Module 1: Measurement

Name:

**Note:** This homework requires you to watch two short video clips and record data based on the behavior in those clips. URL’s are provided for the location of the clips online. We recommend collecting data on a separate sheet of paper while you are watching the video clips, and then entering the data into this form afterwards.

### Part 1: Momentary Time Sampling

**Video:** http://jam-lab.com/MTS-flapping.wmv

Audio cues have been included with this clip to signal the end of each interval – record data based on the behavior that is occurring at the time of the audio cue.

**Target Behavior:** Hand Flapping

**Operational Definition:** Instances of hand flapping involve a flapping of one or both hands with a back-and-forth motion with the arm(s) slightly bent and the hand(s) raised near the shoulders. Raising of the hands without a flapping motion does not represent an occurrence of hand flapping.

<table>
<thead>
<tr>
<th>Interval #</th>
<th>Target Behavior? (Y or N)</th>
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</table>

How would you report these data?
Part 2: Frequency Count

Target Behavior: Manding (picture exchange)

Operational Definition: The occurrence of a mand involves the child taking a picture card off a wooden rectangle and reaching it towards the snack box on the table. Specifically, the edge of the picture card must cross the plane of the edge of the snack box in order for the response to qualify as a mand.

Total occurrences:

If all of our observation periods were of the same duration, how would you report these data?

If our observations periods varied in length, how would you report these data?

Part 3: Operational Definition

Please write an operational definition for ONE of the following behaviors. It might be helpful to have a specific child in mind when writing these definitions.

Swiping instructional materials from a table during instruction
Gross motor imitation of hand clapping
Following the instruction “line up” when other children have already formed a line
Module 2: IOA & Procedural Integrity

Name:

Please provide us with a bit more demographic information:

How many research projects using single-case designs were you actively involved in during the 12 months prior to the beginning of this training? (You may include ongoing research projects that began prior to this training.)

How many of these projects were presented at professional conferences?

How many of these projects were published, or submitted for publication in a peer-reviewed journal?

The data set below provides frequency data for two independent observers from a variety of sessions. Calculate the IOA for each session. (1 pt each, 13 points)

<table>
<thead>
<tr>
<th>Session #</th>
<th>Observer 1</th>
<th>Observer 2</th>
<th>IOA</th>
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<tbody>
<tr>
<td>1</td>
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<td>8</td>
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<td>45</td>
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</tbody>
</table>

Calculate the mean and range of the IOA for this data set. Mean: (1 pt) Range: (1 pt)

Would the mean IOA score be considered acceptable? Why or why not? (2 pts)

Were enough IOA checks conducted for this data set? (Note: there were 45 sessions) Why or why not? (2 pts)
The data set below provides frequency data for two independent observers from a variety of sessions. Calculate the IOA for each session. (1 pt each, 8 points)

<table>
<thead>
<tr>
<th>Session #</th>
<th>Observer 1</th>
<th>Observer 2</th>
<th>IOA</th>
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<tbody>
<tr>
<td>1</td>
<td>80</td>
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<td>4</td>
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<td>51</td>
<td>62</td>
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</tbody>
</table>

Calculate the mean and range of the IOA for this data set. Mean: (1 pt) Range: (1 pt)

Would the mean IOA score be considered acceptable? Why or why not? (2 pts)

Were enough IOA checks conducted for this data set? (Note: there were 51 sessions) Why or why not? (2 pts)

The data set below provides MTS data for two independent observers during one session. (Y = occurrence, N = non-occurrence)

Calculate point-by-point agreement for this data set.

<table>
<thead>
<tr>
<th>Session #</th>
<th>Observer 1</th>
<th>Observer 2</th>
<th>Session #</th>
<th>Observer 1</th>
<th>Observer 2</th>
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<tbody>
<tr>
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<td>30</td>
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<td>N</td>
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</table>

Overall agreement: (1 pt)
Occurrence agreement: (1 pt)
Non-occurrence agreement: (1 pt)
Module 3: Data Sheets

Create a data sheet to be used in a research study evaluating the acquisition of tacting (i.e., labeling) colors in children with autism. This study will use 10-trial blocks, errorless prompting (i.e., full verbal prompt, partial verbal prompt, no prompt), and will involve three conditions: baseline, teaching with flashcards, and teaching with 3D objects. Please refer to the lecture for this module for guidelines and examples. Be sure to include the following components:

1. Identifying information
2. A section for participant behavior (vocal tacting/labeling)
3. A section for all relevant therapist behaviors (e.g., providing appropriate stimuli, instructions)
4. A section for IOA assessment and calculation

You may use Microsoft Word or Excel to create your data sheet.

