Teaching Listening Comprehension to Students with Significant Intellectual Disabilities

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WHAT WE KNOW ABOUT LITERACY AND STUDENTS WITH MODERATE AND SEVERE INTELLECTUAL DISABILITY

- Literacy overall has been underemphasized
- Sight words have been overemphasized in research and practice although they can provide an important path to functional reading
- Some students with moderate and severe intellectual disability can learn to read
- Other students can learn to gain meaning from text
- Read alouds can promote literacy skills for all students

# WHY HAS LITERACY BEEN UNDEREMPHASIZED?

Prior Assumptions

- Assumption/bias that individuals with IQ under 55 cannot learn to read
    - Self fulfilling prophecy if never taught early reading skills
- Assumption that literacy=functional sight words
    - "trainable" vs. "educable"
    - Lack of guidance for how to compensate for deficits in language and communication

What Has Changed

- Cultural expectations for competence increasing
- Science of reading
    - E.g., PA vs. IQ as predictor of reading
- New resources/ guidance on literacy for Ss with ID
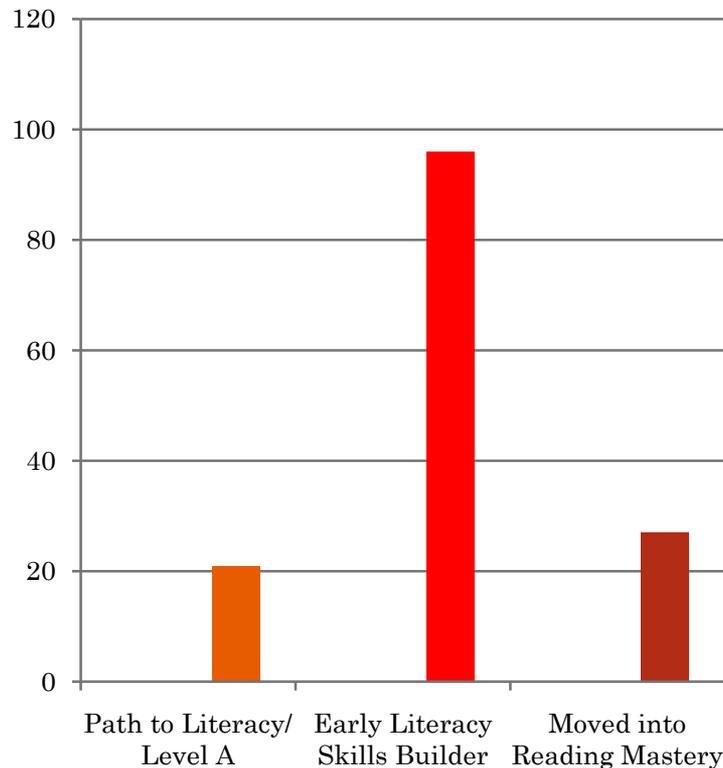- Assistive technology

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Too Much Focus on Sight Words
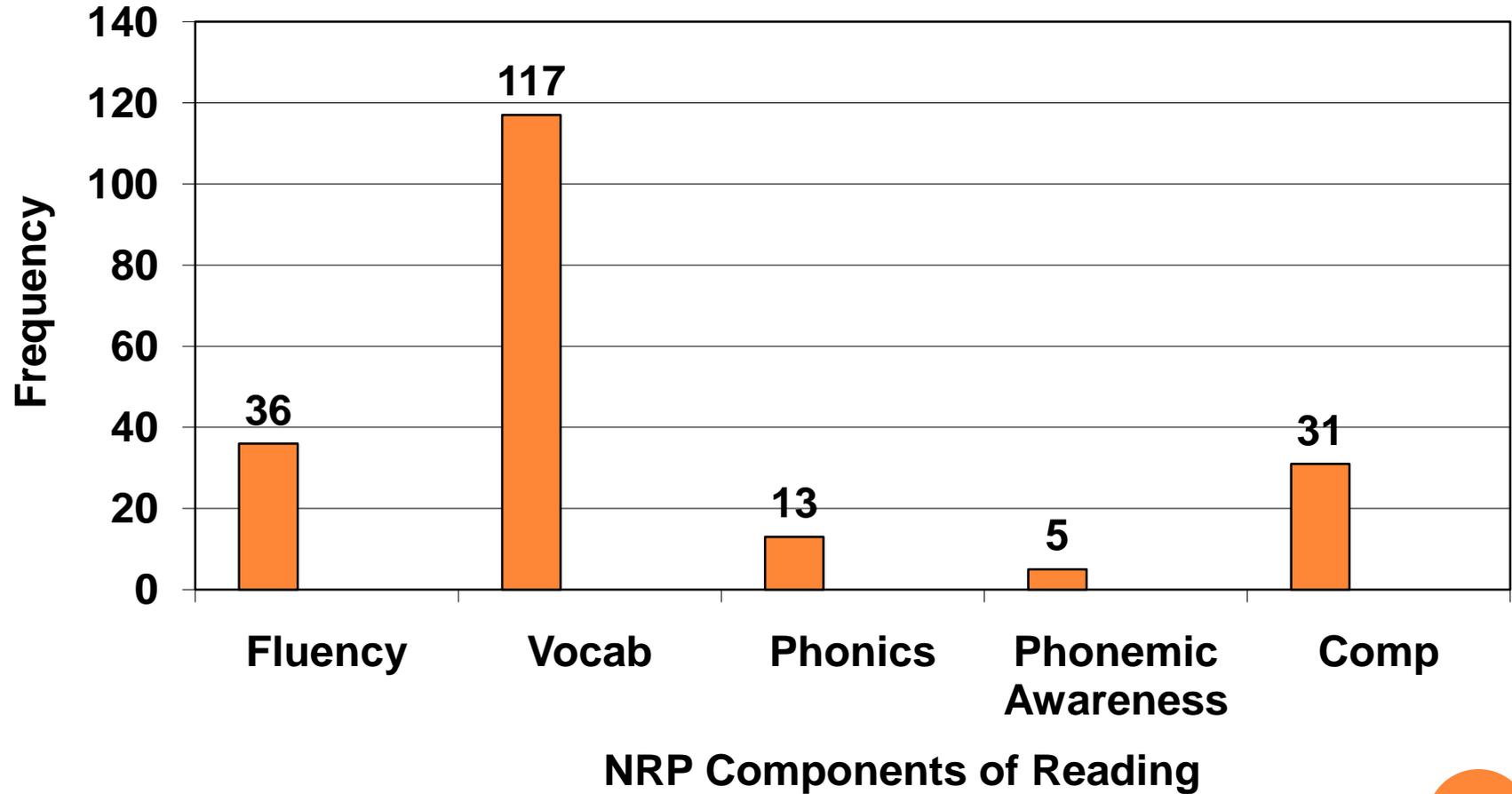
Some Students with Moderate and Severe Disabilities Can Learn to Read

