

# Integrating PBS and Cognitive-Behavioral Therapy (CBT) to Treat Anxiety in Autism & ID

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# In Memoriam

Thank you to my late advisor, Dr. Ted Carr



1947-2009

And to the children we work with  
and their families

# Agenda

- **Overview of Autism and Anxiety**
- **Frameworks and Interventions**
  - Cognitive Behavior Therapy (CBT)
  - Combining/Modifying CBT with PBS
- **If time, case studies!**

# Background on Anxiety in Autism

- Anxiety is more prevalent in youth on the spectrum than in neurotypical youth or those with other DDs
- BUT anxiety often overlooked, unrecognized, or undiagnosed among autistics due to:
  - **Difficulty of assessing or measuring anxiety**
    - *Communication deficits*
    - *Idiosyncratic behavioral expression*
  - **Symptom overlap b/w Autism & anxiety disorders**
    - *Diagnostic overshadowing*

# Treating Anxiety in Autism

**a) CBT procedures reduce anxiety in NT children and those with lower support needs**

- **i.e., exposure, cognitive restructuring, psychoed** (see Albano & Kendall, 2002 for review)

**b) ABA procedures shown to reduce avoidant responding in children with autism**

- **e.g., systematic desensitization, reinforcement, modeling** (Ellis et al., 2006; Koegel et al., 2004; Love et al., 1990; Luscre & Centre, 1996; Rapp et al., 2005; Ricciardi et al., 2005)

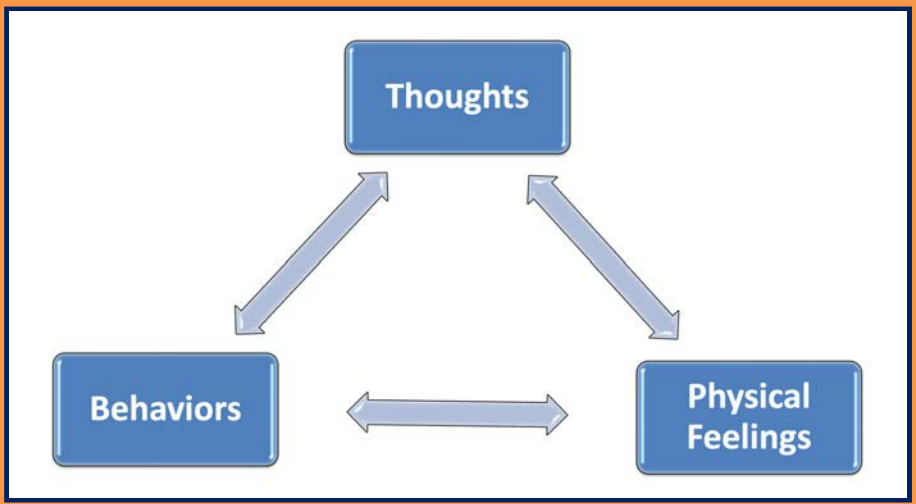
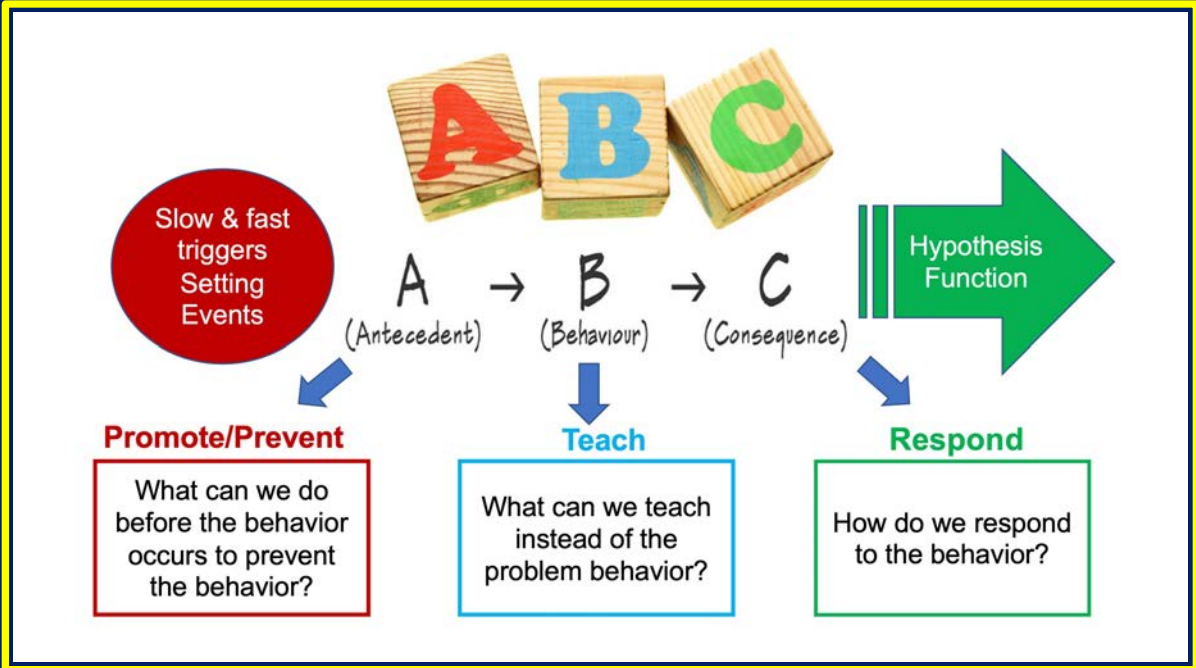
**c) PBS antecedent-based & replacement strategies used w/autism & DD** (Carr et al., 2002; Lucyshyn et al., 2007)

- **e.g., choice, visual supports, social stories, noncontingent reinforcement, FCT**

