**Slide 1**

UNIVERSITY OF
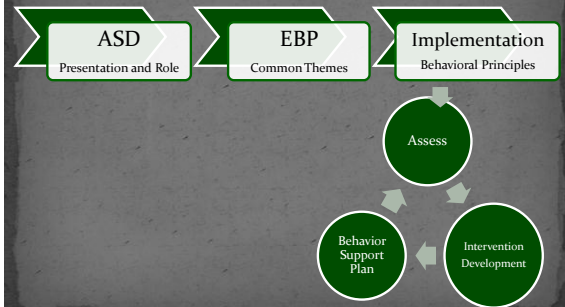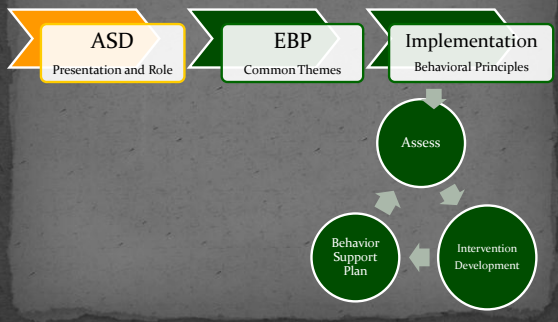**LOUISVILLE.**
AUTISM CENTER AT
KOSAIR CHARITIES

**Evidence-Based Interventions Addressing Challenging Behaviors in Individuals with an Autism Spectrum Disorder**

Scott D. Tomchek
Jocelyn W. Warren

**Slide 2**

## Today's Process and Plan:

ASD
Presentation and Role

EBP
Common Themes

Implementation
Behavioral Principles

Assess

Intervention Development

Behavior Support Plan

**Slide 3**

## Today's Process and Plan:

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**Slide 4**

## ASD Developmental Presentation

**Slide 5**

## Current Diagnosis - Autism

- DSM-IVR (APA, 2000)
  - 5 disorders under the PDD umbrella

- Qualitative impairments of communication
- Qualitative impairments of social skills
- Restricted, repetitive and stereotyped patterns of behavior, interests, and activities

**Slide 6**

## Social Presentation:

- Lack of use of eye contact; looks through people
- Decreased awareness of others
- Lack of joint attention or shared enjoyment
- Unable to read facial expressions and not sensitive to the feelings of others
- Limited initiation and interaction with others
- Poor imitation

## Communication Presentation:

- Delayed verbal language
- Impaired nonverbal communication (eye gaze, pointing, gestures)
- Communicative attempts limited to protesting and requesting only
- Echolalic speech
- Lack of imaginative, pretend and cooperative play
- Regression in language (~30%)
- Nonresponsive to language

## Behavioral Presentation:

- Repetitive interests
- Routine-based behavior; "sameness"
- Failure to see the gestalt
- Difficulty with transitioning between task or activities
- Cognitive inflexibility and difficulty with generalization
- Motor stereotypes
- Unusual responding to sensory input

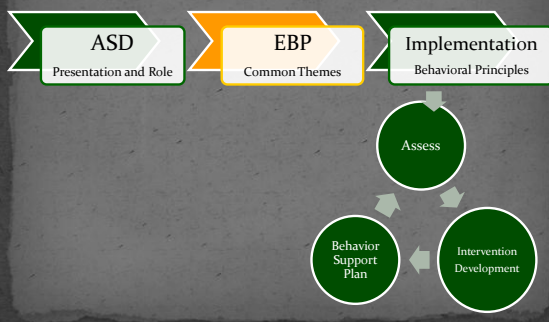## OT Practice, Areas Addressed

- Active engagement
- Activities of daily living
- Affect and emotion
- Regulation
- Arousal
- Attention
- Behavior
- Coordination
- Fine motor
- General development
- Gross motor development
- Habits and routines

- Joint attention
- Play
- Praxis
- Self-injurious behavior
- Sensory processing
- Social interaction
- Social skills
- Stereotypic behavior
- Transitions
- Unusual behaviors
- Visual–motor
- Visual perception

**(Cowan, 2009; Watling, Deitz, Kanny, & McLaughlin, 1999)**

## Activity

- Fill out Presentation and Challenging Behavior Description on support plan form

## Today's Process and Plan:

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## Survey of Interventions

## Practice Guidelines

- Consensus Panel (Filipek et al, 1999)
- American Academy of Child and Adolescent Psychiatry (Volkmar, Cook, Pomeroy, Realmuto, & Tanguay, 1999)
- American Academy of Neurology (Filipek et al., 2000),
- National Research Council (2001)
- American Pediatric Association (Johnson et al., 2007)
- AOTA (Tomchek & Case-Smith, 2009)
- Right to Effective Behavioral Treatment (Vanhouten et al., 1988)

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## Survey of Interventions

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## General Treatment Strategies:

- Skill Based Approaches
  - PECS, Social Stories, Visual Supports, Fast ForWord, Facilitated Communication, Discrete Trial/Applied Behavioral Analysis Package, Verbal ABA, Pivotal Response Training Package, Milieu Therapy, Lindamood-Bell, Cognitive Behavioral Methods, Direct Instruction

- Schools and Comprehensive Programs
  - TEACCH, Denver Model, Baudhuin Preschool, Eden Programs, Giant Steps, Higashi School

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## General Treatment Strategies:

- Interpersonal Relationship
  - Holding Therapy, Gentle Teaching, DIR/Floor Time, Relational Development Intervention, Lego

- Physical Orientation
  - Sensory Integration, Auditory Integration Training, Swimming with the dolphins, Psychopharmacology, IVIG, Diets, Secretin, Chelation

