ABA/Evidence Based Practices - Kris Baker, Autism Consultant SSJCSS

ABA – Applied Behavior Analysis

What is ABA? Applied Behavior Analysis is a discipline that refers to the scientific and systematic application of methods that are based on behavior principles in real world settings (Hagopian & Hardesty, 2014). Information, interventions and programs for students are based on the collection of baseline data that is used to develop a hypothesis. This hypothesis is an informed guess, based upon sound data collection regarding the relationship between events or conditions and the students' problematic behaviors (NPDC-ASD, 2014). This data collection then drives the planning of interventions, to monitor outcomes, areas in need of revision, student success and mastery of a variety of academic and behavioral skills. The hypothesis is tested through implementation of intervention and sound data collection that drives future programming or intervention.

Applied: The intervention is implemented, with fidelity, in an effort to make positive and meaningful changes in the life of the student (Leach, 2010).

Behavioral: denotes that the goal determined for the student is observable and measurable. By being measurable, multiple individuals can observe and collect data on the student's performance (Leach, 2010). *Behavior must be the target of change*.

Analytic: indicates that interventions are formed through analyzing baseline data. The baseline data drives the interventions in an effort to create positive changes in the student's behavior. Analytic means there is a functional relationship between the interventions being implemented and the actual changes in behavior.

ABA is a structure for looking at behaviors and determining what causes them to increase or decrease. Based on this information, strategies are developed to teach new skills.

Verbal Behavior

Verbal Behavior: targets language and *why* we use words. It is behavior that is reinforced through the response of another person's behavior. With Verbal Behavior, language is classified into functional units, each serving a different function. Verbal Behavior determines that these functional units of language are necessary for effective verbal communication including understanding, generalization and mastery of language. Keep in mind that verbal behavior can include vocal responses, sign language, gestures, writing and various forms of augmentative communication.

Remember that verbal behavior can include vocal responses, but also includes sign language, gestures, writing, and various forms of augmentative communication.** However, some ABA and Verbal Behavior purists do not believe in using pictures or AAC because you don't always have access.

These 4 units of language are:

Mand: a request. Mands are used to get desires and needs met and the reinforcement for the use of this operant is that which is naturally reinforcing. This comes from "demand" and it is evoked by a motivating operation (MO, see below) followed by specific reinforcement. Example: if the student points to a cookie – they get the cookie.

Tact: A comment used to share an experience or draw attention – label for attention. This comes from "contact" and involves naming things or actions with which the individual has direct contact. For example, a student sees a kite in the sky and says, "Kite" in an effort to draw another individual's attention to the kite and draw a response from another individual. Reinforcement for tacts is non-specific reinforcement – the other individual stating, "Yes, I see the kite."

Echoic: a repeated or echoed word. This is an important step in that children need to have imitation skills to learn. Echoics are vocal being repeated with vocal. Example, the staff says, "Ball?" and the student's response is "Ball."

Intraverbal: an answer to a question through verbal or other (sign language, PECS) response.

Verbal Operant	Antecedent	Behavior	Consequence
Mand	Motivating Operation (wants cookie)	Verbal behavior (says "cookie")	Direct reinforcement (gets cookie)
Tact	Sensory Stimuli (sees or smells cookie)	Verbal behavior (says "cookie")	Non-specific reinforcement (gets praised, for instance)
Intraverbal	Verbal stimulus (Someone says: "What do you eat?")	Verbal behavior (says "cookie")	Non-specific reinforcement (gets praised, for instance)
Echoic	Verbal Stimulus (someone says "cookie")	Verbal behavior: repeats all or part of antecedent (says "cookie")	Non-specific reinforcement (gets praised, for instance)

(PaTTAN Autism Initiative, 2014)

Other Operants:

