Implementation science

The next leap forward in autism research

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Overview

- Implementation Science
- COMPASS for improving educational outcomes

Needed Services of Autistic Children

Lisa Ruble
12-16-1980
Senior Composition
Evidence Based Practices

- 24 and counting
  - “Focused treatments”
  - “Comprehensive packages”

- Websites
  - National Professional Development Center
    - [http://autismpdc.fpg.unc.edu/](http://autismpdc.fpg.unc.edu/)
  - OCALI – Autism Modules
    - [http://www.autisminternetmodules.org/](http://www.autisminternetmodules.org/)
  - National Autism Center

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Table 1. Evidence-based practices for children and youth with ASD

- Antecedent-based interventions (ABI)
- Computer-aided instruction
- Differential reinforcement
- Discrete trial training
- Extinction
- Functional behavior assessment
- Functional communication training
- Naturalistic intervention
- Parent-implemented interventions
- Peer-mediated instruction and intervention
- Picture exchange communication system (PECS)
- Pivotal response training
- Prompting
- Reinforcement
- Response interruption/redirection
- Self-management
- Social narratives
- Social skills groups
- Speech-generating devices/VOCA
- Structured work systems
- Task analysis
- Time delay
- Video modeling
- Visual supports
Pace of research (17 years for 14% of data to translate) is too slow.

How do we maximize educational services now, in 2014?
Implementation Science:

- The process of integrating evidence-based practices in a specific setting.
- Only 13% of published research represents studies of treatment.
- Interagency Autism Coordinating Committee (2011) has a goal for dissemination to ensure that EBP are implemented in communities.
Implementation Framework

The processes and procedures that help or hinder the transfer, adoption, and use of evidence-based practices.


Consultation

Consultation has a “multiplier effect”
Meet Andrea

- Preschool, 5 yrs old
- One of quadruplets
- Verbal
- Reads
Importance of Assessment for Understanding

- Andrea –

- Parent and teacher concern:
  - Acting Impulsively

- To think about—
  - How would you write a goal for this?
Importance of Assessment for Understanding

- Andrea – 🎤

- Parent and teacher concern:
  - Acting Impulsively

- To think about—
  - How would you write a goal for this?
Meet Joey

- 4 yrs, 9 months
- Nonverbal
- Behavioral Issues
- Family / home stress
Importance of Assessment for Understanding

- Joey –

- Parent and teacher concern:
  - Aggression, mainly to adults

- To think about—
  - How would you write as goals for this behavior?
  - What behaviors do we want to increase?
  - What behaviors serve the same communicative function as hitting?
Importance of Assessment for Understanding

- Joey – 🎤

- Parent and teacher concern:
  - Aggression, mainly to adults

- To think about—
  - How would you write as goals for this behavior?
  - What behaviors do we want to increase?
  - What behaviors serve the same communicative function as hitting?
Roadmap with a final destination

COMPASS to make sure we are going in the right direction
Evidence Based Practice in Psychology - EBPP

- Child characteristics, culture, preferences
- Clinician Assessment, decision-making, treatment planning & implementation
- EBP Best available research evidence
An EBPP Considers:

- Child
  - Child-specific strengths and challenges
  - Autism
  - Typical development
- Parent & teacher concerns
- How to adapt the EBP for the specific child
- PERSONALIZATION is KEY
Planning for a Good Quality of Life Starts Now

Quality of Life Tomorrow

Specific Skills Today
Our end goal: Quality of Life

- Competence
- Develops from the interactions between child and environment
Overview of COMPASS

- Decision-making framework
- Improving understandings among family and school
- Obtain comprehensive information about the child
- Based on assumptions of that competence comes from the child-environment interaction

Ruble, Dalrymple, & McGrew, 2012
Overview of COMPASS

- Proactive problem solving
- Research-supported practices
- Teaching plan is specific to autism
- Forms are specific to autism
- Teaching strategies are linked to each specific skill

Ruble, Dalrymple, & McGrew, 2012
Assessment of the Balance Between Challenges and Supports

Challenges
- Personal
- Environmental

Support
- Personal
- Environmental
# Personal Challenges & Supports

## Challenges
- Characteristics of ASD:
  - Social communication
  - Narrow range of interests, repetitive behaviors
- Sensory / Motor
- Cognition / Attention
- Organization
- Fears and Frustrations

## Supports
- Strengths and interests
- Rote memory
- Visual learning
- Attention to details
- Computers
- Videos
Environmental Challenges & Supports

**Challenges**
- Activities that move quickly (circle time)
- Activities that lack structure
- People who do not understand autism
- Noisy environments

**Supports**
- People who can interpret behavior from the viewpoint of the person with ASD
- People who understand how the environment needs to be adapted to promote learning and engagement
Results from research on COMPASS - Two Randomized controlled trials

