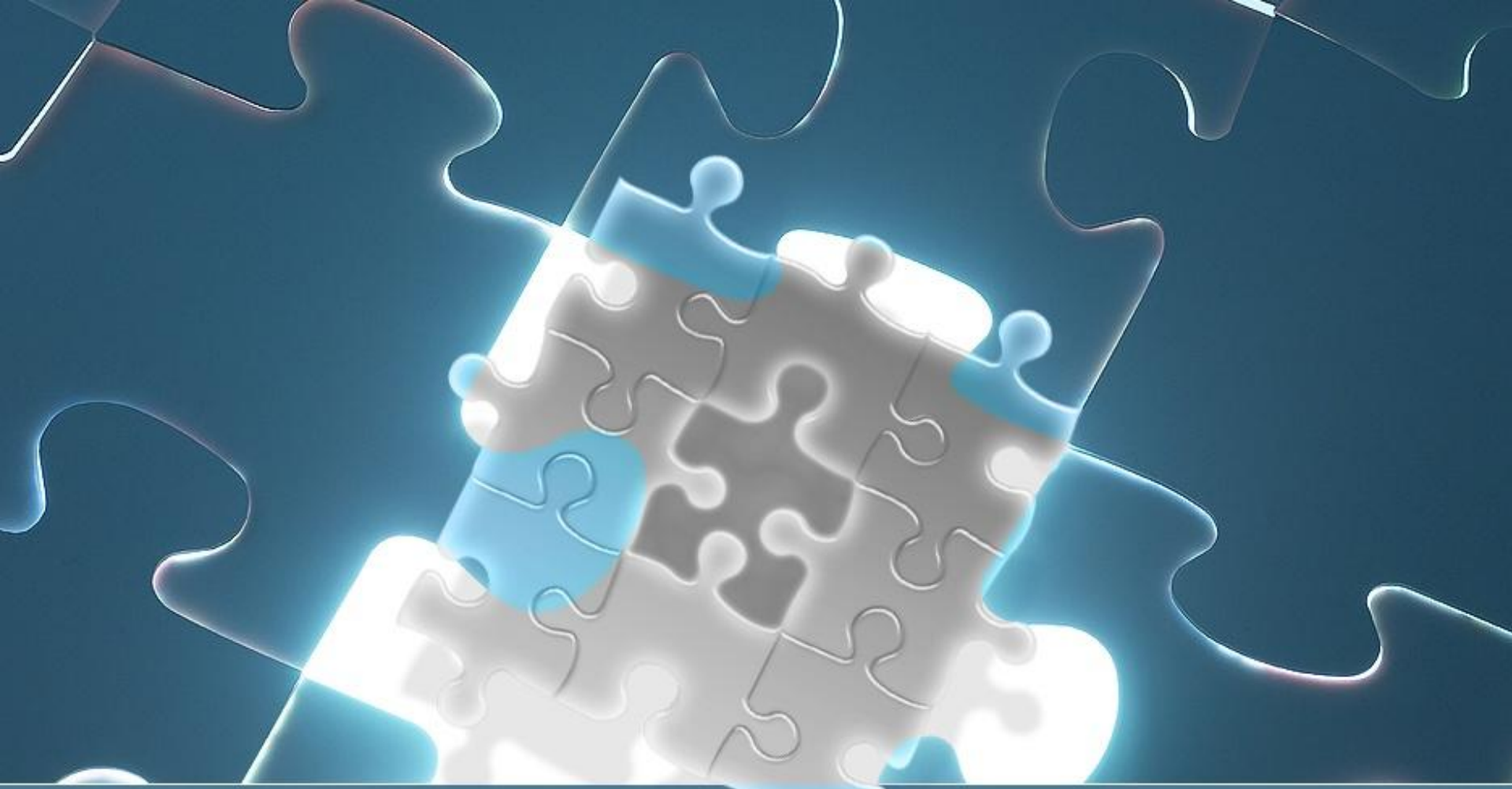


# Introduction to Applied Behavior Analysis

Glenwood, Inc.  Teacher Training 2013


We may have gotten into the teaching profession to teach science, music, or foreign language,  but pretty soon we discover that, in reality, we are in the profession to teach people. And people have many needs beyond particular content areas.

- (From Smith, R., (2004). Conscious Classroom Management: Unlocking the Secrets of Great Teaching. Conscious Teaching Publications: Fairfax, CA.)

Challenging behavior does not happen randomly.
It can be understood.

# What exactly is “behavior”?

- Is a behavior “bad” or “good”?
- Is a behavior learned or innate?
- Can we always observe every behavior?
- How is the behavior of a person with an ASD diagnosis different from that of a “neurotypical” person?

# What is ABA?

- Applied Behavior Analysis is the systematic application of the principles of behavior to facilitate ***socially significant*** behavior change in organisms.
- ABA relies on consistent data collection and analysis to determine the function of behavior, replacement behaviors to be taught, and the effectiveness of the intervention

# The Science of ABA

- Underlying principles and strategies of ABA were derived from the scientific study of behavior.
- Single case design- each individual case is still studied scientifically in the applied setting
  - Dependent variable- target behavior
  - Independent variable- environmental manipulations

# ABA as Applied to Autism

- ABA is the only empirically validated treatment for individuals with Autism at this time (AAP, 2007; Simpson, 2005; Maine Administrator's Task Force, 2000).
- A variety of teaching strategies that utilize the principles of ABA have been found to be effective for children with ASDs, but are not limited only to use with children with ASDs.

# ABA does ~~not~~ equal Lovaas

- Lovaas is known for pioneering the application of ABA principles to teach children with ASDs
- Many people incorrectly use the terms "ABA" and "Lovaas therapy" interchangeably
- "Lovaas therapy" refers to a specific teaching curriculum developed by Dr. Ivar Lovaas at UCLA
  - Discrete Trial Teaching in a structured 1:1 setting
  - 40 hours per week
  - Very little teaching done in the natural environment

# ABA does not equal Discrete Trial Training (DTT)

- Many people incorrectly use the terms "ABA" and "DTT" interchangeably
- Discrete Trial Training (DTT) is one of several teaching strategies that utilize the principles of ABA
- DTT focuses on breaking down skills into small components and teaching each component in a systematic manner

# Why Should Teachers Use ABA?

- We are born with reflexes and unlearned reinforcers and punishers.
- These are necessary for the survival of the individual and the species.
  - Food/satiation
  - Thirst/satiation
  - Comfort/cessation of pain or discomfort
  - Sex

# Why Should Teachers Use ABA?

- ALL other behaviors are learned.
- All behaviors exist because they are within the individual's *skills repertoire* and are being *reinforced*.
- If your teaching is successful, you are teaching and reinforcing behaviors.

# The Process of Changing Behavior

- Behavior change is a process involving trial and error, data collection, evaluation or the effectiveness of interventions, and modification of interventions as needed.

# The Big Question

- Is it the Autism, or is it a learned behavior?

**YES**

# Applied Behavior Analysis

**A**ntecedent

**B**ehavior

**C**onsequence

# Functional Behavior Plans

- Phase 1- Operational Definition of Behavior(s) and Data Collection
  - Determine current level of behavior (baseline)
  - Identify possible antecedents , functions, and maintaining consequences

# Defining Behavior

- ***Observable***: What do you see or hear the child doing?
- ***Measurable:*** How often does the behavior occur?

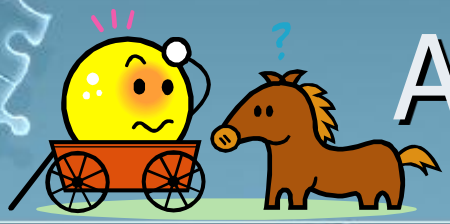
  - How long does the behavior last?
  - How intense is the behavior?
  - Can everyone agree on what the behavior looks like?

