

The Evidence Based Intervention Network

The EBI Network "Common Problems" Framework

The Current Dilemma

Consider the current issues facing all educational professionals. First, school-wide Problem Solving Models (e.g. response to intervention (RTI) or positive behavior supports (PBS)) essentially require interventions for everyone in need. Second, educational policy (e.g. No Child Left Behind and IDEIA) mandate higher levels of accountability than have been typically demanded, resulting in the need for defensible formative outcome data to measure the effectiveness of interventions. Finally, traditional models require a great deal of time to develop recommendations about a child's needs. For example, a comprehensive assessment orientation requires hours of assessment and report writing followed by long meetings to develop intervention plans. In addition, we have learned that regardless of the amount of upfront assessment, any interventions recommended will only be ones that are "likely to be effective", and unfortunately not sure things. Intervention effectiveness is only known after implementation and formative assessment. A traditional consultation orientation is designed to find an effective intervention, but is unfortunately quite time consuming as it typically requires a number of consultation sessions to guide the intervention process. The combination of these factors is a concerning mix of more cases, more accountability, and a lack of models that are built to handle a massive intervention caseload.

The Solution: "Efficiency"

The logical solution to this dilemma is "efficiency". It is critical that we select and design interventions at Tiers 1, 2 and even 3 (in a PSM/RTI model) very quickly so that most of the time allocated is devoted to actual intervention implementation. Second, we need to collect outcome data in a highly feasible manner. Finally, it is critical to have a consistent manner of data analysis that is quick and easy for most educational professionals. Considering the needed efficiency, it is only defensible to select intervention based on the "The Reasonable Hypothesis". In most cases, the efficient and likely effective pathway is to test the most likely hypothesis explaining the academic or behavioral problem first, and then proceed to less likely and more complex explanations. This orientation is an application of Ockham's razor – given two competing theories (or hypotheses for the problem behavior) the simplest explanation is to be preferred. If that approach fails to improve student performance, then something progressively more time-intensive can be attempted until the probable cause of failure is identified. To go about this path, we must consider functional explanations rather than look "within" the child.

Relating academic performance to aspects of classroom instruction that both precede and follow student performance represents a functional approach to understanding academic or behavior problems. Functional explanations appeal to factors external to the child that have been shown experimentally to affect academic and social behavior performance, such as time for learning, feedback from the teacher, and reinforcement for correct responding. Because these factors are external to the child and subject to direct manipulation, functional explanations have the added advantage of identifying simple, practical targets for intervention programming.

The 5 Common Reasons for Academic Problems

We have decided to use the model of five common reasons why students fail academically proposed by Daly and Martens (1997). This model provides a simple and quite comprehensive approach to quickly selecting functional explanations. Those interested in an in depth explanation of this framework are directed to read the original article (A model for conducting a functional analysis of academic performance problems. *School Psychology Review*, 26(4), 554-575) Specifically, the five common reasons are;

1. They do not want to do it. *Solution: Increase student interest by providing choices and incentives.*
2. They have not spent enough time doing it. *Solution: Increase the amount of time that a child can actively engage in a particular academic activity at their instructional or mastery level.*
3. They have not had enough help to do it. *Solution: Increase performance feedback individually or consider use of a group method (e.g. response cards).*
4. The students have demonstrated the skill before, but are having difficulty applying the skill in a new manner. *Solution: Design tasks to apply skill, and promote recognition of when to apply the skill (and when not to).*
5. The academic activity is too hard. *Solution: Lower the task difficulty (consider the instructional hierarchy).*

The 5 Common Reasons for Behavior Problems

In relation to behavior problems, we have decided to utilize a behavioral approach. Simply put, we have 40 years of research to support the consideration of reinforcement, punishment and acquisition when trying to understand why a child is behaving in a manner which is not considered appropriate. Specifically, the five common reasons are;

1. Student has not learned the behavior. *Solution: Teach the appropriate behavior.*
2. Appropriate behavior is positively punished. *Solution: Reinforce child for doing the right behavior and remove punishment.*
3. Appropriate behavior results in loss of desired activity (negatively punished). *Solution: Systematically reward appropriate behavior.*
4. Inappropriate behavior removes student from what they do not want to do (negatively reinforced). *Solution: Remove the "escape" and increase the reinforcing value of the task demand.*
5. Inappropriate behavior is positively reinforced. *Solution: Minimize reinforcement for problematic behavior while reinforcing appropriate behavior.*