UNCC Project RAISE
Note 3rd Column

Bar chart with y-axis from 0 to 120.
- Path to Literacy/Level A: ~21
- Early Literacy Skills Builder: ~96
- Moved into Reading Mastery: ~27

Recent Studies

- Allor, J.H., Mathes, P.G., Roberts, J.K., Jones, F.G., & Champlin, T.M. (2010). Teaching students with moderate intellectual disabilities to read: an experimental examination of a comprehensive reading intervention. *Education and Training in Developmental Disabilities, 45*, 3-22.

- Browder, D. M., Ahlgrim-Delzell, L., Courtade, G., Gibbs, S. L., & Flowers, C. (2008). Evaluation of the effectiveness of an early literacy program for students with significant developmental disabilities. *Exceptional Children, 75, 33-52.*

Browder, D.M., Ahlgrim-Delzell, L., Courtade, G., Gibbs, S. L., & Flowers, C. (2008). Evaluation of the effectiveness of an early literacy program for students with significant developmental disabilities, *Exceptional Children, 75*, 33-52
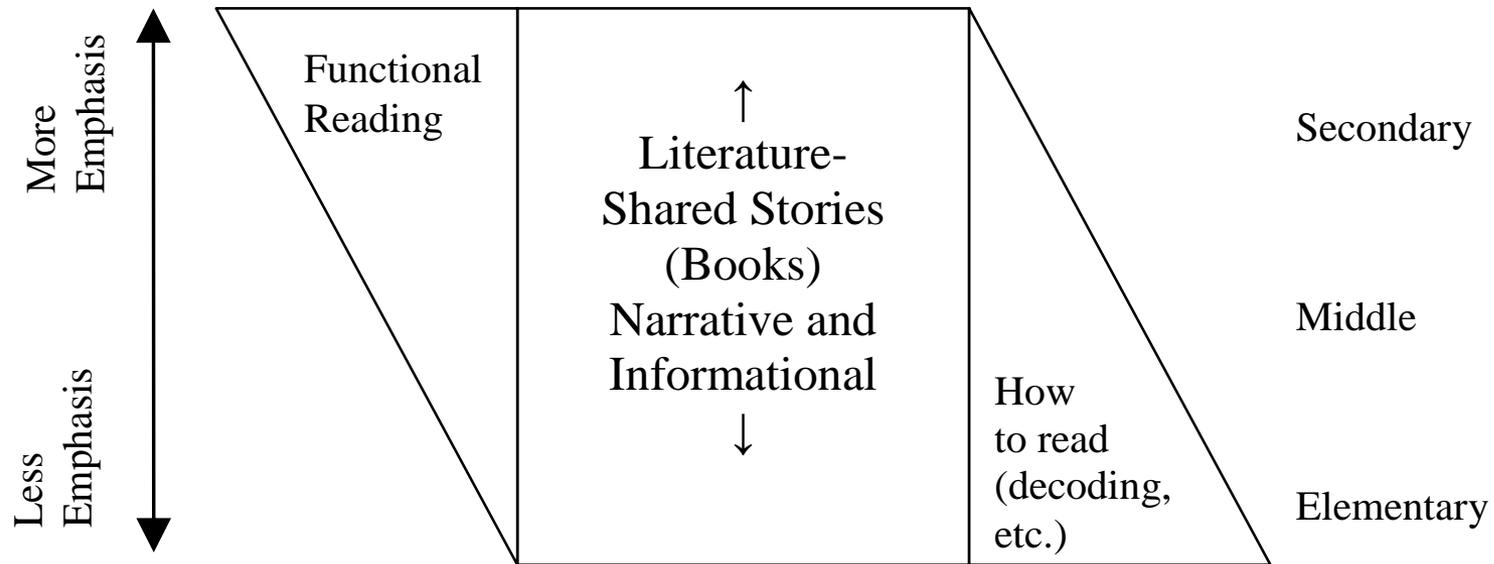
OTHERS CAN GAIN MEANING FROM TEXTS