Grading:
- 34 points possible for included the necessary components
- 6 points for organization and following the guidelines provided in lecture
- 40 points total
Module 4: Single Case Designs

Part 1:

For each of the 6 example research questions/topics listed below, please indicate which single case research design discussed in the lecture for this module (i.e., reversal, multiple baseline, alternating treatments) would be most appropriate. Next, explain why that design is most appropriate.

1. A researcher wants to evaluate the effects of a differential reinforcement of low-rates (DRL) procedure for reducing high-rate mands by comparing the rates of mands during a DRL condition to the rate during a baseline condition.

   Which design should be used? (1 pt)

   Why? (2 pts)

2. A researcher wants to evaluate the effects of differential reinforcement on vocal responding during circle time for three children. The researcher would like to measure each child’s behavior individually.

   Which design should be used? (1 pt)

   Why? (2 pts)

3. A researcher wants to evaluate a functional communication training (FCT) intervention with and without extinction as a treatment for escape maintained problem behavior. Specifically, the researcher would like to compare the rates of problem behavior during a condition with both treatment components, to the rates of problem behavior during a condition in which extinction is withdrawn.

   Which design should be used? (1 pt)

   Why? (2 pts)

4. A researcher would like to compare FCT and noncontingent reinforcement (NCR) as potential treatments for problem behavior.

   Which design should be used? (1 pt)

   Why? (2 pts)

5. A researcher would like to compare the use of behavior specific (e.g., “Good job touching your nose!”) and non-behavior specific praise (e.g., “Good job!”) for the acquisition of receptive identification of body parts. Specifically, the researcher would like to teach one body part using specific praise, and another using non-specific praise, and then compare the rates of acquisition.

   Which design should be used? (1 pt)

   Why? (2 pts)

6. A researcher would like to evaluate the effects of a group NCR intervention on the rates of problem behavior displayed by clients at a day program. Specifically, the researcher would like to evaluate the effects of this intervention across two times of day – morning and afternoon.

   Which design should be used? (1 pt)
Part 2:

For each of the three single case designs presented in the lecture for this module, please provide one sample research question/topic that could be evaluated using that design. Next, explain why that design is appropriate for the question/topic you provided.

7. Reversal Design
   Example research question/topic: (1 pt)
   Why is that design appropriate for this question/topic? (2 pts)

8. Multiple baseline design
   Example research question/topic: (1 pt)
   Why is that design appropriate for this question/topic? (2 pts)

9. Alternating treatments design
   Example research question/topic: (1 pt)
   Why is that design appropriate for this question/topic? (2 pts)

Sub-total: points earned (9 points possible)

Total Score: points earned (27 points possible)
Module 5: Graphing & Visual Inspection

Name:

Part 1: Graphing (24 points possible)

- For each of the three data sets provided below, create a graph using Excel. Be sure to include the following components:
  - Accurate data (matches data provided) (1 pt)
  - Axis labels (1 pt)
  - Phase change lines (1 pt)
  - Phase titles (e.g., Baseline, Treatment) (1 pt)
  - Condition/data path labels (e.g., Treatment 1), for ATD graph (1 pt)
  - Arrows for condition labels, for ATD graph (1 pt)
  - Panel labels for multiple baseline graph (1 pt)

- Also be sure to do the following formatting:
  - No shading or borders (1 pt)
  - Black and white data paths & markers (1 pt)
  - Consistent data markers throughout graph (1 pt)

- Once you have created your graphs, copy and paste them into a new word document as a picture. Use one word document for all three graphs. Please make the graphs fill at least half of the page in the word document so they will be large enough to view and score. Save this file as “yourlastnamegraphs.doc” and submit it with this form.