Using the Framework

Using this model, a teacher or problem solving team is asked to consider what they think the most likely reasons are for the academic or behavior problems. Once selected, these hypothesized reasons are then used to select interventions. If there are more than one likely reasons selected, they should be rank ordered (from most to least likely). It is important to note that the accuracy of these reasons will only be known after interventions are implemented and outcome data is selected. While it is important for the teacher/problem solving team to be logical in the problem reasons selection stage, it is not important for the team to perseverant in order to make the perfect decision. Again, it is only after the intervention is implemented that the accuracy of the original decision will be known. Considering how this framework is to be utilized, it should be very clear that intervention implementation with fidelity, collection of defensible outcome data, and

accurate analysis and decision making necessary components. This framework has not been developed to aid in the selection of an intervention, and then simply hoping that it will work.

Evidence Based Intervention Protocol

What are Evidence Based Interventions (EBI)?

Evidence-based interventions (EBI) are treatments that have proven effective (to some degree) through outcome evaluations. As such, EBI are treatments which are likely to be effective in changing target behavior if implemented with integrity. The EBI movement has an extensive history across Medicine, Clinical and Counseling Psychology. In the 1990's the EBI movement was extended to Education/School Psychology. While there has been a great deal of intervention research and general discussion, the development of an agreed upon "list" of EBI has not occurred.

Before such a list would be useful, there are several critical features of EBI that must be understood to result in effective use. We refer to those features as the "EBI Fine Print".

- EBI Fine Print I - EBI are validated for a specific purpose with a specific population. As such, EBIs are only useful for a range of problems and as such, must be paired up with the right situation. If you match an EBI with a problem it is not designed to address, there is no reason to think that it will work. A hammer is an effective tool, but not with a screw.
- EBI Fine Print II- EBI assumes that the treatment is used in the manner which it was researched. As such, changing parts of an intervention, while typical, can invalidate the EBI. There are many ways to change an intervention (frequency, materials, target, and on and on) which can alter the effectiveness of the EBI.
- EBI Fine Print III- EBI are typically validated with large group research, or a series of small group studies. As such, EBI have been documented as likely effective, not surely effective. It is critical to remember that even the most effective interventions are often ineffective with a specific case. You can't assume an EBI will work.

The general implication of the EBI Fine Print is that a list of EBIs is just a nice place to start. There are several additional steps which are critical for the correct use of EBI in applied settings. These steps will be discussed below.

Methods of Identifying Interventions Which are "Evidence Based".

There are a number of methods for establishing when an intervention can be deemed "evidence based". For example, several groups use a meta-analytic approach with the goal of assigning an effect size to certain interventions. This approach has some substantial advantages including providing a clear mathematical "rating" so that a number of competing educational programs can be considered. The [What Works Clearinghouse](#) is arguably the best example of such a site. This method is most appropriate for comprehensive academic or social behavior programs. Such programs can be applied across large populations and their general effectiveness can be measured. As such, this should be the first level of validation considered by groups looking to adopt schoolwide, or large scale intervention

programs (e.g. an academic or schoolwide social behavior curriculum). While understanding the importance of this approach, there are some critical weaknesses that require that other concepts of defining “evidence based” are considered. Specifically, intervention packages require that teachers, schools and often districts select and invest in the programs which are often quite expensive (cost of intervention package, cost of training, etc.). In addition, most intervention programs are not small endeavors, but rather large commitments for the teachers and often school administrations. While it is critical that all practices are evidence based, there are only so many comprehensive reading or social behavior programs that a teacher can do. Finally, such programs are typically validated over large groups. Effect sizes report the “typical effect” of an intervention across the participants. Using this model, it is understood that a “strong” effect demonstrated across 10,000 children, was not universally “strong” for all 10,000 children. In all likelihood, the intervention was in fact ineffective for some children, but there were other cases where there was a very strong impact which balanced out the cases with a weak or no effect. In the end, validation at the group level only means that an intervention is more likely to be effective, not that it will be effective with all children.