Project RAISE
Note: 1st Two Columns
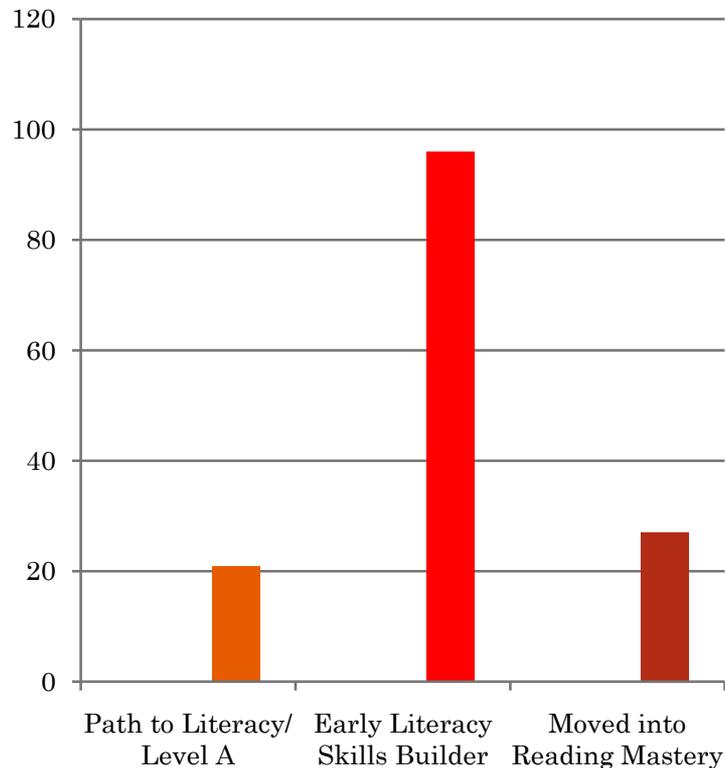
- EBP: Interactive Storybook Reading (www.wwc.edu.gov)
- Variations adapted for older students
  - E.g., Shared stories (read aloud)
    - Browder, D. M., Trela, K., & Jimenez, B. A. (2007). Training teachers to follow a task analysis to engage middle school students with moderate and severe developmental disabilities in grade-appropriate literature. *Focus on Autism and Other Developmental Disabilities, 22,* 206-219.

IMPLICATIONS FOR PLANNING LITERACY

More Emphasis ↑ ↓ Less Emphasis

Functional Reading

↑
Literature-
Shared Stories
(Books)
Narrative and
Informational
↓

How to read (decoding, etc.)

Secondary

Middle

Elementary

Mims, P.J. (2009). The Effects of the System of Least Prompts on Teaching Comprehension Skills during a Shared Story to Students with Significant Intellectual Disabilities. Dissertation.

BENEFITS OF SHARED STORIES

- Shared stories have been commonly used to promote emerging literacy skills for students without disabilities (Justice & Kaderavek, 2002)

- Also successful for children at risk (Coyne et al., 2006)

- and for students with severe disabilities (Skotko, Koppenhaver, & Erickson, 2004)

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Shared Stories for Students with Severe Disabilities

- Most research has focused on increasing overall engagement and participation (Blyden, 1998; Skotko et al., 2004)
- Few have focused on increasing not just engagement, but other skills such as phonemic awareness, vocabulary, comprehension (Browder, Mims, Spooner, Ahlgrim-Delzell, & Lee, 2008; Browder, Trela, & Jimenez, 2007; Mims, Browder, Baker, Lee, & Spooner, 2009)
  - Systematic instruction procedures were effective in the acquisition of these skills

Systematic Instruction during Shared Stories

- Of the research conducted on academics with students with severe disabilities most employed direct systematic instructional procedures

- Use of a Task Analysis to progress through Shared Stories

- Browder et al. (2007)-
    - Teachers were able to follow the task analysis to present the story-based lesson with high fidelity
    - Increases in literacy skills after the story-based lessons

SYSTEMATIC INSTRUCTION DURING SHARED STORIES

- Browder et al. (2008)-
  - Adapted books
  - A team approach
  - Three components of UDL
  - All 3 participants increased student engagement and participation during the story-based lessons
  - Students answered comprehension questions including a prediction and simple recall question

Systematic Instruction during Shared Stories

- Mims et al. (2009)-
    - system of least prompts
    - salient objects representing nouns
    - students were provided with the same objects as response options (including a distracter object and the target object)
    - both students saw significant gains in comprehension in all 3 books