ABA Operant	Education	Meaning	Example or Sample Goals
Listener Responding	Receptive language skills	Focuses on the child paying attention when someone speaks, attending as an audience to the speaker, and responding to the speaker's behavior	"Touch your head" and the student touches their head. "Go to the kitchen and get a tissue" Student complies.
			Student will follow 3 step directions (e.g. get coat, hang it up, and sit down on the carpet) in 9/10 trials.
			Student responds to hearing his/her own name 3/3 instances in 7/10 trials.
Listener Responding: function/feature/class	Receptive classification	(LRFFC) includes the ability to correctly respond nonverbally when objects and activities are	Give me the item you use to clean. Touch the brown animal.
(LRFFC)	skills	described or talked about, but not specifically named (Sundberg, 2008).	Present the student with several items and ask the student to identify the food item or the item that belongs in the kitchen.
		Always prompted touch the, give me, which are	Student will select the correct item from an array of 10 items given verbal prompt "Wh" question (what do you ride, which one barks, who can hop) in 8/10 trials.
Imitation	Imitation	The copying the motor movement (fine and gross motor) of another individual with formal similarity (the person modeling and the person imitating look the same).	The student would learn the sign for "candy," and from there be able to mand (request) for "candy" by using the same sign without an imitative prompt.
			Student will imitate 8 motor movements when prompted with "Do this " with 80% accuracy in 9/10 trials.
			Student imitates 5 different three-component sequences of actions when prompted with "Do this" (eg. Jump, clap, touch toes) with 100% accuracy in 9/10 trials.
Visual Perceptual Skills – Match to Sample	Visual Discrimination	Visual discrimination involves tasks such as puzzles, block designs, patterns, sequences, and matching-to-sample	Given a variety of shapes of various sizes, Jason will correctly match the picture of the shape to a 3D shape. Student will match the icon of an item to the actual photograph of the item.
			Student completes 10 different block designs (parquetry, shape puzzles, pattern blocks) with at least 8 different pieces with 100% accuracy in 8/10 trials.
			Student will sort 5 items from 5 different categories without a model (e.g. animals, food, and clothing)

ABA Language vs Public Education Language and Goals

ABA	Education	Meaning	Example or Sample Goals with blended language:
Mand	Request	Asking for something when you want it or asking for information	 Student spontaneously emit an average 10 different requests/mands per day Student will request/mand with at least (specify amount) different "wh" questions or other question words(e.g., who, what, when where, can or do)
Tact	Label	Naming an item, person, place or action - (item or action present)	 Student will label/tact at least 10 different items (people, place, or pictures) on command with% accuracy Student will label/tact 5 items spontaneously in an hour 5 out of 6 trials. Student will label/tact 5 different colors and 5 different shapes with% of accuracy trials? Student will label/tact different emotions with% accuracy trials?
Tact (TFFC)	Label by feature, function and/or class	Labeling items by feature, function or class with picture or items present. (That dog is an animal.)	Student will label/tact 10 items by feature, function or class with% accuracy trials?
Intraverbal	Conversation	Answering or asking questions – what the student says is determined by what others say	 Student will provide correct verbal responses to fill in the blank questions involving nouns/verbs Student will answer different yes-no questions
Echoic	Echolalia	Repeating a word or phrase	 Student will echo at least vowel sounds with % accuracy Student will echo at least consonant sounds Student will echo at least vowel/consonant combinations

ABA/Evidence Based Practices (EBPs) and Public Education

ABA	EBP Y or N	Education	Meaning	Example or Sample Goals with blended language:
Extinction	Y	Withdrawal of reinforcement, planned ignoring	When the reinforcer responsible for maintaining a behavior is withheld Ignoring the problem behavior and reinforcing appropriate behavior	Student crawls under desk to get teacher attention – teacher ignores student because it is not a distraction to instruction or learning for other students Student gets out of seat, teacher ignores, teacher reinforces when student is in seat
Fair/Pair	N	Replacement Behavior F.E.R.B.	A socially appropriate replacement behavior that has the potential to take the place of a problem behavior – the replacement behavior serves the same function.	Student walks out of class when angry = student is given a hot pass to request the ability to leave class to a designated location.
Response/ Redirection	Y	Divert/Distract	The problematic behavior is blocked or interrupted. Once the behavior is blocked, immediately prompt the student to engage in a competing behavior	For example – a student is scripting to avoid work, teacher asks a question to interrupt the script and student is redirected to another task and reinforced. Student engages in self-injurious behavior, student is blocked/distracted and handed a check schedule card redirected to their schedule and reinforced. Student will
Time Delay	Y	Wait Time/Processing Time	Providing a brief period of wait time paired with an expectant look and body language to encourage the student to initiate or respond.	Student will respond to verbal prompt (identify – addition computation orally, comprehension question, take their turn) with 80% accuracy within 4/5 seconds. Student will comply with a request to perform a non-preferred activity (examples) within (set time) 8/10 trials. Student will use AAC device to responsd to questions within 4/5 seconds with 1 or fewer prompts with 80% accuracy. Student will independently respond, through the use of yes/no visual cue cards, to indicate whether he wants something or not within 2/3 seconds in 8/10 trials.
Task Analysis	Y	Breaking down/chunking	The process of breaking a skill into smaller, more manageable steps in order to teach the skill one part at a time.	Forward Chaining: teaching the first step then the second Backward Chaining: teaching the last step, the second to last step

