Choosing the best therapies: Bottom-Up and Top-Down

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ABC Conference

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Learning Objectives

Upon completion of this presentation, the participant will be able to:

• Define and describe the Natural History of ASD
• Define and give examples of Bottom-Up and Top-Down instructional methods
• Describe the long-term outcome for persons with ASD and explain the role of IQ as a driver of outcome

Disclosures

• Dr. Coplan is author of Making Sense of Autistic Spectrum Disorders: Create the brightest future for your child with the best treatment options (Bantam-Dell, 2010), and receives royalties on its sale

• This presentation will include a discussion of off-label drug use

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Therapies for ASD: Bottom-Up & Top-Down
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Outline

• Natural History of ASD
• Impact of IQ on Prognosis
• Bottom-Up & Top-Down
• Long-term outcomes
• Summary

Natural History: “The temporal course a disease from onset to resolution”
Center for Disease Control & Prevention

ASD has a Natural History

Since 1943, there have come to our attention a number of children whose condition differs so markedly and uniquely from anything reported so far, that each case warrants—and I hope, will eventually receive—a detailed consideration of its fascinating peculiarities.

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943
Kanner, 1943

- N = 11 (M 8; F 3)
- Age: 2 to 8 yr.
- Clinical Features:
  - Impaired socialization
  - Idiosyncratic language
  - Repetitious behaviors
  - Unusual responses to sensory stimuli

Impaired Socialization

- “Aloof”
- “Withdrawn”
- Limited eye contact
- Indifferent to others

Idiosyncratic Language

- Echolalia
- Delayed Echolalia
- Pronoun Reversal
- Odd inflection
Repetitious Behaviors

- Rigid Routines
- Stereotypies
- Lining up / spinning objects

Unusual sensory responses

- “Petrified of vacuum cleaner”
- Drawn to, or afraid of, spinning objects
- Mouthing behavior
- Ingesting inedible materials
- Food selectivity

Kanner, 1938 → 1943

- Gradual improvement in early childhood
  - Social skills
  - Language
  - Cognitive flexibility
  - Sensory Aversions
Kanner, 1938 → 1943

“Between the ages of 5 and 6 years, they gradually abandon echolalia and learn spontaneously to use personal pronouns.

“Language becomes more communicative, at first in the sense of a question-and-answer exercise, and then in the sense of greater spontaneity of sentence formation....

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943

Kanner, 1938 → 1943

“Food is accepted without difficulty. Noises and motions are tolerated more than previously. The panic tantrums subside. The repetitiousness assumes the form of obsessive preoccupations...

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943

Kanner, 1938 → 1943

“Reading skill is acquired quickly, but the children read monotonously, and a story or a moving picture is experienced in unrelated portions rather than in its coherent totality...*

* “Central coherence”

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943
Kanner, 1938 → 1943

“Between the ages of 6 and 8, the children begin to play in a group, still never with the other members of the group, but at least on the periphery alongside the group.

Leo Kanner, 1943

Kanner, 1938 → 1943

“People are included in the child's world to the extent to which they satisfy his needs...

Kanner, 1938 → 1943

All of this makes the family feel that, in spite of recognized ‘difference' from other children, there is progress and improvement.

Leo Kanner, 1943
Kanner, 1971

- Deceased: 1
- Lost to follow-up: 2
- Institutionalized: 5
- Living on work farm: 1
- Living at home: 2
  - BA degree / bank teller
  - Sheltered workshop / machine operator

Kanner's contributions

- Clinical Description
  - Social, Language, Repetitious behavior, & Sensory aversions / attractions
- Attribution: An “inborn error of affective contact”
- Described the Natural History of improvement over time

The Natural History of ASD - 1

<table>
<thead>
<tr>
<th>Clinical Domain</th>
<th>Decreasing Atypicality / Increasing Age ⇒</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Social Interaction</td>
<td>Severe / Youngest</td>
</tr>
<tr>
<td></td>
<td>No eye contact</td>
</tr>
<tr>
<td></td>
<td>Cannot be engaged in imitative tasks</td>
</tr>
<tr>
<td></td>
<td>Rigid; has difficulty if perceives that rules have been broken</td>
</tr>
</tbody>
</table>

