PERSPECTIVE TAKING
AND
NONLITERAL LANGUAGE

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OUTLINE

- Evolution from simple to complex behavior
- Philosophical background for addressing complex behavior
- Derived relational responding
- Bidirectional naming
- Perspective taking
- Rule-governed behavior
- PEAK studies
- Mindfulness

DERIVED RELATIONAL RESPONDING

- Stimulus equivalence
- Bidirectional naming
- Relational frame theory (RFT)
- Big Picture: Stimulus generalization does not account for the generativity of language
BIDIRECTIONAL NAMING

- Thorough program of research by Doug Greer’s group in the last 10-15 years
- Training rapid rotation of listener, tacting, and matching produces generalized naming (aka, generalized mutual entailment)
- Most of us might not be training VB the most efficient way!
- Functional INTERdependence of verbal operants

Training Bidirectional Naming:
- Trial 1: “Touch the car”
- Trial 2: “What’s this?”
- Trial 3: Match car to car
- Trial 4 and beyond: Random repetitions of these three trial types

PERSPECTIVE TAKING
PERSPECTIVE TAKING

• Putting yourself in someone else’s shoes
• “Theory of Mind”
• Many individuals with autism, despite sufficient language and IQ, have difficulty with perspective taking

SIMPLE VISUAL PERSPECTIVE TAKING

• Detecting that what others see is different from what oneself sees is among first perspective taking skills to develop
• Delayed or absent in many children with ASD
• Used table-top multiple exemplar training to teach it

2D stimulus cards
Instruction: “What does he see?”
Arrow prompts from eyes to object faded out
Tested generalization to untrained cards and 3D environment
VISUAL PERSPECTIVE TAKING

- 2D stimulus cards
- Instruction: “What does he see?”
- Arrow prompts from eyes to object faded out
- Tested generalization to untrained cards and 3D environment

PERSPECTIVE TAKING: OTHERS’ DESIRES

- Identifying what others’ want and adjusting one’s own behavior is socially critical
- When others get what they want, they will be happy
- Can’t just always play / talk / do what YOU want
- Many individuals with ASD have difficulty

PERSPECTIVE TAKING: OTHERS’ DESIRES

- Taught children to predict peers’ emotions, given 4 circumstances:
  1. Peer gets what peer wants (positive)
  2. Peer doesn’t get what peer wants (negative)
  3. Peer gets what she doesn’t want (negative)
  4. Peer avoids what she doesn’t want (positive)
**PERSPECTIVE TAKING: OTHERS’ DESIRES**

- Based on predictions, would child with ASD choose activities to make peer happy?
- Or choose activities to make themselves happy?

**DESIRES**

- Clients learned predictions
- But did not adjust their own behavior
- We trained them directly to adjust their behavior to peer preferences

**PERSPECTIVE TAKING: LIE DETECTION**

- Individuals with ASD have difficulty with lying and detecting lies
- Leaves them susceptible to bullying
- Client’s mom asked us to teach him how to tell when bullies were lying to him
- Peers were lying to him to take his items and to exclude him
PERSPECTIVE TAKING: LIE DETECTION

- We used multiple exemplar training to teach children with ASD to identify when someone was lying to them
- And to resist the lie (e.g., “No! That’s not true!”)
- Trained until generalization to untrained lies
- 2 kinds of lies embedded into natural play interactions with adults and peers:
  1. Taking possessions
  2. Excluding child from play

LIE DETECTION

- All three children learned to detect lies from adult teachers
- Generalization across lies and liars was observed
- And from peer confederates
- Skills maintained for at least a month with no contrived reinforcement or prompting

PERSPECTIVE TAKING: PLAYING TRICKS

- Fun way to teach perspective taking skills and creativity / flexibility
- Successful trick playing involves
  - Identifying what others know
  - Identifying behaviors that will prevent others from knowing
  - Doing something new that the other person will think is fun
  - And executing all this in a way that maintains the deception
PLAYING TRICKS

- Clients
  - Children with autism who needed to work on perspective taking
  - Highly verbal
  - Couldn’t keep secrets or surprises
- Task analysis
  1. Create a new trick
  2. Describe it and why it’s a trick
  3. Execute without “giving it away”
  4. End the trick appropriately, e.g., “Gotcha!” or “Tricked ya!”

