
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## Functional Analysis & Treatment of Bolting

### ❑ 1 participant

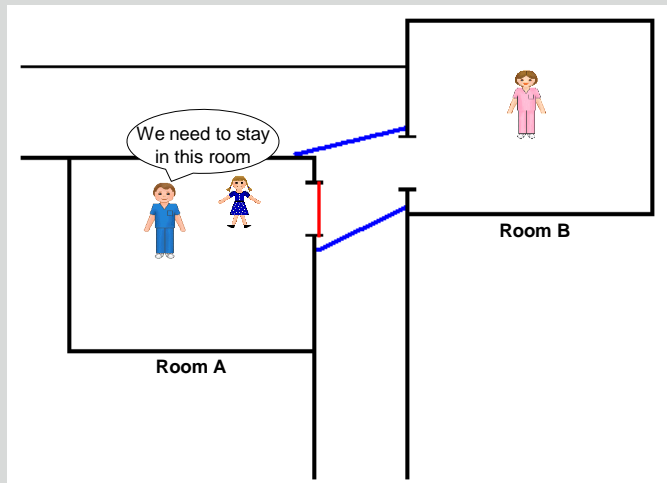
1. Results of Behavioral Assessment suggest goal-directed bolting

### ❑ Treatment evaluation

1. Functional Analysis (FA)
  - Piazza et al. (1997) and Bowen et al. (2011)
2. Functional Communication Training
  - Fisher et al. (1993) and Piazza et al. (1999)



## Functional Analysis



## Casey

- ☐ 4 year-old girl diagnosed with PDD-NOS
- ☐ Used full sentences
- ☐ Ambulatory



## Corey

- ☐ 5 year-old boy diagnosed with PDD-NOS and ADHD
- ☐ Used single and two-word phrases
- ☐ Ambulatory



## Functional Analysis of Elopement

- ☐ Preference assessment conducted to determine preferred items
- ☐ Two rooms separated by a doorway (Casey) or single room separated by a divider (Corey)
- ☐ One therapist in each room or on each side



## Functional Analysis of Elopement

- ☐ Present the EO (e.g., provide instruction, withdrawal attention, remove tangible)
- ☐ Provide 20-s reinforcement for elopement
- ☐ Re-present the EO in the other room or side



### ☐ Escape

1. Issue instructions using 3-step prompting
2. After 20-s break following elopement, re-present instructions in other room

### ☐ Attention

1. Play for a 1 to 2 min then leave to the other room
2. The other therapist enters but does not interact with child
3. Provide 20-s attention following elopement

### ☐ Tangible

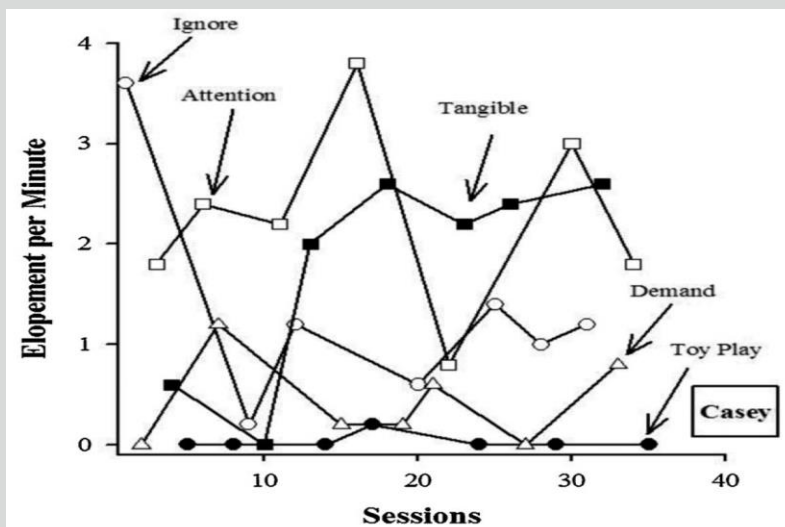
1. Play with high-preferred toy for 1 to 2 min then toy is removed
2. Re-presented toy in other room following elopement