---

## NPDC on ASD: EBP are...

- Focused interventions that:
  - Produce specific behavioral/developmental outcomes for a child
  - Have been demonstrated as effective in applied research literature
  - Can be successfully implemented in educational settings

  (Odom, Boyd, Hall, & Hume, 2009)

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## NPDC Criteria

- EBP if:
  - Two randomized or quasi-experimental design studies
  - Five single subject design studies by three different authors, OR
  - A combination of evidence such as one group and three single-subject studies

## Evidence-Based Practices

- Computer-aided instruction
- Differential reinforcement
- Discrete trial training
- Extinction
- Functional behavior assessment
- Functional communication training
- Naturalistic interventions
- Parent-implemented intervention
- Peer-mediated instruction/intervention
- Picture Exchange Comm. System©
- Pivotal response training
- Prompting

- Reinforcement
- Response interruption/redirection
- Self-management
- Social narratives
- Social skills training groups
- Speech generating devices
- Stimulus control
- Structured work systems
- Task analysis
- Time delay
- Video modeling
- Visual supports

(National Professional Development Center on Autism Spectrum Disorders, 2010)

| EBP | Cognitive | Behavior | Comm. | Play | Social | Transition |
|---|---|---|---|---|---|---|
| Computer Assisted Instruction | | | | | | |
| Differential Reinforcement | | | | | | |
| Discrete Trial Training (DTT) | | | | | | |
| Extinction | | | | | | |
| Functional Behavior Assessment | | | | | | |
| Functional Comm. Training | | | | | | |
| Naturalistic | | | | | | |
| Parent Implemented | | | | | | |
| Peer Mediated | | | | | | |
| PECS© | | | | | | |
| Pivotal Response Training (PRT) | | | | | | |
| Prompting | | | | | | |
| Reinforcement | | | | | | |
| Response Interruption/ Redirection | | | | | | |
| Self-management | | | | | | |
| Social Narratives | | | | | | |
| Social Skill Groups | | | | | | |
| AAC (Speech generating) | | | | | | |
| Stimulus Control | | | | | | |
| Structured Work Systems | | | | | | |
| Task Analysis | | | | | | |
| Time Delay | | | | | | |
| Video Modeling | | | | | | |
| Visual Supports | | | | | | |

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For evidenced base reviews including detailed explanation and implementation procedures visit:

**http://autismpdc.fpg.unc.edu/**

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## National Professional Development Center on Autism

*Module:* Functional Communication Training (FCT)

**Implementation Checklist for Functional Communication Training (FCT)**

Franzone, E. (2009). *Implementation checklist for functional communication training (FCT).* Madison, WI: The National Professional Development Center on Autism Spectrum Disorders, Waisman Center, University of Wisconsin.

*Instructions:* The Implementation Checklist includes each step in the process of implementing FCT. Please complete all of the requested information including the site and state, individual being observed/interviewed, and the learner's initials. To assure that a practice is being implemented as intended, an observation is always preferable. This may not always be possible. Thus, items may be scored based on observations with the implementer, discussions and/or record review as appropriate. Within the table, record a 2 (implemented), 1 (partially implemented), 0 (did not implement), or NA (not applicable) next to each step observed to indicate to what extent the step was implemented/addressed during your observation. Use the last page of the checklist to record the target skill, your comments, whether others were present, and plans for next steps for each observation.

Site: _____ State: _____

Individual(s) Observed: _____ Learner's Initials: _____

*Skills below can be implemented by a practitioner, parent, or other team member*

| Observation Date | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Observer's Initials | | | | | | | | |
| Planning (Steps 1 and 2) | | | | | | | | |

**Step 1. Identifying the Interfering Behavior**
1. Identify an interfering behavior or a subtle communicative form to be the interfering behavior.   Score**

**Step 2. Completing a Functional Behavior Assessment (FBA)**
1. Complete a high-quality FBA that includes:
   a. indirect assessment (e.g., interviews, record reviews, questionnaires) and

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## National Standards Project (NSP):

- Provide straightforward information to parents, educators, and service providers that can help them make treatment decisions
- Create an EBP guideline for ASD that address some of the limitations of previous guidelines
- Identify critical areas in which additional research should be conducted
- Promote evidence-based practice in the treatment of ASD

---

## NSP Classifications:

| Established | Emerging | Unestablished | Ineffective/Harmful |
|---|---|---|---|
| Several published, peer-reviewed studies □ Scientific Merit Rating Scales scores of 3, 4, or 5 □ Beneficial treatment effects for a specific target. May be supplemented by studies with lower scores on the Scientific Merit Rating Scale. | Few2 published, peer-reviewed studies □ Scientific Merit Rating Scale scores of 2 □ Beneficial treatment effects reported for one dependent measure for a specific target. These may be supplemented by studies with higher or lower scores on the Scientific Merit Rating Scale. | May or may not be based on research: □ Beneficial treatment effects reported based on very poorly controlled studies (scores of 0 or 1 on the Scientific Merit Rating Scale) □ Claims based on testimonials, unverified clinical observations, opinions, or speculation □ Ineffective, unknown, or adverse treatment effects reported based on poorly controlled studies | Several published, peer-reviewed studies □ Scientific Merit Rating Scales scores of 3 □ No beneficial treatment effects reported for one dependent measure for a specific target (Ineffective) OR □ Adverse treatment effects reported for one dependent measure for a specific target (Harmful) Note: Ineffective treatments are indicated with an "I" and Harmful treatments are indicated with an "H" |

## Established Interventions

| | |
|---|---|
| Antecedent Package | Peer Training |
| Behavioral Package | Pivotal Response Treatments |
| Naturalistic Teaching Strategies | Schedules |
| Joint Attention Interventions | Self-management |
| Modeling | Story-based Interventions |
| Comprehensive Behavioral Interventions for Young Children | |