Take what we know

### PBS

### Prevent-Teach-Respond



Add what's missing

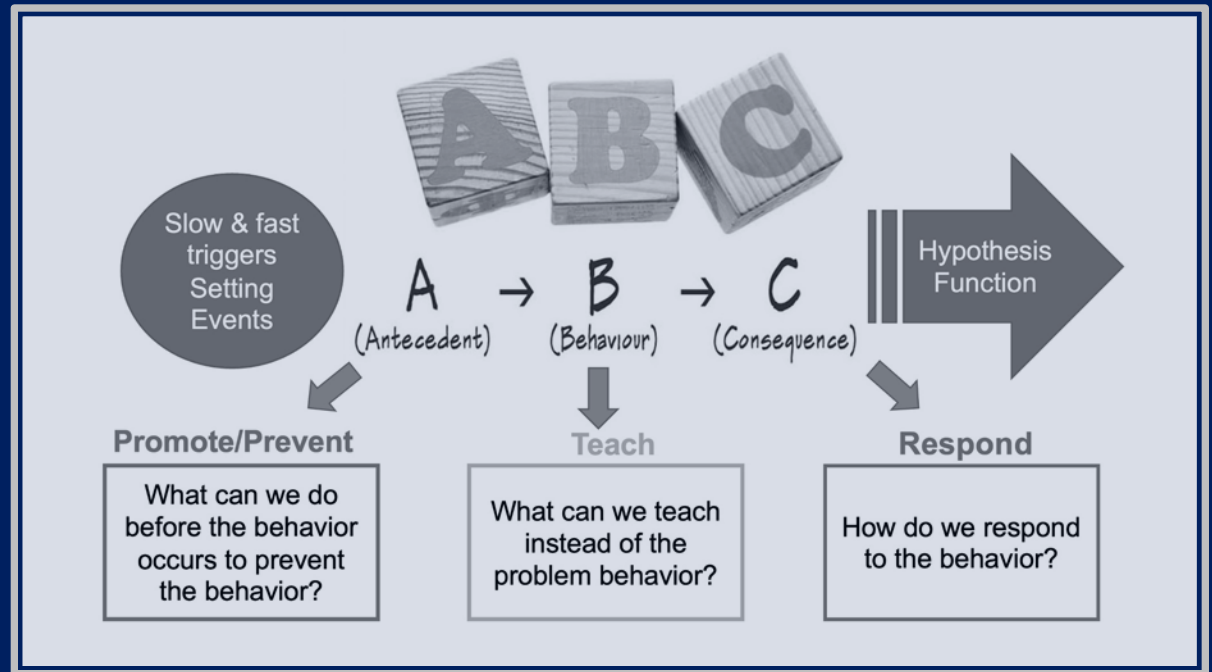
### CBT

### Cognitive Triangle

Take  
what we  
know

**PBS**

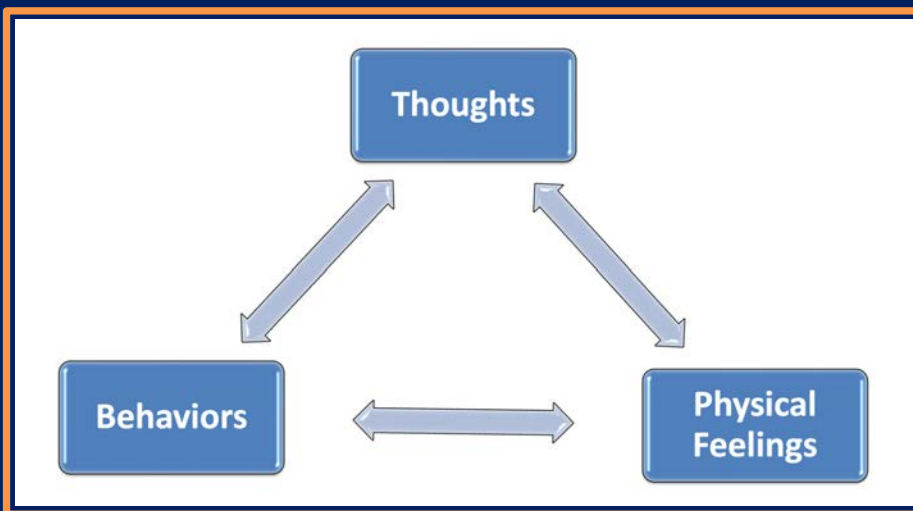
Prevent-Teach-Respond



Add  
what's  
missing

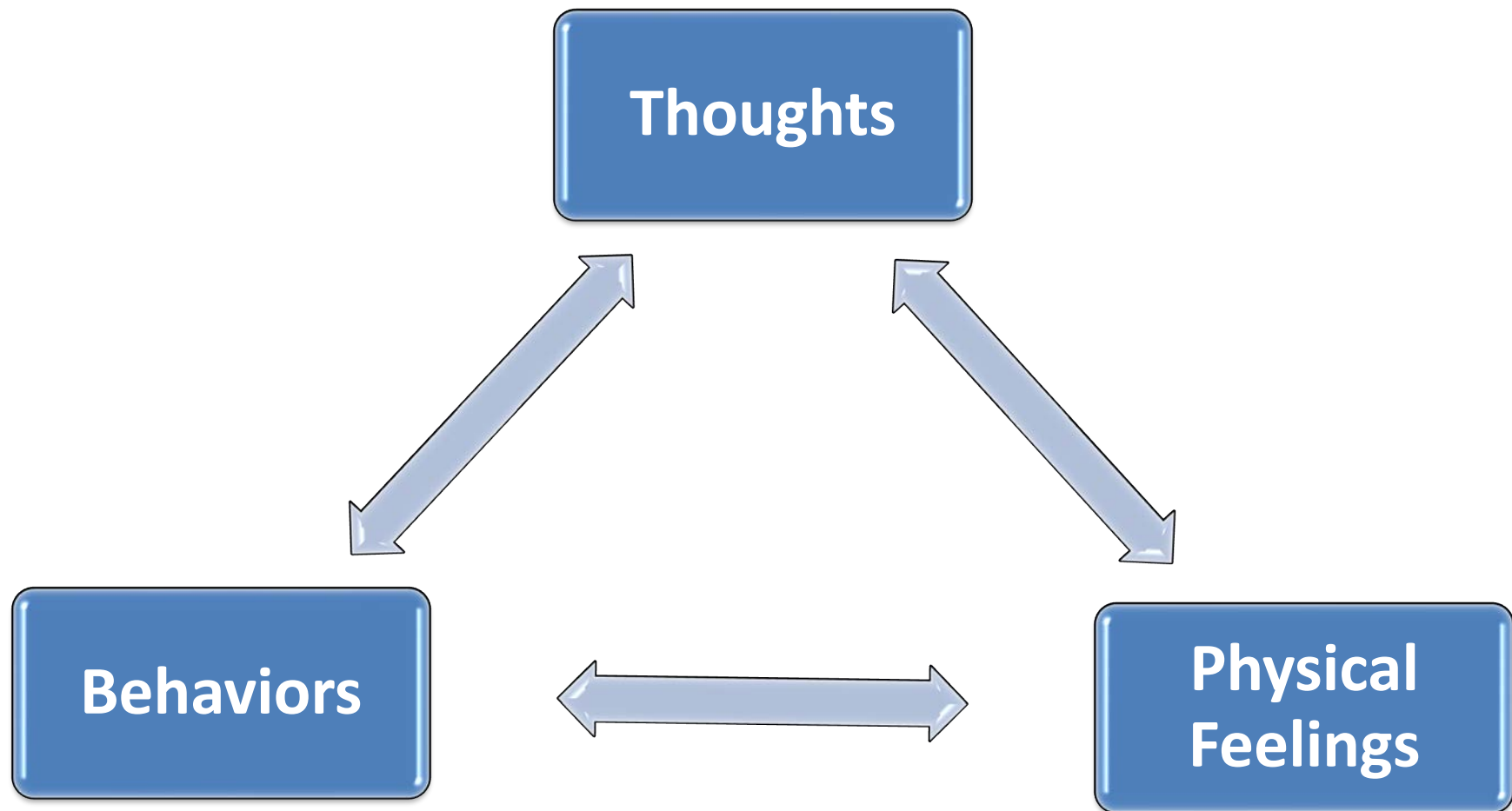
**CBT**

Cognitive Triangle



# What is Anxiety?

## 3-Component Model:





# Feelings

- Heart beating fast
- Heavy/rapid breathing
- Muscles tense
- Flushed face
- Perspiration
- Nausea



# Thoughts

- **Catastrophizing:** Always thinking the worst ever is going to happen
- **Mind-Reading:** Believing you know what other people are thinking about you
- **Fortune-Telling:** Believing that you know that something bad will happen in the future
- **All-or-Nothing Thinking:** Believing if you don't do something 100% perfectly, you have failed
- **Negative Thinking:** Picking out only negative aspects of situation and not considering positive aspects



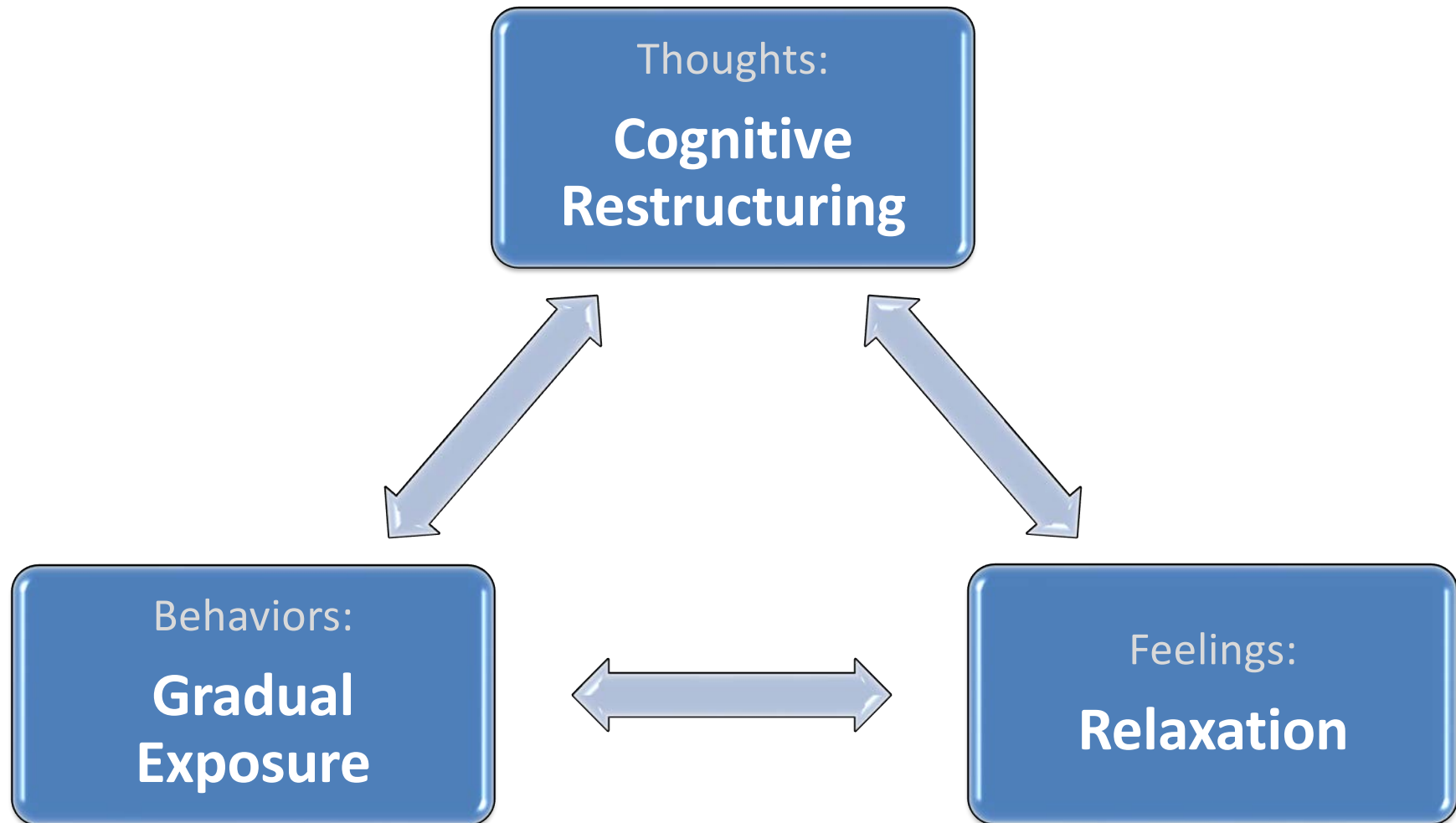
# Behavior

- Avoidance/escape behavior
  - Running away
  - cowering
- Reassurance-seeking
- Freezing
- Pacing
- Crying