Recognizing that the intervention program validation method has inherent weaknesses, another protocol is necessary. Specifically, at the level of an individual child, or a small group of children, it is critical to shift the focus of validation from a content area (e.g. reading, mathematics or social behavior) and focus on the function of the problem behavior or academic failure. The EBI Network protocol was designed to examine the literature base for simple interventions which can be done in most classes with little resource commitment. These are interventions that a teacher or an intervention team can select and tryout with a target student or group of students demonstrating a common problem. **It is critical to understand that intervention selection is only the first step using this model, and that all selected interventions will be implemented with fidelity, target outcomes will be measured, and the effectiveness of the interventions will be determined by the outcome data rather than some a priori decision.** Using this model, the EBI Network protocol has the following steps.

1. Examine scholarly publications (research journals) for interventions which have one or more experimental studies reporting some level of effectiveness. Priority is given to interventions with a series of experimental studies documenting some level of effectiveness (e.g. Cover, Copy, Compare) or those based on a strongly supported theoretical orientation (e.g. positive reinforcement).
2. Sort selected interventions into categories based on what common academic or behavior problem they address. Please see the [EBI Network Common Problem Framework](#) page for an explanation of the framework used to sort interventions.
3. Develop simple protocols which teachers or other educational professionals can use to try out the intervention. These protocols all include the following elements:

- Intervention Name
- Brief Description
- Overview of the common problem” the intervention is designed to address
- Overview of the intervention procedures

- Overview of the critical components of the intervention. These are intervention procedures which are considered essential for fidelity purposes.
- Overview of the assumptions of the intervention. This section often includes limitations.
- Materials needed
- Citations

4. Develop YouTube videos modeling the interventions.

These briefs are then presented in two tables ([academic](#) and [behavior](#) interventions) which organize them based on the common problem the intervention is designed to address. **It is critical to again note that this method of intervention validation assumes that users understand selection of an intervention is only the first step in a defensible problem solving process. It is essential that all selected interventions be implemented with fidelity, target outcomes be measured, and the effectiveness of the interventions be determined by the outcome data. The true documentation of an EBI for a specific case occurs only when there is outcome data indicating a change in the target behavior.**

Modeling Video Overview

Ethical, Legal and Professional Issues in School Psychology is a course taken by all school psychology students in the first semester of their first year of study at Indiana University.

In the fall 2009, one of the assignments was to select four interventions (two academic and two behavior) from among those described in the ECU EBI manual developed by Dr. Chris Riley-Tillman and his students. For the assignment, the IU students created brief (5-8 min.) video demonstrations of the EBIs they selected. Students followed the protocol established in the intervention demonstration videos created by Dr. Matt Burns and his students (also on YouTube). When a real child was included in the IU video, signed parental consent and student assent were obtained prior to taping. As part of the assignment, the graduate students read at least one of the original articles cited as support for each of the four interventions they selected. A summary of the planned procedures for each video demonstration was submitted for review and feedback by the instructor, Dr. Rebecca Martinez. Next, students obtained or developed materials and manipulatives used to demonstrate the EBI. Finally, the videos were taped and later showcased in class. The videos were shared with Dr. Riley-Tillman and uploaded to the EBI Network's YouTube site.

ACADEMIC

Common Reason for Academic Problems (Daly & Martens, 1997)

1. [The task is too hard](#)
 2. [They have not spent enough time doing the task](#)
 3. [They have not had enough help doing the task](#)
 4. [They have not had to do the task that way before](#)
 5. [They do not want to do the task](#)
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The task is too hard

Instructional Match

The purpose of this intervention is to improve instruction through the accurate assessment of the student's current instructional level and selection of appropriately matched curriculum and materials to the student's current level and ability. A student's prior knowledge, the difficulty of the learning task, and the pace of instruction differ, and therefore instruction must be tailored to the individual student to generate an instructional match.

Guided Reading

Guided reading works by having students placed in small groups. Before reading the story, the teacher will provide the students with background information that will help them understand the story. The students then read the story out loud softly. The teacher is able to provide feedback to the students as they read the stories. Following completion of the reading, the teacher asks questions to the students to ensure their comprehension.