## Established by age:

| 0-2 Years | 3-5 Years |
|---|---|
| Behavioral Package | Antecedent Package |
| CBTYC | Behavioral Package |
| Joint Attention | CBTYC |
| Naturalistic Teaching | Joint Attention |
| | Naturalistic Teaching |
| | Modeling |
| | Peer Training |
| | Pivotal-Response |
| | Schedules |
| | Self-management |

## Emerging Treatments

| | |
|---|---|
| AAC Device | Music Therapy |
| CBT Package | Peer-mediated Instruction |
| Developmental Relationship-Based | PECS |
| Exercise | Scripting |
| Exposure Package | Sign Instruction |
| Imitation-based | Social-communication Intervention |
| Initiation Training | Social-skills Package |
| Language Training | Structured Teaching |
| Massage/Touch Therapy | Technology-based |
| Multi-component Package | Theory of Mind Training |

## Unestablished

| |
|---|
| Academic Instruction |
| Auditory Integration Training |
| Facilitated Communication |
| Gluten- and Casein-Free Diet |
| Sensory-Integrative Package |
| *other interventions to no studies would fall into this category |

## Evidence-Based Practice Reviews

- Recommended Practices:
  - ABA
  - Naturalistic (young children)
  - Parent training (social skill)
  - Peer training
  - Visual supports (comprehension, initiation, communication)

(Reichow & Volkmar, 2010)



(Simpson, 2005)

## Evidence-Based Practice Reviews

| SCIENTIFICALLY-BASED PRACTICE | | | |
|---|---|---|---|
| *Social* | *Skill-Based* | *Cognitive* | *Neurophysiologic* |
| | ABA | | |
| | DTT | | |
| | PRT | | |
| PROMISING PRACTICES | | | |
| Play Strategies | PECS | Cognitive Behavioral | Sensory Integration |
| | Incidental Teaching | Cognitive Learning | |
| | TEACCH | Social Stories | |
| | AAC | Social Decision Making | |
| | AT | | |
| | Joint Action | | |

(Simpson, 2005)

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## Evidence-Based Practice

Common Themes in the Literature

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## Review Categories:

- Sensory integration and sensory based
- Relationship-based, interactive
- Developmental skill-based
- Social-cognitive skill training
- Parent-directed or parent-mediated approaches
- Intensive behavioral

---

## Educating Students with Autism
(National Research Council, 2001):

- Early intervention; entry to services
- Active engagement in intensive programming for full school day across sites (5/day week, full school year)
- Planned teaching opportunities planned around relatively brief time periods
- Sufficient time with low adult to student ratio

---

## Overall Themes Across Reviews:

- Individualized support and services
- Specialized curriculum content
- Comprehensive and systematic instruction
- Functional approach
- Family involvement
- Engagement/Relationship Building

---

## Individualized support and services

- Evaluation process
- Features/Gifts/Strengths of ASD are common, **not** consistent
- Specialized curriculum, matching strategies to:
  - Current level of child
  - Child/Parent/ teacher needs
  - Context
    - Classroom
    - Home
    - Community

-Sensory reactivity

-Impulsive/active

-Sensory preferences

-Fear or refusal to participate

-Motor incoordination

-Task avoidance

- Underlying neurological differences impacting development
- Environmental factors
- Language/cognitive impairment
- Developmental delay
- Diagnostic considerations

## Functional Behavior Assessment

- Examine environment and task
- Systematically examine the behavior that is problematic.
  - What happens before, during and after the behavior
  - What is the behavior and what sensation does it provide
  - Is there a way to provide the sensation in a way that engages the child in learning or interaction?
  - Is there a way to respect the sensory need? Make functional?
- What happens to the child
- Consider build up during day
- How does it relate to the child's developmental level or developmental presentation

## Intensive, Comprehensive and Systematic Instruction

- LISTEN...LISTEN
- Positive behavior supports for functional skills that replace unwanted behaviors
- Intensive schedules over extended period of time
- Meet multiple needs of child
- Address all core features
- Pre-planned

**All aboard the train that's coming aboard!**

## Functional approach

- Primary filter when goal setting
- Ultimate outcome: Independence
- Functional for the individual
- Greater access/participation
- Generalization

## Family Is Central

- Interventions are family driven
  - Family drives the train! "Father...best interventionist"
  - Is it feasible, effective, efficient?
  - Easily implemented?
  - Easily tracked?
- Education
- Transfer of knowledge = consistency = generalization
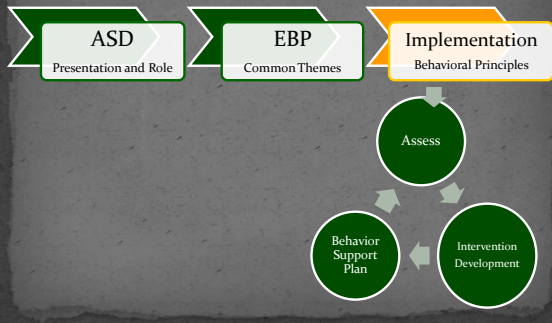- Support

## Engagement/Relationship Building

- Reinforcer/motivation assessment
- Pair yourself with reinforcers
- Building rapport and trust with families and other supports in the natural environment
- Relationship with:
  - Environmental supports
  - Social supports
  - Instructional strategies

## Today's Process and Plan:

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## Implementation

Principles in addressing
Challenging Behaviors

## Applied Behavior Analysis

Much what we know about the assessment of reinforcers is derived from the field of **Applied Behavior Analysis**

Applied behavior analysis or **ABA** is cited frequently in the area of intervention for students with Autism Spectrum Disorders (ASD)