ABA	EBP Y or N	Education	Meaning	Example or Sample Goals with blended language:
Prompting	Y	Redirection, instruction, cue, visual cue	Any help given to learners to assist them in using a specific skill. Prompts are usually given by a staff member, adult or peer prior to the learner erroring when attempting the skill.	 Methods of prompting – most to least and least to most Types of Prompts: Verbal prompts, gestural prompts (staff movements to cue a skill or behavior), physical prompts (staff touching a learner to help them perform the target behavior or skill), and visual prompts (staff provide pictures of events or desired expectations to cue the learner to perform the skill or behavior) Goals: Student will transition from tasks or activities without verbal refusal or running from staff with 2 or fewer verbal/visual prompts. (See prompting rubric for measurement) Student will walk in line quietly and keep hands and feet away from others with 1 or fewer prompts 7/10 trials. (See prompting rubric for measurement)
Instructional Control	N		Instructional control is an ABA term that describes how to establish a paired, authoritative relationship. Instructional control is the product of pairing (see below) and after having developed a history of reinforcing compliance.	 Adult is in control of all items and materials. Let the child know YOU ARE AND CAN BE FUN! Always say what you mean what you say. Following your directions/instructions should be to their benefit and reinforcing. Start with continuous reinforcement and move to varied reinforcement Track and record the child's reinforcing items and activities! MAKE A LIST, we can't remember it all! (Preference assessment) Ignoring your instructions or inappropriate behavior will NOT result in reinforcement!
Pairing	N	Building Rapport	The process of creating (or recreating) an enjoyable, reinforcing, and pleasurable relationship between adult and child, where the child comes to view the adult as not just the <i>giver of reinforcement</i> , but as actual reinforcement.	<u>Pairing and Instructional Control</u> : When done properly pairing will help staff gain instructional control. The reason why is because if I am restricting access to the child's most reinforcing items then that means I control them and some type of interaction with me is required to get the items back. If we have rapport, that interaction is not viewed as a "task" but reinforcement itself.
Behavior Momentum (High- probability request or High-P)	N	Increasing Compliance Non- Compliance	A procedure to increase compliance by identifying a minimum of (2-4) behaviors/activities that the student has a high probability of compliance. Keep data on high probability requests and low probability requests. Gradually reduce the frequency of high probability requests.	Method: Make the requests for the high probability behaviors (three things the student can do or perform easily) before making a request for a low probability of compliance. Once momentum of compliance has started and is reinforced, it is considered more likely that it will continue with the low probability responses. Goals: Student will comply with three high probability requests (identify these behaviors or requests) with 1 or fewer prompts 8/10 trials. Student will comply with 1 low probability request after three high probability requests with 2 or fewer prompts 8/10 trials. By making easy, easy, easy, difficult requests, the student builds MOMENTUM or confidence.

ABA	EBP Y or N	Education	Meaning	Example or Sample Goals with blended language:
Discrete Trial Teaching (DTT)	Y		Method of instruction in which skills are broken down into teachable steps, then presented and reinforced in a repetitive fashion until the	Three major components: the antecedent (the directive or request), the behavior (the learner's response), and the consequence (the reinforcement).
			student demonstrates mastery of the skill	(ex. teacher presents a question or instruction, student responds, then teacher presents appropriate consequence).
Errorless Learning	N		Presenting an instruction with a prompt so that there is a 100% chance that the student will respond correctly.	Method: Prompts are faded through trials and other distractors and options are added. Errorless learning benefits:
			Teaching a task correctly upfront and in a manner that does not allow the student to establish an incorrect pattern.	 Minimizes the number of errors Increases overall time available for instruction Reduces the likelihood that errors will be repeated in future trials Reduces frustration and the occurrence of inappropriate emotional behaviors by increasing opportunities for reinforcement
Social Narratives	Y	Social Stories	A short story, written from the student's perspective, using simple and clear statements to teach a variety of academic, behavioral, or social skills.	Prompting/fading procedures as well as reinforcement can be used in conjunction with social narratives.
Self- Management	Y	Self-Monitoring Student lead intervention	Student is taught how to monitor their own performance using a self-assessment tool.	Students are taught to discriminate between appropriate and inappropriate behaviors, monitor and record their behaviors and have input on the rewards for meeting personal goals.
				 Suggested Method: Select a specific goal or target behavior with the student Discuss expectations and provide an example Select a reinforcer Teach the student how to record their performance and self-reinforce Both the teacher and student initially record the student's performance. The teacher recording fades once the student is consistently and accurately recording their behavior.
Functional Behavior Assessment (FBA)	Y	FBA	Functional Behavioral Assessment is a systematic collection and analysis of data that will vary in length and scope depending on the severity of a student's behavior. Results and analysis of the data collection are used in developing the student's Behavioral Intervention Plan.	The goal of the FBA is to describe the interfering or problem behavior, identify the antecedent/trigger, consequent events that control the behavior, develop a hypothesis of the function of the behavior and test the hypothesis through data collection. The FBA is a process of determining the relationship between a person's internal/external environment and the occurrence of problematic behavior.