# Cognitive Behavioral Therapy (CBT)

## 3-Component Model:



# Cognitive Behavioral Therapy (CBT)

- Addressing **Thoughts**

- Psychoeducation
- Cognitive Restructuring



- Addressing **Behaviors**

- Creating a Fear-and-Avoidance Hierarchy
- **Gradual Exposure\***
- Positive Reinforcement



- Addressing **Feelings**

- Relaxation



- *CBT is the most effective evidence-based treatment for anxiety disorders in neurotypical individuals & autistic youth who do not have ID* (Ung, Selles, Small, & Storch, 2015; van Steensel & Bogels, 2015; Wood, Kendall, Wood, Kerns, Seltzer, Small, Lewin, & Storch 2020)

# Psychoeducation

- **Information about nature of anxiety**

- Define anxiety
- Normalize anxiety
- Anxiety has a function or purpose
- Externalize anxiety
- Explain 3-component model
- Explain rationale for treatment
  - e.g., distress tolerance

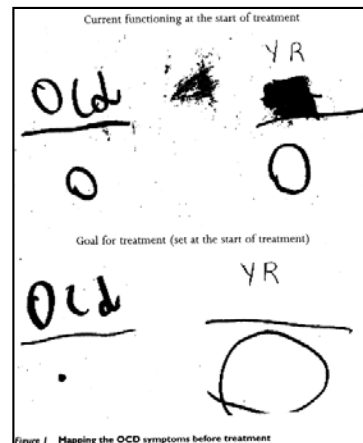


Figure 1 Mapping the OCD symptoms before treatment

**Sometimes, though,  
the fire alarm will go off  
even when there is no fire  
because the fire alarm is  
broken or not working right or  
is turned up too much.**



# Cognitive Restructuring

- **Challenging anxious thoughts**

- Do I know for certain that \_\_\_\_\_?
- Do I have a crystal ball?
- What evidence do I have that \_\_\_\_\_?
- Is there another explanation for \_\_\_\_\_?
- What is the worst thing that can happen? How bad is that? **How can I cope with that?**

The spider probably won't crawl on me and, even if it does, what's the worst that can happen? I'll just swat it.

- **Coping self-talk/“Boss-back” talk**

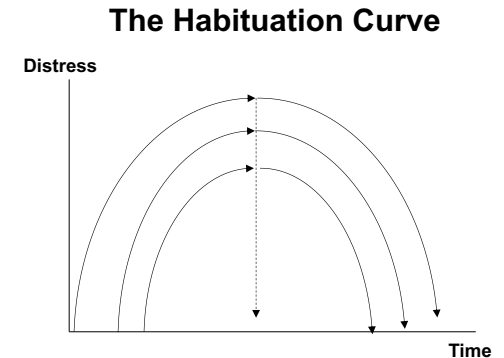
- I've done this before, so I can do it again.
- I can handle this!
- My brain is just stuck right now; I don't have to listen to it!
- My anxiety will pass; I'll get used to it.



**\*Give fear/anxiety a name!**

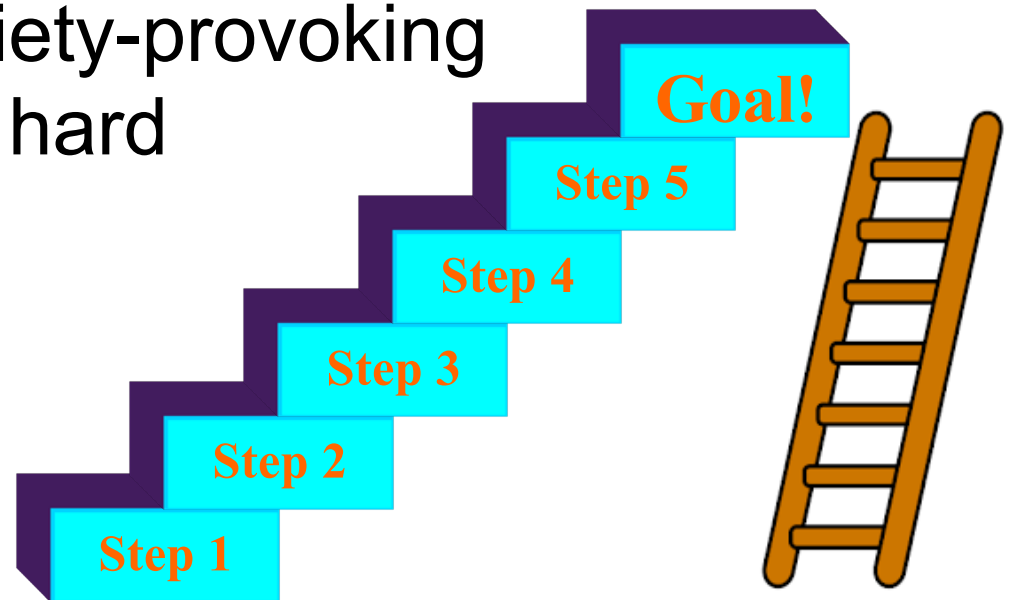
# Gradual Exposure

- **Face your fears** (a little at a time)
  - Learn that you will **get used to it**
  - Learn that feared consequences do not come true (*behavioral experiment*)



- **Fear Ladder** (fear-and-avoidance hierarchy)
  - Gradually confront anxiety-provoking situations from easy to hard

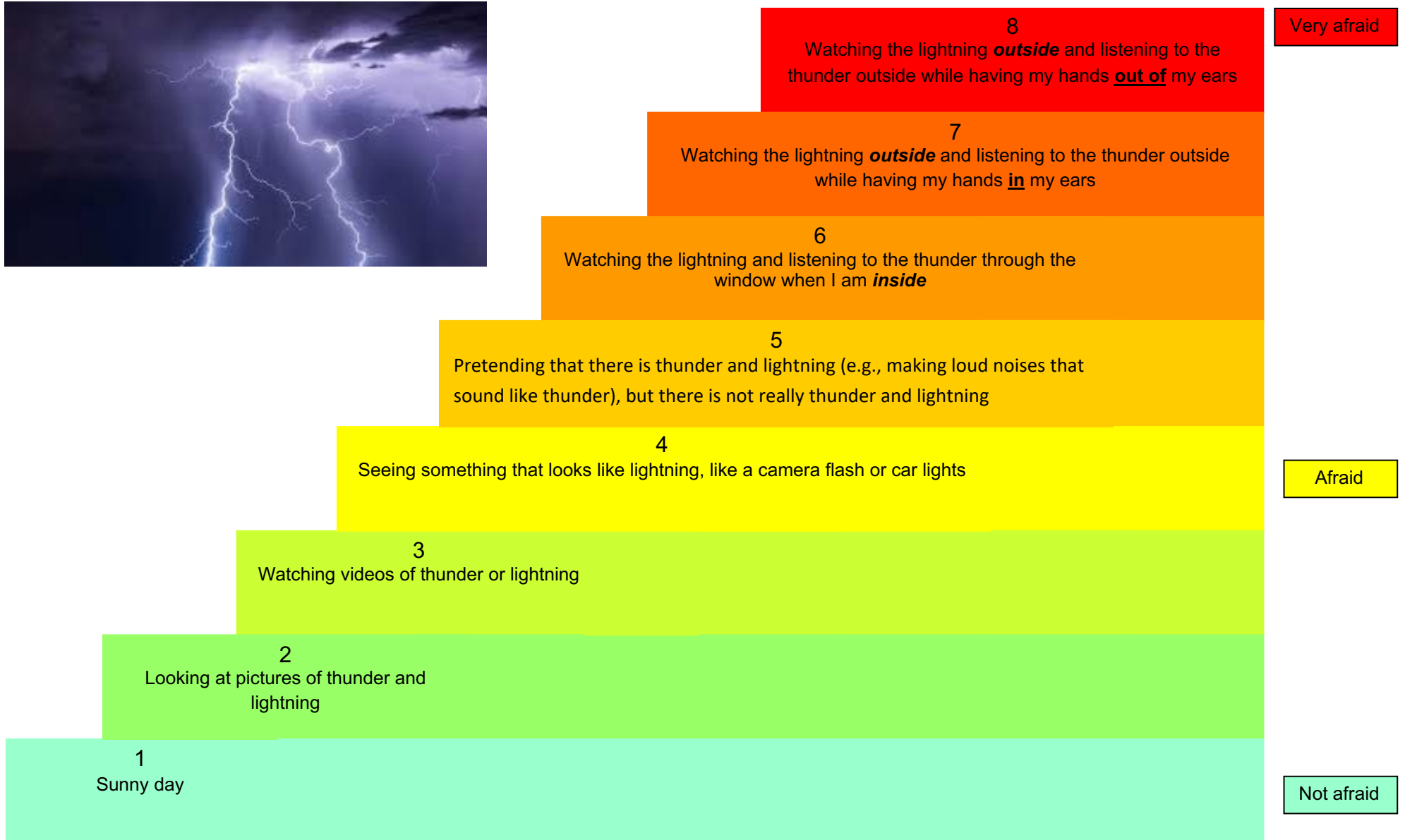
Graded exposure is the **CORE component** in CBT or behavioral intervention for anxiety