- Initially taught same tricks
- Then moved to novel tricks every session
- Taught rule “A trick is when you play a joke on someone for fun. If you make someone sad, it's mean, it’s not a trick”
- Multiple exemplar training across tricks

NONLITERAL LANGUAGE
**NONLITERAL LANGUAGE: METAPHORS**

- **Metaphors**: Calling a thing something other than what it really is
- Many individuals with ASD have difficulty
- We used multiple exemplar training to teach ability to decode metaphors

**METAPHORS: TEACHING METHODS**

- Told short stories and then asked metaphorical questions
- Trained intraverbal - echoic responses across multiple exemplars
- Continued training until generalization to untrained exemplars

**METAPHORS**

- “I once knew a boy who was really strong, he always wore yellow and he stayed up really late at night.”
  - “What would I mean if I said he was a banana?”
  - “What would I mean if I said he was an owl?”
  - “What would I mean if I said he was a super hero?”
### VISUAL PROMPT

<table>
<thead>
<tr>
<th>BOY</th>
<th>OWL</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRONG</td>
<td>BIRD</td>
</tr>
<tr>
<td>STAYS UP LATE</td>
<td>LIVES IN TREES</td>
</tr>
<tr>
<td>WEARS YELLOW</td>
<td>AWAKE AT NIGHT</td>
</tr>
</tbody>
</table>

### RELATIONAL FRAME THEORY ANALYSIS

**Question:** I once knew a boy who always wore yellow, he liked to stay up late at night, and he was really strong. If we call him a super hero, what would it mean by that?

**Target:** "He..."

**Vehicle:** "super hero"

- Wears yellow
- Stays up late
- Is strong

Answer: "You would mean he is really strong"
METAPHORS: DISCUSSION

- Looks like “understanding metaphors” may be learned verbal behavior
- Participants began responding as speakers - making their own metaphors
- Limitation: Did not test generalization to real-life social interactions
- Ana Ramon-Cortes is now running her dissertation in Spain on teaching kids to create their own novel metaphors

NONLITERAL LANGUAGE: SARCASM

- **Sarcasm**: Saying the opposite of what you literally mean
- Many individuals with ASD have difficulty understanding and using sarcasm

*Research in Autism Spectrum Disorders 7 (2013) 10–56*

Teaching children with autism to detect and respond to sarcasm
Angela Persicci, Jonathan Tarbox, Jennifer Ranick, Megan St. Clair

<table>
<thead>
<tr>
<th>Context</th>
<th>Sarcasm comment</th>
<th>Sincere comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>sunny day</td>
<td>“It’s definitely going to snow today.”</td>
<td>“It’s so warm outside today.”</td>
</tr>
<tr>
<td>money</td>
<td>“You really love to eat bread every day.”</td>
<td>“I know you don’t like bread.”</td>
</tr>
<tr>
<td>video games</td>
<td>“You didn’t make a mess at all.”</td>
<td>“This house is so messy.”</td>
</tr>
<tr>
<td>fishing</td>
<td>“It’s so much fun to play video games.”</td>
<td>“It’s so much fun to play video games.”</td>
</tr>
</tbody>
</table>

- We used multiple exemplar training to teach children with autism to detect and respond to sarcasm
- Many comments rotating between sarcastic and sincere comments
- Everyday natural language interactions
- Prompting, prompt fading, reinforcement
SARCASM

- Trained until correct responding to untrained comments first time

RULE-GOVERNED BEHAVIOR

- Rule-following: Antecedents and behaviors (Tarbox et al., 2011)
- Rule-following: Behaviors and consequences (Wymer et al., 2016)
- Rule-deriving, social problems (Szabo, in preparation)
- Derived rule following in games (Dixon, 2016)
RULE-GOVERNED BEHAVIOR

- **Rule-governed behavior**: Behavior that occurs in response to a rule, as if the behavior had contacted the contingencies described in the rule in the past.
- **Rule**: An antecedent description of contingencies that controls behavior, as if the behavior had contacted those contingencies.
- Example: "Don’t drink bleach or you will die."