ABA	EBP Y or N	Education	Meaning	Example or Sample Goals with blended language:
Social Skills Training (SST)	Y	Social Skills Groups	SST teaches individuals with ASD how to appropriately interact with typically developing peers. Social skills groups generally include	Social skills groups can target the following skills: asking for help, taking turns, initiating conversations, personal space, sharing and a variety of other social skills as well.
			instruction, modeling or role- playing, practice, and feedback to help individuals with ASD develop	Goals: Student will spontaneously follow or imitate a peer, in a social group setting, at least 4 times in 4/5 trials.
			positive and appropriate social interactions with peers.	Student will request/mand for others to attend to the same stimulus that Student is attending to at least 5 times in 4/5 group settings.
				Student will respond to a request/mand from a peers (set amount) during a day/trial/observation in a group setting.
				Student will request/mand to peers using 2 or more word questions an average of (set amount of times) in a group setting.
Pivotal Response	Y		PRT builds on learner initiative and interests and is particularly effective	The Pivotal Areas include: motivation, responsivity to multiple cues, self-initiations, and self-management.
Training (PRT)			for developing communication, language, play and social behaviors. Motivation is the most pivotal element: results in increases in joint attention, turn taking, and student affect.	<u>Motivation</u> : Let child choose materials, use natural and direct reinforcers (e. g). "Ball" gets ball, not praise, intersperse previously learned tasks with new tasks, reinforce any clear and goal-directed attempts made by the child immediately
			difect.	Multiple Stimuli: e.g. use two different objects but same verb such as "roll car" and then "roll ball" then "throw ball"
				<u>Self-initiations</u> : Wh- questions, assistance seeking questions, information seeking questions
				<u>Self-management</u> : Teach child to be aware of inappropriate behavior, internalize, self-monitoring device, foster behavioral management, use self-administered rewards
Video Modeling/Video Self-Modeling	Y		A video of peers or the specific student demonstrating a desired behavior or skill in an effort to increase the student's use of the behavior or skill shown.	Once the target behaviors are captured on video, students can view them, talk about what they observed on the video, role-play what was observed, and receive reinforcement for demonstrating the target behavior or skill.
				Targeted skills with video modeling: communication, social skills, academic skills and independent functioning skills.

ABA	EBP Y or N	Education	Meaning	Example or Sample Goals with blended language:
Peer Mediated Intervention	Y	Peer tutor, peer helper, buddy	Staff systematically teach peers strategies for engaging children and promoting positive interactions between peers and the student.	Goal: Student will transition from class to class for at least 3 periods with 3 or fewer prompts from a peer model with (set percentage) accuracy.
			F	Student will kindly greet (say hello, good morning, hey) at least one student each morning when entering the classroom 4/5 trials. (Teach specific peers to model the behavior for the student then select specific peers to attempt to engage in the greeting.)
Structured Work Systems	Y	Work system	The individual work system is defined as a visually organized space where learners independently practice skills that have been previously mastered under the	The work system communicates 4 things to the learner: The work they are to do How much work is to be completed How the student knows they are finished
Visual Supports	Y	Visual schedule Visual cue cards Visuals	supervision of an adult. Visual supports are any tool presented visually that supports an individual as he or she moves through the day. (NPDC-ASD)	What to do next – once they are finished. "Visual supports might include, but are not limited to, pictures, written words, objects within the environment, arrangement of the environment or visual boundaries, schedules, maps, labels, organization systems, timelines, and scripts. They are used across settings to support individuals with ASD" (National Research Council, 2001).
Computer Aided Instruction	Y	Technology Computer	"Computer-aided instruction (CAI) includes the use of computers to teach academic skills and to promote communication and language development and skills. It includes computer modeling and computer tutors." (NPDC-ASD)	Teach Town Lexia Aleks Read 180 Systems 44 SuccessMaker NovaNet IXL
Antecedent- Based intervention (ABI)	Y	Alternating between preferred activities/non- preferred Warning of changes in schedule/routine	The goal of ABI is to identify factors that are reinforcing the interfering behavior and then modify the environment or activity so that the factor no longer elicits the interfering behavior	ABI procedures include 1) using highly preferred activities/items to increase interest level, 2) changing the schedule/routine, 3) implementing pre-activity interventions (e.g., providing a warning about the next activity, providing information about schedule changes), 4) offering choices, 5) altering the manner in which instruction is provided, and 6) enriching the environment so that learners with ASD have access to sensory stimuli that serve the same function as the interfering behavior (e.g., clay to play with during class, toys/objects that require motor manipulation).
		Altering instruction Addressing sensory stimuli		