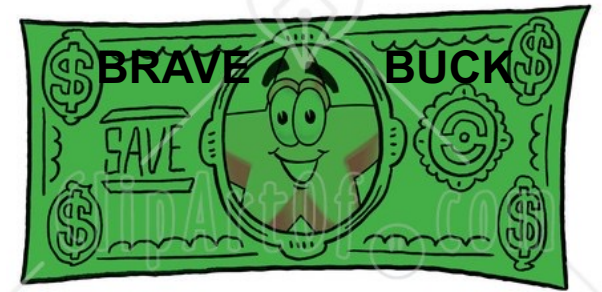
# Example “Fear-and-Avoidance Hierarchy”

## Fear Staircase for Thunder and Lightning




# Reinforcement

- Reinforce **BRAVE** behavior!
  - Reward your child for doing something that is hard for him/her!
- What is reinforcing for your child?
  - Social rewards (positive attention)
  - Tangible rewards (e.g., toy, treat)
  - Activity rewards/privileges
- Reinforce **partial success or attempts**




**Joey's Reward Chart**

Even though Mater is afraid...









He still faces his fears and saves his friends.



That's what it means to be brave... facing your fears even though you are afraid.

You will earn stickers for being brave... for talking to people even though it feels scary sometimes. Tell yourself, "I can do it! I can be brave!"

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Ask a question</b> = 1 sticker + eye contact  = 1 sticker + loud voice  = 1 sticker							
<b>Answer a question</b> + eye contact  = 1 sticker + loud voice  = 1 sticker							
<b>Tell a story</b> + eye contact  = 1 sticker + loud voice  = 1 sticker							

**Joey's Rewards:**

- ✓ Drawing or coloring = \_\_ stickers
- ✓ Reading picture books = \_\_ stickers
- ✓ Choose a DVD or movie to watch = \_\_ stickers
- ✓ Print out pictures of characters = \_\_ stickers

- ✓ Choose a YouTube clip to watch = \_\_ stickers
- ✓ Making a cupcake game on iPhone = \_\_ stickers
- ✓ Scooter = \_\_ stickers
- ✓ McDonalds happy meal = \_\_ stickers

The background features three decorative, curved, overlapping bands. One band is light blue, another is light orange, and a third is a very light, almost white, color. They are positioned in the top right and bottom left corners, framing the central text.

# **MODIFYING CBT STRATEGIES FOR AUTISTIC YOUTH**

# Modifications to CBT for Treating Anxiety in Autistic Youth


- Increase **structure & predictability** in delivering treatment components
  - Use **concrete** and **visual teaching strategies**
- Extra modules for ASD-specific difficulties
- Increase focus on **generalization**
  - Increase **parental involvement**
- Focus on reducing anxiety around **uncertainty**  
(Rodgers et al., 2017)
- Incorporate children's “**special interests**”



Moree & Davis, 2010; Reaven et al., 2012; Storch et al., 2013; Wood et al., 2020

# Modifications for Autism: Cognitive Restructuring

- **Concrete & visual** teaching strategies
  - Cognitive components *de-emphasized* or *modified* to meet developmental level
  - **Psychoeducation & cognitive restructuring conveyed using visual aids** (e.g., Social Stories, illustrations, lists with pictures, reward charts), modeling, video modeling, role-playing

BRAVE Behavior: Things I CAN do when I'm Anxious	AFRAID Behavior: Things I CANT do when I'm Anxious X
	
<ul style="list-style-type: none"> <li>• Tell myself, "I can do this, my anxiety will pass."</li> <li>• Tell myself, "This is just my anxiety trying to trick me. I will fight it!"</li> <li>• Tell myself, "This is just my anxiety talking. I will not listen to it. This is just a brain trick. I will go do something else."</li> <li>• Do my deep breathing.</li> <li>• Squeeze &amp; relax my muscles.</li> <li>• Play Tech Deck.</li> <li>• Play a board game.</li> <li>• Play a video game.</li> <li>• Watch TV or a movie.</li> <li>• Listen to music.</li> <li>• Read a book.</li> <li>• Go take a walk.</li> <li>• Run outside, or run up &amp; down the hall, or run up &amp; down the stairs.</li> <li>• Ride a bike.</li> <li>• Play catch.</li> <li>• Relax in bubble bath.</li> <li>• Go on the computer.</li> <li>• Play outside with my friends.</li> <li>• Tell Mom or Dad about school.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask, "Am I sick?"</li> <li>• Ask, "Am I going to get sick?"</li> <li>• Ask, "Is that person healthy? Am I healthy?"</li> <li>• Ask, "Is the medicine going to work?"</li> <li>• Ask, "Is there something wrong with my brain?"</li> <li>• Ask, "Am I breathing fast?"</li> <li>• Ask, "Am I breathing heavily?"</li> <li>• Ask, "Do I have asthma?"</li> <li>• Ask, "Are you sure I don't have asthma?"</li> <li>• Ask, "Am I going to throw up?"</li> <li>• Ask, "Am I going to catch a virus?"</li> <li>• Ask, "Am I going to have a fever?"</li> <li>• Ask any other question like this.</li> </ul>

**So, to fight my anxiety, I will try not to ask Mom these questions.**



**And to help me fight my anxiety, mom will try NOT to answer my questions by saying, "Yes, you're healthy" or "No, you're not going to get sick."**



**Instead, mom will say, "That's just your anxiety talking. I can't tell you if you're going to get sick."**



**At first, when Mom says "I don't know" or "I can't tell you," I will feel scared. But, after a while, I will be less scared. Then, after a while longer, I won't be scared anymore.**



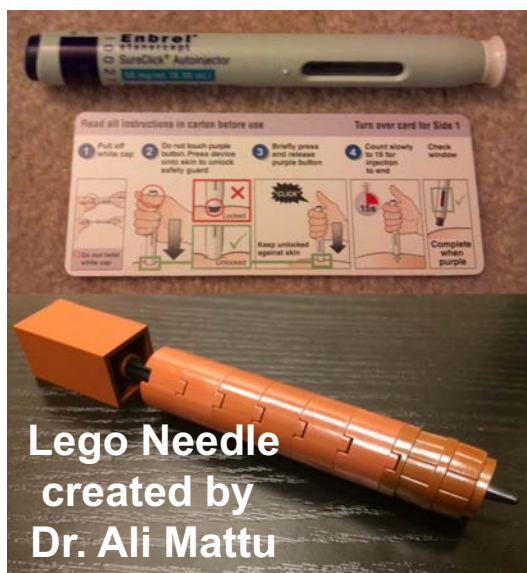
**I will see that my anxiety goes down after a while, even if mom doesn't answer me.**



Moskowitz et al. (2017)

# Modifications for ASD: Gradual Exposure

- Incorporate **special interests** into the exposures
- Incorporate **video modeling** or **video self-modeling** or **video priming**
- Increase parental involvement; most likely need **parents** to implement **positive reinforcement** (e.g., Reward Chart)



~~Missed Today?~~

**Sticker Chart for Ed for Brave Behavior**

	Mon	Tues	Wed	Thur	Fri	Sat	Sun
4:00 – 4:30							
4:30 – 5:00							
5:00 – 5:30							
5:30 – 6:00							
6:00 – 6:30							
6:30 – 7:00							
7:00 – 7:30							
7:30 – 8:00							
Total							

You get 1 sticker if you are brave and don't ask any Undertaker questions for 30 minutes.