## The Natural History of ASD - 2

<table>
<thead>
<tr>
<th>Clinical Domain</th>
<th>Decreasing Atypicality / Increasing Age</th>
<th>Severe / Youngest</th>
<th>Moderate / Older</th>
<th>Mild / Older</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Language</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pragmatics</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Prosody</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Chance verbal also response to voice; may “act deaf” also use of gestures compensating for absence of spoken language</td>
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</tr>
<tr>
<td></td>
<td>• Use of visual communication modalities (symbol cards, sign language)</td>
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<tr>
<td></td>
<td>• May use stock phrases in an attempt to communicate</td>
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<tr>
<td></td>
<td>• May use “hand-over-hand” to guide caregiver to desired objects</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

## The Natural History of ASD - 3

<table>
<thead>
<tr>
<th>Clinical Domain</th>
<th>Decreasing Atypicality / Increasing Age</th>
<th>Severe / Youngest</th>
<th>Moderate / Older</th>
<th>Mild / Older</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Repetitious</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaviors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Cognitive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Extreme distress if routines are changed or when required to transition from one task to another</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fascination with odd objects (tags, wheels, fans, etc.)</td>
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<tr>
<td></td>
<td>• Some, but with diminished level of distress; able to accept verbal preparation for changes in routine</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Complex repetitive play (lining up objects, memorizes numbers, letters, etc)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## The Natural History of ASD - 4

<table>
<thead>
<tr>
<th>Clinical Domain</th>
<th>Decreasing Atypicality / Increasing Age</th>
<th>Severe / Youngest</th>
<th>Moderate / Older</th>
<th>Mild / Older</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Sensorimotor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Intense aversion or attraction to specific classes of stimuli</td>
<td>• Auditory: Hyperacusis, covers ears, sits deaf • Visual self-stimulation (light/patterns); looks at objects from odd angles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Tactile: rubbing, licking, mouthing, deep pressure; aversive to light/touch • olfactory: Sniffing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Extreme food selectivity • Taste threshold</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fear: Heightened</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
"The Spectrum":
ASD in One Dimension

Severe Moderate Mild

ATYPICALITY

Atypical features can range from severe to mild

Outline

• Natural History of ASD
• Impact of IQ on Prognosis
• Bottom-Up & Top-Down
• Long-term outcomes
• Summary

Influence of IQ on Prognosis

• “In terms of scholastic progress, social competence, and work opportunities, the child’s IQ level is as influential as the presence of autism.”**
• 1973-2005: > 10 studies; >1000 subjects

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**Table: Intellectual Disability (ID) Categories**

<table>
<thead>
<tr>
<th>ID Category</th>
<th>IQ Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior</td>
<td>130</td>
</tr>
<tr>
<td>Average</td>
<td>115</td>
</tr>
<tr>
<td>Low Average</td>
<td>100</td>
</tr>
<tr>
<td>Borderline</td>
<td>90</td>
</tr>
<tr>
<td>ID - Mild</td>
<td>80</td>
</tr>
<tr>
<td>ID - Moderate</td>
<td>70</td>
</tr>
<tr>
<td>ID - Severe</td>
<td>60</td>
</tr>
</tbody>
</table>

**Diagram: Atypicality vs. IQ Scales**

1. **Atypicality** (Severe, Moderate, Mild)
2. **IQ Scales** (Genius, Superior, Average, Low Average, Borderline, ID - Mild, ID - Moderate, ID - Severe, Profound MR)

**Source:** Coplan J. Atypicality, intelligence and age: a conceptual model of autistic spectrum disorder. Dev Med Child Neurol 2003; 45(10):712-6

**Diagram: ASD & IQ: 2 Dimensions**

1. **IQ** (130, 115, 100, 85, 70, 55, 40, 25, Profound MR)
2. **Atypicality** (Severe, Mild)

**Source:** Coplan J. Atypicality, intelligence and age: a conceptual model of autistic spectrum disorder. Dev Med Child Neurol 2003; 45(10):712-6
Outline