# What About Thoughts and Emotions?

- ABA absolutely recognizes that thoughts and emotions are part of the individual's behaviors and environment.
- But how can you measure that?

# Describing Behaviors

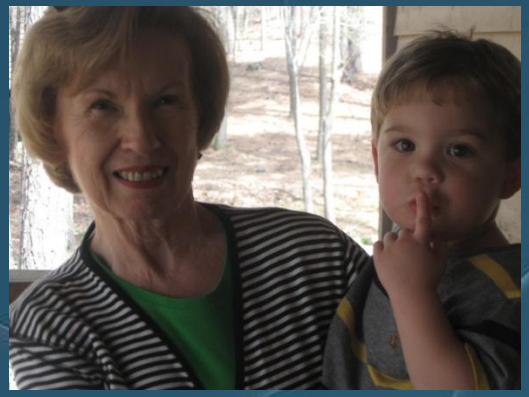
| Instead of: | Say: |
| --- | --- |
| "The child is defiant." | "The child tells me "NO" when I ask her to do something. |
| "The child throws temper tantrums." | "The child falls on the floor, kicks, screams, and cries loudly." |
| "Teachers say that the child is off task." | "The child stares out the window during instruction." |
| "The child throws a 'fit' at Wal mart." | "The child refuses to stay in the buggy and screams, "I want that" if I do not put the desired object in our cart." |
| "The child is aggressive." | "The child hits me or others when he does not get something he wants." |

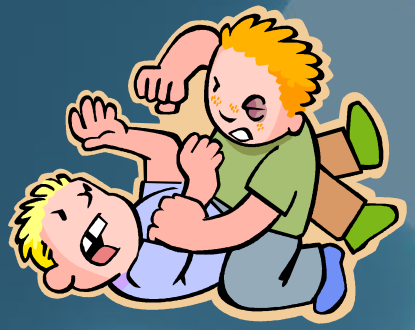


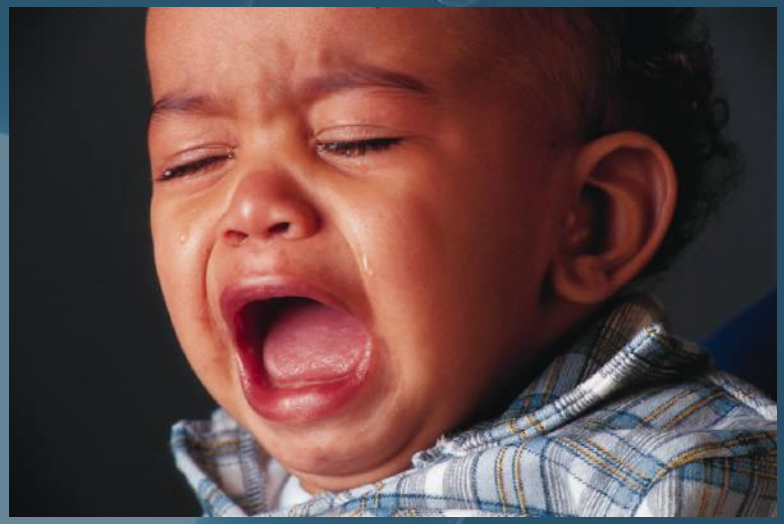
# Antecedent

- What happened immediately before the behavior?
- Was there a setting event, such as ongoing activities, noise, different people, new place, etc.?
- Is your child hungry, thirsty, tired, afraid, anxious, or overwhelmed?
- Is there a medical reason for the behavior – ear infection, allergies, cold, fever?
- Any of these things that precede the behavior may influence behavior.

# Changing the antecedent can help prevent the problem behavior.







# Antecedent Modifications

- TEACCH/Structured Teaching
  - Environmental Modifications
  - Visual Prompts/Stimulus Cues
  - Worksystems
  - Visual Schedules
- Priming
  - Transition cues
  - Social Stories
  - Visual Rules

# ♫ ♫ A-B-C…♫ ♫

- **CONSEQUENCE** is what follows the behavior and influences that behavior.
- Behavior can be strengthened or weakened by the consequences.
- A consequence can be rewarding or aversive.
- ***A consequence can be imposed or naturally occurring.***
- It can increase or decrease the behavior.

# Phase I and Consequences

- At this stage, we need to identify consequences currently in place that are already reinforcing the target behavior.

# Functional Behavior Plans

- Phase II- Develop plan
  - Formally state hypothesis of function, current antecedents, and current maintaining consequences
  - Detailed description of possible replacement behaviors and teaching strategies
  - Determine reinforcement hierarchy, rate of reinforcement, punishment clause, severe clause if needed
  - ASSIGN DUTIES!!
  - Write goals in observable, measurable terms with clear date and criteria for mastery

# Writing a "Defendable Goal"

- Are these goals clear?
  - Jennifer will not engage in noncompliance during circle time.
  - Jennifer will increase compliance by 80%.

** 80% of what?

** For how long?

** Where?

# Writing a "Defendable Goal"

- Is this goal clear and measurable?
- By March 30, 2012, Jennifer will decrease the number of afternoon activities in which she engages in more than three disruptive and noncompliant behaviors to 10% of activities for at least two weeks. Disruptive behaviors include excessive motor activities and vocalizations preventing other students from participating in activities. Noncompliant behaviors include any actions incompatible with the behavior prompted by a caregiver.

# FUNCTIONS OF BEHAVIOR

# COMMON FUNCTIONS OF BEHAVIOR

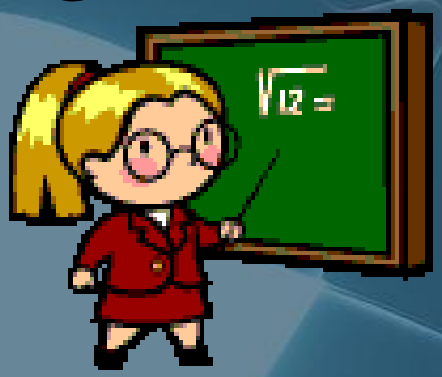
- Attention
- Gratification
- Escape/ Avoidance
- Sensory Imbalance/Automatic
- Others: Self-Expression, Justice/Revenge, Power/Control, Acceptance/Affiliation

# NAME THAT FUNCTION!

- Matthew swipes materials off his desk when instructed to complete an activity.
- While the teacher is assisting another student, Elizabeth yells "shut up!" and looks at the teacher.
- Joshua flaps his hands in front of his face throughout the school day.
- Brandon screams and cries when his truck is taken away until the teacher gives his truck back.

# Replacement Behaviors

IT IS IMPORTANT TO TEACH A CHILD WHAT **TO DO** RATHER THAN ONLY WHAT NOT TO DO.



# REPLACEMENT BEHAVIORS

- Case Study: Anthony hits peers who invade his personal space. The initial intervention included a Social Story which told the student not to hit.
- Anthony began kicking peers who invaded his personal space.
- What would be a more appropriate intervention?

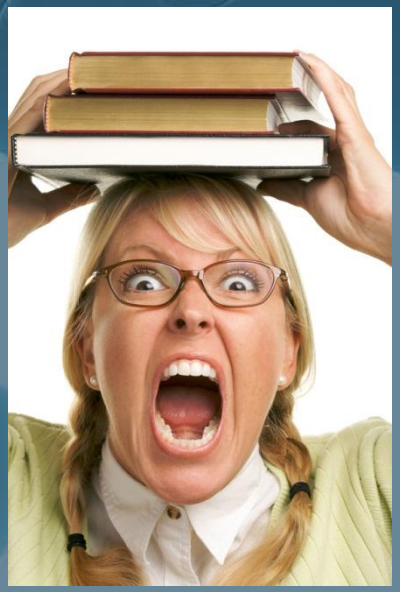
# ATTENTION SEEKING

- Ignore but intervene physically if necessary
- Positive attention when appropriate
- Teach appropriate replacement skills (raise hand, ask for help, ring bell, etc.)
- Teach waiting

  Role Playing, scenarios
- Use schedules
- Ignore negative behavior/ Active Ignoring
- Praise others for goal behavior
- Direct the appropriate behavior while ignoring the inappropriate behavior
- *****NEVER IGNORE DANGEROUS BEHAVIOR!!!!!


