

## **Assessing Potential Precursors to Severe Problem Behavior**

### ***Study 1: Identification of Antecedent Behaviors***

**Purpose:** Study 1 will identify variables that maintain the participant's severe problem behavior (SPB) and will identify antecedent behaviors (AB).

**Participants:** Individuals, between the ages of 6 to 17 years old, who engage in severe problem behavior

#### **Safety Procedures:**

- Safety Equipment: [Click here to enter text.](#)
- Restraints Worn: [Click here to enter text.](#)
- Permanently Blocked Behaviors [Click here to enter text.](#)
- Criteria for Session Termination: [Click here to enter text.](#)

**Data Collection:** Data will be collected on the rate of SPB and AB. Data will also be collected on percentage of compliance and duration of engagement and reinforcement. A lag sequential analysis using conditional probabilities will also be conducted. Conditional probabilities will be calculated using BDataPro Extended Analysis (binary method). A 10 s viewing window will be used to identify:

1. The AB with highest conditional probability (AB → SPB)
2. The AB with lowest background probability (AB → SPB)
3. The AB with lowest conditional probability

***Stability Criteria:*** Mean +/- .25SD

Data will be considered stable if three consecutive data points fall within +/- .25 standard deviation of the mean. This criterion will be used in conjunction with visual inspection.

Researchers will use visual inspection to determine the following:

- No decreasing trend
- Lack of responding

**Materials:** Materials will include:

- Table
- Two chairs
- Demand materials
- Highly preferred items
- Protective equipment (if applicable)

#### **Study 1:**

The functional analysis (FA) will be conducted by the clinical team. In the event that the clinical team is unable to conduct the FA, the research team will conduct an FA / Pairwise.

*General:*

1. Sessions will be **10 minutes** in length and conducted in a **padded treatment room**
2. The **sequence of conditions** within each series will occur as follows (see Appendix A):
  - Alone (or Ignore)
  - Attention
  - Tangible (if included)
  - Toy Play
  - Demand
3. **Once the FA is complete**, the research team will review FA sessions via video playback and score all behaviors emitted by the participants

Precursor Selection:

1. Greatest difference between conditional and background probability
2. Occurs frequently
3. Can be blocked ethically (e.g., Vocal statements cannot be ethically blocked)
4. Easily operationally defined without many variations
5. ***Individuals who engage in precursors that are topographically similar proto-problem behavior are not recommended for participation in the Study 2 or 3.***

## KEY ASSIGNMENTS

<b>1</b> <b>Target Behavior</b> (SIB, if applicable)	Operationally define
<b>2</b> <b>Target Behavior</b> (AGG, if applicable)	Operationally define
<b>3</b> <b>Target Behavior</b> (DIS, if applicable)	Operationally define
<b>4</b> <b>Antecedent Behavior</b>	Operationally define
<b>5</b> <b>Antecedent Behavior</b>	Operationally define
<b>6</b> <b>Antecedent Behavior</b>	Operationally define

<b>7 Attention</b>	Therapist delivers brief attention contingent upon target PB
<b>8 Initial Prompt</b>	Therapist delivers verbal prompt
<b>9 Compliance</b>	Compliance following the verbal or gestural prompt
<b>E Engagement</b>	<u>3 sec onset/offset</u> – (for toy play and tangible conditions) includes any attempt to manipulate the toy that is not destructive or harmful to self or others. Includes stereotypy with the item, does not include mere contact
<b>R Reinforcement</b>	<u>Immediate onset/offset</u> – (for demand and tangible conditions) 30s escape or access to tangible item