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Therapies for ASD: A Modest Proposal
• Therapies for ASD should be matched to the natural history of ASD itself
  – As the child’s symptoms evolve, so should the forms of therapy
  – It’s not a matter of right vs wrong; It’s a matter of what & when

Interventions: Issues
• Lack of controlled studies
  – What is the best therapy?
  – How much therapy is “enough”?
  – How much progress is due to therapy, and how much to natural history of ASD?
• Therapeutic dogmatism
  – The blind men and the elephant
THE BLIND MEN AND THE ELEPHANT
(Traditional Indian folk tale)

It was six men of Indostan,
To learning much inclined,
Who went to see the Elephant,
(Though all of them were blind,)
That each by observation
Might satisfy his mind.

The First approached the Elephant,
And happening to fall
Against his broad and sturdy side,
At once began to bawl:
"God bless me!—but the Elephant
Is very like a wall!"

The Second, feeling of the tusk,
Cried "Ho! what have we here
So very round and smooth and sharp?
To me it is mighty clear
This wonder of an elephant
Is very like a spear!"

The Third approach the animal,
And, happening to take
The squirming trunk with in his hands,
Thus boldly up and spake:-
"I see," quoth he, "the Elephant
Is very like a snake!"

The Fourth reached out his eager hand,
And felt about the knee;
"What most this wondrous beast is like
Is mighty plain," quoth he;
"'Tis clear enough the Elephant
Is very like a tree!"

The Fifth, who chanced to touch the ear,
Said "Even the blindest man
Can tell you what this resembles most:
Deny the fact who can,
This marvel of an Elephant
Is very like a fan!"
Therapies for ASD: Bottom-Up & Top-Down

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The Sixth no sooner had begun
About the beast to grope,
Than, seizing on the swinging tail
That fell within his scope,
“I see,” quoth he, “the Elephant
Is very like a rope!”

And so these men of Indostan
Disputed loud and long,
Each in his own opinion
Exceeding stiff and strong,
Though each was partly in the right,
And all were in the wrong!

Clever Stories of Many Nations, Rendered in Rhyme
John Godfrey Saxe, 1865

Therapeutic Dogmatism
(Six Blind Men and the Elephant)

Is ASD:
– a sensory processing disorder…
– a language disorder…
– a social disorder…
– a behavioral disorder…
– a learning disorder…
– a neurological syndrome…?
Answer: All of the Above (and More)
Therapies for ASD

Organize therapies:
- According to functional areas ("blind men")
  - Social
  - Language
  - Behavioral
  - Sensory
- According to cognitive orientation:
  - "Bottom-Up" vs. "Top-Down"

"Bottom Up" versus "Top Down" - 1

"Bottom Up" versus "Top Down" - 2
“Bottom Up” versus “Top Down” - 3

**TOP DOWN**
- Cerebral cortex
- Complex response patterns (insight, language)
- Expectation and context guide perception

**BOTTOM UP**
- Brainstem, cerebellum, sensory inputs
- Physical properties of stimulus guide perception
- Fixed response patterns (ex: knee jerk)

---

**Visual Perception: Bottom-Up**

---

**Visual Perception: Top-Down**

---
Language: Bottom-Up vs Top Down
(Literal meaning, vs. Context)

“The chicken is ready to eat.”

Bottom-Up
- Concept-driven
- Learner-directed
- Focus on complex linguistic & social skills
- Explicit understanding is a goal
- Strategizing by child is required

Top-Down
- Therapist-directed; learner initiation is minimal
- Focus on foundation skills (attending, reciprocating)
- Explicit understanding is not a goal
- Strategizing by child is not required

Therapist and child work as partners
Works on foundation and target skills
Explicit understanding may be a goal
Strategizing by child may be required
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Therapy Goals

Top-down therapies
*teach concepts*

Bottom-up therapies
*shape behavior*

---

Moving from One Stage to the Next

• Social Reciprocity
  • Attending to others
  • Imitation of others
  • Initiation of interaction with others