1 sticker =  
3 stickers =  
4 stickers =  
6 stickers =  
8 stickers =  
16 stickers =  
24 stickers =

Moskowitz et al. (2017)

# Additional Modifications for Nonverbal or Minimally Verbal Autistic Individuals

## ■ Modifications to Cognitive Restructuring

- More **CONCRETE** (e.g., visual, multiple choice)
- Focus on **REPLACING** with **general coping thoughts** rather than identifying/challenging anxious thoughts
- *Cognitive components often simplified, adapted to cognitive/language level, or may be excluded altogether*



Worry Bug



Helper Bug

## ■ Modifications to Exposure

- Incorporate **special interests**
- Pair anxiety-provoking stimuli with **highly positive stimuli** (*counterconditioning*)
- Involve parents in all treatment sessions
- Incorporate **Functional Communication Training (FCT)**



Moskowitz et al. (2017)

# NOTE: Not all fears need to be "faced"

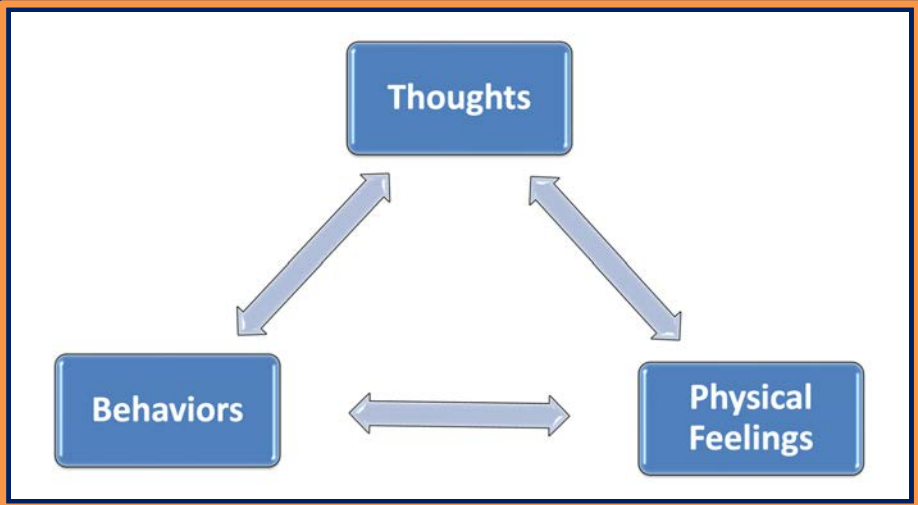
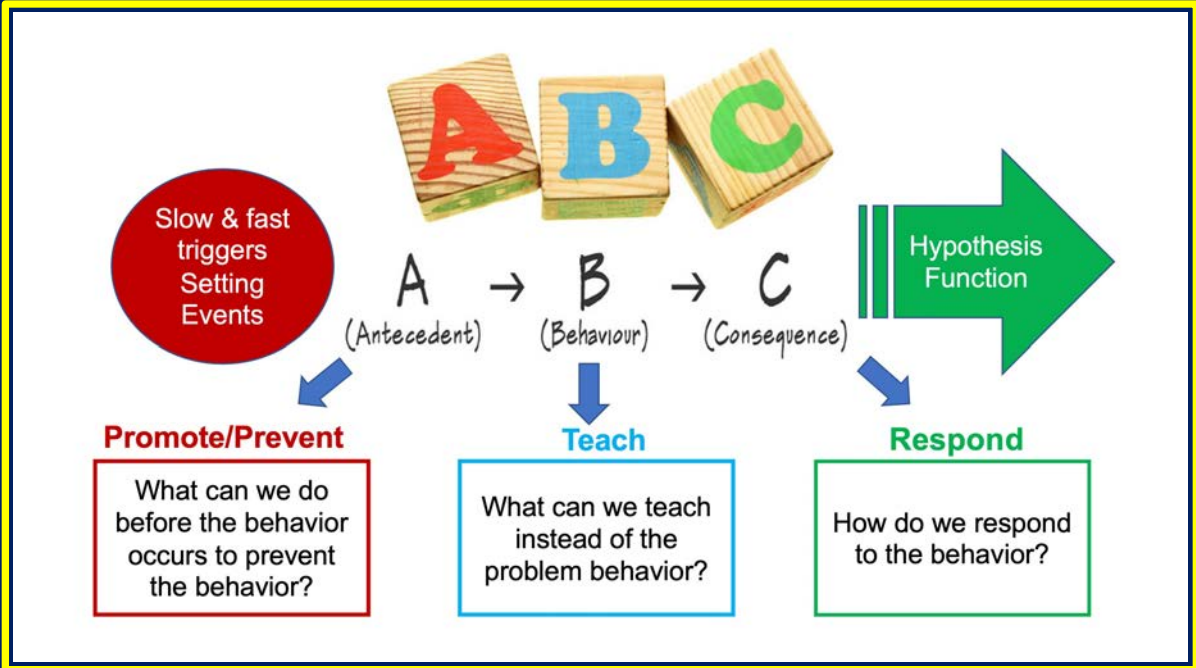
- Is it necessary to encourage child to face this fear? Is it ethical?
- Does the child appear distressed by their fear/anxiety?
- Is this fear/anxiety **harming child's or family's quality of life**?
  - If child afraid of roller coasters, **no need to do exposures** (no need for them to go on a roller coaster; they can live their life without going on a roller coaster) – not impairing quality of life
  - BUT if a child is afraid of trees, there's a **need for exposures**, since that's hard to avoid and **impairing daily life/functioning**
  - If child afraid of spiders and so doesn't want to go camping or go to the attic, there may be **no need to target that fear**
  - BUT if child saw spider in bathroom and is so afraid that she is now no longer using the bathroom and having accidents, **need to target this fear**



Take what we know

### PBS

### Prevent-Teach-Respond



Add what's missing

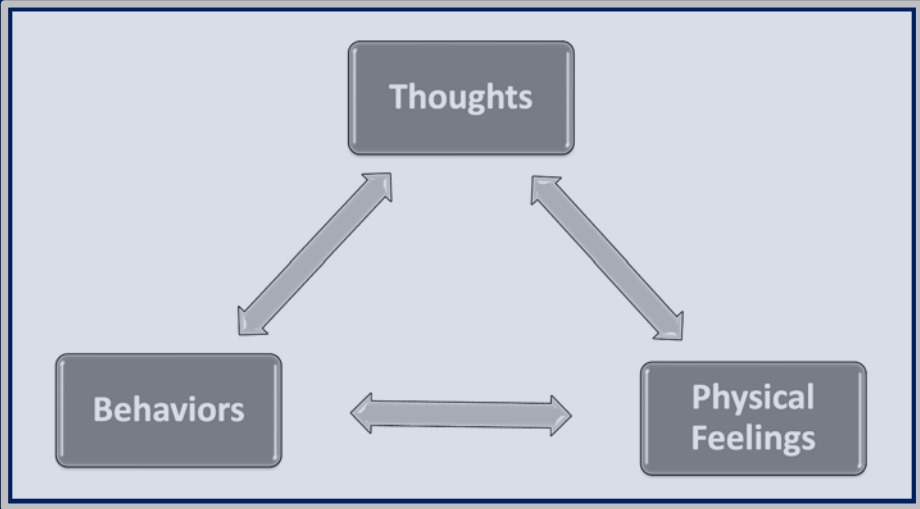
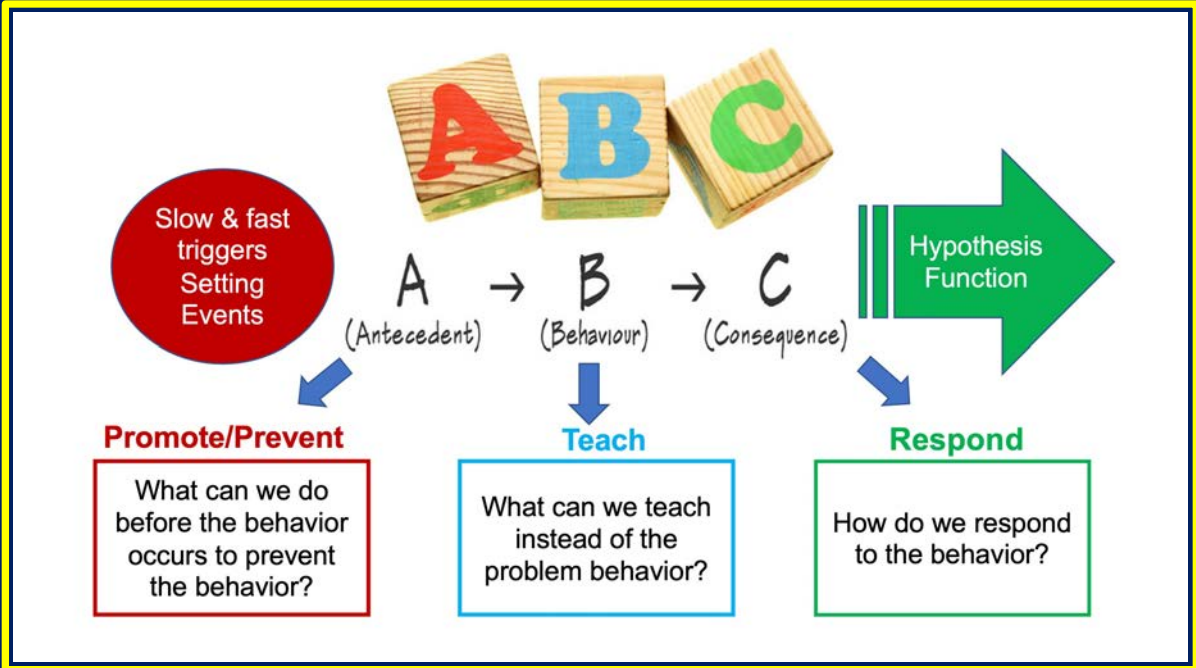
### CBT