# ATTENTION SEEKING

- Remember, sometimes ***ANY*** attention is reinforcing!



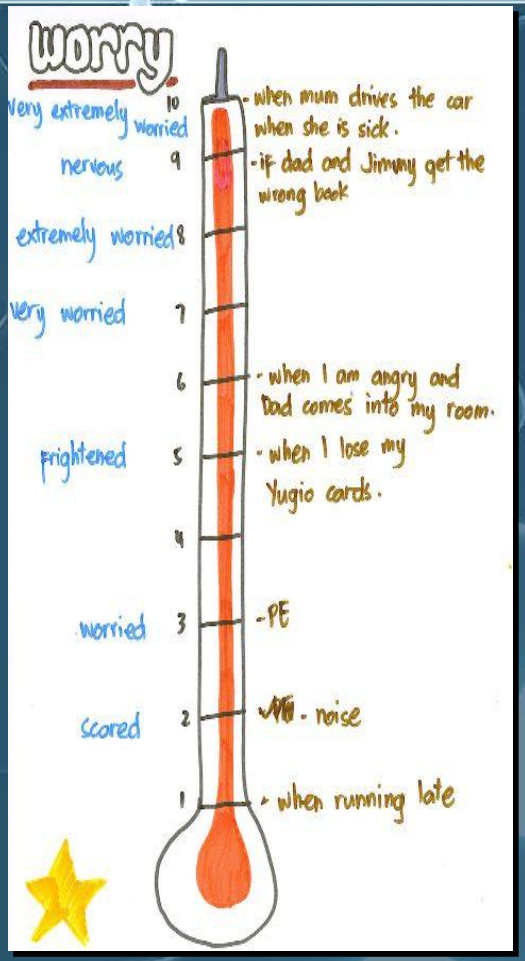
# ESCAPE/AVOIDANCE

- Teach asking for a break (Verbal, Break Cards)
- Offer choices within the work goal
- Refer to the schedule
- Use first-then cue cards
- Gradual introduction to an unpleasant situation (noisy rooms, difficult work) followed with specific praise
- Modify the environment (physical "road blocks")
- Reward attempts not perfection
- Assess current level of performance

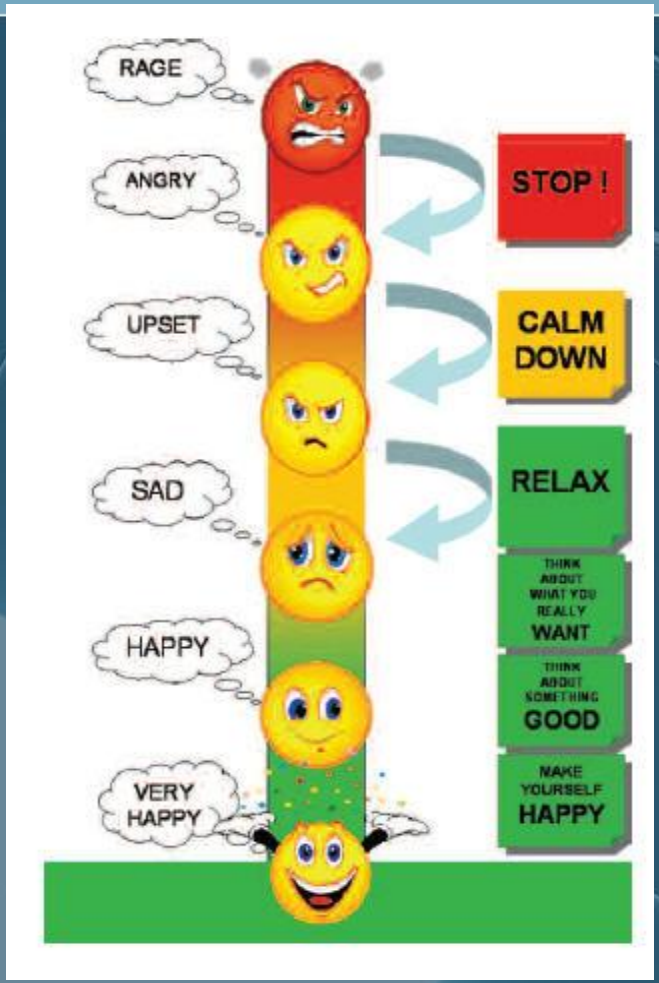
# EMOTIONAL DYSREGULATION/SELF-EXPRESSION

- Teach appropriate expression of emotions- Emotion Thermometer, 5-Point Scale
- Use social stories
- Acknowledge & label emotion. Provide appropriate outlet
- Teach problem solving
- Adjust demands

# Emotion Thermometer




http://www.smelena.com

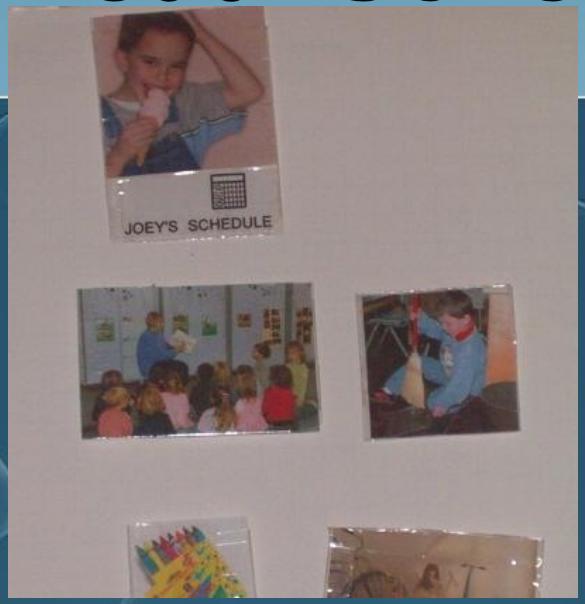


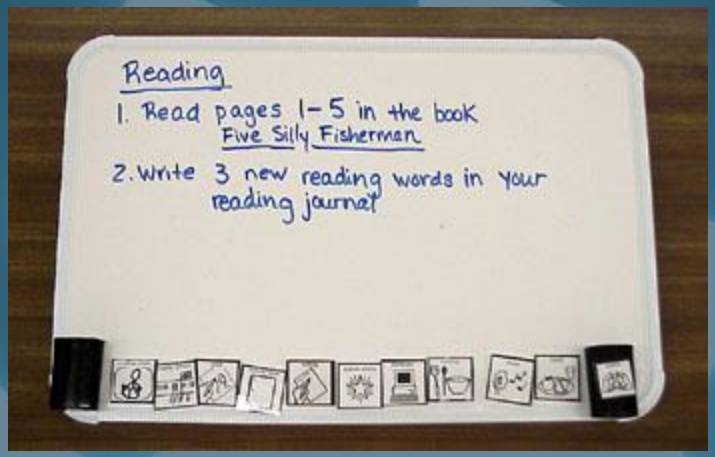

http://www.dhs.vic.gov.au

# GRATIFICATION

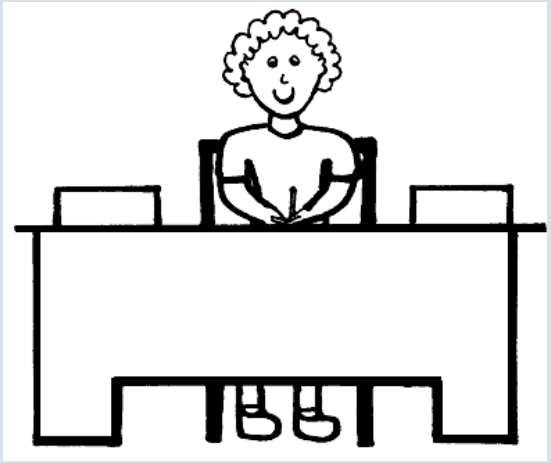
- Teach communication skills (requesting)
- Use first-then cue cards
- Refer to the schedule
- Teach waiting
- Token Economies

