The Effect of Naturalistic Behavior Strategies on the Quality of Social Interactions for Children with Autism

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Outline
- Characteristics
- Rationale
- Purpose
- Research Questions
- Methodology
- Results and Discussion

Impairments in Autism Spectrum Disorders
- Social Interaction
- Communication
- Restricted interest and stereotyped repetitive patterns of behavior and interest
- Proposed revisions to DSM-V
  - Social-communication domain

Rationale
- Social-communication deficits:
  - Persist throughout the lifespan;
  - Compromise social competence;
  - Related to Pivotal Skills;
- Benefits of early intensive behavior analytic treatment

Purpose
- To increase the frequency of vocal mands;
- To improve the quality of social interactions;
- To assess generalization of these skills with untrained caregivers

Research Questions
1. Is there a functional relation between the use of naturalistic behavior strategies and the quality of social interactions for children with autism?
   - Frequency of vocal mands;
   - Child-initiated social engagement;
   - Dyadic orienting
Research Questions continued...

2. Will the improved quality of social interactions of children with autism generalize to untrained caregivers in the same setting?

Methodology

- Participants and setting;
- Dependent variables;
- Procedures for data collection;
- Research design;
- Experimental procedures;
- Data analysis

Participants

- Four child participants:
  - Independent diagnosis of autism (AU);
  - Between ages of 2-4 years;
  - Deficits in eye contact with others;
  - Early or emerging language

Setting: EPSY Research Lab

Dependent Variables

- Vocal mands (frequency);
- Child-initiated social engagement during manding (frequency);
  - Physical orientation
  - Display of positive affect
- Nonverbal dyadic orienting (percent)

Data Collection Procedures

- Equipment and materials:
  - HD handycam with wide angle lens;
  - External hard drive for video data storage;
- Direct observation of behavior (see data sheet):
  - Primary observer coded vocal mands and social engagement live;
  - Video data coding for dyadic orienting
Data Collection continued...

- Interobserver agreement (IOA) to indicate quality of measurement of DVs (Cooper et al., 2007);
  - Collected and reported for 25% of all sessions across all experimental phases;
  - Both data collectors trained until they met 90% mastery criteria across 3 consecutive sessions;
- **Outcome**: IOA Range was 80-100%
  - Overall IOA was 94.3%

Research Design

- Single-subject Multiple Baseline Design across participants (Gast, 2010; Horner et al., 2005)
- Experimental phases
  - Baseline
  - Naturalistic Behavior Strategies
  - Generalization to Caregivers

Experimental Procedures

- Baseline (no manipulation of IV);
- Naturalistic Behavior Strategies;
  - Natural Environment
  - Child-initiated
  - Prompting
  - Natural Reinforcement
  - Shaping
- Generalization across Parent /Caregiver

Experimental Phase: Baseline - Example 1

- Free play with interventionist;
- 10-min sessions;
- Child-led but no direct instruction

Experimental Phase: Baseline - Example 2

Experimental Phase: Intervention - Example 1

- Naturalistic Behavior Strategies
  - Natural environment
  - Child-initiated
  - Prompting
  - Shaping
  - Natural reinforcement
Experimental Phase: Intervention - Example 2

- Scored for 30% of intervention sessions (Gresham, Gansle, & Noell, 1993);
- Demonstration of accurate and consistent application of intervention (Cooper et al., 2007);
- Data on fidelity of implementation showed 100% across all intervention sessions across all participants.

Experimental Phase: Generalization – Example 1

- Followed intervention phase when behavior pattern stable;
- Addition of generalization target (not trained parent/caregiver).

Experimental Phase: Generalization – Example 2

- Problems with generalization (observation ≠ formal training).

Experimental Phase: Generalization Plus

- Implemented within generalization phase for caregiver of Child 1 & 4 after decreasing trend in vocal mands;
- Video feedback and personalized script for training.

Results

Visual Analysis

<table>
<thead>
<tr>
<th>Behavioral Pattern</th>
<th>Dependent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td>Vocal Mands</td>
</tr>
<tr>
<td>Trend</td>
<td>Social Engagement</td>
</tr>
<tr>
<td>Variability</td>
<td>Dyadic orienting</td>
</tr>
<tr>
<td>Immediacy of Effect</td>
<td></td>
</tr>
<tr>
<td>Overlap</td>
<td></td>
</tr>
</tbody>
</table>
Cohen’s $d$ index
- Used to determine the magnitude of effect of the IV
- Small effect = .2; Medium effect = .5; Large effect = .8 or higher

<table>
<thead>
<tr>
<th>Child</th>
<th>Child Two</th>
<th>Child Three</th>
<th>Child Four</th>
<th>Overall ES (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.25</td>
<td>3.96</td>
<td>3.53</td>
<td>4.75</td>
<td>3.41</td>
</tr>
</tbody>
</table>

Social Validity
- Importance of Dependent Variables
- Importance of Generalization
- Confidence in Applying Intervention
  • Social Validity Outcomes

Discussion
- Naturalistic behavior strategies were effective in
  1. Improving the quality of social interactions (RQ 1);
  2. Generalizing skills across caregivers (RQ 2).