### Cognitive Triangle

Take what we know

**PBS**

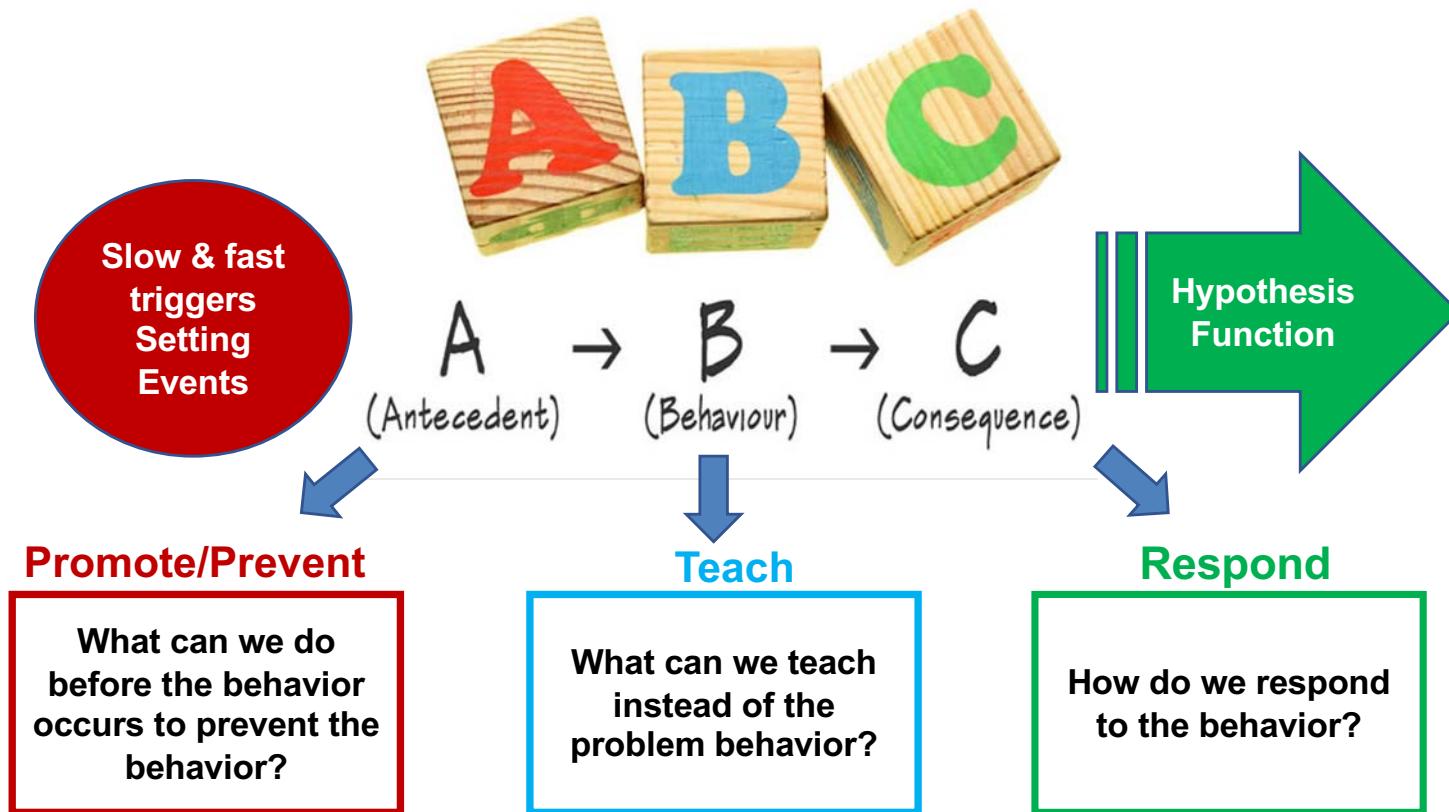
**Prevent-Teach-Respond**



Add what's missing

**CBT**

**Cognitive Triangle**



# Combining PBS + CBT

With exception of Neufeld, Law, and Lucyshyn, (2014) and Moskowitz et al. (2017), intervention research targeting fear/anxiety in children with autism has not incorporated key principles or procedures of PBS:

- Antecedent-based interventions
- Incorporating stakeholder participation & ecological validity in the selection of goals and strategies
- Intervention informed by a functional assessment

# Combining PBS + CBT

- **Given that**

- the heterogeneity of setting events & antecedents of anxious behavior in children with autism,
- the different functions of such behavior,
- the idiosyncratic fears that children with autism possess, and
- the idiosyncratic ways in which they might express their fear and anxiety

- **We should**

- Use individualized treatments tailored to each specific child may be that much more powerful for autistic youth with ID

# **PBS: Considering Function of Behaviors**

## **Traditional View: 4 main functions of behavior**

- Escape-Demand
- Gain Attention
- Obtain Tangible
- Sensory-Seeking

## **Re-conceptualizing as Reducing Anxiety:**

- Escape-Anxiety
- Gain comfort/reassurance
- Obtain comfort object or self-soothing activity
- Reduce feelings of arousal associated with anxiety

# Using Positive Behavior Support (PBS) Framework to Treat Anxiety

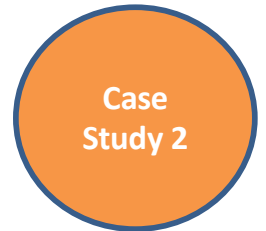
## Prevention Strategies (altering antecedents)

- ✓ **Psychoeducation/cognitive restructuring** (e.g., using Social Stories)
- ✓ **Increasing predictability** (visual schedules, timer, Social Stories, priming)
- ✓ **Providing choices**
- ✓ **Incorporating special interests**
- ✓ **Counter-conditioning** (pair with anti-anxiety stimuli noncontingently)



## Replacement Strategies (teaching replacement skills)

- ✓ **Gradual exposure** (replacing avoidance with approach response)
- ✓ **Coping self-talk** (boss-back talk)
- ✓ **Functional communication training (FCT)**
- ✓ **Mindfulness: Soles of the Feet**
- ✓ **Relaxation training**



## Consequence-based Strategies

- ✓ **Positive reinforcement** for brave behavior (e.g., contingent on approach)
- ✓ **Extinction** (stop reinforcing anxious behavior or challenging behavior)

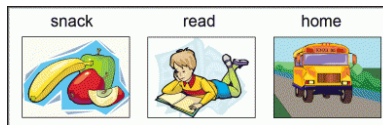


# PBS Prevention Strategies

*(to Prevent or Mitigate Challenging Behavior Related to Anxiety in Autism & DD)*

- **Increase PREDICTABILITY**

- Visual Schedules



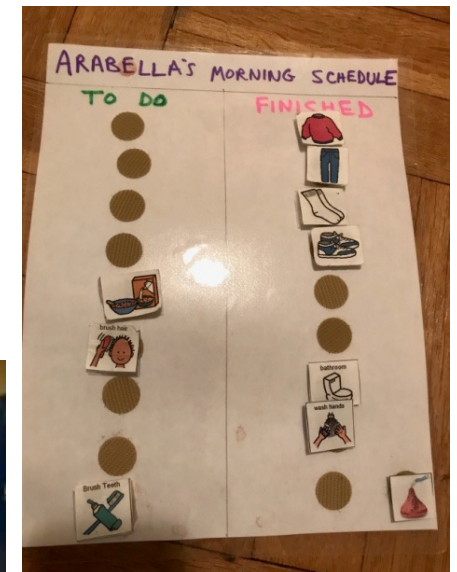
- Social Stories



- Advanced Warnings  
(e.g., timers, countdowns)



- Priming (previewing future events)



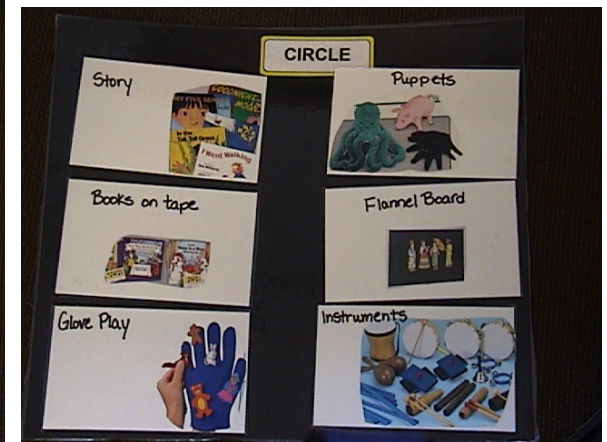
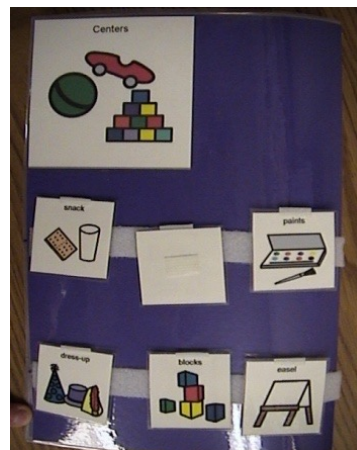


# PBS Prevention Strategies

*(to Prevent or Mitigate Challenging Behavior Related to Anxiety in Autism & DD)*

## ■ Provide CHOICES


- Enhances sense of control
- Child learns to become an active participant, rather than a passive, helpless bystander
- Increases motivation to participate & behave well



# PBS Prevention Strategies

When I feel afraid, I can conjure the Patronus Charm by thinking about a very happy memory. This will help me face my fears!


