Module: Antecedent-Based Interventions

Steps for Implementation: Antecedent-Based Interventions (ABI)

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Antecedent-based interventions (ABI) are a collection of practices in which environmental modifications are used to change the conditions in the setting that prompt a learner with ASD to engage in an interfering behavior. The goal of ABI is to identify the conditions in the setting that are reinforcing the interfering behavior and then to modify the environment or activity so that the environmental conditions no longer elicit the interfering behavior.

Step 1. Identifying the Interfering Behavior

In Step 1, teachers/practitioners identify an interfering behavior for a learner with ASD that they would like to decrease. In most cases, the interfering behavior is one that is interfering with learning and development (e.g., self-stimulation, repetitive, self-injurious, stereotypical). Therefore, teachers/practitioners complete a high quality functional behavioral assessment (FBA) to identify the function of the interfering behavior and select an ABI strategy that addresses the function of the behavior and can be used to decrease the interfering behavior. **Please refer to *Functional Behavioral Assessment: Steps for Implementation* (National Professional Development Center on ASD, 2008) to acquire more in-depth information about the following FBA strategies.**

1. Teachers/practitioners use direct observation methods that generally include using:

    a. A-B-C data charts and

A-B-C data charts help team members determine what happens right before the behavior (the antecedent), the behavior that occurs, and what happens directly after the behavior (the consequence). These data provide insight into why the learner may be engaging in a particular behavior.

    b. scatterplots.

Scatterplots help team members determine:

- the possible functions of the behavior,
- when the behavior is occurring, and
- times of the day when an intervention might be implemented to reduce the interfering behavior.

2. Teachers/practitioners use direct assessment results to identify:

    a. where the behavior is happening;

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b. with whom the behavior is occurring;

c. when the behavior is happening;

d. activities during which the behavior occurs;

e. what other students are doing when the behavior starts;

f. what teachers/adults are doing when the behavior starts;

g. proximity of other students, teachers, and/or adults;

h. the noise level in the environment;

i. the number of individuals in the area;

j. other environmental conditions (e.g., lighting, door open/closed); and

k. the function of the behavior (i.e., *to get or obtain something*--obtaining internal stimulation, wanting something because it feels good, obtaining attention, obtaining activities or objects; or *to escape or avoid*--obtaining internal stimulation, not wanting something because it feels bad, escaping or avoiding attention, avoiding tasks or activities).

3. Teachers/practitioners develop a hypothesis statement for the interfering behavior that includes:

   a. the setting events (i.e., the environment or conditions in which the behavior occurs), immediate antecedents, and immediate consequences that surround the interfering behavior;

   b. a restatement and refinement of the description of the interfering behavior that is occurring; and

   c. the function the behavior serves (i.e., get/obtain, escape/avoid).

EXAMPLE: Kenny repeatedly bangs his head on his desk when his teacher asks him to complete an in-class assignment because he does not want to complete the task, and his teacher then walks away and Kenny does not have to do his work.

EXAMPLE: Mary flaps her hands, rocks back and forth, and yells loudly each time the bell rings to switch classes because she does not like the noise, and she then needs help from a staff member to calm down and leave the room. This often results in Mary missing part of or the entire next class.

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4. Teachers/practitioners identify an overall goal for the learner that will be accomplished as a result of the intervention.

EXAMPLE: Kenny will complete in-class assignments without banging his head.

EXAMPLE: 1) Mary will engage in minimal hand-flapping and body rocking when the bell rings at the end of each class period.
2) Mary will not yell when the bell rings at the end of each class period.
3) Mary will walk to class independently when the bell rings at the end of each class period.

Step 2. Collecting Baseline Data

Once the interfering behavior is identified, teachers/practitioners collect baseline data to determine how often the learner with ASD is currently engaging in the interfering behavior.

1. Teachers/practitioners measure a learner's engagement in the interfering behavior before implementing ABI by collecting

    a. frequency data and

Frequency data measures how often a learner engages in a particular behavior. *Event sampling*, a method for collecting data on behaviors that occur infrequently, is used to record every instance of the interfering behavior. Data are then used to identify a potential pattern of a learner's behavior over a period of days or weeks. Table 1 provides an example of an event sampling data collection sheet.