Reinforcement

Reinforcement itself is an EBP however, there are many different types and levels of reinforcement! "Reinforcement describes a relationship between learner behavior and a consequence that follows the behavior. This relationship is only considered reinforcement is the consequence increases the probability that a behavior will occur in the future, or at least be maintained" (NPDC-ASD, 2014).

Reinforcement: what an individual gets or escapes by engaging in a behavior or things that maintain behavior over time (Pratt, 2014).

Types of Reinforcement:

Type	Meaning	Example
DRO -	Staff ignore the problematic behavior and	For a student who is often out of their seat,
Differential reinforcement of other	reinforce when the target behavior has not	reinforcement is given when the student sits for 10
behaviors	occurred during a set time interval.	minutes.
DRL –	Staff reinforce the student after the target	A student is reinforced for talking out 4 or fewer times in
Differential reinforcement of low	behavior occurs at a pre-determined low rate	a set amount of time – 30 minutes – if previously the
rates of behavior		student was talking out 10 times per 30 minutes.
DRI –	Staff reinforce a behavior that interferes with	A student who puts his hands on others is reinforced
Differential reinforcement of	(physically or functionally incompatible) the	when he walks in the hallway with his hands in his
incompatible behavior	inappropriate behavior and ignores the	pockets.
	problematic behavior.	
DRA –	Staff ignores the inappropriate behavior and	For a student that blurts, reinforcement is given when he
Differential reinforcement of	reinforces when a targeted replacement	raises his hand quietly.
alternative behavior	behavior is demonstrated	
DRH –	Staff reinforce student when a targeted	For a student who does not participate in class, a set
Differential reinforcement of higher	appropriate behavior is used at a	reinforcement is given when the student contributes at
rates of behavior	predetermined high rate.	least three times during one period (one hour) of class.

Schedules of Reinforcement:

Continuous: positive reinforcement that **immediately** follows each occurrence of the behavior – used to target new skills (1:1)

Intermittent: positive reinforcement is that follows intermittent occurrences of the behavior – used to maintain behaviors (every 3-5 responses)

<u>Fixed:</u> positive reinforcement is given after a predetermined number of correct behaviors/response is given (e.g. every 3rd time)

Variable: a variable number of behaviors occur before positive reinforcement is given (e.g. – lottery) Catch the student "being good"

Interval: reinforcement is followed after a pre-determined time

Ratio: reinforcement occurs after a certain number of responses

FI (Fixed Interval) – every 3 minutes VI (Variable Interval) – every 3 – 5 minutes FR (Fixed Ratio) – every three responses VR (Variable Ratio) – every 3 – 5 responses

Data Collections Methods/Rubrics for goals with Prompting EBPs

Prompting: (Leach, Flovel)

- 1. Maximum prompting: needed physical assistance
- 2. Moderate prompting: needed verbal prompts
- 3. Minimal prompting: needed a gestural prompt
- 4. Independent: no prompting required

Or

- 1. Complete hand over hand
- 2. Partial hand over hand
- 3. Intermittent touch
- 4. One touch
- 5. Gestural Prompt
- 6. Verbal Prompts
- 7. Independent

Or

- 1. Maximum prompting: needed continual prompts to stay on task
- 2. Moderate prompting: needed 5 8 prompts to stay on task
- 3. Minimal prompting: needed 1 3 prompts to stay on task
- 4. Independent: no prompting required

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