**Expecto Patronum!**



I am going to fight my anxiety and I will win!



I can handle this!



I can do it!

I can be brave like Harry!


## ing Behavior (sm & DD)

ed, but rather one that is


ward: you can also

restructuring as well as other skills, etc.

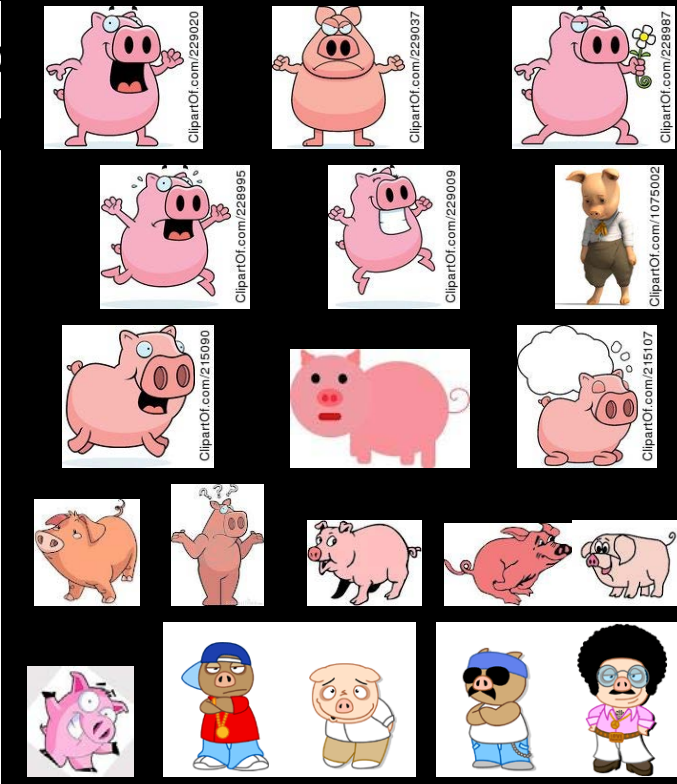
~~I can't do it!~~



I am a brave boy - I can take care of myself in the dark!



~~[snoring]~~



A collection of various cartoon pig and animal clipart images, including pink pigs, brown pigs, and stylized characters, each with a small vertical watermark 'ClipartOI.com/ID'.

# PBS Replacement Strategy:

## Functional Communication Training (FCT)

- Teaching child to ask for what he/she wants through language instead of problem behavior or anxious behavior

- Examples of appropriate communication:

- **Function: Escape Anxiety**

- Ask for break, help, change in activity

- **Function: Attention**

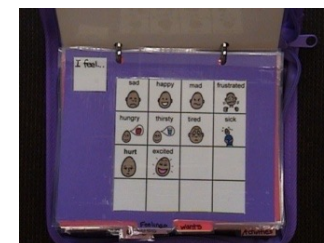
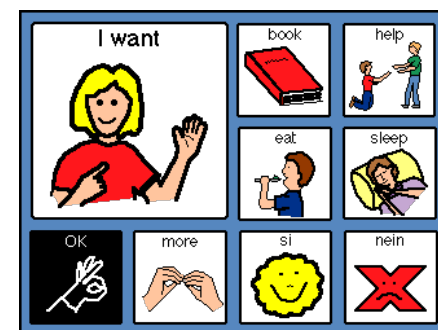
- Ask for social interaction, attention, or praise

- **Function: Tangible**

- Ask for preferred items, activities, or people; ask for a turn

- **Function: Sensory**

- Ask for item that provides sensory stimulation or reduces sensory stimulation



***Note: Must fade the number of “Break Cards” available or hugs we provide over time so that child is exposed to the feared situation for increasingly longer periods of time (“graduated exposure”)***

# PBS Replacement Strategy: Coping Self-Talk

## Examples of Coping self-talk/“Boss-back” talk

- I’ve done this before, so I can do it again.
- My anxiety will pass; I’ll get used to it.
- My brain is just stuck right now; I don’t have to listen to it!
- Back off Voldemort, I’m the boss of me!
- Undertaker, you can’t tell me what to do anymore!
- It’s no big deal!
- It will be hard, but I can do it!
- I can handle this!
- I can do it!



***Use this Coping Self-Talk before, during, and after exposure!***

# PBS Replacement Strategy: Mindfulness: Soles of Feet (SoF)

Visual from  
**Manualized SoF  
Adaptation for  
Schools (from Felver  
and Singh, 2020):**

**SOLES OF THE FEET**

**Breathe**

- 1 Sit or stand with your back straight, relaxing your body
- 2 Place one hand on your belly, paying attention to your breathing
- 3 Shifting attention to your feet...



**Return to Class**

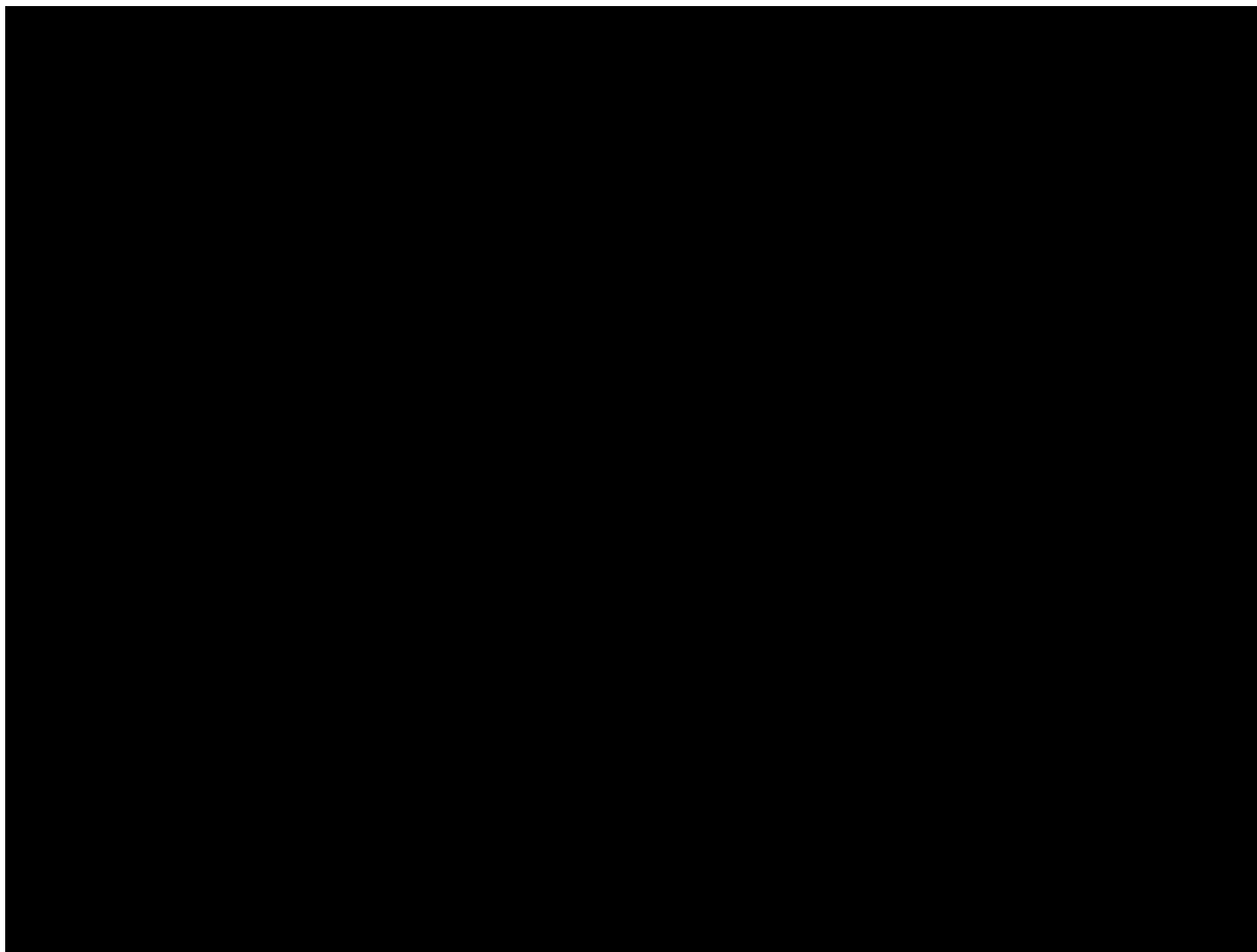
- 11 Coming back to class with a calm, clear mind - making a choice that is good for you!

**Focus on Feet**

- 4 Putting your attention on the soles of your feet
- 5 Wiggling your toes
- 6 Feeling your socks
- 7 Focusing on the arches
- 8 Going to the heels
- 9 Continue wiggling your toes
- 10 Opening your eyes and relaxing...

Use *Soles of the Feet* whenever you notice yourself starting to become upset (triggers).  
You have the power to stay calm even if you're upset!