SYSTEMATIC INSTRUCTION DURING SHARED STORIES

- Task analytic instruction used for foundational skills may be a good foundation for teaching students with significant intellectual disabilities emerging literacy skills,

- A more defined systematic instruction prompting systems need to be developed to teach listening comprehension

- One prompting strategy that has been commonly used to teach both functional and academic skills is the system of least prompts

PURPOSE

- Little research where the primary dependent variable is listening comprehension
- Few studies have employed a systematic prompting procedure but had limited measures for outcomes of comprehension
- Purpose- to demonstrate a method for teaching listening comprehension during a shared story using adapted grade level text for students with significant intellectual disabilities

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RESEARCH QUESTIONS

- What is the effect of the system of least prompts on the number of comprehension questions answered during a story-based lesson for students with significant intellectual disabilities?

- What are the effects of the system of least prompts on ability to maintain text dependent listening comprehension among students with significant intellectual disabilities?

- To what extent does the system of least prompts to teach comprehension skills during a story-based lesson generalize to additional comprehension during a different story?

- What value does the interventionist place on using the system of least prompts to teach comprehension of grade appropriate text?

PARTICIPANTS

- 4 Elementary Students with Significant Intellectual Disabilities
  - adequate vision and hearing
  - IQ of 55 or below
  - little or no emerging literacy skills
  - concrete symbolic level of communication

Table 2

Student Demographics

Student	Age	Disability	IQ/ Test	Reading and Communication	Literacy
Fred	11	Intellectual Disabilities-Moderate	44/ WISC	Nonverbal; uses visual supports to complete activities and communicate	90 minutes per day
Richard	11	Intellectual Disabilities-Moderate	42/ WISC	Minimal sight word vocabulary; communicates wants and needs though visual supports	90 minutes per day

| Charlie | 10 | Multi-handicapped | Was labeled as untestable due to nonverbal nature (76% delay; Battelle Developmental Inventory) | Minimal sight word vocabulary; communicates wants and needs though visual supports | 90 minutes per day |
| Dave | 11 | Intellectual Disabilities-Moderate | 30/ WISC | Nonverbal; uses visual supports to complete activities and communicate | 90 minutes per day |

INTERVENTIONISTS

- Teachers
  - Classroom teacher
  - 2 Paraprofessionals

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MATERIALS

- 3 books
  - picture support
  - response board for each comprehension question (correct answer and 2 distracters)
- A sequence of specific question was created for each book that focused on the following:
  - prediction question
  - 2 knowledge questions (factual recall)
  - 2 comprehension questions concerning a sequencing question and identification
  - 2 application questions
  - 1 analysis question
  - 2 synthesis questions (1 cause and effect and 1 main idea)

INDEPENDENT VARIABLE

- System of Least Prompts
  - 1st level prompt- reread part of text containing the answer and reask the question
  - 2nd level prompt (model prompt)- reread more specific text containing the answer and model answer- reask question
  - 3rd level prompt (physical prompt)- rereading the text containing the answer and physically guide student to the correct response

DEPENDENT VARIABLE

- The number of correctly answered comprehensions questions

  - A sequence of specific question was created for each book that focused on the following: (a) a prediction question; (b) 2 knowledge questions (factual recall); (c) 2 comprehension questions concerning a sequencing question and identification; (d) 2 application questions; (e) 1 analysis question; and (f) 2 synthesis questions (1 cause and effect and 1 main idea)

DESIGN

- Multiple Probe across Books
- Concurrent replication across students (4)
- Data were analyzed by visually inspecting graphed data to identify trend, level, and variability and to determine if a functional relationship existed between the independent and dependent variable
  - Predication
  - verification of prediction
  - initial effect
  - replication of the effect
- Mastery criteria were set at 8 out of 10 correctly answered questions for three consecutive sessions

Reliability and Fidelity

- at least 25% of the lessons
- The criterion for acceptability was set at 90% or above
- Procedural Fidelity- scoring if the interventionist presented each step of the system of least prompts prompting strategy for the delivery of each predetermined comprehension question
- In addition, procedural fidelity was scored during the training of the prompting procedure and shared story process for each teacher implementing the intervention