- Importance of the RCT
- COMPASS involves <10 hours total with the consultant over the school year
- Primary outcome measured with educational goal attainment
  - Results from Study 1 (COMPASS vs control)
  - Results from study 2 (WEB)
Randomized Single Blind Controlled

Time 1
Baseline Evals
Randomized (n = 35)

Control
(n = 17)

COMPASS
(n = 18)

Time 2
Goal Attainment Scaling
*Unaware of Group Assignment
Group Comparison

- **Comparison Group**
  - Services as usual
  
  ![Diagram](image124x89.png)

- **Intervention Group**
  - 3 hour COMPASS consultation (parent and teacher)
  - 3 IEP objectives
    - Specific to needs of child with autism
    - Measurable
    - Teaching plans
  - 4 teacher coaching sessions (1.5 hour every 4-6 weeks)
  - Final evaluation
<table>
<thead>
<tr>
<th>Child</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Total Number of Children Taught</td>
</tr>
<tr>
<td>Autism Severity</td>
<td>Total Years Teaching Children with Autism</td>
</tr>
<tr>
<td>IQ</td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td></td>
</tr>
<tr>
<td>Adaptive Behavior</td>
<td></td>
</tr>
<tr>
<td>Problem Behavior</td>
<td></td>
</tr>
</tbody>
</table>
Results

Study 2

- Need to replicate findings
- 3 groups – Face-to-face coaching; Web-based coaching; placebo control
- Begin to address resource utilization
  - Examining web-based videoconferencing tools
  - Scalability
Randomized Study of COMPASS Consultation

Placebo
- Online access to EBP

FF COMPASS
- Consultation at start of school year
- Four FF coaching sessions

WEB COMPASS
- Four web-based coaching sessions

Goal Attainment by Observer Unaware of Group Assignment
Randomized Study of COMPASS Consultation

- Placebo
- Online access to EBP
- FF COMPASS consultation at start of school year
  - Four FF coaching sessions
  - Four web-based coaching sessions

Goal Attainment by Observer Unaware of Group Assignment
Randomized Study of COMPASS Consultation

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Goal Attainment by Observer Unaware of Group Assignment
Randomized Study of COMPASS Consultation

- Placebo: Online access to EBP
- FF COMPASS: FF COMPASS consultation at start of school year
  - Four FF coaching sessions
- WEB COMPASS: Four web-based coaching sessions

Goal Attainment by Observer Unaware of Group Assignment
WEB-based Teacher Equipment
Activities During Web-based and Face-to-Face Coaching

1. Watched videotape of child demonstrating skill
2. Reviewed and scored child progress
3. Discussed what worked well and what might work better
4. Reviewed and updated teaching plans

Consultant provided a written summary of session to teacher and parent
## More about Andrea

### Preferences & Strengths
- Coloring
- Musical instruments, singing
- Princess toys. Dressing up
- Singing
- Small plastic figures and animals
- Chicken patties
- Quoting TV shows
- Reading

### Fears & Frustrations
- Transitions
- Being ignored
- Someone not repeating things back to her
- Wants to do an activity as soon as she thinks of it
- Wiggles
- Loud noises
- Food with certain textures
When given the direction to wait or walk with me, Andrea will stay within arm’s length of adult or wait for 1 minute with written and/or visual cues twice a day for 80% of opportunities by the end of the school year.

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Supports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal</td>
<td>Environmental</td>
</tr>
<tr>
<td>Impulsive</td>
<td>Distractions in the environment; bookbags at school</td>
</tr>
<tr>
<td>Doesn’t recognize danger</td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td>Personal</td>
</tr>
<tr>
<td>Responds to her name when called using a loud voice</td>
<td>Visuals</td>
</tr>
<tr>
<td>Reads</td>
<td></td>
</tr>
<tr>
<td>Likes singing and small objects</td>
<td>Team who will work with her consistently Teaching plan</td>
</tr>
</tbody>
</table>
• For understanding the importance of the skills:
  • Provide a story about waiting and walking with person
  • NPDC and OCALI provide more information on social stories

• For teaching waiting:
  o Use video self modeling to show her waiting (NPDC on video modeling)
  o Include Andrea being reinforced (NPDC and OCALI on reinforcement).
    o Singing a song while waiting was used and worked.
  o Have visual “stay with me” or walk beside and adult shows it to her as she walks rather than verbally cueing her.
  o Hold her hand initially, gradually fade (when safety isn’t an issue) and reinforce her for walking beside the adult – her hand is not having to be held in the hall.

• Provide a clear prompt -gesture and verbal and written direction “wait” or “walk with me” (NPDC on prompting). We talked about a stop sign with feet not moving under.

• For reinforcement, use high fives and verbal praise as well as naturally occurring consequences – all this and seeing herself and singing the song is working well.