## Appendix A

### GENERAL PROCEDURE

1. If a complete series cannot be completed before the end of the session block try to **avoid stopping after the alone condition** (it's ideal for the alone condition to immediately proceed the attention condition), but if there is only enough time to run the alone condition, then do so
2. An upcoming session may be briefly delayed if the patient continues to display a burst of problem behavior after the end of the previous session, but no longer than 5-minutes should separate each session with the exception of the termination of sessions at the end of the session block and the end of the day. The SBA/PI should **determine a description of agitated/calm behavior and the duration the patient must be calm to continue** sessions (the next session should begin as soon as calm criteria has been met). If this occurs multiple times, discuss again with your SBA
3. **Ignore problem behavior between sessions** and provide minimal attention in general unless otherwise specified by the SBA
4. Though the decision to terminate the FA is ultimately up to the SBA/PI, in general, **the FA is complete when either:**
  - Differential responding is observed over the course of at least three series
  - 10 complete series are conducted
  - In cases in which the FA is undifferentiated because the patient does not exhibit the target behavior, stop after six series

### CONDITIONS

#### Alone

Discuss with the SBA whether an alone condition should be included. If so, an alone condition is preferable to an ignore condition, and should be conducted unless the patient cannot be left alone in the room (e.g., SIB requires blocking, the patient is afraid to be left alone in the room); if this is the case, conduct an ignore condition instead of alone.

- **Materials:** 1 chair, unless a target behavior requires materials (e.g., baited room for pica or disruption)
- **Instructions to patient:** "You need to stay in here for a little while. I'll be back in about 10 minutes." (Discuss with the SBA whether or not instructions will be given)
- **Stimulus condition:** The patient is alone in the room with no toys available
- **Note:** Inform SBA if the patient repeatedly asks or attempts to get out of the room, or engages in problem behavior that appears to be related to being in the room
- **Modifications:** [Click here to enter text.](#)

\*\*\* (delete whichever condition is not applicable for your patient, Alone or Ignore) \*\*\*

#### Ignore

Only conduct the ignore condition with patients who cannot be left alone in the room for the alone condition. Discuss with your SBA if aggression is the only target problem behavior.

- **Materials:** 2 chairs, unless a target behavior requires materials (e.g., baited room for pica or disruption)
- **Instructions to patient:** “You need to stay in here for a little while. I will not be available.”
- **Stimulus condition:** The patient is in the room with no toys available. The therapist is also present, standing or seated approximately 8ft away from the patient. The therapist does not look at or engage with the patient in any way
- **Consequence for target behavior:** Ignore all behaviors. Block only when necessary to maintain safety or for other behaviors specified by the SBA (e.g., restraint removal). If blocking occurs in the ignore condition, it must occur throughout all ignore sessions in the analysis
- **Note:** Inform SBA if the patient repeatedly asks or attempts to get out of the room, or engages in problem behavior that appears to be related to being in the room
- **Modifications:** [Click here to enter text.](#)

## Attention

Conduct the attention condition with all patients.

- **Materials:** 2 chairs, low preferred toys (generally, lowest three items from the preference assessment, but review with SBA), item for therapist to focus on (e.g., magazine)
- **Instructions to patient:** “I need to do some work and will not be available for the next 10-minutes.”
- **Stimulus condition:** The therapist sits in the chair and pretends to be busy, low preferred toys are available for the patient to play with independently
- **Consequence for target behavior:** Provide brief social attention and non-punitive physical contact (e.g., “Don’t do that, you’ll hurt yourself” while placing a hand on the patient’s shoulder; or “You’re going to break that” while touching patient’s arm) for each occurrence of target behavior. If problem behavior is occurring very rapidly (e.g., multiple responses per second), provide continuous attention, but you do not need to provide a separate statement for each occurrence
- **Consequence for other behavior:** Ignore
- **Note:** Notify SBA if the patient attempts to obtain attention appropriately (e.g., lightly taps therapist, verbally requests attention, etc.)
- **Modifications:** [Click here to enter text.](#)

## Tangible

Only conduct the tangible condition if maintenance of problem behavior by positive reinforcement in the form of access to preferred items is suspected based on observation or staff report.