RESULTS: FRED

- *Don't Wake Up the Bear.*
  - Baseline- all scores at 0 out of 10
  - Intervention- scores ranged from 1 to 9 with a mean of 6.27
  - Maintenance data indicated a score of 8 out of 10
- *Alexander and the Terrible, Horrible, No Good, Very Bad Day.*
  - Baseline-scores ranged from 0 to 3, with a mean of 1.6
  - Intervention-scores ranged from 3 to 9 with a mean of 7.83
  - Maintenance data indicated a score of 9/10
- *Jamaica's Find.*
  - Baseline- scores ranged from 0 to 3, with a mean of 1.2
  - Intervention-scores ranged from 2 to 10 with a mean score of 8.14
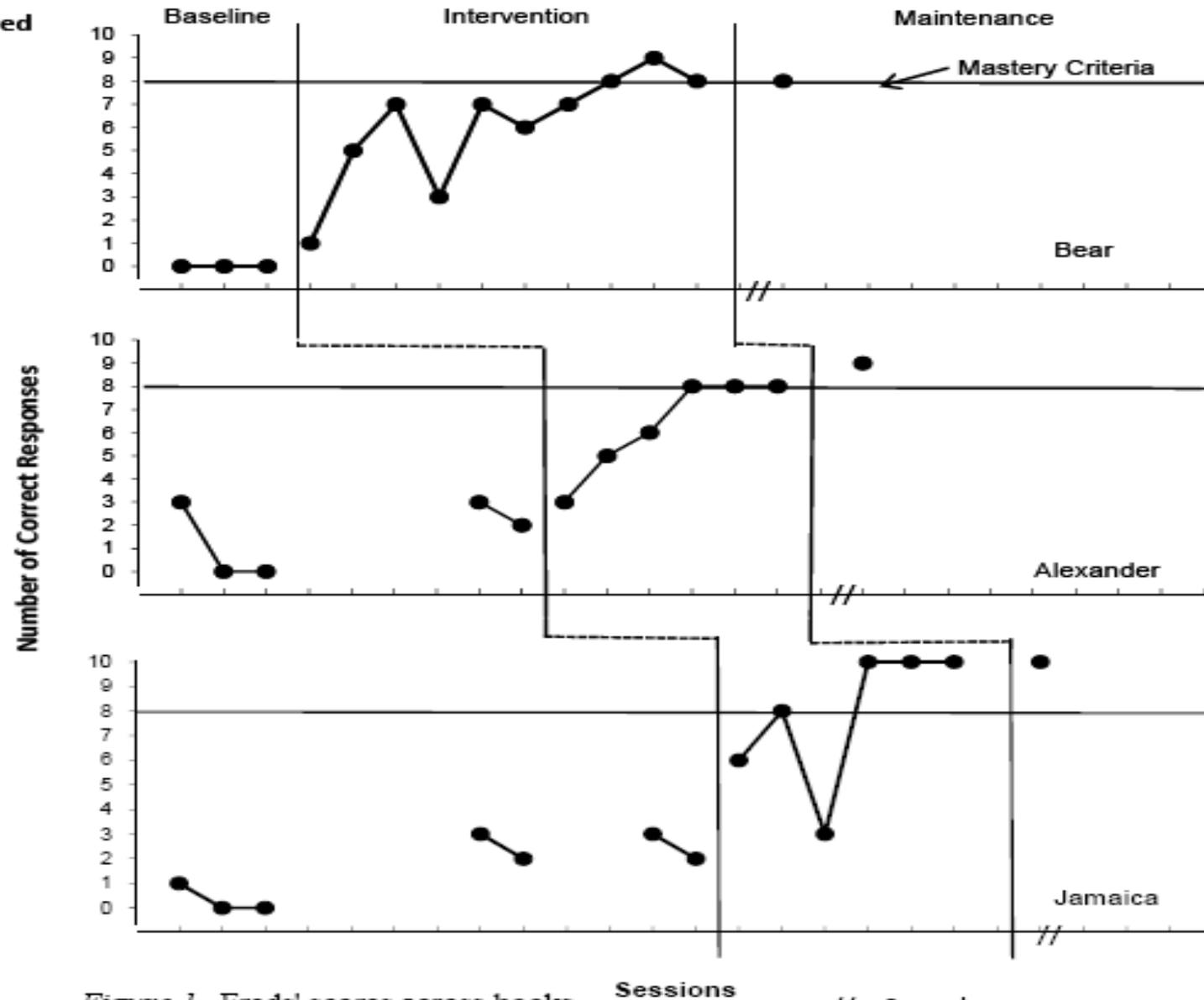 - Maintenance data indicated a score of 10 out of 10