### ☐ Toy Play (Play)

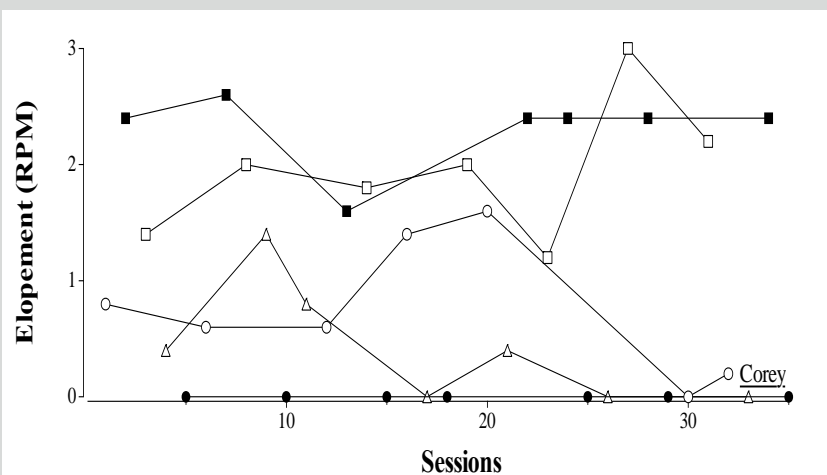
- Both therapists ignore elopement while playing without issuing instructions in both rooms



## Casey's Functional Analysis



## Corey's Functional Analysis





## Casey's FCT for Tangible Function

☐ Play with high-preferred toys for 2 min

☐ Remove toys

1. FCR: Card touch + "Can I play with my toys, Please"
2. 20-s access to toys
3. EXT for elopement and other problem behavior



## Corey's FCT for Tangible Function

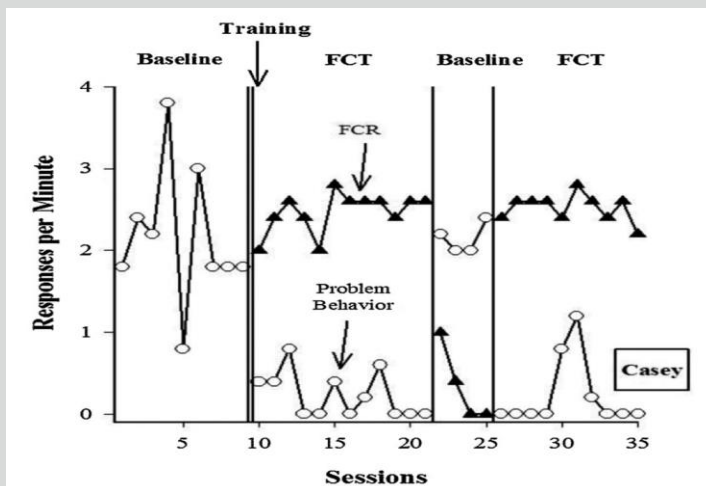
☐ Play with high-preferred toys for 2 min

☐ Remove toys

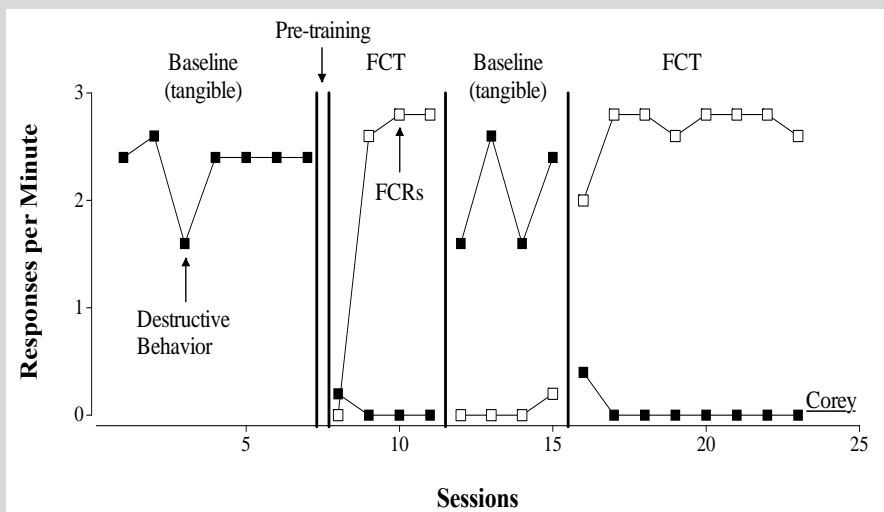
1. FCR: "Toys, please"
2. 20-s access to toys
3. EXT for elopement and other problem behavior