- **Materials:** 2 chairs, highly preferred toy(s) (with history of problem behavior associated with removal): [Click here to enter text.](#)
- **Instructions to patient:** “You may play with your toy for a few minutes and then it will be put away.”
- **Stimulus condition:** Allow the patient 2-minutes access to the toy prior to beginning the session (therapist and patient are together in room, but no data are collected). At the

end of the 2-minute period and immediately prior to the start of session, tell the patient, "Time to put this away." If the patient does not hand over the item, take the item from the patient without further prompting. Once session begins, sit or stand in the room holding the toy

- **Consequence for target behavior:** Say "okay" and return the toy to the patient for 30s. Provide no social attention, and do not play with the patient. Ignore subsequent behaviors, but continue to score. Take the toy back after 30s
- **Consequence for other behavior:** Ignore
- **Note:** If the patient does not engage with the toy during the 2-minutes pre-session access, stop and notify your SBA. Ignore appropriate requests for the toy, but notify the SBA if this occurs
- **Modifications:** [Click here to enter text.](#)

## Toy Play

Conduct the toy play condition with all patients.

- **Materials:** 2 chairs, highly preferred toys (generally, top three items from the preference assessment, but review with SBA): [Click here to enter text.](#)
- **Instructions to patient:** "We're going to play with some toys for a while."
- **Stimulus condition:** Preferred toys are available. The therapist sits in a chair and a chair is available for the patient. The therapist will not prompt the patient to play with the toys and will not make any requests of the patient/place any demands
- **Consequence for target behavior:** Ignore
- **Consequence for other behavior:** Ignore
- **Delivery of attention:** If the patient initiates play or communication, interact with the patient or engage in parallel play. If the patient does not initiate interaction, provide non-contingent attention every 30-seconds (e.g., 5-10s of attention/praise, "I like the way you're playing"). If the patient is engaging in problem behavior, implement a 5s delay before delivering attention
- **Note:** Notify SBA if the patient engages in avoidance behavior, responds negatively to attention
- **Modifications:** [Click here to enter text.](#)

## Demand

Conduct the demand condition with all patients.

- **Materials:** table, 2 chairs, demand materials: [Click here to enter text.](#)
- **Demands:** Identify five tasks through caregiver interview and/or informal observation that appear to be nonpreferred. These tasks may vary in response effort and in skill domain, as needed. Present each task an equal number of times in a quasi-random order (i.e., present all five tasks once before repeating any)
  1. [Click here to enter text.](#)
  2. [Click here to enter text.](#)
  3. [Click here to enter text.](#)
  4. [Click here to enter text.](#)
  5. [Click here to enter text.](#)

- **Instructions to patient:** “We are going to do some work for a while.”
- **Stimulus condition:** The patient and therapist are seated at the table. During each session, the therapist will continuously present instructional trials using three-step guided compliance at a 5s inter-prompt interval
- **Consequence for target behavior:**
  - During the demand sequence/demands present: Immediately remove the demand materials (do not provide attention), turn away, and do not look directly at the patient. Provide escape even if problem behavior occurs before the prompt is issued (e.g., as you place the demand materials back on the table, the patient engages in a target problem behavior, then provide escape as previously described)—be sure to discuss with your SBA. Issue a new demand after 30s
  - During the 30s escape period: Ignore and do not look at the patient. Continue to score target behaviors during the escape period. Issue a new demand after 30s
- **Consequence for other behavior:** Ignore
- **Consequence for compliance:** Provide verbal praise for compliance following the verbal or gestural prompt
- **Note:** Discuss with your SBA whether demands will continue to be presented even if the patient leaves the table or whether they will be physically guided back to the table. Notify your SBA if the patient appropriate request a break
- **Modifications:** [Click here to enter text.](#)

## Assessing Potential Precursors to Severe Problem Behavior

### *Study 2: Experimental Precursor Analysis*

**Purpose:** Study 2 will be conducted following the identification of a likely precursor and the maintaining variable of the likely precursor during Study 1. Study 2 will identify the functional relation between the likely precursor and severe problem behavior.