Figure 1. Freds' scores across books

RESULTS: RICHARD

- *Jamaica's Find.*
  - Baseline- scores ranged from 3 to 6, with a mean of 4
  - Intervention- scores ranged from 3 to 10 with a mean score of 7.8
  - Maintenance data indicated a score of 10 out of 10
- *Alexander and the Terrible, Horrible, No Good, Very Bad Day.*
  - Baseline- scores ranged from 3 to 6, with a mean of 4.25
  - Intervention- scores ranged from 3 to 10 with a mean score of 7.8
  - Maintenance data indicated a score of 10/10
- *Don't Wake Up the Bear.*
  - Baseline- scores ranged from 2 to 5, with a mean of 3.6
  - Intervention-scores ranged from 7 to 10 with a mean of 9.2
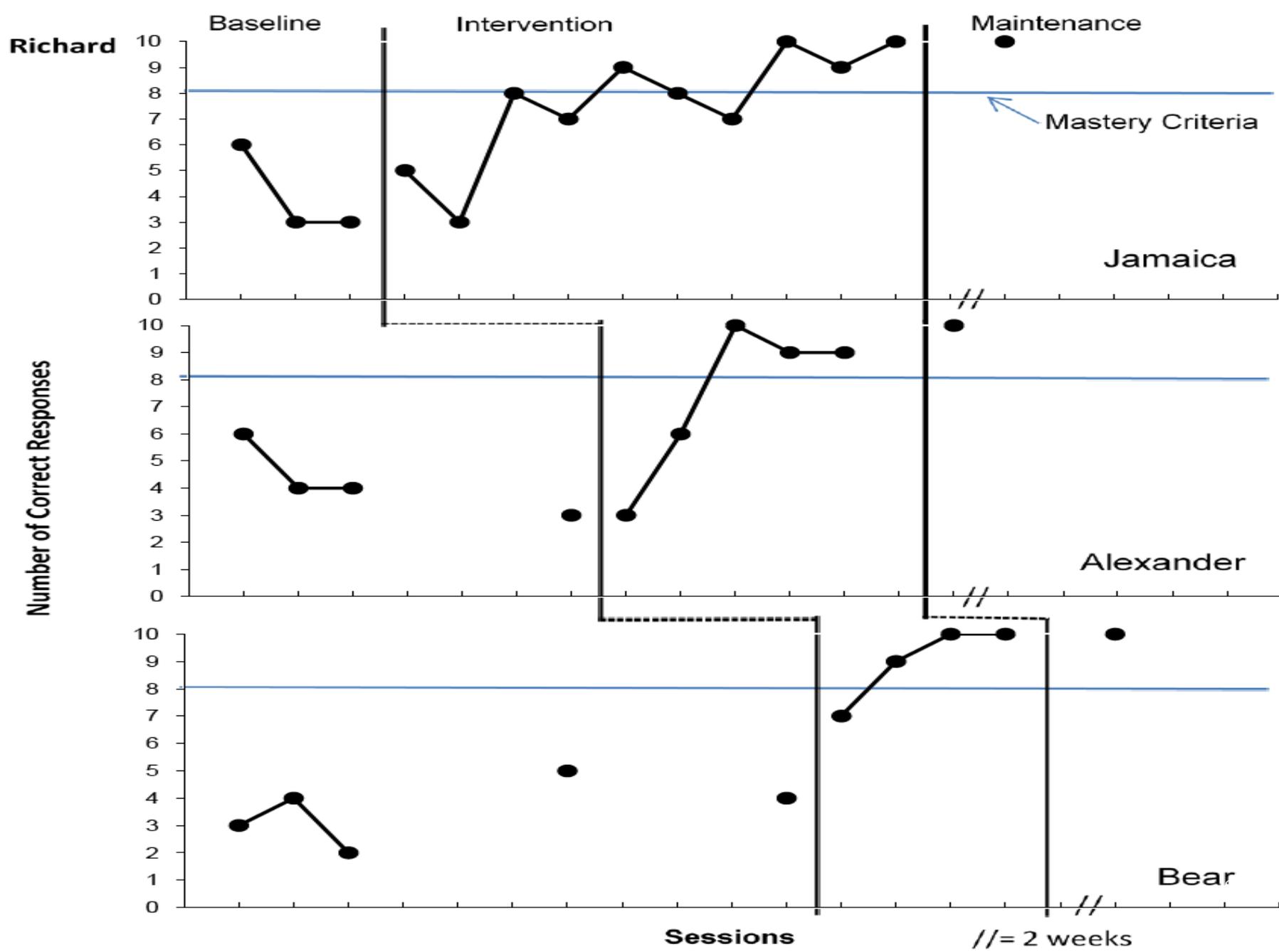 - Maintenance data indicated a score of 10 out of 10