ABAB Reversal Design (7 points possible)

- x-axis = Sessions
- y-axis = Responses per Minute
- Data:
  - First baseline phase: 4, 5, 4, 2, 4, 6, 7
  - First intervention phase: 10, 12, 14, 11, 10, 16, 15
  - Second baseline phase: 4, 2, 1, 3, 4, 2
  - Second intervention phase: 7, 5, 8, 10, 16

Alternating Treatments Design (9 points possible)

- x-axis = Sessions
- y-axis = Responses per Minute
- Data
  - Baseline: 7, 5, 4, 8, 4, 5, 7
  - Alternating Treatments phase:
    - Treatment 1: 7, 6, 4, 3, 7, 5, 8
    - Treatment 2: 16, 14, 15, 20, 13, 14, 16

Multiple Baseline Design (8 points possible)

- x-axis = Sessions
- y-axis = Responses per Minute
- Data
  - Behavior 1 Baseline: 4, 5, 1, 4, 2, 5, 3
  - Behavior 1 Intervention: 0, 1, 0, 1, 2, 2, 3, 2, 3, 1, 0, 3, 0
  - Behavior 2 Baseline: 4, 8, 4, 6, 8, 7, 5, 8, 5, 8, 9, 7, 5
  - Behavior 2 Intervention: 1, 2, 2, 3, 2, 0
Part 2: Visual Inspection (20 points possible)
- For each of the following graphs, indicate whether a treatment effect is demonstrated.
- Also indicate which of the three aspects of the data changed from baseline to intervention phases.

Is a treatment effect demonstrated in the graph above? (1 pt) □ Yes  □ No
Which of the following aspects of the data changed between baseline and intervention phases? Check all that apply. (3 pts) □ Level  □ Trend  □ Variability

Is a treatment effect demonstrated in the graph above? (1 pt) □ Yes  □ No
Which of the following aspects of the data changed between baseline and intervention phases? Check all that apply. (3 pts) □ Level  □ Trend  □ Variability
Is a treatment effect demonstrated in the graph above? (1 pt)  

[ ] Yes  [ ] No

Which of the following aspects of the data changed between baseline and intervention phases? Check all that apply. (3 pts)  

[ ] Level  [ ] Trend  [ ] Variability

Is a treatment effect demonstrated for Treatment 1 in the graph above? (1 pt)  

[ ] Yes  [ ] No

Which of the following aspects of the data changed between baseline and intervention phases for Treatment 1? Check all that apply. (3 pts)  

[ ] Level  [ ] Trend  [ ] Variability

Is a treatment effect demonstrated for Treatment 2 in the graph above? (1 pt)  

[ ] Yes  [ ] No

Which of the following aspects of the data changed between baseline and intervention phases for Treatment 2? Check all that apply. (3 pts)  

[ ] Level  [ ] Trend  [ ] Variability
Module 6: Ethics & Informed Consent

Imagine you are conducting a study on the acquisition of tact responses for 2D and 3D objects. Please develop an appropriate informed consent document for this study. Feel free to reference the supplemental materials provided during the lecture for this module as an example.

Adhere to the following guidelines: (5 pts)
- Language in the form of an invitation to participate AND at a reading level appropriate for the participants (At a reading level appropriate for a 12 year-old) (2 pts)
- Do not include phrases like “I am aware” or "I understand" anywhere in the document. (1 pt)
- Do not include language that would absolve the researcher of responsibility for negligence (2 pts)

Include the following components: (20 pts)
- A header that includes “AGENCY” Principal Investigator: (name), and title of the study. (1 pt)
- The nature, purpose, and duration of the study (2 pts)
- Procedures to be employed in the research; exactly what the participant is expected to do (2 pts)
- Risks (hazards, inconveniences, discomforts) the participant may undergo, so far as they are known, and how any risks will be minimized (2 pts)
- Benefits to the subject (and to the general subject population) (2 pts)
- How confidentiality will be maintained and any limits to confidentiality (2 pts)
- Statement that the participant can refuse to participate; stop participating at any time; or refuse to answer any question without prejudice, penalty, or risk of any loss of service he/she would otherwise have (1 pt)
- The researchers’ names and telephone numbers (a fake one is fine) as well as the following statement: “You may also contact the Human Subjects Institutional Review Board (XXX-XXXX) if questions or problems arise during the course of the study.” (1 pt)
- A place for date and signature of participant and a witness line, if required (e.g., with subjects who are not legally competent); a place for date and signature of translator, if applicable; a place for date and signature (or initials) of individual obtaining the consent, if applicable (2 pts)
- The following statement must be included in all consents: “This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.” (1 pt)
- Since there is the possibility of accidental physical injury, include the statement: “As in all research, there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however, no compensation or additional treatment will be made available to you except as otherwise stated in this consent form.” (1 pt)
• Since the research is therapeutically related, disclose alternate procedures the subject might choose. For example, the child would still receive appropriate language training even if the parent declines to participate. (1 pt)
• Circumstances under which the researcher may terminate the participant’s participation (1 pt)
• Consequences of the participant’s withdrawal from the study (1 pt)