## Casey's FCT Evaluation



## Corey's FCT Evaluation





## Mixed Schedule Procedure

- ☐ Randomized 60-s reinforcement/ 60-s extinction
- ☐ FCRs reinforced on FR 1 during reinforcement
- ☐ FCRs on extinction during extinction
- ☐ Elopement ignored
- ☐ Rule: Sometimes (FCR) produces toys, sometimes it does not.
- ☐ Pre-session play with preferred item

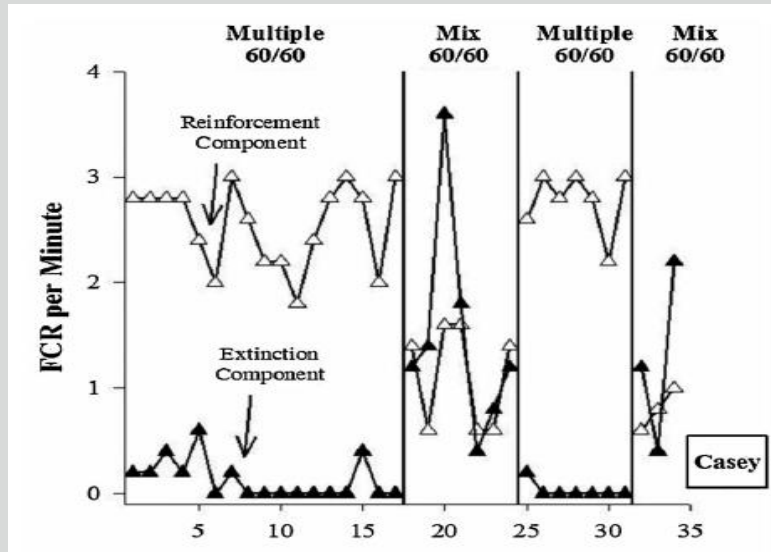


## Multiple Schedule Procedure

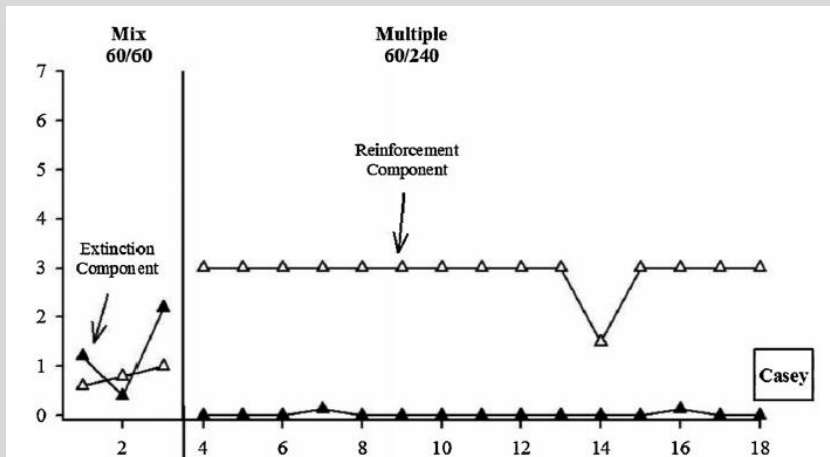
- ☐ Same as mixed schedule, except
- ☐ Bracelet on ( $S^D$ ) used during reinforcement; bracelet off ( $S^A$ ) used during extinction
- ☐ Rule: When bracelet is on, you can say (FCR), and you can play with your toys.