Cross Age Peer Tutoring

This is a cross-age peer tutoring intervention that works by pairing students from different grades and ability levels to work on an academic skill together. The older/higher ability student will be the tutor; and the younger/lower ability student will be the tutee. The students work together to practice a skill. This is beneficial for both the tutors and the tutees.

They have not spent enough time doing the task

Partner Reading

A fluent reader (Partner 1) is paired with a less fluent reader (Partner 2). Partner 1 reads the material to model fluent reading. Then, Partner 2 reads the material and Partner 1 corrects any errors made. This should be conducted for about 30-35 minutes 3 times per week.

Incremental Rehearsal

A student is presented with flashcards containing unknown items added in to a group of known items. Presenting known information along with unknown allows for high rates of success and can increase retention of the newly learned items, behavioral momentum and resulting time on task. Research shows that this technique can be used with sight/vocabulary words, simple math facts, letter names, and survival words/signs. In addition, this technique could be used for other facts, such as state capitals or the meanings of prefixes or suffixes, etc.

Repeated Readings

A student is given a reading passage and is asked to read multiple times. As fluency increases, decoding and word identification become more automatic. With gained automaticity attention is no longer used to decode words. Therefore, increased automaticity and fluency allow students to utilize the newly available attention to comprehend materials read.

HELPS Program

The Helping Early Literacy with Practice Strategies (HELPS) One-on-One Program integrates eight research-based instructional strategies that are easy to use and designed to improve students' reading fluency. The HELPS Program can be implemented in approximately 10 minutes per student and used by various types of educators (e.g., regular or special education teachers, teacher assistants, school psychologists, reading specialists, librarians, well-trained parents, etc.). All materials and information needed to implement this program can be accessed for free from the HELPS Program website: www.helpsprogram.org

They have not had enough help to do the task

Response Cards

Students receive immediate corrective feedback after the information has been provided during whole group instruction. Students respond to questions by holding up cards, rather than waiting to be called on individually.

Cover, Copy Compare

Students have access to the answers to many academic tasks and use this to compare the accuracy of their work. Students view the answers to problems, cover the answers, and attempt the problem.

Error Monitoring Strategies

A student creates a written passage (or is given one) and is asked to use an error monitoring strategy to practice fluency (production) and accuracy (editing skills). Error monitoring strategies enable learners to attempt increase accuracy during independent work without the need for one-on-one instruction. Error monitoring strategies can be generalized to other subject areas, like math (e.g. PEMDAS) or reading comprehension (e.g. CROP-QVS).

Story Detective

Story Detective turns the reader into a “detective” making predictions about a story as it unfolds through a series of clues. Students are given clues one at a time that, when listed in their entirety, create the outline of a story. The teacher reads one clue such as, “Two friends were walking home for dinner.” The student then has the opportunity to be the “detective” and make a prediction about where the story is headed. The teacher follows that prediction by asking the student to explain his/her thoughts. A second clue is then given. The details of this clue may prove or disprove the previous prediction and a new or extended prediction is made.

They have not had to do the task that way before

Reinforce Natural Occurrences

Academic problems may stem from lack of generalization. The student may know the skill but has not learned to generalize it to a new environment. When that student naturally shows signs of generalization, reinforce the generalization.

They do not want to do the task

Mystery Motivator

Motivating students to do certain tasks may be difficult. The mystery component in this intervention is based on offering an unknown reinforcer. The mystery will engage students in the academic task, even when the task is difficult.

Interspersing Easier Problems in Drill Practices

Research indicates that problem completion within an activity is in itself a reinforcing event. Interspersing easier problems during drill activities increases completion rates and enjoyment of activity.

BEHAVIORAL

Common Reason for Behavior Problems

1. [Student has not learned the behavior](#)
 2. [Appropriate behavior is positively punished](#)
 3. [Appropriate behavior results in loss of desired activity \(negative punishment\)](#)
 4. [Inappropriate behavior removes student from something they do not want to do \(negatively reinforced\)](#)
 5. [Inappropriate behavior is positively reinforced](#)
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Student has not learned the behavior

Sit and Watch

The goal of this intervention is to help children learn appropriate behavior through structured observation. This intervention also has a time-out procedure. The student's contingent observation is used to promote appropriate classroom behavior through peer modeling.