Also, develop a document to be used in obtaining child assent. Include the following components: (7 pts)

• A description of the procedure the researcher will follow when obtaining assent. (2 pts)
• A list of potential indicators of assent. (2 pts)
• A place to indicate whether assent was given. (1 pt)
• A place for the parent/guardian to sign and date the document confirming that assent was provided. (1 pt)
• A place for the researcher to sign and date the document. (1 pt)
Module 7: Implementing a Research Protocol

Purpose: To teach a single participant a pair of new tact responses (verbal responses in the presence of non-verbal stimuli) while practicing the implementation of all aspects of a single-case design research protocol.

Design: A multiple-baseline design across behaviors will be used. For the purposes of this assignment, the A phase will be a baseline phase in which the participant’s existing tact responses will be evaluated, and the B phase will be a teaching phase in which a new tact response from a single program area will be taught.

- The first and second target responses will be taught in different research sessions (i.e., blocks of 10 tact-training trials).
- The independent variable (tact training) will be applied to one target first, while the other target remains in baseline.
- The independent variable will be applied to the second target in a staggered fashion.

Target Behaviors: Please select ONE of the following program areas to teach your participant based on the child’s individual level of functioning, so that the targets being taught represent clinically appropriate skills. If none of the program areas are relevant for the child you will be working with, please contact the TRAINER as soon as possible so that a new program area can be selected. If a program area is appropriate for the child you will be working with, but the specific targets are not, feel free to select two different targets to teach within the program area. Be sure that it is clear which two targets were taught.

1. Basic shapes from picture cards: Upon presentation of an index card with a basic shape on it and the verbal stimulus “What shape is this?” the child will independently and correctly tact (vocally or with sign language) the shape presented within 5 seconds. For a child’s response to be considered correct and independent, it must occur without any therapist prompts, and must be recognizable to the therapist as the correct word or sign in terms of articulation or fine motor movement.
   a. Targets: circle, square

2. Common foods from pictures: Upon presentation of a photograph of a common food item and the verbal stimulus “What is this?/What is this called?/What food is this?” the child will independently and correctly tact (vocally or with sign language) the food presented within 5 seconds. For a child’s response to be considered correct and independent, it must occur without any therapist prompts, and must be recognizable to the therapist as the correct word or sign in terms of articulation or fine motor movement. NOTE – be sure not to use apple or crackers as a reward for independent responses if teaching these targets.
   a. Targets: apple, cracker

3. Body parts from a live person: When the therapist points to a body part on herself/himself and presents the verbal stimulus “What is this?/What is this called?/What body part is this?” the child will independently and correctly tact (vocally) the body part presented within 5 seconds. For a child’s response to be considered correct and independent, it must occur without any therapist prompts, and must be recognizable to the therapist as the correct word in terms of articulation.
4. **Actions from a live person:** When the therapist models an action and presents the verbal stimulus “What am I doing?” the child will independently and correctly tact (vocally) the action presented within 5 seconds. For a child’s response to be considered correct and independent, it must occur without any therapist prompts, and must be recognizable to the therapist as the correct word in terms of articulation.
   a. Targets: clapping, waving

5. **Emotions from pictures:** Upon presentation of an index card with a picture of a human face displaying the relevant emotion, and the verbal stimulus “How does he/she feel?” the child will independently and correctly tact (vocally or with sign language) the emotion presented within 5 seconds. For a child’s response to be considered correct and independent, it must occur without any therapist prompts, and must be recognizable to the therapist as the correct word or sign in terms of articulation or fine motor movement.
   a. Targets: happy, sad

**Materials:** Based on the specific program area that you select, you will need to prepare the following materials before beginning to run sessions:

1. **Basic shapes from picture cards:** Two equal sized white index cards, each with one shape (circle, square) drawn on it with black marker. The shapes should be approximately equal in size.

2. **Common foods from pictures:** Two equal sized white index cards, each with a photograph of one food item (apple, cracker) glued on. The photographs should be clear pictures in which the food item takes up the majority of the picture and there are no distracter items present in the picture.