## Applied Behavior Analysis

Though often cited as a practice, ABA is more accurately described as a science devoted to the understanding and improvement of human behavior.
(Cooper, Heron, & Heward, 2007)

For practitioners, ABA should be viewed as a lens for viewing contexts and behaviors therein

## Baer, Wolf, & Risley, 1968

*Definition of ABA*
The science in which tactics derived from the principles of behavior are applied to improve socially significant behavior and experimentation is used to identify the variables responsible for behavior change

(Cooper, Heron, & Heward, 2007)

## The Nuts and Bolts

Behavior doesn't happen in a vacuum
" *The 3- term contingency*"
Antecedent-Behavior-Consequence

Antecedent- Billy falls down
Behavior- Billy Cries
Consequence- Billy is held by his mother

## The Nuts and Bolts

| Antecedent "A" | Behavior "B" | Consequence "C" |
|---|---|---|
| Teacher hands Student a new worksheet | Student slides out of desk onto floor | Teacher talks to Student about his behavior for 2 minutes |
| Teacher works independently for 10 min. | Student blurts out | Teacher increases proximity to the student |
| Teacher says: "Computer time is over, time for math" | Student runs to the hall | Teacher puts student in Time out |

---

## A Closer Look: ANTECEDENTS

*The antecedent is an event that occurs immediately prior to the behavior.*

**If behavior is primarily maintained by its consequences why do we have to care about what happens before the behavior?**

---

## A Closer Look: ANTECEDENTS

- Setting Events
  - Physical Environment/Context
    - Noise level, room arrangement/size, people present

  - Physiological/Medical
    - Allergies, medication effects, hunger, fatigue

  - Social
    - Non-preferred therapist, miscommunication, ignored

---

## A Closer Look: "BEHAVIOR"

**"Anything an organism does"** (Catania, 1998)

Must be operationalized in terms of physical qualities

---

## BEHAVIOR Operational definitions

- A behavior is defined in a clear, objective, and concise manner

- Three ways to test a definition:
  - Can you count the number of times a behavior occurs or how long it takes to perform
  - Can you see the individual performing the behavior when it occurs
  - Can you break down the target behavior in to smaller components (the answer should be No)

Morris, 1985

---

## Activity

Operationally define your client's challenging behavior

## A Closer Look: CONSEQUENCES

*How do consequences effect problem behavior?*

Reinforcement
&
Punishment

---

## Reinforcement

What is Positive Reinforcement?

When a behavior is followed immediately by the presentation of a stimulus that increases the future frequency of the behavior in similar conditions

(Cooper, Heron, & Heward, 2007)

---

## Positive Reinforcement

| Antecedent | Behavior | Consequence | In the future |
|---|---|---|---|
| Teachers asks student to work Independently | Child falls to floor | Peers point and Laugh | Falling to floor persists |
| Snack Time | Child Screams for chips | Adult gives chips | Screaming increases |
| Nap Time | Child Cries | Adult picks up and comforts | Crying increases |
| Nap Time | Child Tantrums for Toy | Adult gives toy | Tantrum behavior persists |

---

## Reinforcement

What is **Negative Reinforcement**?

Something removed immediately following a behavior that increases the future frequency of the behavior

(Cooper, Heron, & Heward, 2007)

---

## Negative Reinforcement

| Antecedent | Behavior | Consequence | In the future |
|---|---|---|---|
| The request to sit during calendar/circle Time | Student Hits | Time Out | Hitting persists |
| Teacher asks student to sit in his chair for Snack Time | Student Screams | Removed from Snack | Screaming increases |
| Teacher hands student a work sheet | Student throws paper | Sent to time out | Throwing increases |
| Teacher announces that it is Nap Time | Student Cries | Told they can play for 5 more minutes | Crying persists |

---

## Punishment

- *Positive punishment*

Something delivered immediately following a behavior that decreases the future frequency of the behavior

## Positive Punishment

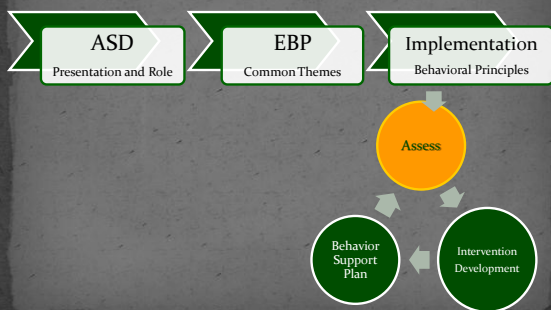| Antecedent | Behavior | Consequence |
|---|---|---|
| Driving | Speeding | Ticket<br>Driver does speed in the future |
| Stove is on | Child reaches | Hand is burned<br>Child never touches the burner again |
| Teacher asks question | Student answers correctly | Teacher Embarrasses student.<br>The student doesn't volunteer answers in the future |

## Punishment

### Negative Punishment

Something removed immediately following a behavior that decreases the future frequency of the behavior

## Negative Punishment

| Antecedent | Behavior | Consequence |
|---|---|---|
| Student with ASD is engaged in computer activity | Peer Approaches<br>Students with ASD hits peer | Computer time taken away<br>Students with ASD hit less often in the future |
| Student in circle time | Student screams | Teacher removes a token from the student's token board. The screaming desists |

## Watch the following Clips and Discuss Possible Reinforcers

## Today's Process and Plan:

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## ASSSESSMENT OF CHALLENGING BEHAVIORS

## Benefits of Measuring Behavior

- Memory is fallible
- A vehicle for communicating result to others
  - Evaluation of results
  - Documentation of efforts
- Reduces bias from discipline lens
- Exploration of patterns of behavior
  - Monitor progress
  - Determine efficacy