## Casey Multiple Schedule Evaluation



## Casey's Multiple Schedule Evaluation



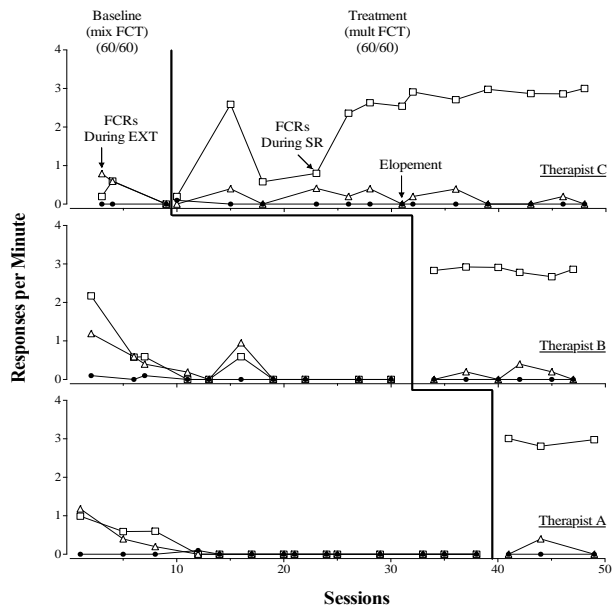


## Multiple Schedule Variation for Corey

### ❑ Multiple baseline across therapists



### Corey's Multiple Schedule Evaluation





## Treatment of Wandering

- ☐ Monitor proximity to adult while walking
- ☐ Maintain proximity to adult while waiting (e.g., in line at grocery store)



## Participants

### ☐ Kirby

1. 3-year-old male
2. Disruptive behavior disorder- Not otherwise specified
3. Global Developmental Delay

### ☐ Art

1. 4-year-old male
2. Disruptive behavior disorder- Not otherwise specified
3. Autistic disorder



## General procedures

### ☐ Dependent variables

1. Elopement : child 1 meter (3 feet) or more from therapist while walking
2. Correct waiting: child less than 1 meter (3 feet) away from therapist while waiting