# Visual Schedules

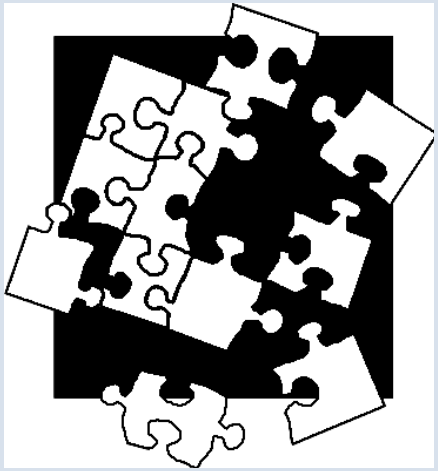




# FIRST



WORK

# THEN

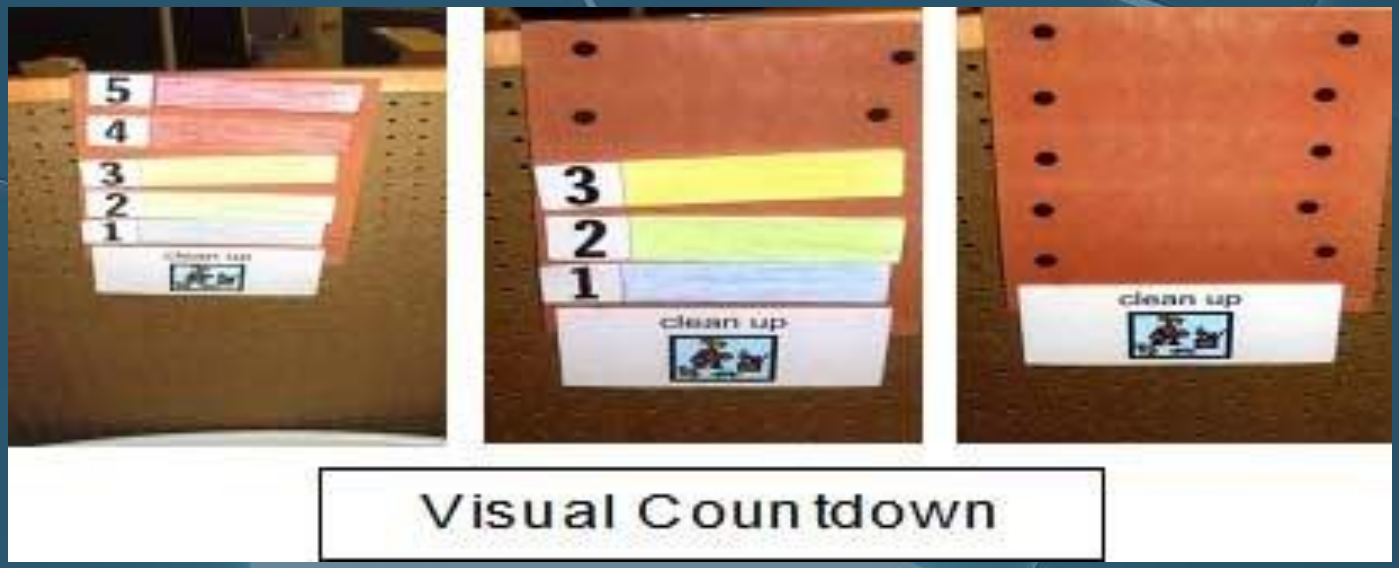


PUZZLE

# Time Timer

http://www.timetimer.com

# Countdown Cards




http://www.iidc.indiana.edu/styles/iidc/deimages/IRCA/Countdown.jpg

# Token Economies

- **Token System**
  - Target only 1-2 High Priority Behaviors
  - Regular Decision Points (set by YOU)
  - Attainable Goals for Reward (Not too easy or hard)
  - Child Involved, Knows Target Behavior/Goals & Participates in Decisions
  - Modified as needed (Length, Adding Behaviors)
  - Rewards- Motivating, Variety, Choices
  - Tokens-poker chips, stickers, points, paper "tickets", "paychecks," etc…

# Communication

- Improve Request Skills
- Have Access to Communication
  - Pictures
  - Communication Boards
  - Sign Language
  - Teach Key Phrases
- Regularly use communication devices

# Communication


http://toypecs.com


http://www.cpofnj.org/tlc/HighTechAugCom.html

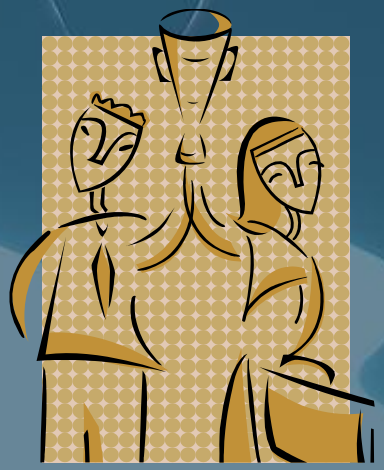
http://www.athensparent.com/articles/online/babysign.html

# SENSORY ISSUES

- Sensory integration techniques
- Shaping/replacing the behavior with a more appropriate skill
- Teach an incompatible skill
- Redirect to a task
- Use first-then cue cards
- Physical activity
- Gradual Introduction
- Prepare/Prime the child

http://tips4specialkids.com/wp-content/uploads/2011/09/weighted-vest.jpg

# REINFORCEMENT



# The "Reinforcement Doesn't Work" Fallacy

- Reinforcement is a process that leads to the increase in rate of response in the FUTURE
- The immediate effect of the presentation of the reward is NOT reinforcement
- We ONLY have reinforcement when the rate of the behavior increases or is maintained in the FUTURE!
- And if the target behavior continues instead of the replacement behavior, then the issue is not reinforcement; rather, which ONE is being reinforced!

# Reinforcement

- **Reinforcement INCREASES** the likelihood of the behavior occurring again. It makes the behavior stronger.
  - Be EFFECTIVE and MOTIVATING
  - IMMEDIATELY follow the desired behavior
  - Be CONTINGENT on a desired behavior
  - Be VARIED
  - Be INDIVIDUALIZED
  - Have potential to be FADED OUT
  - Be CONSISTENT
  - Examples: Praise, Token, Special Treat/Activity, Reprimands ?, Time Out ?

# Why the Emphasis on Reinforcement?

- Punishment may stop a behavior in the short-term but does not teach the replacement behavior.
- Research shows that Positive Behavioral Supports are more effective at long-term behavioral change.

http://www3.interscience.wiley.com/journal/114095838/abstract
http://www.patrickcrusade.org/details_chap4.html
http://www.nasponline.org/resources/factsheets/pbs_fs.aspx

# When to Reinforce?

- When first teaching a new behavior, the reinforcement has to come frequently and consistently.
- Fading out the reinforcement (once new behavior is established) is important in making the behavior more durable and keeping the reinforcer effective.