## General Forms of Assessment

- Summative
  - Documentation of change by comparing an individuals performance at two points in time
  - Pre and Post testing
- Formative
  - Frequent and repeated measurement of performance assessed under natural conditions and over time
    - Continuous vs. Intermittent

## Functional Behavior Assessment

- Addresses contextual variables that affect student's behavior, variables that a teacher may be able to control
- Process...not a form
- It may result in more powerful intervention
- It may result in more reinforcement-based interventions

(Cooper Heron & Heward, 2007)

## Functional Behavior Assessment (FBA)

**Outcomes:**

- Description of the problem behavior
- Identification of the events, times, circumstances that are regularly associated with the occurrence and non occurrence of the problem behavior
- Identification of the consequences that maintain the behavior
- Development of a summary statement or hypothesis regarding the function or purpose of the behavior

(O'Neill et al., 1997)

## So.....what is the function?

- Escape?
- Sensory?
- Attention?
- Tangible?

## Continuum of FBA Methods



Level of Precision
Level of Difficulty

Experimental
Analysis

Direct observation

Indirect Assessments
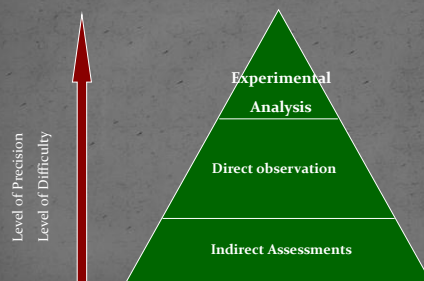
## Two Sources of Data

- Indirect measurement
  - Permanent product
  - Interviews
  - Ratings, Surveys

- Direct measurement
  - Measuring the behavior of interest without inferring it's occurrence from other events

## Functional Behavior Assessment and Behavior Intervention Plan - Schools

- When the ARC chairperson/district representative convenes an ARC meeting to consider the suspension of a child or youth for more than five (5) cumulative days in a school year, the ARC:
  A. Develops a plan for conducting a Functional Behavior Assessment (FBA) if an assessment has not been conducted;
  B. Develops and implements a BIP if an FBA has already been conducted; or
  C. Reviews and modifies the FBA and the BIP, as necessary, to address the behavior if an FBA has been conducted and a BIP has been developed.

**(Exceptional Child Education Procedures, Jefferson County Public Schools, 2008)**

## IEP form, BIP, FBA

- http://www.kentuckyschools.org/KDE/Instructional+Resources/Exceptional+Children/Forms+and+Documents/Special+Education+Forms+-+Due+Process.htm

## Activity

- Fill out Hypothesis section on support plan form
  - Antecedent
  - Behavior
  - Consequence

## Today's Process and Plan:
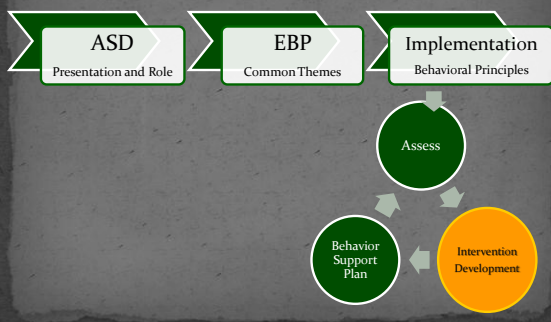


## Intervention Development

Addressing the challenging behavior

# Guidance Document for Individualized Education Program (IEP) Development

Kentucky Department of Education, 2011

## IEP Present Level Area: Social and Emotional Status

- Includes functional performance information about:
  - Social skills
  - Interpersonal behavior
  - Personal skills
  - Self-related behaviors
  - Sensory self-regulation
  - Emotional behavior
  - Organization and executive skills
  - Environmental access/mobility skills
  - Independent living skills

## Interpersonal skills: general guiding questions

- "How does the student display interpersonal behaviors such as accepting authority, coping with conflict, gaining attention, making conversation, playing in organized and informal activities, engaging others, respecting property?"

## Self-regulation: general guiding questions

- "How does the student demonstrate self-related behaviors such as accepting consequences,... expressing feelings,..."
- "Does the student employ sensory or self regulation skills such as...taking quiet time, walking away from stressful situation,..."
- "How does the student respond to challenge such as using appropriate voice tones, tolerating frustration, employing anger management strategies, curbing aggression, acting-out,...using stress management strategies, and adjusting to social, school, and community environments."

## Making transitions: general guiding questions

- "How well does the student make transitions within the classroom, school building, school campus? Examples include making transitions from one activity to another, movement to cafeteria/gym/office/playground..."

## Other

- "What supports promote successful student behavior?"
- "What are situations where the student makes appropriate behavioral choices?"
- "What does the student like/enjoy doing?"

## Program Modification and Supports for School Personnel

- "School personnel will be oriented to a highly structure behavior support program (i.e. PASS) before school begins."

## Establishing Program Interventions and Supports:

- The intervention is clearly defined so that others can determine when it is conducted correctly
- The intervention is then conducted with consistency or fidelity
- Data are collected before and during intervention

## So....

- Instead of "try to follow the child's lead"......
  - *When the child moves toward a preferred item, increase proximity and state the name of the object.*

- An effective intervention typically would result in some sort of observed behavior change in a targeted response
  - Observable
  - Measurable
  - More specific than common
  - Context considerations

## Building an Objective

- Behavioral Objectives drive programming
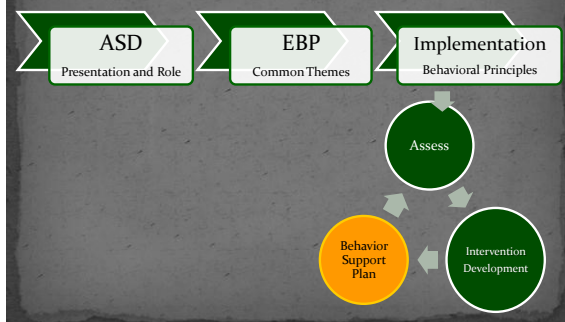- Four parts
  - condition, individual, response and criterion

  When presented with a one step vocal directive involving the performance of a motor response, Tomchek will perform the response within 5 s, for 3 consecutive days and across 15 different directives.