Table 1. Example of Event Sampling Data Collection Sheet

Date	Bites hand	Total	Before, during, or after reinforcement
7/26/08	XXXXXXXXXXXX	13	Before
7/27/08	XXXXXXXXXXXXXXX	16	Before
7/28/08	XXXXXXXXXXXXX	14	Before
7/29/08	XXXXXXXXXX	11	Before

    b. duration data.

Duration data are used to record how long a learner engages in a particular behavior during a class, activity, or treatment session. For example, a teacher might collect data on how long a learner with ASD engages in hand mouthing during math class. Table 2 provides an example of a duration data collection sheet.

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Table 2. Example of Duration Data Collection Sheet

Date	Start time	End Time	Total minutes	Before, during, or after reinforcement
7/26/08	9:00	9:15	15	Before
7/27/08	9:05	9:20	15	Before
7/28/08	9:00	9:13	13	Before
7/29/08	9:10	9:30	20	Before

Baseline data give teachers/practitioners a starting point from which they can evaluate whether the interfering behavior decreases as a result of ABI.

2. Teachers/practitioners collect baseline data for a minimum of four days before implementing ABI.

3. Teachers/practitioners collect baseline data in numerous settings and/or activities.

It often is useful to have more than one practitioner collect baseline data over the course of several days to compare findings. Also, by collecting data in multiple settings, teachers/ practitioners can potentially recognize patterns of behavior. For example, does the learner engage in the interfering behavior more often in one setting than another? This kind of information helps teachers/practitioners identify activities or settings that can be modified using ABI strategies.

Step 3. Implementing ABI

In Step 3, teachers/practitioners identify and implement ABI strategies that directly address the function of the interfering behavior to prevent its future occurrence.

1. Teachers/practitioners identify one of the following ABI strategies that directly addresses the function of the interfering behavior:

    a. using learner preferences,

    b. changing schedules/routines,

    c. implementing pre-activity interventions,

    d. using choice-making,

    e. altering how instruction is delivered, or

    f. enriching the environment.

Table 3 provides descriptions and examples of each of these ABI strategies.

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Table 3. Descriptions and Examples of ABI Strategies

ABI strategy	Description	Functions addressed	Examples
Using learner preferences	Tasks/activities are modified to increase interest.	Escape/avoid	• Incorporating dinosaurs into a finger painting activity • Using a Spiderman notebook for journal entries
Altering the environment	Routines and schedules are changed to decrease interfering behaviors.	Escape/avoid	• Changing seating • Changing line up procedures • Providing activities during wait time • Providing snack after non-preferred activity • Providing sufficient space between students • Clearly marking areas of the classroom (e.g., work, leisure) • Providing study carrels • Providing a kitchen timer during non-preferred tasks
Implementing pre-activity interventions	Intervention is implemented before a task associated with the interfering behavior.	Escape/avoid	• Providing a warning about an upcoming activity • Going over an assignment before class starts • Providing information about schedule changes • Using activity schedules
Using choice-making	Choice of materials or tasks is offered during activities or settings where the interfering behavior occurs.	Escape/avoid	• Choosing where to sit at snack • Choosing which activity to complete first • Choosing which toy to play with during free play • Choosing whether to write with a pencil or a pen
Altering how instruction is delivered	Instruction is modified so that learner clearly understands what is expected.	Escape/avoid	• Providing written rather than verbal instructions • Providing instructions in a checklist rather than paragraph
Enriching the environment	Providing access to appropriate behaviors (rocking chair)	Get/obtain	• Allowing quiet play with clay or doodling during lectures • Allowing chewing gum instead of playing with saliva

Cihak, Alberto, & Frederick (2007); Kern, Choutka, & Sokol (2002); Luiselli (2008)

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2. Teachers/practitioners implement the selected ABI strategy by creating a lesson plan that includes:

    a. weekly objectives for the learner with ASD that will lead to a decrease in an interfering behavior,

    b. a statement of the strategy and what the teacher will do (e.g., adapting instructions for assignments), and

    c. the materials needed to implement the ABI strategy.

The lesson plan provides teachers/practitioners with a structure for identifying what will be needed to implement the strategy effectively and how the environment will be modified to decrease the occurrence of the interfering behavior. Table 4 provides a sample lesson plan.