Active Teaching of Rules

Clearly and specifically teach and review classroom rules/procedures through modeling, practice, and specific, immediate, positive feedback. This intervention is related to direct instruction methodologies which are supported by a substantial literature base.

Say Show Check

Each of the classroom rules and why adhering to each rule is important is verbalized to the class. Modeling what adherence to each rule would look like and what non-adherence to each rule would look like is next. Students then scrutinize non-adherence, re-practice appropriate rule behavior, and are praised for demonstrating proper rule following. This intervention is consistent with the Positive Behavioral Interventions & Supports (PBIS) Model, and offers an example of how such a model would work in a single classroom.

Appropriate behavior is positively punished

Removal of Punishment

Positive punishment occurs when an aversive stimulus as a consequence is applied in response to appropriate behavior (see below). The presentation of an aversive stimulus causes a decrease in appropriate behavior and has long-term behavior effects. The removal of the positive punishment involves the elimination of this punishment so that it is more likely that appropriate behavior will occur in the future.

Positive Peer Reporting

Positive Peer Reporting (PPR) is a classwide intervention designed to increase the social involvement of socially withdrawn children. The primary component of PPR is that children are provided with structured peer praise for engaging in appropriate social behaviors. Children who are severely socially withdrawn, neglected, socially aggressive, or socially isolated can benefit from this intervention.

Appropriate behavior results in loss of desired activity (negatively punished)

Response Cards

Response cards are cards or signs that may be held up by students in order to allow classwide responding.

Guided Notes

Guided Notes provide a handout of notes that have blank spaces for writing down lesson concepts, allowing the student opportunities to demonstrate appropriate classroom behavior. Notes are reviewed by the teacher, providing positive reinforcement. This intervention can be used with children of many ages (especially those in grade four through twelve), with or without disabilities. Guided Notes can be adapted to any instructional level and altered for students with specific skill deficits. Guided Notes are inexpensive, efficient, allow teachers to exhibit their own style, and are often preferred over "regular" notes by both teachers and students.

Behavioral Contracts

To lower the incidence of inappropriate behaviors, including escape behaviors, the child, teacher and parent will write a contract of appropriate behavior goals. Reinforcements will be given at different stages according to the contract.

Inappropriate behavior removes student from something they do not want to do (negatively reinforced)

Choice of Task Sequence

To lower incidences of inappropriate behavior, child will engage in choice. Research has found that just making a choice is reinforcing.

Antecedent Modifications

Student wants to escape nonpreferred activity, so antecedents are altered to increase task engagement. Antecedent-based procedures can be used to decrease inappropriate behaviors or increase appropriate behaviors.

Inappropriate behavior is positively reinforced

Response Cost Raffle

This intervention is a low-cost classroom management strategy developed for students with mild to moderate behavior problems. This intervention is both efficient & effective without the use of a complex token economy system. There is a large body of evidence on the use of response cost behavior management strategies to

reduce disruptive behaviors. This type of intervention will generalize across settings and grade level.

The Good Behavior Game

The Good Behavior Game (GBG) is an intervention designed to decrease inappropriate classroom behaviors by reinforcing appropriate classroom behavior. The specific format for the implementation of this intervention includes dividing students into teams and distributing group-earned rewards. When someone on the team engages in an inappropriate classroom behavior, the team receives a mark. The teams who receive less than the specified amount of marks for inappropriate behavior receive a reward. The teamwork component of this intervention will reduce the incidence of students providing positive peer attention for inappropriate behavior.

Reducing Disruptive Behavior with Randomized Group Contingencies

This intervention uses a group contingency to alter student's disruptive behavior with Interdependent group reinforcers. With an interdependent group reinforcer, students have to rely on one another to gain access to the reward. "Reinforcement increases target behavior, whereas punishment decreases the target behavior (Kelshaw-Levering, Sterling-Turner, & Henry, 2000). By removing the reinforcement or "reward" for undesired behavior and increasing the reward for desired behavior with class-wide randomized group contingency, simultaneously ALL students can be rewarded for their positive behavior and potentially punished for negative behavior. There is a large body of evidence on the use of reinforcement to decrease disruptive behavior. This type of intervention is should generalize across settings.