## Activity

- Develop Behavioral Objectives
  - Select a response with corresponding conditions and criterion

## Today's Process and Plan:

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## Slide 1
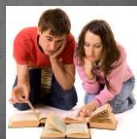
INTERVENTION
Behavioral Support Plans

## Slide 2: Positive Behavioral Supports

| Behavioral support | Escape | Attention | Tangible | Sensory |
|---|---|---|---|---|
| Positive reinforcement | x | x | x | x |
| Prompting | x | x | x | x |
| Visual supports | x | x | x | x |
| Modeling | x | x | x | x |
| Fading | x | x | x | x |
| Chaining | x | x | x | x |
| Shaping | x | x | x | x |

## Slide 3: Antecedent Interventions

- What can we do to try to stop the challenging behavior from occurring..
  - Positive reinforcement
  - Prompting
  - Visual supports
  - Modeling
  - Fading
  - Chaining
  - Shaping

## Slide 4

Positive Reinforcement

## Slide 5: Again, What is Reinforcement?

"Any stimulus that maintains or increases the behavior exhibited immediately prior to the presentation of the stimulus."

How do we know the stimulus is a reinforcer?
If behavior it followed was increased in or maintained at the current *rate*, *duration* or *intensity*

Prepared by KATC January 2010

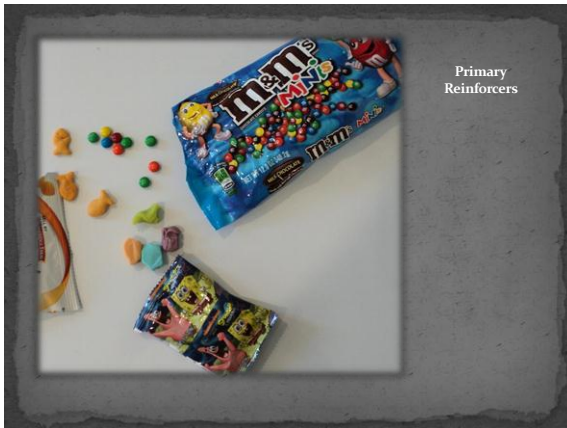## Slide 6: Types of Reinforcers

*Primary (unconditioned) Reinforcers*
Is reinforcing even though the individual may have no learning history with it

Stimuli that have biological importance to an individual
Examples: food, liquids, sleep, shelter, sex

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Cooper, Heron, & Heward, 2007

Primary Reinforcers
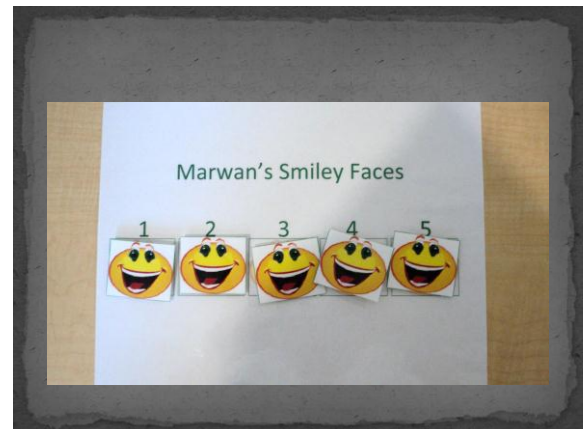
## Types of Reinforcers

*Secondary (Conditioned) Reinforcers*

A previously neutral stimulus that has acquired reinforcing properties through pairing with a primary reinforcer.

Examples: praise, finishing task, learning, tokens, penny cards

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Cooper, Heron, & Heward, 2007



Secondary reinforcers



Marwan's Smiley Faces

1 2 3 4 5

## What is Reinforcement?

How often do we hear a colleague refer to a child as unmotivated?

It important to see our role in the motivation of clients. If a client is unmotivated then it is likely that we have failed in identifying effective reinforcers

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## Reinforcer assessments

- Asking
- Free operant
- Trial based

## Preference Assessment

Refers to a variety of procedures used to determine...

A) What the client prefers
B) If it is a high preference or a low preference
C) Under what conditions do those preferences change.

Cooper, Heron, & Heward, 2007

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## Asking

Asking the *Target Person/significant other*

Open-ended questions

Choice format

Rank ordering

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## Free Operant Observation

Observing the client when they have unrestricted access to multiple stimuli

A total duration measure of the time a person engages with each stimulus is recorded

Cooper, Heron, & Heward, 2007

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## Trial–based Assessments

Single stimulus

Paired stimuli

Multiple stimuli

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## Single Stimulus Presentation

Developed by Pace et al., 1985

Items are presented to an individual one at a time

Each item is presented multiple times

Observer records duration with stimulus, approach or rejection of stimulus, or number of touches

- Types of stimuli used are visual, auditory, vestibular, tactile, olfactory, gustatory and multisensory.