3. **Body parts from a live person:** None.

4. **Actions from a live person:** None.

5. **Emotions from pictures:** Two equal sized white index cards, each with a photograph of a human face displaying one emotion (happy, sad). The photographs should be clear pictures in which the face takes up the majority of the picture, and the same person’s face should be used for all three pictures.

In addition to the program materials, you will need data sheets (see attached), a pencil, a work area with a table and chairs, and preferred edibles or tangibles to provide as rewards for correct responses. Use the same work area for each session.

**Procedure:**

**Pre-Baseline Assessment:** Conduct a brief assessment to determine if the tact responses you will be teaching are in your participant’s repertoire.

- Present the verbal instruction & visual stimulus (e.g., picture card, in vivo model) relevant to the target response and allow the child 5 seconds to respond.
- Do not provide any consequences for any response from the child.
- Conduct two trials of the pre-baseline assessment for each teaching target before beginning baseline.
• If the child does not respond correctly on either trial for a given target, you may proceed to the baseline phase.

• If the child does respond correctly on any pre-baseline assessment trials, you will need to select a new target response and conduct another assessment for that response.

Baseline:

• Present the verbal instruction & visual stimulus (e.g., picture card, in vivo model) relevant to the target response and allow the child 5 seconds to respond.

• Do not provide any consequences for any response from the child.

• Intersperse these trials with trials for other mastered skills after every 1-2 tact trials (i.e., no more than two tact trials should be conducted before implementing an interspersal trial).
  
  o Correct responses on interspersal trials for mastered skills should receive only verbal praise.

  o Data will not be collected on the interspersal trials.

• If your participant acquires the target response during baseline, discontinue that target and begin again with a new target (Contact Jessa at ceapresearchtraining@gmail.com if this occurs and you are concerned about completing the project on time).

Tact Training:

• Before each training session (i.e., block of 10 tact-training trials), conduct a brief preference assessment to identify the rewards to use during that session.
  
  o Identify three preferred edibles OR three preferred tangibles for your participant, based on your experience with him/her.

  o Present the three items to the child, all approximately equal distance away.

  o Prompt the child to look at all three items presented, and then ask the child the pick one.

  o The first item the child selects AND consumes (i.e., eats or interacts with) should be used as the reward for independent responses during the subsequent session.

• Present the verbal instruction & visual stimulus (e.g., picture card, in vivo model) relevant to the target response and allow the child 5 seconds to respond.
  
  o If the participant responds correctly within the 5 seconds, provide 15 seconds of access to a preferred items as well as verbal praise (i.e., “Good job, that’s right!”). This trial should be scored as “I” for independent.

  o If no response is made in the 5 seconds, provide an echoic or physical prompt for the correct answer. Correct imitation of the prompt will receive only (relatively non-enthusiastic) verbal praise. This trial should be scored as “NR” for no response.
If the participant responds incorrectly during the 5 seconds, represent the verbal instruction and visual stimulus with an immediate prompt as an error correction. Again, correct imitation of the echoic prompt will receive only verbal praise. This trial should be scored as “E” for error. (Note – the child’s imitation of the error correction prompt should not be recorded on the datasheet, only the initial error).

- Intersperse these trials with trials for other mastered skills after every 1-2 tact trials (i.e., no more than two tact trials should be conducted before implementing an interspersal trial).
  - Correct responses on interspersal trials for mastered skills should receive only verbal praise.
  - Data will not be collected on the interspersal trials.
  - The table below displays a sample trial order for one 10-trial block:

| Trial # | 1 | 2 | INT | 3 | INT | 4 | 5 | INT | 6 | INT | 7 | INT | 8 | 9 | INT | 10 |

- Mastery criteria: 4 consecutive correct and independent responses across 2 sessions. Separate sessions occurring on the same day by at least 15 minutes.

**Termination Criteria:** If your participant displays undue stress for more than 2 minutes at a level higher than the minor frustration that may be evident during teaching, terminate the research sessions. If five consecutive sessions are terminated, terminate the participant’s involvement in the project. (Contact Jessa at ceapresearchtraining@gmail.com if this occurs and you are concerned about completing the project on time).