Figure 2. Richards' scores across books

RESULTS: CHARLIE

- *Don't Wake Up the Bear.*
  - Baseline- scores ranged from 4 to 5, with a mean of 4.3
  - Intervention- scores ranged from 5 to 10 with a mean of 7.4
  - Maintenance data indicated a score of 10 out of 10
- *Jamaica's Find.*
  - Baseline- scores ranged from 1 to 6, with a mean of 3.8
  - Intervention- scores ranged from 4 to 9 with a mean score of 7.1
  - Maintenance data indicated a score of 9 out of 10
- *Alexander and the Terrible, Horrible, No Good, Very Bad Day.*
  - Baseline- scores ranged from 3 to 10, with a mean of 6.6
  - Never entered intervention in this book due to achieving mastery criteria
- *Tar Beach.*
  - In four data sessions- scores ranged from 5 to 9 with a mean of 6.2.
  - The last three data sessions collected- met the mastery criteria of 8 out of 10 or higher for three consecutive sessions
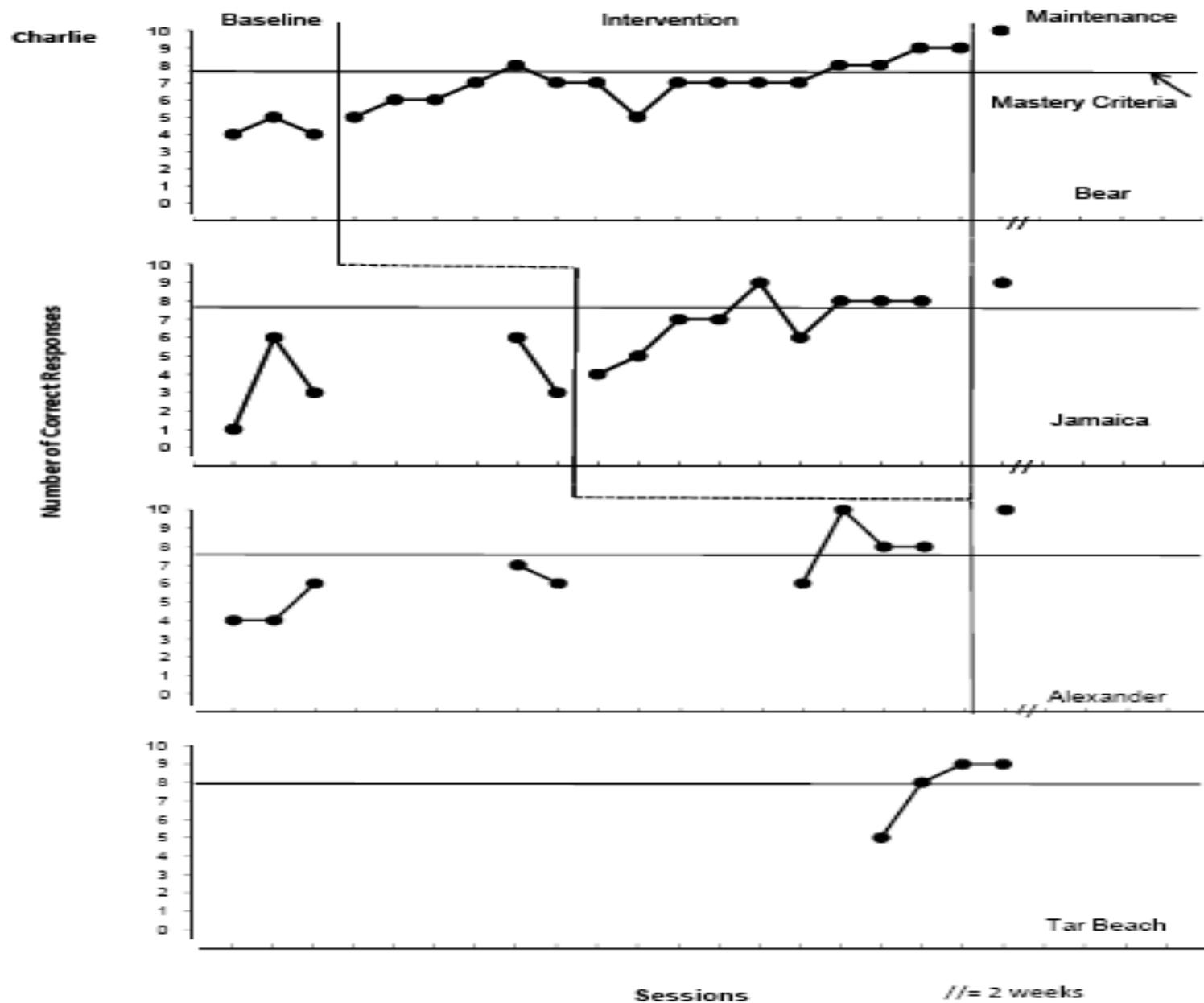 - Data collection was discontinued at this time