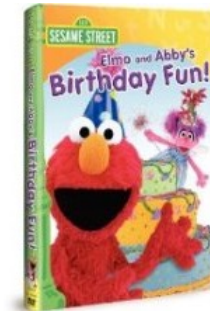
# **Case #1: Jon – Baseline of Happy Birthday**



# Case Example: Intervention for “Happy Birthday” Anxiety

## Prevention Strategies

- ✓ Increasing predictability
  - ✓ **Video modeling** (psychoed, cognitive restructuring)
- ✓ Incorporating special interests (Sesame Street)
- ✓ Counter-conditioning (pair with anti-anxiety stimuli noncontingently)



## Replacement Strategies

- ✓ Gradual exposure

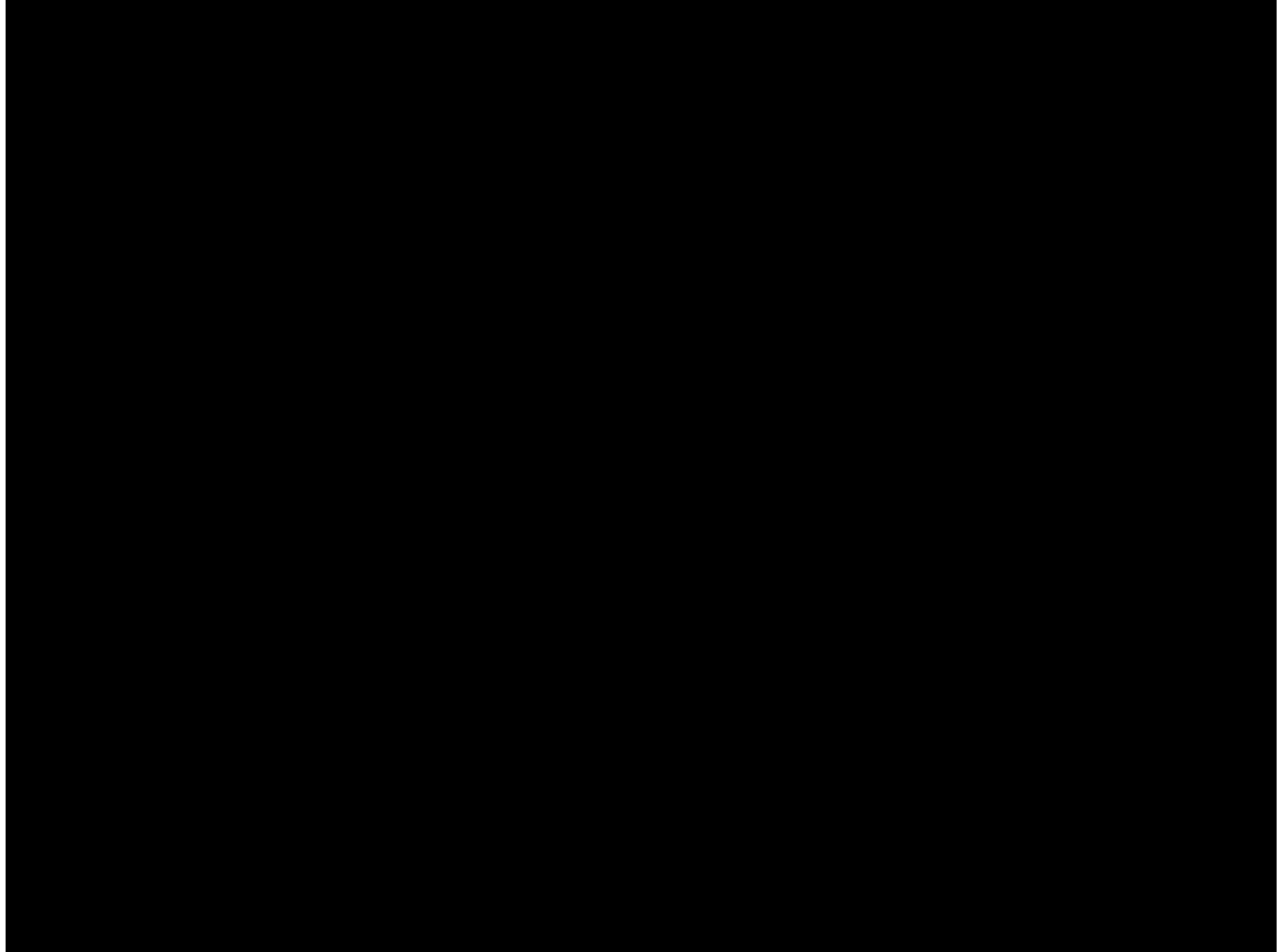


## Consequence-based Strategies

- ✓ Positive reinforcement for brave behavior (e.g., contingent on approach)
- ✓ Extinction



# Intervention Session for Happy Birthday





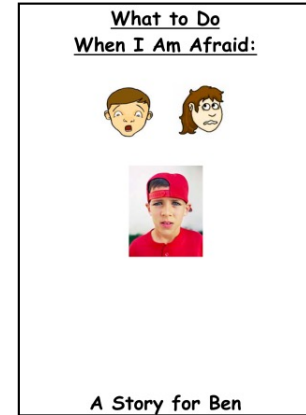
# Intervention for Happy Birthday: Exposures



# Case #2: Separation Anxiety

## Prevention Strategies

- ✓ Psychoeducation/cognitive restructuring (e.g., using Social Story)
- ✓ Increasing predictability (e.g., using Social Story)
- ✓ Providing choices
- ✓ Incorporating special interests
- ✓ Counter-conditioning (pair with anti-anxiety stimuli noncontingently)

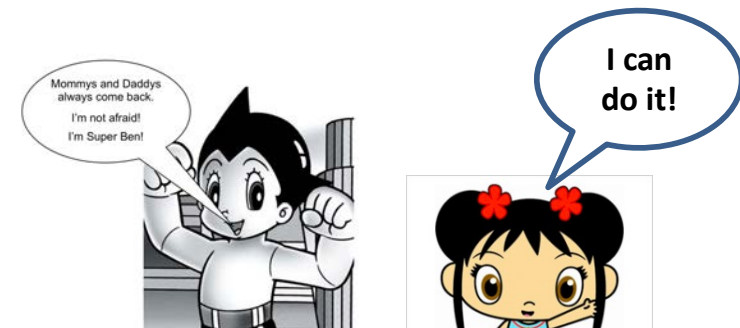


## Replacement Strategies (teaching replacement skills)

- ✓ Gradual exposure (replacing avoidance with approach response)
- ✓ Coping self-talk (boss-back talk)

## Consequence-based Strategies

- ✓ Positive reinforcement for brave behavior
- ✓ Extinction

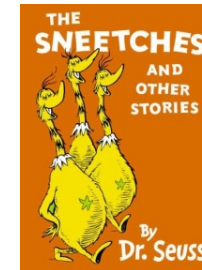


Moskowitz et al., (2017); JADD

# Case #3: Fear of Left/Right Turns

## Prevention Strategies

- ✓ **Increasing predictability** (e.g., using visual schedules, Social Story, video priming)
- ✓ **Providing choices**
- ✓ **Incorporating special interests**
- ✓ **Counter-conditioning** (pair with anti-anxiety stimuli noncontingently)



## Replacement Strategies

- ✓ **Gradual exposure**



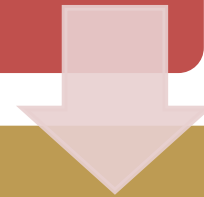
## Consequence-based Strategies

- ✓ **Positive reinforcement for brave behavior**
- ✓ **Extinction**

# Summary



Target behavior may be functionally related to anxiety in youth with autism



Need for valid methods of assessing anxiety in youth with autism



Identifying anxiety in youth with autism can help to:

- Change conceptualization
- Change intervention approach

# Resources: Books

**Written for Parents of Children without autism or DD (but should still be useful for youth with autism or DD):**

- ***Freeing Your Child From Anxiety***, by Tamar Chansky, Ph.D.
- ***Freeing Your Child from Obsessive Compulsive Disorder***, by Tamar Chansky, Ph.D.
- ***You and Your Anxious Child***, by Anne Marie Albano, Ph.D.
- ***Helping Your Anxious Child***, by Ronald Rapee, Ph.D., Ann Wignall, Susan Spence, Vanessa Cobham, and Heidi Lyneham

**Designed for Children with autism and their Parents:**

- ***Facing Your Fears: Group Therapy for Managing Anxiety in Children With High-Functioning Autism Spectrum Disorders / Facilitator's Manual / Parent Workbook / Child Workbook***, by: Judy Reaven Ph.D., Audrey Blakely-Smith Ph.D., Shana Nichols Ph.D., Susan Hepburn Ph.D.

# Resources: Websites

- Child and Adolescent Anxiety Disorders Clinic at Temple University [www.childanxiety.org](http://www.childanxiety.org)
- Children's and Adult Center for OCD and Anxiety: [www.worrywisekids.org](http://www.worrywisekids.org)
- The Child Anxiety Network: [www.childanxiety.net](http://www.childanxiety.net)
- Association for Behavioral & Cognitive Therapies: [www.abct.org](http://www.abct.org)
- Anxiety Disorders Association of America: [www.adaa.org](http://www.adaa.org)
- Parent Training Resources: <http://www.copingcatparents.com/>



Thank you!