**Phase Changes:**

- A minimum of three data points are required to determine the stability of a data path. Therefore:
  - At least three data points should be collected during the baseline phase for the first target before moving to the teaching phase.
  - At least three additional data points should be collected during the baseline phase for the second target, before moving to the teaching phase. In other words, if you have three data points in the baseline phase for the first target, you’ll need at least 6 data points in the baseline phase for the second target.

**Data Collection:** Use the attached data sheet to take trial-based data on the relevant participant response, and 4 therapist behaviors. Participant, IOA, and procedural integrity data can all be collected using this datasheet. The therapist behaviors that require measurement include:

- Visual stimulus – did the therapist present the appropriate visual stimulus (i.e., flash card or physical demonstration) for the target response?
- Vocal instruction – did the therapist present the appropriate vocal instruction for the target response?

- Prompt – did the therapist provide a prompt, if needed, as specified in the procedures above? NOTE – A score of “Yes” on this measure does NOT necessarily mean the therapist provided a prompt, instead it means the therapist did the correct thing in terms of prompting based on the participant’s response.

- Consequence – did the therapist provide the appropriate consequence, as specified in the procedures above? NOTE – A score of “Yes” on this means the therapist provided the correct consequence based on the participant’s response.

**Graphing:** The data should be graphed in a two-panel multiple baseline graph, with the x-axis representing trials, and the y-axis representing the cumulative number of independent responses. That is, any trial scored as “Independent” will be displayed as an increase in the value of the data point in reference to the previous data point. Any trial scored as “No Response” or “Error” will be displayed as no change in the value of the data-point in reference to the previous data point (horizontal line). See the single-panel graph below for an example of what your panels should look like. Please refer to the materials from Module 5 to ensure that you include all the necessary components in your graph.
Submission Materials

- Computer files should be submitted by XXX. Please be sure to indicate the names of all group members in the file and/or email.

- Excel file with all data (participant, IOA, procedural integrity) and graph
  - All data should be organized and clearly labeled, so I will know exactly which data I am looking at.
  - Here is a sample of how I organized the data from a previous study that also utilized a multiple-baseline design in which data were presented as the cumulative number of correct responses. Data for the first teaching target (Dog-Animal) are on the left, data for the second teaching target (Apple-Food) are on the right:

<table>
<thead>
<tr>
<th>Date (Dog-Animal)</th>
<th>Session</th>
<th>Condition</th>
<th>Response</th>
<th>Date (Apple-Food)</th>
<th>Session</th>
<th>Condition</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/10/07</td>
<td>1</td>
<td>Baseline</td>
<td>0</td>
<td>12/10/07</td>
<td>1</td>
<td>Baseline</td>
<td>0</td>
</tr>
<tr>
<td>12/11/07</td>
<td>3</td>
<td>Fill-in Training</td>
<td>0</td>
<td>12/10/07</td>
<td>2</td>
<td>Baseline</td>
<td>0</td>
</tr>
<tr>
<td>12/12/07</td>
<td>4</td>
<td>Fill-in Training</td>
<td>3</td>
<td>12/11/07</td>
<td>3</td>
<td>Fill-in Training</td>
<td>0</td>
</tr>
<tr>
<td>12/12/07</td>
<td>5</td>
<td>Fill-in Training</td>
<td>4</td>
<td>12/12/07</td>
<td>4</td>
<td>Fill-in Training</td>
<td>5</td>
</tr>
</tbody>
</table>

- Here is a sample of how I organized the IOA and procedural integrity data for that same study. (This was a different worksheet within the same excel file):

<table>
<thead>
<tr>
<th>Date</th>
<th>Session</th>
<th>Condition</th>
<th>IOA</th>
<th>Tx Integrity</th>
<th>Tx Int. IOA</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/10/07</td>
<td>1</td>
<td>Baseline</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>12/10/07</td>
<td>2</td>
<td>Baseline</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>12/11/07</td>
<td>3</td>
<td>Fill-in Training</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>12/10/07</td>
<td>4</td>
<td>Fill-in Training</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>12/10/07</td>
<td>5</td>
<td>Fill-in Training</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>12/12/07</td>
<td>6</td>
<td>Answer Probe</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>12/12/07</td>
<td>7</td>
<td>Answer Probe</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>12/12/07</td>
<td>8</td>
<td>Baseline</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>12/13/07</td>
<td>9</td>
<td>Answer Training</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>12/12/07</td>
<td>10</td>
<td>Answer Training</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>12/12/07</td>
<td>11</td>
<td>Fill-in Probes</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>12/13/07</td>
<td>12</td>
<td>Fill-in Probes</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

- The graph should be presented in finished form according to the instructions provided in Module 5.