**Participants:** Individuals who have completed Study 1 and a likely precursor was identified

#### **Safety Procedures:**

- Safety Equipment: [Click here to enter text.](#)
- Restraints Worn: [Click here to enter text.](#)
- Permanently Blocked Behaviors [Click here to enter text.](#)
- Criteria for Session Termination: [Click here to enter text.](#)

**Data Collection:** Data will be collected on the rate of SPB and likely precursor. Data will also be collected on the duration of reinforcement.

*Stability Criteria:* Mean  $\pm$  .25SD

Data will be considered stable if three consecutive data points fall within  $\pm$  .25 standard deviation of the mean. This criterion will be used in conjunction with visual inspection.

Researchers will use visual inspection to determine the following:

- No decreasing trend
- Lack of responding

**Materials:** Materials will include:

- Table
- Two chairs
- Demand materials (if applicable)
- Highly preferred items (if applicable)
- Protective equipment (if applicable)

#### **Study 2:**

*General:*

4. Sessions will be **5 minutes** in length and conducted in a **padded treatment room**
5. Sessions will be identical to the FA condition in which function was found during Study 1  
(*Attach session description to Study 2 – Appendix A*)
  - FA condition where function was found: [Click here to enter text.](#)



6. A reversal or multielement design will be used to demonstrate the functional relation between the likely precursor and SPB.
  - One these conditions is identical to the relevant FA condition (named *CR SPB / EXT Precursor* below)
    - Thus, the design should accommodate the extant data from Study 1 (e.g., in a reversal, the initial A phase should come from Study 1).
7. This analysis includes the following sequence of conditions:
  - Contingent Reinforcement for precursor and extinction for severe problem behavior (*CR Likely Precursor / EXT SPB*)
  - Contingent Reinforcement for severe problem behavior and extinction for the likely precursor (*CR SPB / EXT Likely Precursor*)
  - Noncontingent Reinforcement (*NCR*)
8. Problem behavior: [Click here to enter text.](#)
9. Likely precursors: [Click here to enter text.](#)
- 10. If the likely precursor cannot be ethically blocked, the participant should not be included in Study 3**

## CONDITIONS

### ***CR Likely Precursor / EXT SPB***

- The experimenter will deliver the functional reinforcer to the participant contingent on the occurrence of a likely precursor.
- All SPB will be ignored.

### ***CR SPB / EXT Likely Precursor***

- The experimenter will deliver the functional reinforcer to the participant contingent on the occurrence of SPB.
- All likely precursors will be ignored.

### ***NCR***

- The functional reinforcer will be provided independent of responding.
- The reinforcement schedule will be yoked to rate of delivery of reinforcement during the immediately preceding condition. (e.g., reinforcement will be delivered every 30 s if reinforcement was delivered contingent on SPB/precursor every 30 s during the session immediately preceding the initial NCR session).
- The amount of reinforcement will be equal to the reinforcement delivered in the immediately preceding condition (e.g., 10 s of attention will be delivered if attention was delivered for 10 s contingent on SPB/precursor during the session immediately preceding the initial NCR session).
- All SPB and likely precursors will be ignored.

		Target Behavior	
		Problem Behavior	Likely Precursor
Condition	CR Likely Precursor / EXT SPB	Ignore	Reinforcement
	CR SPB / EXT Likely Precursor	Reinforcement	Ignore
	NCR	Ignore	Ignore

## KEY ASSIGNMENTS

<b>1</b> <b>Target Behavior</b> (SIB, if applicable)	Operationally define
<b>2</b> <b>Target Behavior</b> (AGG, if applicable)	Operationally define
<b>3</b> <b>Target Behavior</b> (DIS, if applicable)	Operationally define
<b>4</b> <b>Likely Precursor</b>	Operationally define
<b>7</b> <b>Attention</b>	Therapist delivers brief attention contingent upon target PB
<b>8</b> <b>Initial Prompt</b>	Therapist delivers verbal prompt
<b>9</b> <b>Compliance</b>	Compliance following the verbal or gestural prompt
<b>E</b> <b>Engagement</b>	<u>3 sec onset/offset</u> – (for toy play and tangible conditions) includes any attempt to manipulate the toy that is not destructive or harmful to self or others. Includes stereotypy with the item, does not include mere contact
<b>R</b> <b>Reinforcement</b>	<u>Immediate onset/offset</u> – (for demand and tangible conditions) 30s escape or access to tangible item