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## Single Stimulus Presentation

*Advantages*
Can be used with clients with severe disabilities
*Disadvantages*
Over estimates preference
Does not allow stimuli to be compared to each other
Is time consuming

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## Paired Stimulus (Forced Choice)

Developed by Fisher et al., 1992

Items are presented in pairs and the first item touched is scored as the selection

Each item is presented with every other item at least twice

Measure of preference is the % of time the item was selected when it was presented

Items can be ranked

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## Paired Stimulus (Forced Choice)

*Advantages*
More precise than single item method
Allows for comparison of stimuli
Most accurate method

*Disadvantages*
Time consuming

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## Multiple Stimulus

Stimulus presentation of an array of three or more stimuli

This will reduce your assessment time because you are pairing stimuli together

Cooper, Heron, & Heward, 2007

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## Multiple Stimuli with Replacement

The assessment begins with an array of stimuli in front of the client

The client picks one of the items

Once the client has chosen an item that item is remains and new items are introduced in to the array

Cooper, Heron, & Heward, 2007

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## Schedule of reinforcement

- Continuous (CRF) – each time the child produces the target behavior they receive the reinforcer, when child is learning a new behavior this is what should be utilized
- Example: Johnny gets an M&M every time he he puts one sock on his foot.

## Schedule of reinforcement

- Intermittent – reinforced after some but not all appropriate responses
- Example: Sally gets a "good job" after she goes through every other obstacle on the obstacle course.



## Preferences identified, Now what do I do with them?

Deliver them *immediately*

Deliver them *consistently*

Deliver them *contingently*

Assess their effects as *reinforcers*
(deprivation/satiation)

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## Using reinforcers

Primary    ➡    Secondary

Continuous ➡ Intermittent

## Video - Marwan

- <u>Challenging behaviors</u> – limited food variety, difficulty sitting to complete task, throwing items to avoid non-preferred tasks
  - Visual schedule
  - Token board
  - Reinforcer – asking
  - Continuous reinforcement – 1 bite, play
  - Intermittent reinforcement – 4 bites, toy

## Activity

- Identify primary and secondary reinforcers that might be beneficial.
- Grade a activity identifying how you will change the schedule of reinforcement.

## Differential Reinforcement

- Differential reinforcement of alternative behavior (DRA) - when a challenging behavior is replaced by a more appropriate behavior, only the more appropriate behavior is reinforced

Example: Johnny throws toy on the floor when he is done playing with it

Goal: Johnny places toy into the toy box when done playing

## Video – Seth (FA and tx)

- Behavior – throws toy out of reach from therapist when done (escape, attention), does not request desired activity/toy
- Alternate behavior – handing toy to therapist when done, requesting a desired toy

## DRI

- Differential reinforcement of incompatible behavior (DRI) – a procedure where a behavior is reinforced that is incompatible with the challenging behavior that is targeted

Example: Sarah runs across the parking lot to enter the building

Goal: Sarah holds Mom's hand and walks to the building

## Video - Tyler

- Behavior – aerophagia (sensory, attention)
- Incompatible behavior – blowing, prone positioning for play
  - Continuous reinforcement
  - Modeling

## Activity

- Identify a alternative and/or incompatible target behaviors for each of your behavioral objectives.

## Prompting

## Types of Prompts

**Verbal or Signed Prompts**
*Pros*
Can be given to a group and from a distance
May not require visual attention
No physical contact
*Cons*
Must be heard
Student must have listener/receptive skills
**May be difficult to fade**

Snell & Brown 2010

## Visual Prompts

*Pros*
Can be less intrusive
Can promote independence even when used as permanent prompts
*Cons*
Pictures must be understood by learner
Some actions are difficult to illustrate
Development and maintenance of materials
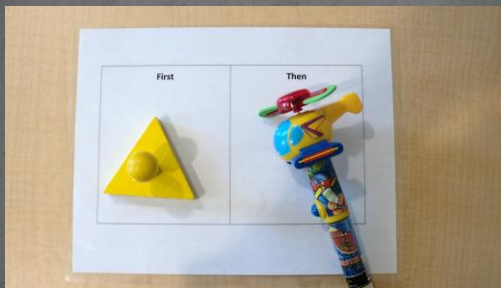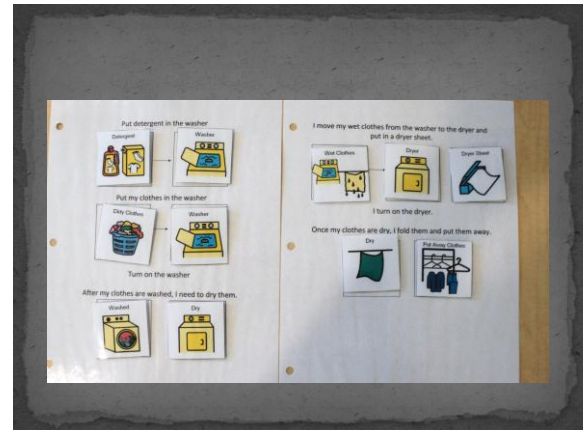
Snell & Brown 2010

## Visual supports

- Do not required adult-mediated intervention
- Provide structure
  - Schedule
  - Manage behavior
  - Assist with transitions
  - Give directions
  - Communication –choice board

## Visual Schedule



## First/Then Board
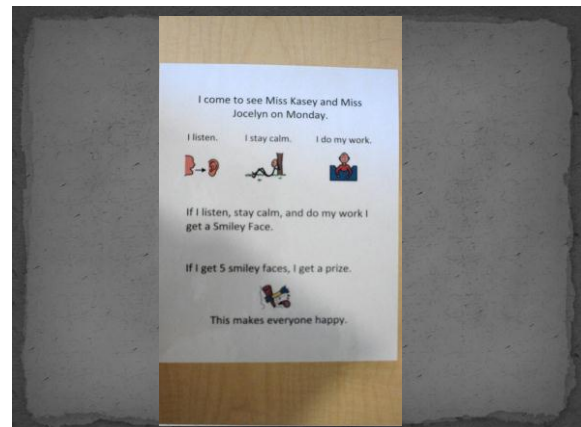
## Model prompts

Pros
Can be used with a group and from a distance
Versatile
Complexity of model can be adjusted
Modeling can be unobtrusive
Cons
Requires child to attend
child must be able to imitate