RELEVANCE OF RGB

- Absolutely critical to human civilization.
- Skinner:
  - Science is essentially rules for effective action with respect to nature.
  - Rules are how knowledge (i.e., effective action) is passed on through generations.

RGB: TARBOX ET AL., 2011

- Used multiple exemplar training to establish generalized repertoire of following novel rules describing antecedents and consequences.

<table>
<thead>
<tr>
<th>Rules Presented During Baseline, Training, and Generalization Probes in Experiment 1</th>
<th>Directly trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>If this is a carrot then touch your head</td>
<td>If this is a carrot then touch your head</td>
</tr>
<tr>
<td>If this is a pig then arm up</td>
<td>If this is a pig then arm up</td>
</tr>
<tr>
<td>If this is a dish then touch the floor</td>
<td>If this is a dish then touch the floor</td>
</tr>
<tr>
<td>If this is a chair then knock</td>
<td>If this is a chair then knock</td>
</tr>
<tr>
<td>If this is a spoon then stand up</td>
<td>If this is a spoon then stand up</td>
</tr>
<tr>
<td>If this is a car then wave</td>
<td>If this is a car then wave</td>
</tr>
</tbody>
</table>

Table 1
• Worked well but took a long time for some learners
• We thought it might have to do with how we presented the rules

• Experiment 2: “Clap if this is a carrot,” etc.

• Worked better, MAYBE...
• But continuing to probe untrained rules without reinforcement may have taught learners to NOT respond to new rules
• Implemented first-trial generalization probes
• Increased effectiveness
• Used multiple exemplar training to teach repertoire of following rules that described behaviors and consequences

• “If you clap then you get Elmo”
• “If you stomp then you get broccoli”
• “If you stick out your tongue then you get vegetable juice”
• Rule with preferred consequence → Do the behavior
• Rule with nonpreferred consequence → DON’T do behavior
• Participants demonstrated generalized symmetry before study

• Multiple exemplar training
• Train a set of rules to mastery, probe a novel set
• Continue until generalization to rules with novel behaviors and consequences
**RGB DISCUSSION**

- Just a few baby steps
- Still need to research:
  - Long delays
  - Nonexistent consequences
  - Real-life social application

**PEAK STUDIES**

- Curricula for autism based on stimulus equivalence and RFT
- Comprehensive assessment and teaching programs
- 12 studies published on validity of the PEAK curriculum
- 15 studies published on effectiveness for teaching skills
- Equivalence
- Categorization
- Comparative relations
- Rule-deriving
- Metaphorical relations
- Gustatory relations
- Autoclitics
- Perspective taking

**MINDFULNESS FOR PARENTS AND KIDS**

- For kids with autism (Wilson & Dixon, 2010)
- For parents of children with autism - NirBay Singh's group
- 2006: Self-injury, aggression, and noncompliance
- 2007: Aggression down, social behavior up
- 2004: Training staff in mindfulness increased happiness in clients
ACT-BASED PARENT TRAINING

- Evelyn Gould’s dissertation
- Used an ACT-based approach to increase values-directed overt behaviors in parents of children with autism
- 1.5 hour sessions, once per week, for six weeks
- All parents had children already in ABA programs
- Started with helping parents identify what they value the most
- Then identified behaviors to measure that were directed toward those values