---

Degree of Atypicality

<table>
<thead>
<tr>
<th></th>
<th>Severe</th>
<th>Moderate</th>
<th>Mild</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>No or rare eye contact, No social reciprocity (imitation, initiation)</td>
<td>Occasional eye contact &amp; social reciprocity</td>
<td>Reliable EC &amp; reciprocity; Ongoing problems with Theory of Mind (personal space, rules, etc.)</td>
</tr>
<tr>
<td>Language</td>
<td>Nonverbal, or nonfunctional (Echolalia, delayed echolalia)</td>
<td>Labeling, requesting; +/- commenting, reciprocating</td>
<td>Commenting, reciprocating; Ongoing problems with Theory of Mind (humor, make-believe, fibbing, etc.)</td>
</tr>
</tbody>
</table>

Decreasing Atypicality

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Cognitive Orientation of Therapy vs Progression of Abilities

Social and Behavioral Therapies

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**Applied Behavior Analysis – Discrete Trial Training (ABA-DTT)**

- **Therapist-driven**
  - 2:1 ⇒ 1:1
  - Physical prompts ⇒ Verbal prompts
  - Initiation by child = 0
- **Rewards: External**
  - Food, tangibles, hugs, praise
- **Goals: Attending, matching, labeling**
- **Meta-goal:** “Learning to learn”

---

**Social / Behavioral Therapies for ASD**

- **ABA-Discrete Trial Training**
  - 1:1
  - Physical prompts
  - External rewards (tangibles, food, hugs, praise)
  - Goals: Attending, requesting, labeling
  - Meta-goal: “Learning to learn”

---

**ABA-Natural Environment Training (NET); Pivotal Response Treatment (PRT)**

- **Floor Time (DIR)**
  - **Child-driven / Play-based**
    - Therapist playfully obstructs child’s activities
  - **Rewards: Internal**
    - Child regains access to desired object or activity
  - **Goals:**
    - ↓ Prompting by adult
    - ↑ Initiation with adult

---

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ABA-Discrete Trial Training

1:1
Physical prompts
External rewards (tangibles, food, hugs, praise)
Attending, requesting, labeling, matching
"Learning to learn"

Bottom Up

Top Down

Cognitive Orientation

Social / Behavioral Therapies for ASD

ABA-NET; PRT, DIR

ABA-Discrete Trial Training

Social
No or rare eye contact, isolation / reciprocation
Occasional eye contact, imitation / reciprocity
Reliable EC & imitation; ongoing problems w. ToM

Language
Nonverbal, or nonfunctional (echolalia)
Labeling, requesting
Sentences; ongoing problems with ToM

Decreasing Atypicality

TEACCH
(Treatment and Education of Autistic and related Communication-handicapped Children)

• Classroom-based
• Make expectations clear & explicit
• Visual cues
  – Environmental organization
  – Visual schedules
• Teacher available if child gets stuck
• Goals: Initiative, organization
Social / Behavioral Therapies for ASD

- TEACCH
- ABA-NET; PRT; DIR
- ABA-Discrete Trial Training

Cognitive Orientation

Bottom Up

Social / Behavioral Therapies for ASD

Social
- No or rare eye contact
- Initiation / reciprocity

Language
- Nonverbal, or nonfunctional (echolalia)
- Labeling, requesting

Decreasing Atypicality

Social Skills Training

- Recognize the thoughts & feelings of others (“Theory of Mind”)

Narrative
- Social Stories™
- Social Skills Picture Book
- Many others....

Interactive
- Social Skills Groups
“Will my friend use my toys?”

“A friend is coming to my home. My friend knows I have toys. My friend is hoping to have a turn playing with my toys. I may let my friend play with my toys for a short time. This is called sharing my toys. My friend knows my toys belong to me. He knows my toys stay with me when we are finished playing. Someday, my friend may share his toys with me.”