Snell & Brown 2010

## Physical Prompts

*Pros*
Gives client some control over response
Reduces opportunities for errors
Useful when vision is limited
*Cons*
Can be intrusive
Cannot be used at a distance
Must take care not to injure client

Snell & Brown 2010

## Response Prompting

Insertion of extra stimuli to increase the likelihood that the client will respond correctly

Extensive research supports its use across individuals with and without disabilities

Has been used to teach a variety of skills

## Using prompts

Consider the least intrusive prompts first
(Intrusiveness of prompt may vary across contexts)

Consider childs characteristics

Always insert prompts with a plan to fade them

## Video - Group

- Group schedule
- Individual schedule

## Fading

## Fading

- Gradual removal of prompts. **Fading should occur as soon as possible.**
  - Graduated guidance – slowly reduce amount of physical assistance needed
  - Time delay – delay providing the prompt for a few seconds
  - Probe occasionally – no prompts
- Move from continuous to intermittent reinforcement

## Video - Evan

- Challenging behavior – underweight, dietician recommended adding whole milk and pediasure until he can transition to other textures of foods
  - Visual schedule
  - Continuous reinforcement
  - Fade verbal prompts (2nd puzzle piece, pediasure)
  - Satiation of puzzle, switch reinforcement
  - Physical assistance to accept new drink (pediasure)
  - Fade physical prompts

## Activity

- Identify what prompts will be used and how to fade

# Chaining

## Teaching chained Tasks

Therapist develops a *Task Analysis*

Breaking complex skills into smaller, teachable units

Steps are presented sequentially and in detail to complete the tasks successfully

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**Table I. Task Analysis: Preparing Frozen Juice Using a Pictorial Recipe**[a]

1. Put the book on the table.
2. Get the juice out of the refrigerator.
3. Get the pitcher.
4. Get the spoon.
5. Take off the tab.
6. Take off the lid.
7. Put the juice in the pitcher.
8. Turn on the cold water.
9. Pour 3 cans of water in the pitcher.
10. Turn off the cold water.
11. Stir the juice. Count to 10.
12. Put the spoon in the sink.
13. Put the trash in the garbage can.

[a] Page-turning steps were inserted after each step.

Griffen & Schuster, 1993

## Task Analysis Activity

- Divide your table into two groups and a client.
- Each group will write a task analysis for putting on a jacket or a laced shoe.
- Let each group take turns reading the task analysis to the client and observe whether or not the client can complete the task with no additional prompts

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## Teaching Chained Tasks

*Forward chaining*
Steps in the task analysis are taught in their natural order

Client is taught to complete first step in the chain

Therapist reinforces correct first response and completes the remaining steps

## Teaching Chained Tasks

*Forward Chaining cont.*
When the client **meets criterion** on the first step, the therapist instructs the client on completing the second step in the chain.

and so on

## Teaching Chained Tasks

*Backward Chaining*

Same task analysis as would be used in forward chaining

Therapist performs all steps in the task analysis except last step

Therapist instructs client to complete last step and delivers reinforcement

## Teaching Chained Tasks

*Backward Chaining cont.*

Next trial, therapist performs all but last two steps in chain and instructs client to complete last two steps.

Reinforcement is delivered after criterion is met.

Progressively, the client is instructed to complete receding steps in the chain.

# Shaping

# Shaping

Systematically reinforcing successive approximations to the desired behavior

Must consider
- Figuring out the "just right step" – not too small or too big
- Stay on each step long enough that the child learns the new behavior but not too long that they become stuck at that level

# Video - Alexis

Challenging behavior – will only drink from a particular cup at home, will not swallow a pill
- Reinforcer – asking
- Continuous reinforcement
- Fading verbal prompt
- Shaping – drink from cup, take candy from cup, will continue to shape to pill

# Activity

Using Shaping or Chaining, list the steps that you will use to shape or teach a new skill to your identified client

## Putting it all together

- Discuss your behavioral support plan

## EBP's specific to Occupational Therapy and Speech Language Therapy

## Evidenced Based Review in Occupational Therapy Interventions

- 17, 440 Citations were reviewed
- 217 articles were reviewed
- 49 were included in the final review
  - Level I: 18
  - Level II: 17
  - Level III: 14

## OT: Overall Themes from the Research Evidence (Tomchek & Case-Smith, 2009)

- Effective intervention programs are developed from individualized analysis of the child that includes assessment of the physiological basis for behaviors and the environment's influence on behavior;
- The child's family is central to the intervention program and services should include family support and education;
- Intervention services need to be intensive and comprehensive;
- Facilitating active engagement of the child is the essential priority for all interventions

## ASHA, 2006

- Used NRC (2001) to recognize active components of effective programs
- Considerations for SLPs:
  - Focus on core characteristics and challenges
  - EBPs to support initiation and generalization
  - Assess link between behavior and communication and use positive behavior supports
  - Use strategies to support learning style, developmental framework, and self-determination
  - Incorporate AAC
  - Consider peer and peer-mediated learning as a context

## ASHA, 2006 Guiding Principles

- Assist in recognition of communicative functions of challenging behaviors and design environments to support positive behavior
- Recognize:
  - Importance of the family and a variety of partners
  - Facilitation of peer-mediated learning
  - Continuity of services across environments
  - Importance of matching service to meaningful outcomes