### ☐ Multiple baseline across therapists design



## General procedures

### ☐ Route consistent throughout training

### ☐ Therapist walked at a consistent pace



## Baseline

### ☐ Child retrieved following elopement

1. Minimal physical attention
2. No verbal feedback



## Differential reinforcement of incompatible behaviors (DRI) + positive punishment

### ☐ Preferred item held out immediately in the child's line of sight

1. Kirby = edibles (e.g., fruit snacks)
2. Art = toys (e.g., toy train)

### ☐ Five praise statements delivered for appropriate walking



## DRI + punishment

### □ Five random wait intervals

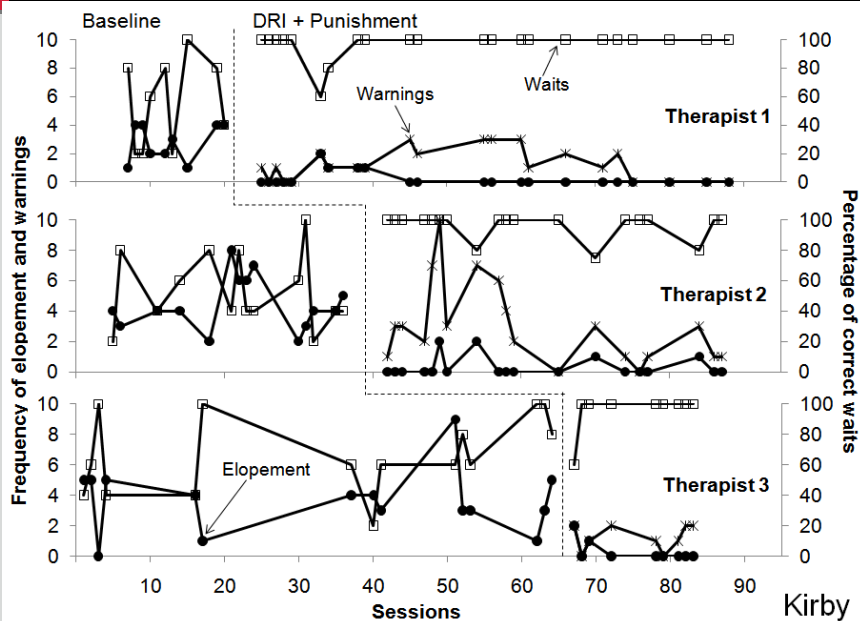
1. 5-s in duration

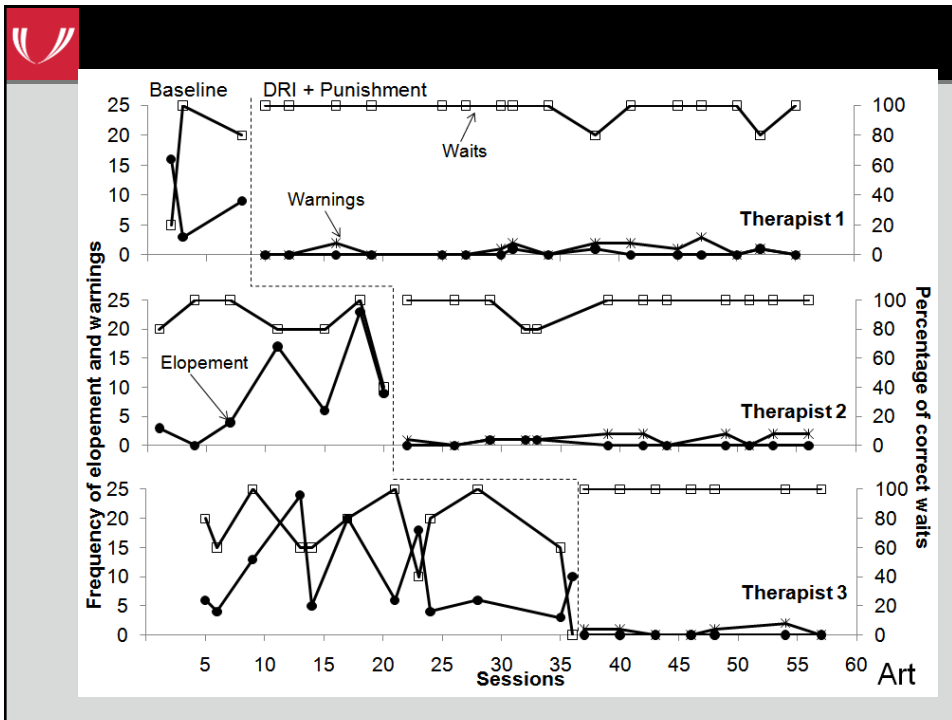
### □ Warnings

1. 0.61 meters (2 feet)

### □ 10-s hold

1. During walking: guidance to continue walking
2. During stops: child held in place with his hands to his sides





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## Results

- ❑ Taught behaviors to compete with elopement
  1. Reduced elopement to near-zero levels
- ❑ Both participants learned to stop and wait
- ❑ Replicated across three therapists with both participants



## Limitations

### ☐ Functional analyses were not conducted

1. Access to social consequences were not ruled out as maintaining variables for elopement

### ☐ What components of the treatment package lead to behavior change?

1. Would DRI alone have been effective?



## Future Directions

### ☐ Fading of tangible/ edible reinforcers

### ☐ Lengthening stop intervals to mimic the natural environment

### ☐ Generalizing across multiple settings

### ☐ Parent Training



## **Elopement and Flopping: Trial-based functional assessment and treatment of symmetrical operants reinforced by the same consequence**

### **❑ Derrick**

1. 3 yo diagnosed with autism
2. referred to a university-based severe behavior disorders' program for the assessment and treatment of elopement and flopping.