## **Assessing Potential Precursors to Severe Problem Behavior**

### ***Study 3: Identification of Precursor-SPB Relation***

**Purpose:** Study 3 will examine the type of precursor-SPB relation; 1) response class or 2) behavioral chain

**Participants:** Individuals who have completed Study 2 and a likely precursor was identified and can be ethically blocked

#### **Safety Procedures:**

- Safety Equipment: Click here to enter text.
- Restraints Worn: Click here to enter text.
- Permanently Blocked Behaviors Click here to enter text.
- Criteria for Session Termination: Click here to enter text.

**Data Collection:** Data will be collected on the rate of SPB and likely precursor. Data will also be collected on the duration of reinforcement.

***Stability Criteria:*** Mean  $\pm$  .25SD

Data will be considered stable if three consecutive data points fall within  $\pm$  .25 standard deviation of the mean. This criterion will be used in conjunction with visual inspection. Researchers will use visual inspection to determine the following:

- No decreasing trend
- Lack of responding

**Materials:** Materials will include:

- Table
- Two chairs
- Demand materials (if applicable)
- Highly preferred items (if applicable)
- Protective equipment (if applicable)

#### **Study 3:**

***General:***

- 11. If the likely precursor identified in Study 2 cannot be ethically blocked, the participant should not be included in Study 3.***
- 12. Sessions will be at least 5 minutes in length and conducted in a padded treatment room**

13. Sessions will be identical to the FA condition in which function was found during Study 1  
(Attach session description to Study 3 – Appendix A)
  - FA condition where function was found: [Click here to enter text.](#)
14. A reversal or multielement design will be used to compare the two conditions.
15. This analysis includes the following sequence of conditions:
  - Blocking
  - No Blocking
16. Problem behavior: [Click here to enter text.](#)
17. Likely precursors: [Click here to enter text.](#)

## CONDITIONS

### ***Precursor Blocking***

- The experimenter will block the participant from any attempt to engage in the precursor.
- The experimenter will deliver the functional reinforcer contingent on every occurrence of SPB
- Engaging in precursors will not result in reinforcement delivery. That is, if a participant successfully engages in a precursor, the precursor will be ignored.

### ***No Precursor Blocking***

- The experimenter will deliver the functional reinforcer contingent on every occurrence of SPB.
- All precursors will be ignored.

		Target Behavior	
		Problem Behavior	Likely Precursor
Condition	Blocking	Reinforcement	Block
	No Blocking	Reinforcement	Ignore

## KEY ASSIGNMENTS

<b>1</b> <b>Target Behavior</b> (SIB, if applicable)	Operationally define
<b>2</b> <b>Target Behavior</b> (AGG, if applicable)	Operationally define
<b>3</b> <b>Target Behavior</b> (DIS, if applicable)	Operationally define
<b>4</b> <b>Antecedent Behavior</b>	Operationally define
<b>5</b> <b>Antecedent Behavior</b>	Operationally define
<b>6</b> <b>Antecedent Behavior</b>	Operationally define
<b>7</b> <b>Attention</b>	Therapist delivers brief attention contingent upon target PB
<b>8</b> <b>Initial Prompt</b>	Therapist delivers verbal prompt
<b>9</b> <b>Compliance</b>	Compliance following the verbal or gestural prompt
<b>E</b> <b>Engagement</b>	<u>3 sec onset/offset</u> – (for toy play and tangible conditions) includes any attempt to manipulate the toy that is not destructive or harmful to self or others. Includes stereotypy with the item, does not include mere contact
<b>R</b> <b>Reinforcement</b>	<u>Immediate onset/offset</u> – (for demand and tangible conditions) 30s escape or access to tangible item

## Statistical Analysis Plan

Study 3 was the clinical trial. No individuals participated in Study 3, thus the statistical analysis plan was not implemented.