The Social Skills Picture Book
Jed Baker, PhD

- Enables child to see the thoughts of others, by clever use of “thought bubbles”

Therapies for ASD

- Social Skills Groups
  - Structured interaction with peers
  - Emphasis on language pragmatics & social interaction (sharing, turn-taking, empathy, co-operation, social “rules of the road”)
  - Usually run by Speech Language Pathologist, OT, Special Ed Teacher, or other trained child development specialist
ABA-Discrete Trial Training

1:1

Physical prompts
External rewards (tangibles, food, hugs, praise)
Attending, requesting, labeling, matching

“Learning to learn”

Social Stories

Social Skills Groups

1:1 ➝ Small group

Perspective-taking
Role-playing
Social context

Bottom Up

Top Down

Cognitive Orientation

Social / Behavioral Therapies for ASD

TEACCH

ABA-NET; PRT, DIR

ABA-Discrete Trial Training

Social No or rare eye contact, imitation / reciprocity
Occasional eye contact, imitation, reciprocity
Reliable EC & imitation; ongoing probs w. ToM

Language Nonverbal, or nonfunctional (echolalia)
Labeling, requesting
Sentences; ongoing problems with ToM

Social / Behavioral Therapies for ASD

Decreasing Atypicality

Language Function / Language Therapies

Use of language: Social
• Conversation
• Humor
• Fibbing
• Make-Believe
• Meaning is context-dependent
• “The chicken is ready to eat”

Use of language: Instrumental (obtain goal)
• “Want chip”
• Meaning is invariant
• “Touch square”

Language Therapy Philosophies

• Behaviorism
  – ABA-Discrete Trial Training (DTT)
  – Verbal Behavior (VB)
• Traditional speech therapy
• Social Skills Groups
Behaviorism

- All behavior is the result of prior experience
- Behaviorists deny the existence of “understanding,” “thought,” “intuition,” etc.
  - Johnny says “I want an apple” not because “he knows what it means,” because the last 1000 times he emitted that behavior, he received an apple.
- The focus of behavioral therapy is to shape behavior (not to impart understanding)

ABA-DTT: Receptive

- Tacting (“Touch square”)
  - 2:1 ratio initially
  - Full physical prompt ➔ Faded
  - External rewards (edibles, hugs, etc.)
- Meta-Goals
  - Attending to the therapist
  - Following verbal instructions
  - Discrimination within sets

Discrete Trial Training: Expressive

- Manding (Picture Exchange)
  - 2:1 ratio initially
  - Full physical prompt ➔ Faded
- No verbalization required
- May enhance speech; data weak
- Requires cards / board / computer
**Picture Exchange**

*Picture Exchange Communication System (PECS)*
Pyramid Educational Products, Inc.


**Language Therapies ASD**

- **Social**
  - No or rare eye contact, imitation / reciprocity
  - Occasional eye contact, imitation, reciprocity
  - Reliable EC & imitation; ongoing problems w. ToM

- **Language**
  - Nonverbal, or nonfunctional (echolalia)
  - Labeling, requesting
  - Verbal, ongoing problems w. ToM

**Bottom-Up**

- Begin immediately with focusing on the child's interests
  - **Gain control of “Echoic function” (verbal imitation)**
  - **Pair the child’s utterance with a desired object**
  - **Requesting (“manding” for desired items)**
    - Picture Exchange or Sign if nonverbal

**Top-Down**

- **Verbal Behavior (VB)**
  - **Verb labeling of objects (“tacting”)**
  - **Object matching by form, function & class**
  - **“Intraverbal behavior”**

**Verbal Behavior (VB)**

- **Begin immediately with focusing on the child's interests**
  - **Gain control of “Echoic function” (verbal imitation)**
  - **Pair the child’s utterance with a desired object**
  - **Requesting (“manding” for desired items)**
    - Picture Exchange or Sign if nonverbal

- **Then move on to:**
  - **Verb labeling of objects (“tacting”)**
  - **Object matching by form, function & class**
  - **“Intraverbal behavior”**
Sign

**Pro's**
- Easier to learn than speech
- Enhances speech development
- Can be taught hand-over-hand
  - Children with ASD frequently rely on H-O-H
- Does not require cards, boards, etc.