### **❑ Elopement**

1. During descriptive assessment, engaged in elopement only in presence of playground, flopped when access blocked



## **Elopement and Flopping as symmetrical operants reinforced by the same consequence**

### **❑ Setting & Materials**

- ❑ Indoor playground with one door access on each side
- ❑ 3 differently colored smocks to serve as discriminative stimuli for each experimental condition
- ❑ Moderately preferred items for inter-trial intervals.



## **Elopement and Flopping as symmetrical operants reinforced by the same consequence**

### **❑ Walking Near the Playground**

- A therapist and Derrick started within close proximity to the playground.
- Contingent upon elopement, Derrick was given 30-s access to the playground.



## **Elopement and Flopping as symmetrical operants reinforced by the same consequence**

### **❑ Leaving the Playground**

- A therapist brought Derrick to the middle of the playground and stated, "You can play."
- After a 30-s access period, the therapist approached Derrick, grasped his hand and stated, "It's time to go."
- Contingent upon flopping, the therapist said, "You can stay," and Derrick was allowed 30-s access to the playground.

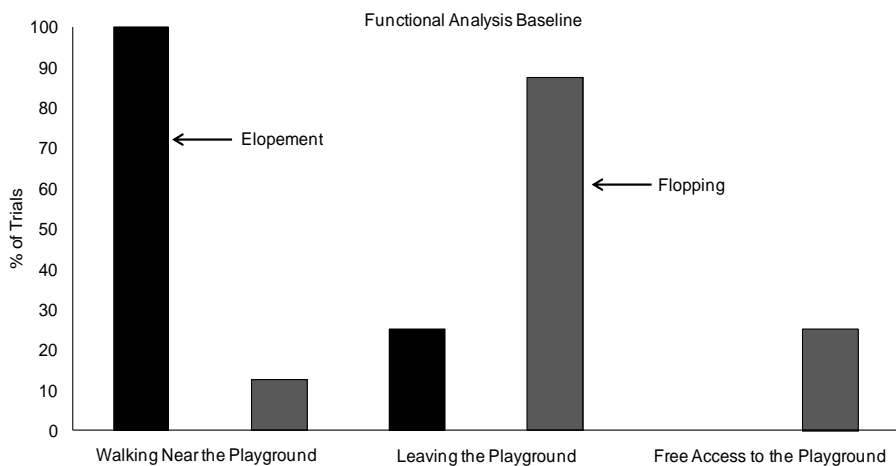


## Elopement and Flopping as symmetrical operants reinforced by the same consequence

### ❑ Free Access to the Playground (Control)

- A therapist brought Derrick to the middle of the playground and stated, “You can play.”
- After a 30-s access period, the therapist approached Derrick, picked him up and exited the playground.
- No consequences were delivered for elopement or flopping.

## Elopement and Flopping: Trial-based functional assessment and treatment of symmetrical operants reinforced by the same consequence