Figure 3. Charlie's scores across books

RESULTS: DAVE

- *Alexander and the Terrible, Horrible, No Good, Very Bad Day.*
  - Baseline- scores were 0 out of 10
  - Intervention- scores ranged from 0 to 10 with a mean of 4.75
  - Maintenance data indicated a score of 9 out of 10 for both data sessions
- *Jamaica's Find.*
  - Baseline- scores ranged from 0 to 3, with a mean of 1.2
  - Intervention- scores ranged from 1 to 10 with a mean of 6.22
  - Maintenance data indicated a score of 10 out of 10
- *Don't Wake Up the Bear*
  - Baseline- scores ranged from 0 to 2, with a mean of .67
  - Intervention- scores ranged from 1 to 9 with a mean of 6.5
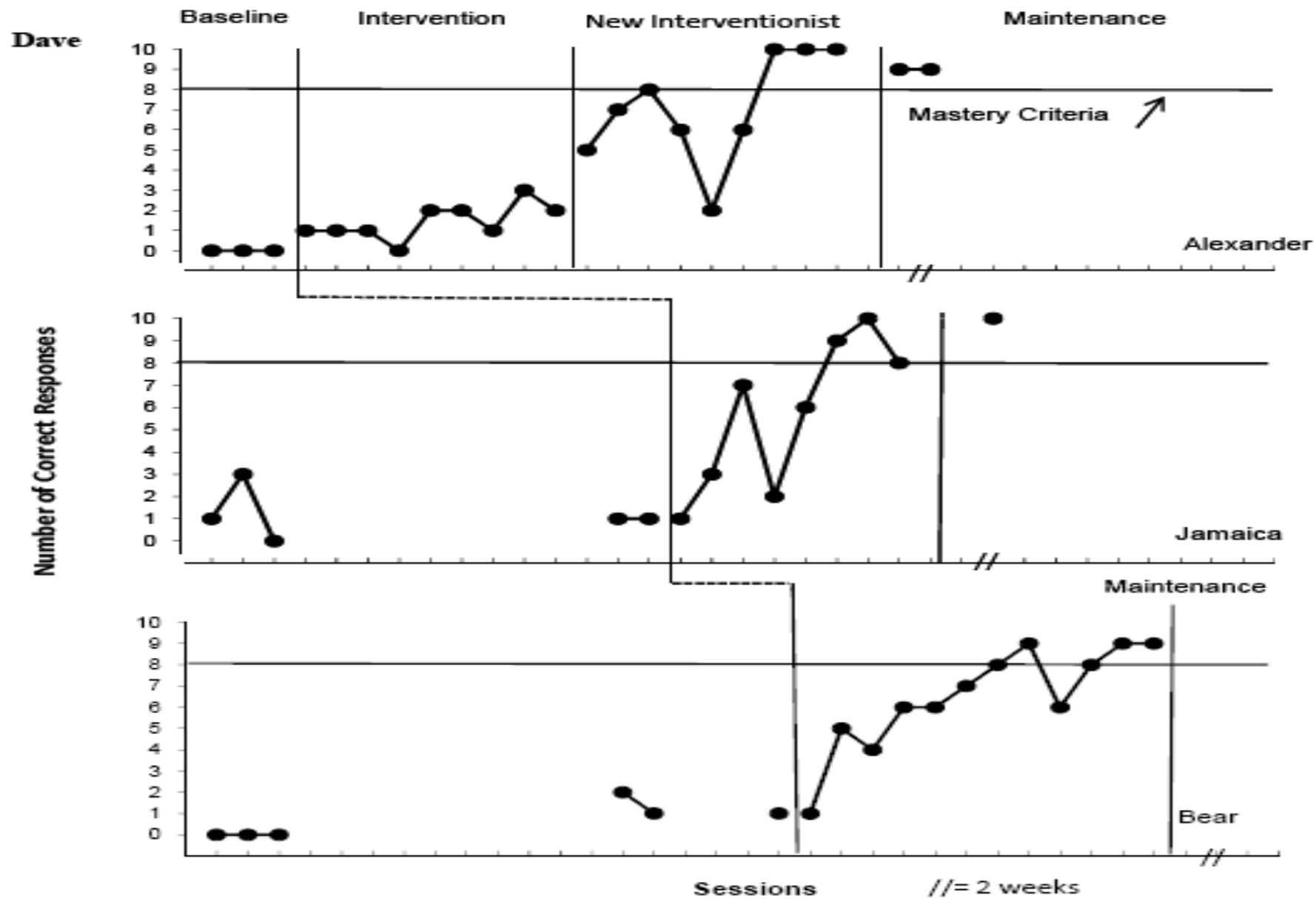 - Maintenance data indicated a score of 8 out of 10

Figure 4. Dave's scores across books.

Reliability and Fidelity Results

- All Interobserver reliability was 90% or above for all students

- Fidelity was at least 95% or above for the delivery of the intervention for each student

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GENERALIZATION AND SOCIAL VALIDITY

- Charlie-generalized to the third book as well as an additional book
- The interventionists reported high levels of satisfaction with the teaching strategy as well as student outcomes

DISCUSSION

- A functional relationship between the system of least prompts on the number of listening comprehension questions correctly answered

- Students overtime in the intervention slowly progressed from requiring more intrusive prompting (e.g. physical, model) to less intrusive prompting (e.g., verbal)

- All students were able to maintain data after a two week noninstructional period of time

- One student generalized the skills learned to additional books

- Teachers found the procedures to be useful and the outcomes to be worthwhile

GENERALIZATION

- One way to ensure students are learning listening comprehension skills rather than memorizing answers is to teach across multiple exemplars
- To assess generalization across materials a different research design would have been needed
  - multiple probe across participants design
    - generalization to other materials could have been evaluated without sacrificing external validity
- Charlie was able to generalize the strategy to the third book and fourth book, implying that he was able to gain the skills needed to find the information on his own in the text
- Generalization to additional books is certainly an ultimate goal for use with this teaching strategy and therefore would be a goal for future research
- Future research should replicate the current study using a multiple probe across student design and add a formal generalization measure to additional books

LIMITATIONS

- Students had a 33% chance selecting a correct response at random

- To avoid this limitation
  - ask the students to generate an expressive response to the question
  - increase the number of response options to four, reducing the chance for students selecting a correct response to 25%

LIMITATIONS CONT.

- Based on an item analysis, some students tended to have more difficulty answering certain types of questions

- The more abstract the comprehension question asked (e.g., synthesis, analysis), the less likely students were to answer it correctly

- Future research may need to develop a new method of prompting for more abstract questions

DISCUSSION

- Teachers/TAs are able to implement, with high fidelity, a teaching strategy to teach comprehension to students with significant intellectual disabilities

- Teachers/ TAs are able to collect data with high reliability

- Students with significant intellectual disabilities were able to acquire text dependent listening comprehension skills that were demonstrated through correctly answering a variety of comprehension questions

- The System of Least Prompts was effective

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QUESTIONS?

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○ http://education.uncc.edu/access