# REINFORCEMENT SCHEDULES

- Continuous Reinforcement: follows each response; beneficial only in the beginning of intervention. Will lead to satiation and diminished performance if over-used.
- Intermittent Reinforcement: follows only some responses; may be on a ratio (number) or interval (time), and may be fixed (after a set number or amount of time) or variable (after a variable number or amount of time).
- Intermittent Reinforcement is far more valuable in maintaining behaviors over time.

Mallot, Richard W., Donald L. Whaley, and Maria E. Mallot. Elementary Principles of Behavior. 3rd Edition.

# Why do people return to slot machines?

- Variable Reinforcement

# Reinforcement

**Positive**

- Something added to the environment following a behavior that increases the behavior
- Examples:
  - Praise/attention
  - Physical play/tickles
  - Access to preferred items or activities
  - Edibles/consumables

**Negative**

- Something removed from the environment following a behavior that increases the behavior
- Examples:
  - Removing unpleasant stimuli
  - Removing demands/expectations

# EXTINCTION AND PUNISHMENT

# EXTINCTION

- Extinction occurs when the behavior is no longer reinforced and decreases in intensity or rate; ideally when replaced by a more appropriate behavior (Differential Reinforcement).
- An **extinction burst** often occurs during the initial intervention. In an extinction burst, the occurrence of the behavior temporarily increases, sometimes dramatically, in an effort to meet the need in a familiar manner.

Mallot, Richard W., Donald L. Whaley, and Maria E. Mallot. Elementary Principles of Behavior. 3rd Edition.

# Extinction- Caution

- NEVER PUT DANGEROUS BEHAVIORS ON EXTINCTION!!!!
- We never ignore dangerous behaviors!

# The machine just took your quarter. Extinction burst!

# When Punishment is Necessary

- Punishment
  - Positive- adding something to *decrease* behavior
  - Negative- removing something to *decrease behavior*


# Use Punishment Sparingly

- Research shows that punishment is highly likely to stop behaviors in the short term.
- However, research also shows that punishment  alone is unlikely to produce long-term behavior change.
- *Much* more effective if *paired* with teaching and reinforcing replacement behaviors.

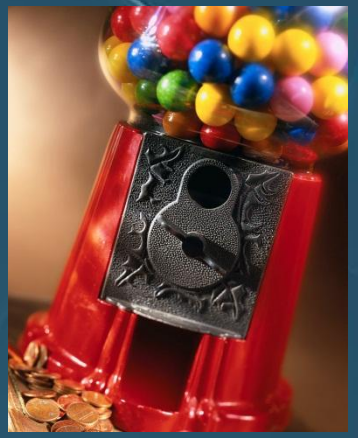
# Punish with Caution

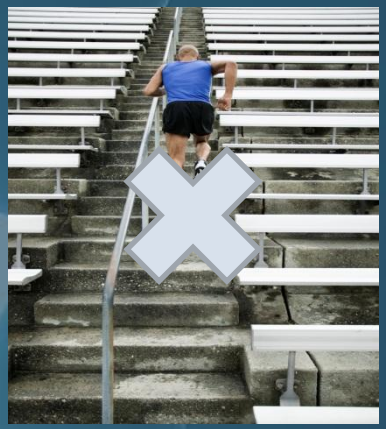
- "Punishment begets punishment"…Research shows that punishment can be REINFORCING for the person providing the punishment.

http://mylearningpod.org/2011bcps44/wp-content/uploads/2011/03/teacher-scolding-student1.jpg

# Make Punishment Effective

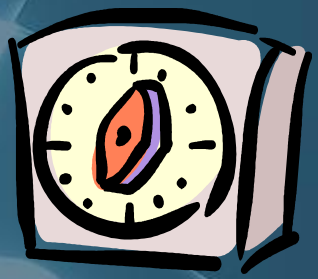
- Pair with strong reinforcement for replacement behaviors- Candy or New Video Game??
- Use for serious behaviors (aggression, not talking out of turn)
- Avoid tolerance building- start off with the most punishing stimuli *appropriate for the offense.*
- *( scolding versus loss of video games)*





# Time Out!

- **Time-Out**
  - One minute/year for Developmental Age
  - Immediate
  - Removal from Activity
  - Minimize Attention
  - Afterwards, Give Reminder but Avoid Lecture
  - Don't Restart Timer or Add Minutes For Misbehavior While in Time-out (contra-indicated by research)
  - *Remember- there is no "time out" without "time in"*



# Functional Behavior Plans

- Phase III- Implement Behavior Plan and continue to take data.  Analyze data to determine effectiveness.

# Functional Behavior Plans

- Phase IV- Analyze data and revise plan if needed.

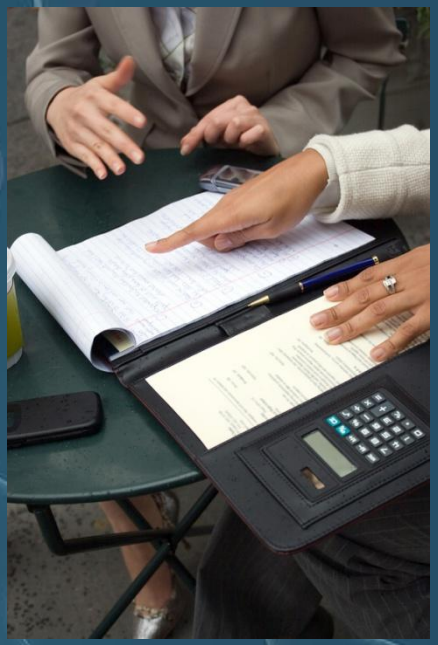
# DATA COLLECTION AND ANALYSIS

# Graphing Data

- The data collection method needs to be consistent throughout the behavior plan. Compare "apples to apples."
- BEST to WORST
  - Best- Continuous (Frequency, Duration)
  - Better- Interval (Whole- for increase, Partial- for decrease)
  - Okay- Scatterplot with Rubric
  - Worst- No data OR *inconsistent* data

# Data Collection Essentials

- The type of data collected depends upon on the type of behavior observed
- Data collection methods need to be *reasonable for your situation*
- Data must be analyzed to be useful



# When to Take Data?

- Scatter plot- initially used to identify times for more specific data collection:
- http://ese.escambia.k12.fl.us/eval/psych/IST/behavior_scatter_data.pdf

# Types of Data Collection

- Informal (anecdotal, narrative)
- Formal- Continuous
  - Frequency
  - Duration
  - Latency
  - Intensity
  - Episode
  - Inter-response time
  - Proportion

http://www.polyxo.com/data/

# Types of Data Collection

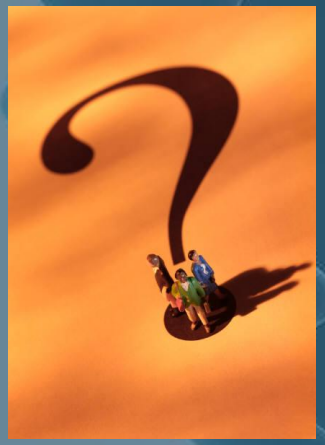
- Interval Data:
  - Whole Interval
    - Behavior must occur the entire interval
    - Underestimates
    - Used for behaviors targeted for INCREASE
  - Partial Interval
    - Behavior must occur part of the interval
    - Used for behaviors targeted for DECREASE
  - The shorter the interval, the more reliable the data
  - Often easier in a typical classroom than continuous