Table 4. Sample ABI Lesson Plan

Date: *Week of 11/17/08 -11/21 /08* Classroom: *Math class* Teacher: *Mrs. Banks* Learner's name: *Kenny* Interfering behavior: *Banging head on desk when asked to complete an in-class assignment*
Objectives for this week: 1. *Kenny will complete one in-class assignment with minimal head banging (i.e., less than three times).*
Strategy: *Altering how instruction is delivered* To implement the strategy, I will: 1. *Give Kenny written instructions for assignments rather than providing them verbally.* 2. *Modify worksheet instructions by providing Kenny with a checklist for completing the task.* 3. *Ignore Kenny when he bangs his head while also pointing to written instructions again.* 4. *Let Kenny have 10 minutes of computer time after completing an in-class assignment with minimal head banging (i.e., less than three times).*
Materials needed: 1. *Sentence strips: "Complete these math problems." "Finish your work."* 2. *Checklists for all worksheets that need to be completed this week.*

3. Teachers/practitioners ignore the interfering behavior when it occurs.

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Extinction often is used in conjunction with ABI strategies. With this evidence-based practice, teachers/practitioners no longer provide reinforcement for the interfering behavior by ignoring it, which eventually leads to a decrease in or elimination of the interfering behavior.

EXAMPLE: Mrs. Banks gives Kenny written instructions to complete an in-class math assignment. Kenny immediately starts banging his head. Mrs. Banks ignores the behavior and points to the sentence strip again which says, "Complete these math problems." Kenny looks at Mrs. Banks and starts banging his head again. Again, Mrs. Banks points to the sentence strip. Kenny bangs his head two more times and then starts the assignment.

Please refer to *Extinction: Steps for Implementation* (National Professional Development Center on ASD, 2008) for more information about extinction.

4. Teachers/practitioners provide learners with reinforcement each time they:

    a. do not engage in the interfering behavior, and

    b. complete the weekly objective.

EXAMPLE: During math class, Mrs. Banks gives Kenny written instructions to complete an in-class assignment. Kenny bangs his head on his desk one time and then follows the checklist instructions provided with the math worksheet. After 10 minutes, Kenny completes the assignment and Mrs. Banks tells Kenny that he can play on the computer for 10 minutes.

Please refer to *Positive Reinforcement: Steps for Implementation* (National Professional Development Center on ASD, 2008) for more information about reinforcement.

Step 4. Monitoring Learner Progress

1. Teachers/practitioners use progress monitoring data to evaluate whether the interfering behavior is decreasing as result of the intervention.

The same data collection sheets that were used to collect baseline data can be used to track learner progress.

Table 5. Example of Event Sampling Data Collection Sheet

Date	Bites hand	Total	Before, during, or after reinforcement
7/26/08	XXXXXXXXXXXXX	13	Before
7/27/08	XXXXXXXXXXXXXXXX	16	Before
7/28/08	XXXXXXXXXXXXXX	14	Before
7/29/08	XXXXXXXXXXX	11	Before
7/30/08	XXXXXXXXX	9	During
7/31/08	XXXXXX	6	During
8/01/08	XXX	3	During

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Table 6. Example of Duration Data Collection Sheet

Date	Start time	End Time	Total minutes	Before, during, or after reinforcement
7/26/08	9:00	9:15	15	Before
7/27/08	9:05	9:20	15	Before
7/28/08	9:00	9:13	13	Before
7/29/08	9:10	9:30	20	Before
7/30/08	9:10	9:22	12	During
7/31/08	9:15	9:25	10	During
8/01/08	9:05	9:10	5	During

2. Teachers/practitioners use progress monitoring data to adjust intervention strategies if the interfering behavior does not decrease.

If the interfering behavior is not decreasing, teachers/practitioners must try to identify potential reasons for this. The following questions may be helpful during this problem-solving process.

- Is the interfering behavior well defined? That is, is it observable and measurable?
- Are ABI strategies being implemented consistently by all staff?
- Do the ABI strategies directly address the function of the behavior identified during the FBA?

References

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Kern, L., Choutka, C. M., & Sokol, N. G. (2002). Assessment-based antecedent interventions used in natural settings to reduce challenging behavior: An analysis of the literature. *Education and Treatment of Children, 25*(1), 113-130.

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