Using Sequential Analysis to Quantify Interaction Patterns Between Teachers and Students Who Engage in Challenging Behavior

Gabrielle E. Crowell, M.Ed., BCBA; Blair P. Lloyd, Ph.D., BCBA-D; Johanna L. Staubitz, Ph.D., BCBA-D
Presentation Roadmap

• Introduction
  • Background
  • Research Questions

• Methods
  • Participants and Setting
  • Data Collection Procedures and Target Behaviors
  • Observer Training and Reliability

• Results
  • Target Behavior Counts
  • Sequential Associations
  • Correlations

• Discussion
  • Summary of Findings and Practical Implications
  • Limitations and Future Directions
What We Know

- Interactions between students and teacher
- Negative reinforcement cycle
- Impact of OTRs on challenging behavior
- Importance of momentary interaction

Previous Sequential Analysis Research

- Conducted in self-contained classrooms
- Sample: Students with E/BD
- Focused on challenging behavior
- Calculated conditional probabilities

(Shores et al., 1993; Sutherland et al., 2002; Van Acker et al., 1996; Wehby et al., 1995)

Sequential Analysis

Method used to quantify moment-to-moment interactions between people

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Our Study

• Gap in research
• Interactions in general education
• New sequential analysis method
• More accurate index of sequential association
Research Questions

1. Are there negative sequential associations between:
   - Opportunities to Respond $\rightarrow$ Challenging Behavior
   - Challenging Behavior $\rightarrow$ Opportunities to Respond
   - Active Responding $\rightarrow$ Challenging Behavior

2. Are there significant sequential associations between:
   - Active Responding $\rightarrow$ Teacher Praise
   - Active Responding $\rightarrow$ Opportunities to Respond
   - Opportunities to Respond $\rightarrow$ Teacher Praise
Participants and Setting

Participants
- 20 students referred for FBA/BIP
  - Grades K – 6
  - No disability (n = 6); OHI (n = 4); Developmental delay (n = 3); Emotional disturbance (n = 3); Not reported (n = 2); Autism (n = 1); Speech impairment (n = 1)
  - Black (n = 9); White (n = 8); Not reported (n = 2); Hispanic (n=1)

Setting
- 11 schools in local school district
- 19 general education classrooms
Data Collection Procedures

Classroom Observation

- All students were observed in their typical classrooms
- Scheduled during activities that teachers reported evoked challenging behavior

<table>
<thead>
<tr>
<th>Observation 1</th>
<th>Observation 2</th>
<th>Observation 3</th>
<th>Observation 4</th>
<th>Observation 5</th>
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<tbody>
<tr>
<td>30 mins</td>
<td>30 mins</td>
<td>30 mins</td>
<td>30 mins</td>
<td>30 mins</td>
</tr>
</tbody>
</table>
Data Collection Procedures

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- Scheduled during activities that teachers reported evoked challenging behavior

150 Minutes
Target Behaviors

High-Risk Problem Behavior
Behavior that poses a physical threat to the student or others.

Examples: physical aggression toward others, self, and property; elopement.

Low-Risk Problem Behavior
Behavior that disrupts instruction or learning but does not introduce a threat to the safety of self or others.

Examples: inappropriate vocalizations, active noncompliance, and disruptions.
Target Behaviors

Challenging Behavior
Target Behaviors

Active Response
Student response (or initiation of response) within 10 s of any verbal prompt or instructional question from a teacher or peer during peer-led instruction.

Opportunities to Respond
Any verbal directive, instructional question, or instructional stimulus directed to the target student (or group that includes target student) that specifies an observable student response and is related to an instructional activity.