<table>
<thead>
<tr>
<th>Value</th>
<th>Values-Directed Behavior</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality, joyful, connected</td>
<td>Any instance of both parents engaging in a clean, social event, or family events together, with both children.</td>
<td>Taking dinner together, playing together at home, going for walks in the neighborhood, having a BBQ, going to a community event.</td>
</tr>
<tr>
<td>Having a sense of personal</td>
<td>Any instance of parents making a choice about future or being assertive, or engaging in self-care (in absence of child).</td>
<td>Respecting our own boundaries, discussing our own choices with our substance or husband, saying “No” to requests from family and friends, accepting responsibilities, spending time with friends, or going on an exercise.</td>
</tr>
<tr>
<td>Happy</td>
<td>Any instance of happiness being clear “friends” contingent and happy</td>
<td>Staying clear “friends” boundaries and happy</td>
</tr>
<tr>
<td>Manufacturing and leading</td>
<td>Any instance of children following through with environmental boundaries, following through with demands, using problem solving or other environmental management strategies, following rules-expecting procedure.</td>
<td></td>
</tr>
<tr>
<td>Focused</td>
<td>Any instance of children following through with environmental boundaries, following through with demands, using problem solving or other environmental management strategies, following rules-expecting procedure.</td>
<td></td>
</tr>
<tr>
<td>Creating a balanced child</td>
<td>Any instance of husband taking care of child without supervision.</td>
<td>Husband putting child to sleep, playing with child, feeding child breakfast, without supervision.</td>
</tr>
<tr>
<td>Partnership</td>
<td>Any instance of both parents spending “quality time” together outside of home, in absence of child.</td>
<td>Going for dinner, going to see a movie, going for a walk, staying in a hotel for a night, etc.</td>
</tr>
<tr>
<td>Taking time for myself</td>
<td>Any instance of Hannah caring for and spending “quality time” together, in absence of child.</td>
<td>Taking an exercise class, getting a massage, spending time with friends (in the absence of child).</td>
</tr>
</tbody>
</table>
FOCUS OF 6 WEEK PROTOCOL

<table>
<thead>
<tr>
<th>Session</th>
<th>Primary Skill Targeted</th>
<th>Exercise Examples</th>
<th>Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Valuing</td>
<td>The Three Wishes</td>
<td>Data tracking</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Connecting to values</td>
</tr>
<tr>
<td>2</td>
<td>Mindfulness</td>
<td>Notice 5 things</td>
<td>Mindfulness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mindfulness of Breath</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Defusion</td>
<td>Having the Thought</td>
<td>Defusion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leaves on stream</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>The Matrix: Tracking</td>
<td>The Matrix</td>
<td>Identifying behavior function</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tracking outcomes</td>
</tr>
<tr>
<td>5</td>
<td>Committed Action</td>
<td>Eighty-Year Old You</td>
<td>Parenting Commitment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tiniest steps</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finding meaning when life hurts</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Acceptance (with self-</td>
<td>Wholehearted Parenting Manifesto</td>
<td>Parenting Commitment and Self-</td>
</tr>
<tr>
<td></td>
<td>compassion)</td>
<td>Creating a Touchstone</td>
<td>care</td>
</tr>
</tbody>
</table>

ACT-BASED PARENT TRAINING

- Only the first study on ACT-based parent training producing improvements in overt behavior for parents of children with autism
- Much more replication is needed
- Delayed effect for one parent
- Should be added to traditional behavioral skills training to evaluate additive benefit
WRAP-UP: FOCUS ON GENERALIZATION

- We are interested in established flexible, generalized operant skills
- No rote learning!
- Multiple exemplar training and other generalization procedures should be used throughout
- Not as an afterthought!
- Emergence of derived or untrained performance is the criterion for mastery

CONCLUSION

- Sky seems to be the limit
- If you can think of it, you can use ABA procedures to teach it
- Much is still unknown about prerequisite skills
- If a procedure isn’t working, back it up to earlier rereqs
- **Main point:** Don’t be afraid to tackle complex skills
  - Start small, fade gradually
  - Lots of practice across many exemplars and focus on generalization!

MORE RESOURCES