# Data Collection Ideas

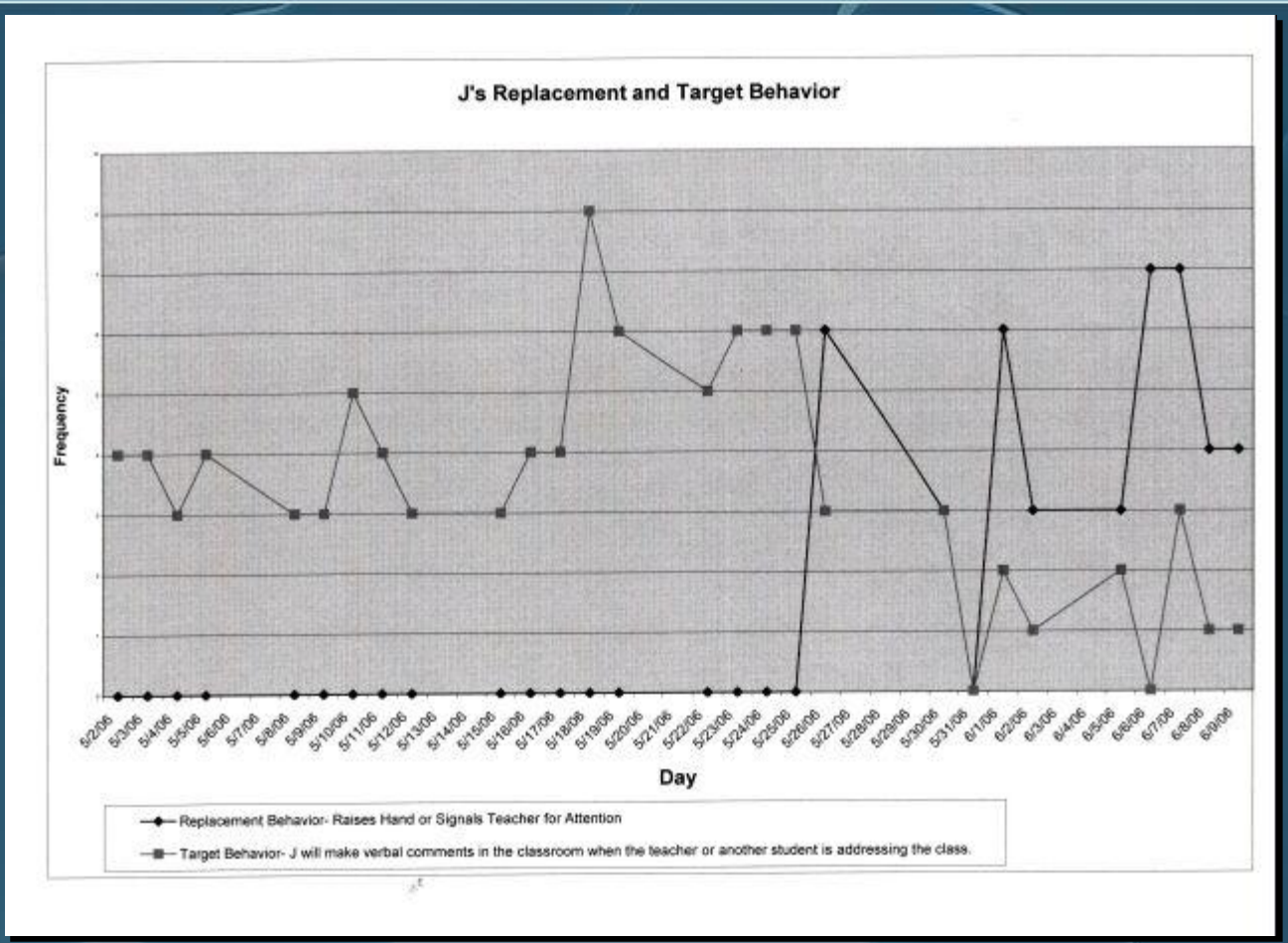
- Clickers
- Removable labels stuck onto clothing
- Tangibles- paper clips, rubber bands, beans, poker chips
- Set aside time daily to tally/record data
- Identify times in the day to take data
- Free printable data sheets: http://www.polyxo.com/documents/#task-specific

# What to Do with the Data?

- Graphing assists with determining "trend lines"
- Trend lines can show overall trend of the data- increasing, decreasing, etc.
- Data should be graphed across phases of the behavior plan.



# Graphing Data

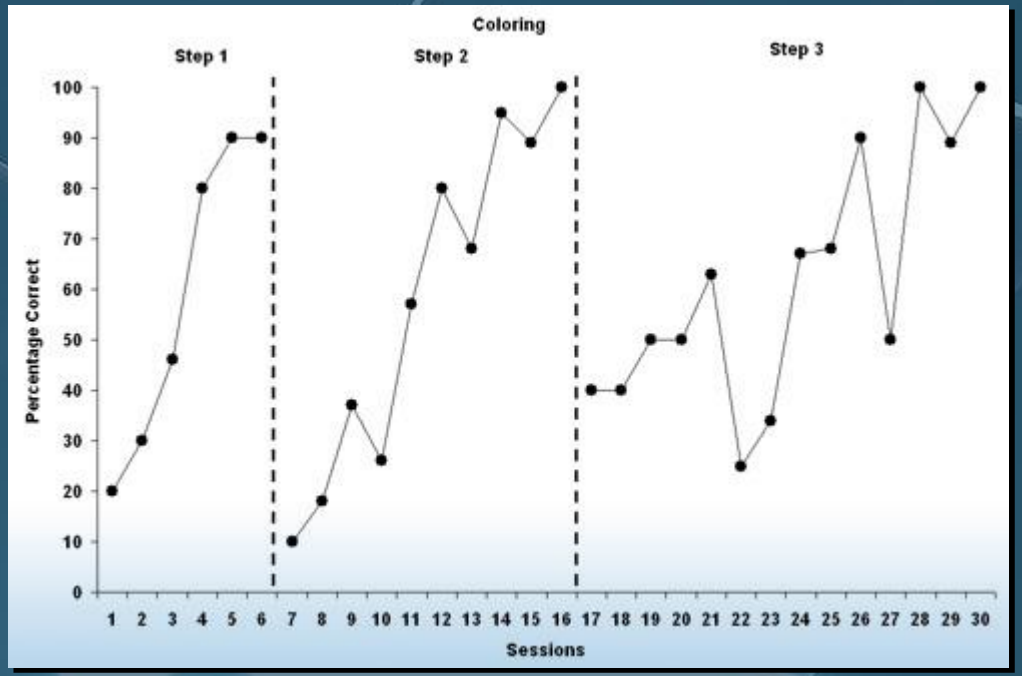



http://gabrielmazzo.com/PerformanceStandards/Standard1/graph20.jpg

# Graphing Resources

- http://www.bettycjung.net/Graphing.htm
- http://www.ncsu.edu/labwrite/res/gt/graphtut-home.html