• Talk to her other teachers about carry over in the other classroom and areas, and show the video with Mom there so A.J. knows that Mom is aware that she can do this. It will help if her preschool afternoon program knows that she can walk without holding hands and have the same prompts and the social story so she practices this skill there also.
Wait

I need to wait when I hear “wait, please AJ.”
I will sit or stand patiently. My feet will not move. I can look around with my eyes. I can talk to a friend. I can sing a song. I am very good at waiting. Soon we will go.
Wait

I need to wait when I hear “wait, please AJ.”
I will sit or stand patiently. My feet will not move. I can look around with my eyes. I can talk to a friend. I can sing a song. I am very good at waiting. Soon we will go!
Coaching 4
More About Joey

Preferences & Strengths

- Music
- Old MacDonald Song
- Art
- Farm animals
- Lovable, shows affection
- Memory! Never forgets
- Initiates with others
- Watches others

Fears & Frustrations

- New situations / places
- Loud noises
- Communicating what is upsetting to him
- Becomes very angry when he is denied a want, isn’t allowed to change his schedule, have an item, or understand a task
- Aggressed toward others (mostly adults) several times daily
Meaning behind behaviors

- What behaviors are communicating:
  - Saying “No,” “I don’t want to,” “I want that” etc.
  - Expressing need for reinforcement, especially for activities that lacked purpose for him
  - Expressing confusion
  - Expressing pain
  - Initiating play with other children

- We developed goals that would be replacement skills for problem behavior
  - A communication goal of initiating wants and needs throughout the day, including expressing refusals
  - A social goal of imitating others
  - A learning skill to start and complete tasks independently
**Behavior:** Joey will use words, signs, or pictures to communicate (e.g., no, all done, I need help, I don’t want to) with reduced physical aggression (50% reduction from baseline or no more than 6 aggressive acts per day for 2 weeks).

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</thead>
<tbody>
<tr>
<td><strong>Personal</strong></td>
<td><strong>Environmental</strong></td>
</tr>
<tr>
<td>Uses aggression to communicate many wants/needs/refusals</td>
<td>Is in a regular integrated setting with a lot of other students</td>
</tr>
<tr>
<td>Has low expressive language skills</td>
<td>Physical distractions in the environment</td>
</tr>
<tr>
<td>Has limited repertoire of preferred tasks – most work tasks are preferred</td>
<td>Living arrangements at home have changed and are expected to change in the future</td>
</tr>
<tr>
<td>Needs to be motivated</td>
<td>People who are physical with him</td>
</tr>
</tbody>
</table>

- Teaching assistant attended the consultation
- Teacher and assistant know Jordan well
- Teaching plan
Teaching Plan

- Identify activities, objects, and other items that Joey likes
- Sabotage situations to elicit requests (see handout – e.g., place desired objects in view, but out of reach).
- Decide how he needs to make the request (picture with word, picture only).
- To request new items, he may need a second person who prompts him from behind when requesting with a picture.
- Obtaining the object will be the reinforcer for Joey to make the request.
- Praise him for asking.
Teacher met with assistants after consultation
- Decided we set goals too high
- Changed starting and completing a work task to starting only
- Removed the goal for communicating want when presented with a refusal

We talked through the decisions and after much discussion agreed it was okay to keep all the goals as originally written.
- But the didn’t put them in the IEP
Coaching 1
Coaching 1
Coaching 4
Coaching 4
Coaching 4
Coaching 4, cont.
Coaching 4, cont.
Figure 1
Anthony’s GAS Scores by Coaching Session

GAS Score

Baseline 1 2 3 4 Final

Coaching Session

Learning Social Communication
Some ideas of why COMPASS works

- Identified Active Ingredients: Quality of the IEP and Teacher Implementation of Teaching plans correlated with child outcomes
- Collaborative problem solving
  - family centered care
  - outcomes based monitoring
  - performance feedback
- Initial planning leads to the right goal
- Personalized teaching plans when implemented with high quality, lead to better outcomes
Other factors that impact child outcomes and why a holistic approach is critical

- Teacher factors that impact child outcomes
  - Burnout directly
  - Administrative support indirectly
- Child factors
  - Engagement accounted for outcomes more than typical child factors (Ruble & McGrew, 2013)
- Parent factors
  - Parent/teacher alliance enhanced
  - Parent stress reduced

Likely Features of Effective Consultation Models

- Collaborative vs expert approach with teachers, families & therapists
- Personalized goals & teaching plans
- Measurable goals/objectives
- Reflective practice & feedback
- Progress monitoring & data keeping
- Cultural sensitivity of family values
Take Home Point

Quality of Life

Competence

Measurable Goals

Personalized Teaching Plans

Comprehensive Team Assessment
Implementation Framework

The *processes and procedures* that help or hinder the transfer, adoption, and use of evidence-based practices.

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Evidence Based Practice in Psychology - EBPP

- Child characteristics, culture, preferences
- Clinician assessment, decision-making, treatment planning & implementation
- EBP best available research evidence
Take Home Point

Quality of Life

Competence

Measurable Goals

Personalized Teaching Plans

Comprehensive Team Assessment
Acknowledgements

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