**Con's**
- Does require physical dexterity
- Does require others to know Sign

SIGN

**Pro's**
- Easier to learn than speech
- Enhances speech development
- Can be taught hand-over-hand
  - Children with ASD frequently rely on H-O-H
- Does not require cards, boards, etc.

**Con's**
- Does require physical dexterity
- Does require others to know Sign

Language Therapies ASD

<table>
<thead>
<tr>
<th>Social</th>
<th>Level of Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Behavior / Sign</td>
<td>DTT: Tacting, Picture Exchange</td>
</tr>
</tbody>
</table>

Cognitive Orientation

Top Down

Bottom Up

Coplan, 2009, in press

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Traditional Speech-Language Therapy

- 1-on-1 ➔ Pair with peer ➔ Small Group
- Often play-based
- Eclectic; no single method
- Requires child to attend and imitate
- Goals: Instrumental ➔ Social

Language Therapies in ASD

Behaviorism

“The analysis of skills for the purpose of diagnosis and treatment planning is linguistically based. This is handicapping because, despite linguistic information from the assessment, the therapist lacks the functional analysis of verbal behavior needed to effect behavior change, which is the sole aim of therapy.” (Emphasis added)


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Behaviorism

“With all his (VB) training, I still think he sometimes doesn’t understand what is being asked of him.”

Mother of a 5 year old boy with mild ASD and normal nonverbal abilities. (MRN 09-0623)

Sensory-Based therapies for ASD

• OT / Sensory Integration Therapy
  – “Sensory Diet”
  – Desensitize to aversive stimuli
  – Use sensory-seeking behaviors to enhance cognitive/behavioral function (claimed)
  – Mirror neurons: The missing link between bottom-up and top-down therapies?
    (proprioceptive awareness ➔ consciousness)

Progression of Interventions

Coplan, 2006, in press
Outline

- Natural History of ASD
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- Summary

Cognitive Rigidity
- Difficulty changing mental sets
- Routines
- Transitions
- Repetitious behaviors
- Perfectionism

Anxiety
- Generalized Anx. D/O
- OCD / TS
- Phobias
- Selective Mutism
- Depression

Atypicality
- Social:
  - Theory of Mind
  - Language:
    - Pragmatics
    - Prosody
  - Cognitive
    - Central Coherence
  - Sensory/Motor:
    - Aversions / Attractions
    - Clumsiness

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DD Model Mental Health Model

ASD (Autism, PDD-NOS, AS)

"Broad Autistic Phenotype"

Extended Family

ASD (Autism, PDD-NOS, AS)

NLD, SPLD

Non-ASD Psych D/O

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“Broad Autistic Phenotype”

- Social Impairment
- Communication Impairment
- Restricted, repetitive behaviors & interests
- Anxiety Disorders
- Obsessive-Compulsive Disorder
- Depression, Bipolar Disorder
- Alcoholism

Non-ASD Psych D/O

NLD, SPLD

Adult Outcomes

www.drcoplan.com

Adult outcomes for children who “lose the diagnosis”

Losing the Diagnosis does not equal “Cure”

Progression of Interventions

IQ

www.drcoplan.com

Educational Support

Vocational Support

Community Living Skills

Mental Health Services

Caregiver Support

Resources for Adults

http://www.ianproject.org/

The Current State of Services for Adults with Autism
Outline

- Natural History of ASD
- Impact of IQ on Prognosis
- Bottom-Up & Top-Down
- Long-term outcomes
- Summary

Future Directions

- Unanswered questions
  - What is the best therapy / combination of therapies?
  - Is outcome better than predicted by Natural History alone?
    - Risk of harm
    - Placebo effect
    - Selective reporting
  - How much therapy is “enough”?
    - Limited resources

Obstacles to Research

- Ethical?
  - Since all therapies are available “over the counter,” why should I not give my child everything I can find and afford?
- Therapeutic Dogmatism
  - Each “camp” of therapists sees the child through their own lens

www.drcoplan.com
The need for science

“Half of what we’ve taught you in medical school is incorrect. Unfortunately, we don’t know which half.”

William Osler, MD
1849-1919

http://en.wikipedia.org/wiki/Blind_men_and_an_elephant