- Summary statements for IOA (for participant & procedural integrity data) & procedural integrity (can be included in Excel file)
Provide a few sentences summarizing these data, in terms of the percentage of sessions for which IOA and procedural integrity data were collected and what the mean and range values were.

The percentage of sessions in which these are monitored (IOA on participant data, procedural integrity, IOA on procedural integrity) should adhere to the guidelines presented in Module 2.

Sample summary statement for IOA: Interobserver agreement was evaluated during 26% of research sessions, and the mean IOA was 92% (range, 80-100%).
Module 8: Developing a Research Protocol

Develop a research protocol (similar to the one you were provided with for Module 7) to answer the following research question:

When teaching new intraverbal responses to children diagnosed with autism, do echoic (providing a vocal response to imitate) or tact (providing a picture of the appropriate response to label) prompts lead to faster acquisition?

Your protocol should include the following components:

**Purpose:** What is the purpose of your study? This should include both the research question being addressed and any new skills that the participants will be taught. (2 pts)

**Design:** What single-case design will be used? What phases will be involved? (Specific procedural information about the different phases/conditions need not be included here, just a brief description of the phases that will be included.) (2 pts)

**Target Behaviors:** Indicate exactly which intraverbal responses will be taught in your study (e.g., fill-in-the-blank, personal questions). What are the relevant antecedent stimuli and what are the target responses of the participant? If different responses will be taught during the different conditions, please indicate which responses will be taught for each condition. (4 pts)

**Materials:** Describe all of the materials that will be required for your study. This should include a description of the teaching materials required (e.g., picture cards for tact prompts) that is sufficiently detailed so anyone reading the protocol could prepare appropriate materials. You should also include a list of any other materials that will be needed to run research sessions (e.g., data sheets, aspects of the work area). (4 pts)

**Procedure:** Provide a detailed description of every phase of the study. This should include any pre-experimental assessments that need to be conducted. This section should provide specific instructions for exactly what the researcher should do throughout the study. Be sure to consider the following questions: (15 pts)

- **Antecedents:** What instructions or antecedent stimuli should be presented during each condition, and how should they be presented? (2 pts)

- **Prompting:** What prompting procedure will be used to teach the new responses? Be sure to describe this clearly enough that someone reading your protocol could implement the prompting procedure correctly. (2 pts)

- **Researcher Behavior:** How should the researcher respond if the child’s response is correct? What if they child’s response is incorrect? What if the child does not respond? (3 pts)

- **Consequences:** What consequences will be provided for the participant’s behavior? If using preferred tangibles/edibles, how will they be identified? (2 pts)

- **Interspersal:** Will teaching trials be interspersed with trials of mastered skills? If so, what should the ratio of teaching:mastered trials be? (2 pts)
- **Mastery:** What are the mastery criteria for the responses being taught? (1 pt)

- **Session Schedule:** How often should sessions be run? How long should sessions last? How many trials should be conducted during each session? (3 pts)

**Termination Criteria:** Under what conditions should a research session be terminated? Under what conditions should the child’s participation in the protocol be terminated? (2 pts)

**Phase Changes:** When will phase changes be made? How will the stability of the data be evaluated (e.g., stability criteria, visual inspection)? It should be clear to someone reading your protocol what their decision to make phase changes should be based on. (2 pts)

**Data Collection:** (15 pts)

- Create and include all necessary data sheets with your protocol. Within the protocol, specify the type of data collection that will be used (e.g., trial-based, interval, momentary time sampling). (4 pts)

- Specify what behaviors will be measured for both the participant and the researcher. Provide operational definitions for all behaviors being measured – participant and researcher behaviors! (10 pts)

- Indicate the percentage of sessions for which IOA, procedural integrity, and IOA for procedural integrity should be measured. (1 pt)

**Graphing:**

- Explain how the data for your study should be graphed, including what the x-axis and y-axis will represent. (1 pt)

- Provide a sample graph with hypothetical data. You may include this in the word document with your protocol, or in a separate Excel file. (3 pts)

**Submission Instructions**

- All files should be submitted by XXX. Please be sure to indicate the names of all group members in the file and/or email.