Teacher Praise
A verbal statement that indicates approval of behavior to the individual student that is over and above an evaluation of adequacy or acknowledgment of a correct response to an instruction.
Observer Training and Data Collection

Seven graduate students were trained to collect data

1. Reading the coding manual and reviewing with the primary investigator
2. Scoring 90% or higher on a written quiz on coding manual content
3. Achieving 85% or higher agreement on two practice videos
4. Achieving 85% or higher agreement on two sessions in the research setting

Data Collection

- Timed-Event frequency recording
- Timed-Event duration recording
- MOOSES (Tapp, 1995)
Reliability

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Inter-Observable Agreement</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
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<tr>
<td>Challenging Behavior</td>
<td>81%</td>
</tr>
<tr>
<td>Active Responding</td>
<td>88%</td>
</tr>
<tr>
<td>Opportunities to Respond</td>
<td>90%</td>
</tr>
<tr>
<td>Teacher Praise</td>
<td>83%</td>
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## Descriptive Data

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<tr>
<th>Variable</th>
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<tbody>
<tr>
<td><strong>Teacher Behaviors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities to Respond</td>
<td>28.52</td>
<td>14.06</td>
</tr>
<tr>
<td>Teacher Praise</td>
<td>2.35</td>
<td>4.69</td>
</tr>
<tr>
<td><strong>Student Behavior</strong></td>
<td></td>
<td></td>
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<tr>
<td>Active Responses</td>
<td>13.10</td>
<td>8.73</td>
</tr>
<tr>
<td>Challenging Behavior</td>
<td>10.86</td>
<td>8.59</td>
</tr>
<tr>
<td><strong>Instructional Contexts (%)</strong></td>
<td></td>
<td></td>
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<tr>
<td>Large Group</td>
<td>47.93</td>
<td>21.50</td>
</tr>
<tr>
<td>Independent Work</td>
<td>31.96</td>
<td>19.40</td>
</tr>
<tr>
<td>Downtime/Transition</td>
<td>12.62</td>
<td>8.91</td>
</tr>
<tr>
<td>Small Group</td>
<td>5.45</td>
<td>8.32</td>
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<td>One-on-One</td>
<td>2.47</td>
<td>8.15</td>
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<tr>
<td>Gone</td>
<td>0.93</td>
<td>1.63</td>
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Sequential Associations: 10 Seconds

OTR 10 Seconds CB

Note. * = one-tailed t-test. OTR = opportunities to respond, CB = total problem behavior, AR = active response, TP = teacher praise.
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<td>AR → TP</td>
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<tr>
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Correlation: Pearson’s r

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<td>1. Challenging Behavior</td>
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<td>-.026</td>
<td>.011</td>
</tr>
<tr>
<td>2. Active Response</td>
<td>-</td>
<td>-</td>
<td>.731**</td>
<td>.726**</td>
</tr>
<tr>
<td>3. Opportunities to Respond</td>
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<td>-</td>
<td>-</td>
<td>.758**</td>
</tr>
<tr>
<td>4. Teacher Praise</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>

Note. N = 20. **Correlation is significant at the 0.01 level (2-tailed).
Primary Findings and Practical Implications

Challenging Behavior

↓

OTR
Primary Findings and Practical Implications

OTR

Active Response

Challenging Behavior
Primary Findings and Practical Implications

OTR

Active Response

Teacher Praise
Primary Findings and Practical Implications

Increase TP
Increase AR
Increase OTRs
Decrease CB
Primary Findings and Practical Implications

Increase TP

Increase OTRs

Increase AR

Decrease CB
Primary Findings and Practical Implications

- Increase TP
- Increase OTRs
- Increase AR
- Decrease CB
Primary Findings and Practical Implications

Increase TP
Increase OTRs
Increase AR
Decrease CB
Primary Findings and Practical Implications

- Increase TP
- Increase OTRs
- Increase AR
- Decrease CB
Limitations

- Low base rates
- Wide ranges of agreement
- Small and varied sample
Future Directions
Thank you!

gabrielle.e.crowell@Vanderbilt.edu
References


Sutherland, K. S., Wehby, J. H., & Yoder, P. J. (2002). Examination of the relationship between teacher praise and opportunities for students with EBD to respond to academic requests. Journal of Emotional and Behavioral Disorders, 10(1), 5-13. https://doi.org/10.1177/106342660201000102