# Graphing Data- Phases and Trends




http://www.stimuluspublications.com/images/graph-large.jpg

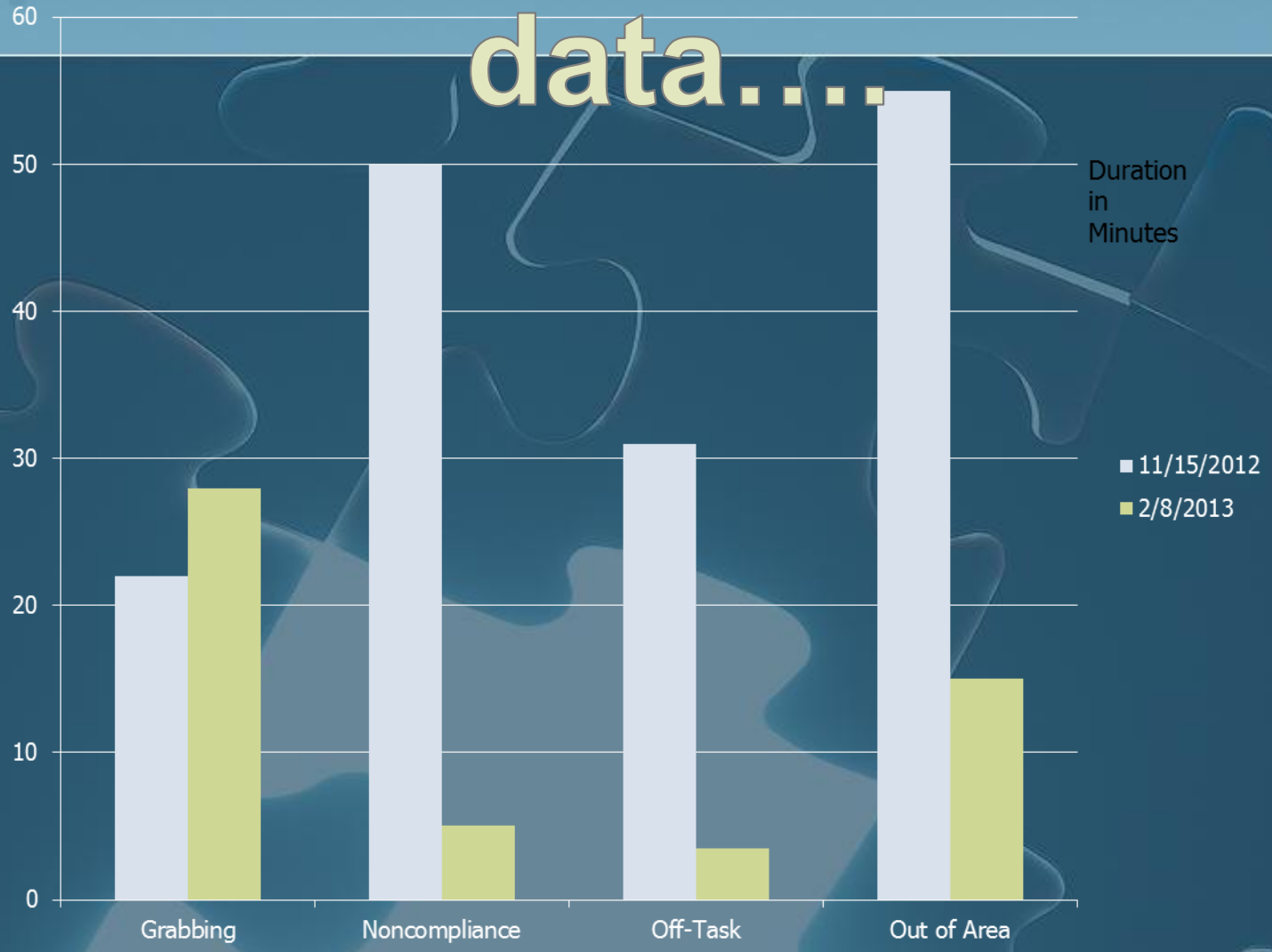
# Benefits of Visual Analysis

- Our students' behaviors will vary by day
- Graphing and trend lines demonstrate the overall acceleration or deceleration of the behavior.

# Real Life Example

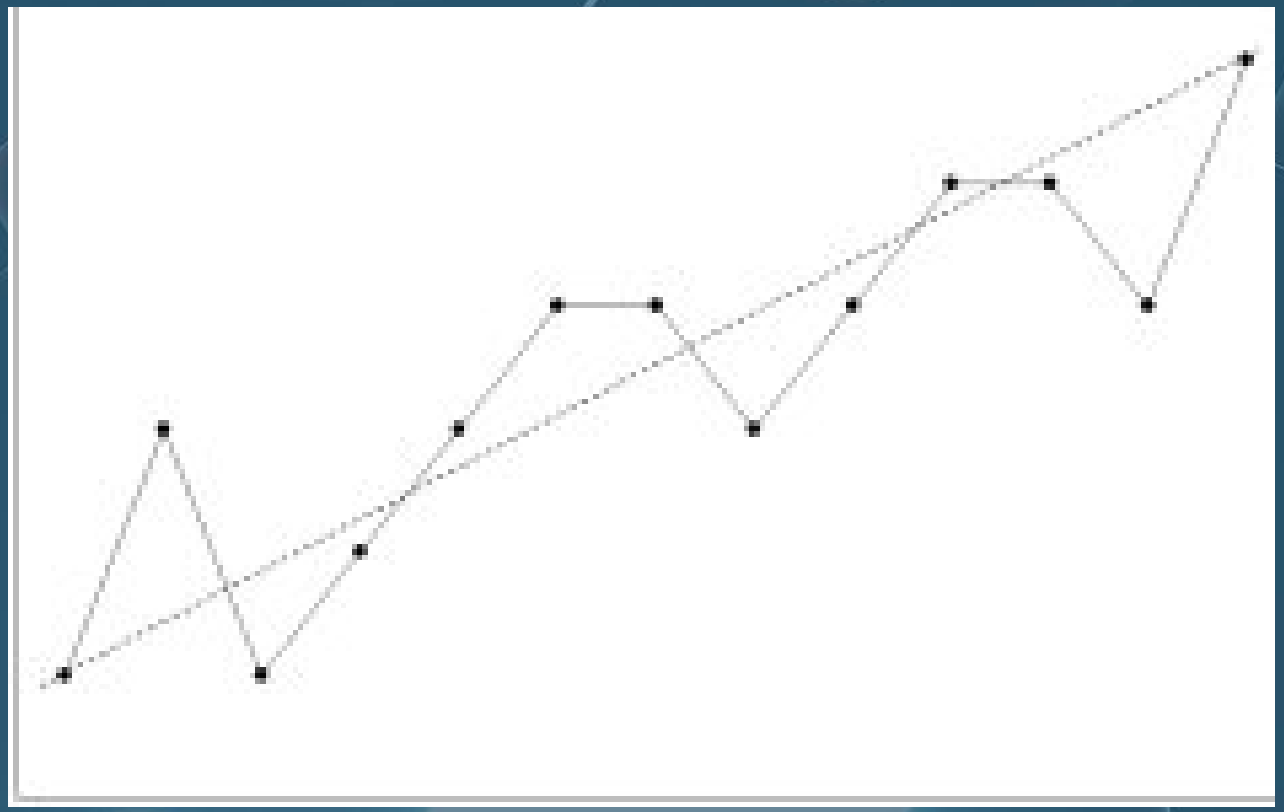
- Teacher: "I just don't think he is doing that much better. He is still grabbing other kids' things and he still doesn't stay where he's supposed to!"

# According to the data….



# Benefits of Visual Analysis

- http://bp3.blogger.com/_5Ayf6ffcY3w/R21CrSDjaiI/AAAAAAAAACs/I-LdqWrzZVM/s400/06-22.bmp