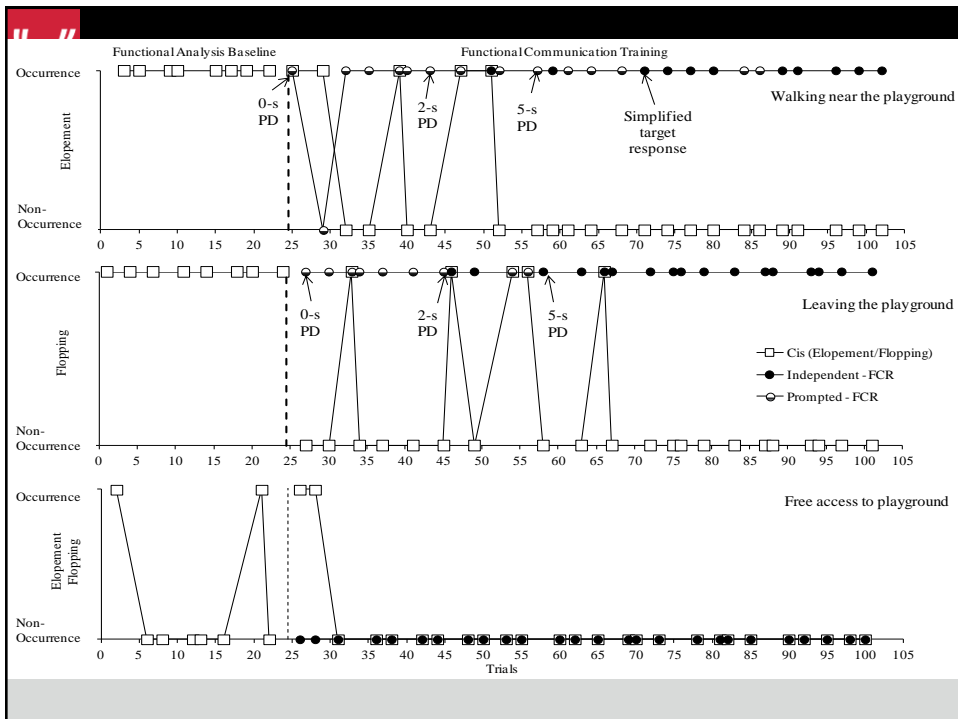




## Elopement and Flopping as symmetrical operants reinforced by the same consequence

### □ Treatment - Functional Communication Training

- Saying “Play, please” gained access to the playground
- Saying “Stay, please” produced additional time at the playground
- Elopement and flopping were no longer reinforced in their respective test conditions and only the appropriate vocal response led to playground access.





## Limitations

### ☐ Low rate of wanderers

1. Sample bias
2. High rate of wandering during stops

### ☐ Predictive validity

1. Fred: Attention versus tangible
2. Caregiver versus therapist

### ☐ Flopping

1. Incompatible behavior



## Future research

### ☐ Retrieval (chasing)

1. Potential reinforcing effects
2. Minimize effect

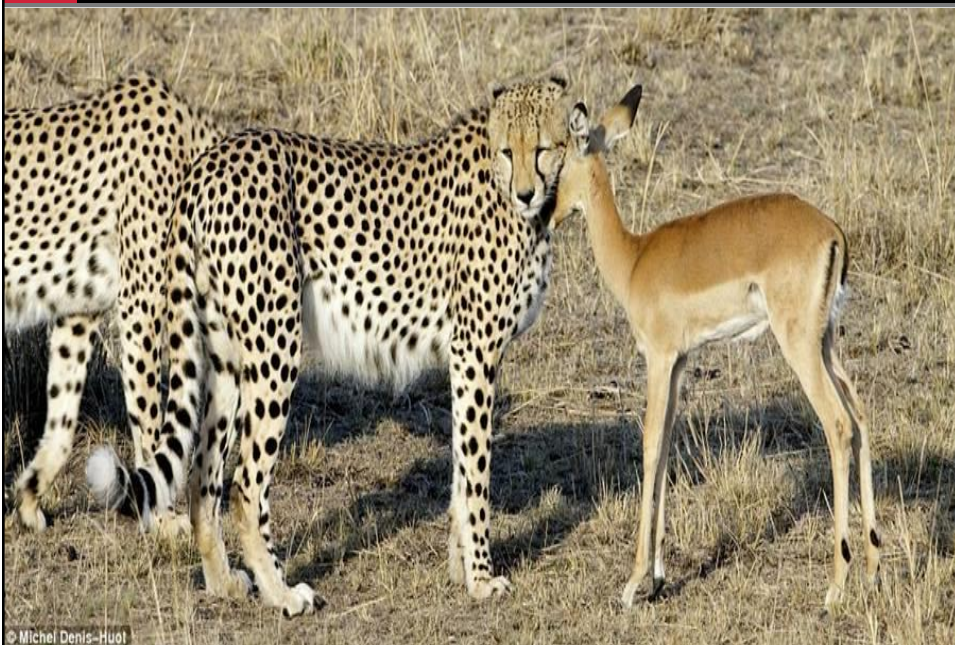
### ☐ Location specific elopement

1. Playgrounds and parking lots
2. Generalization to schools

### ☐ Trial-based functional analysis of elopement



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