# Benefits of Visual Analysis

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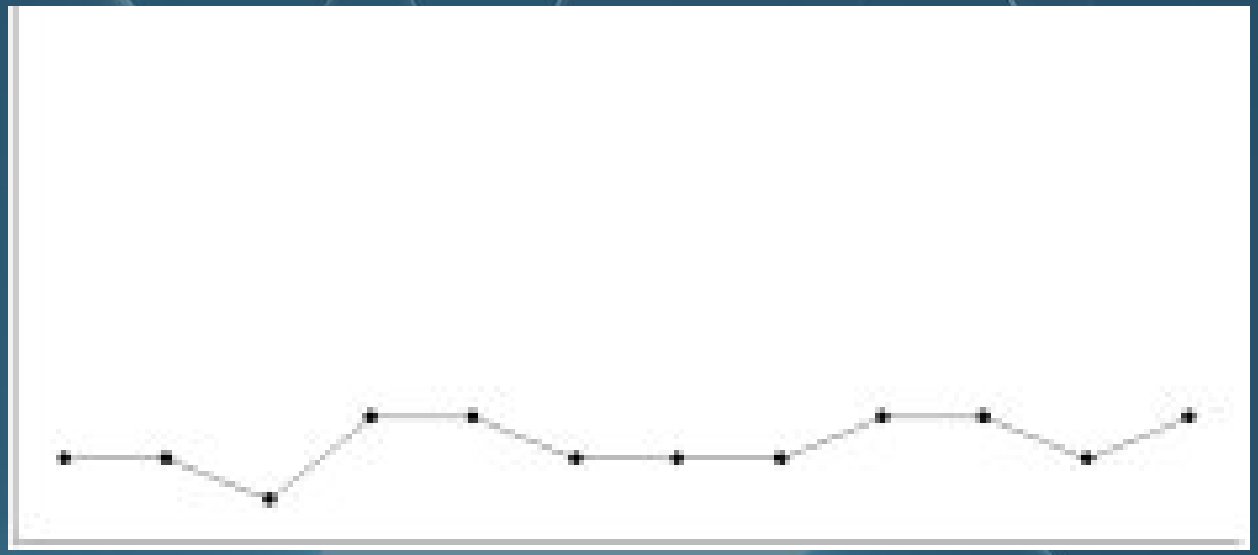
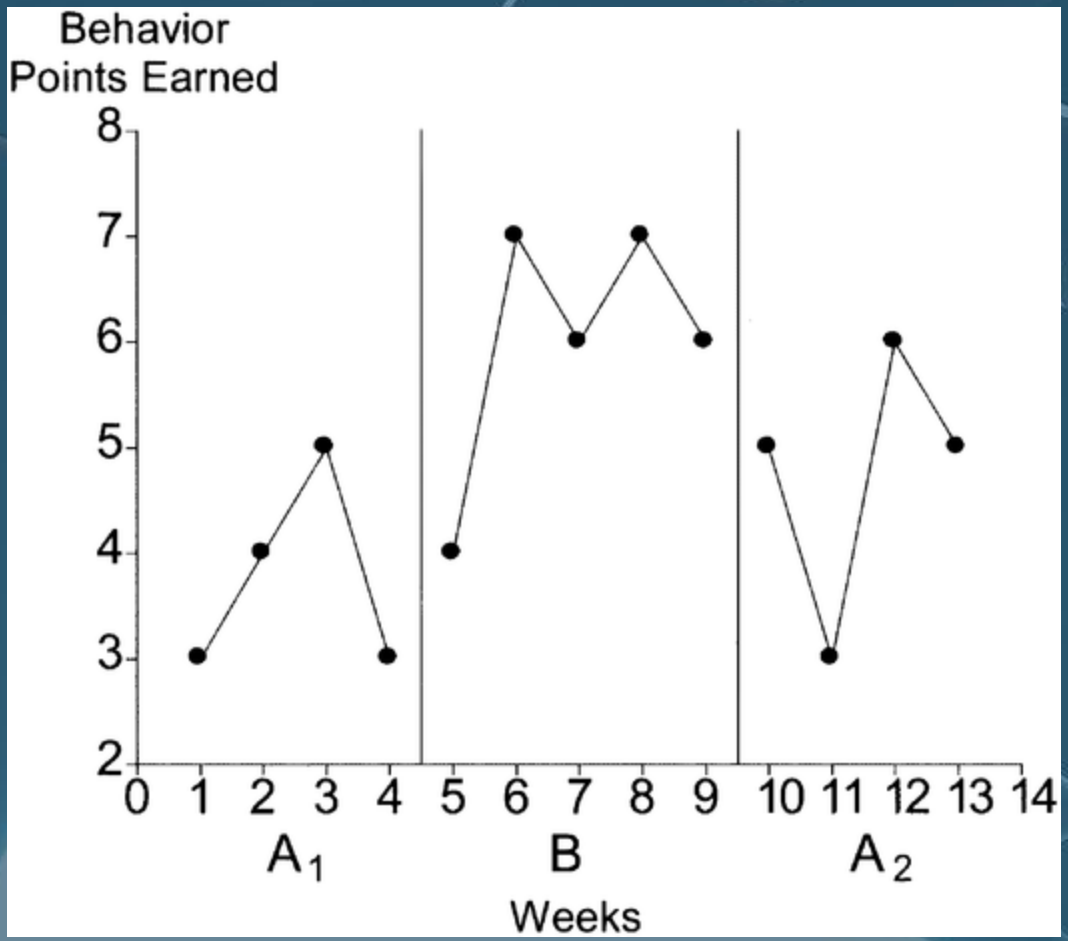


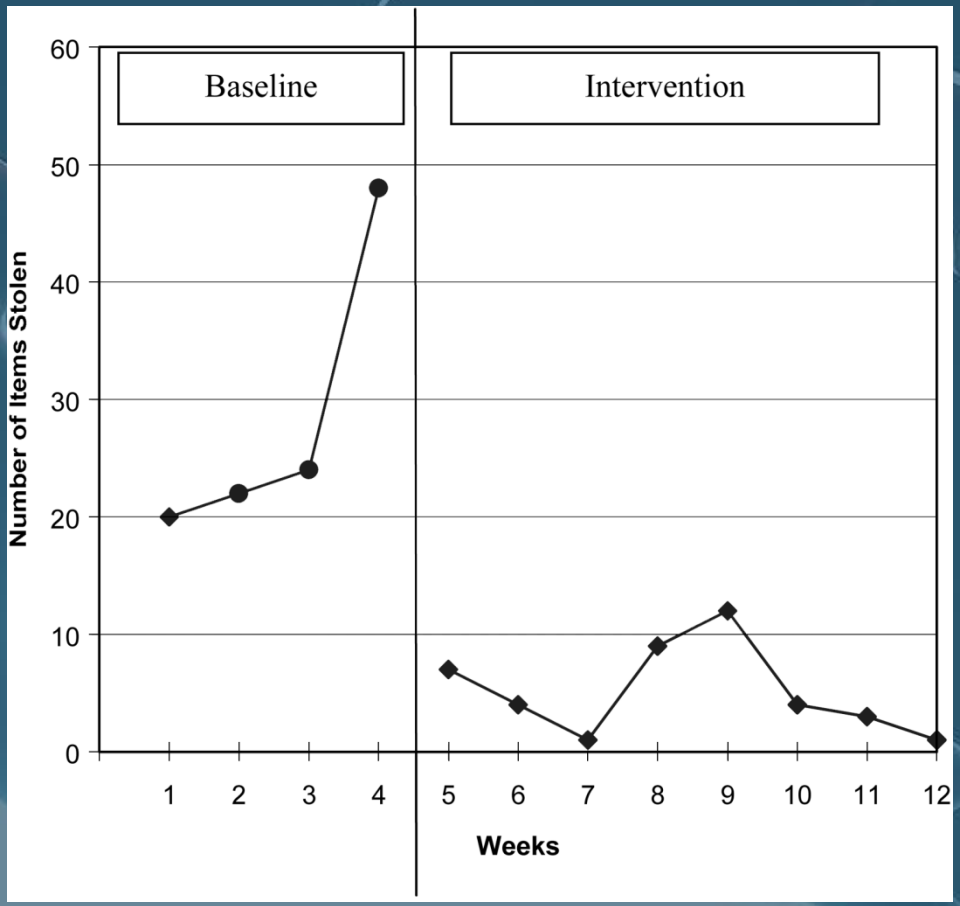
# Benefits of Visual Analysis

- http://psycnet.apa.org/journals/spq/21/1/images/spq_21_1_46_fig1a.gif



# Benefits of Visual Analysis

- http://www.emeraldinsight.com/content_images/fig/0890291002002.png



# Questions???