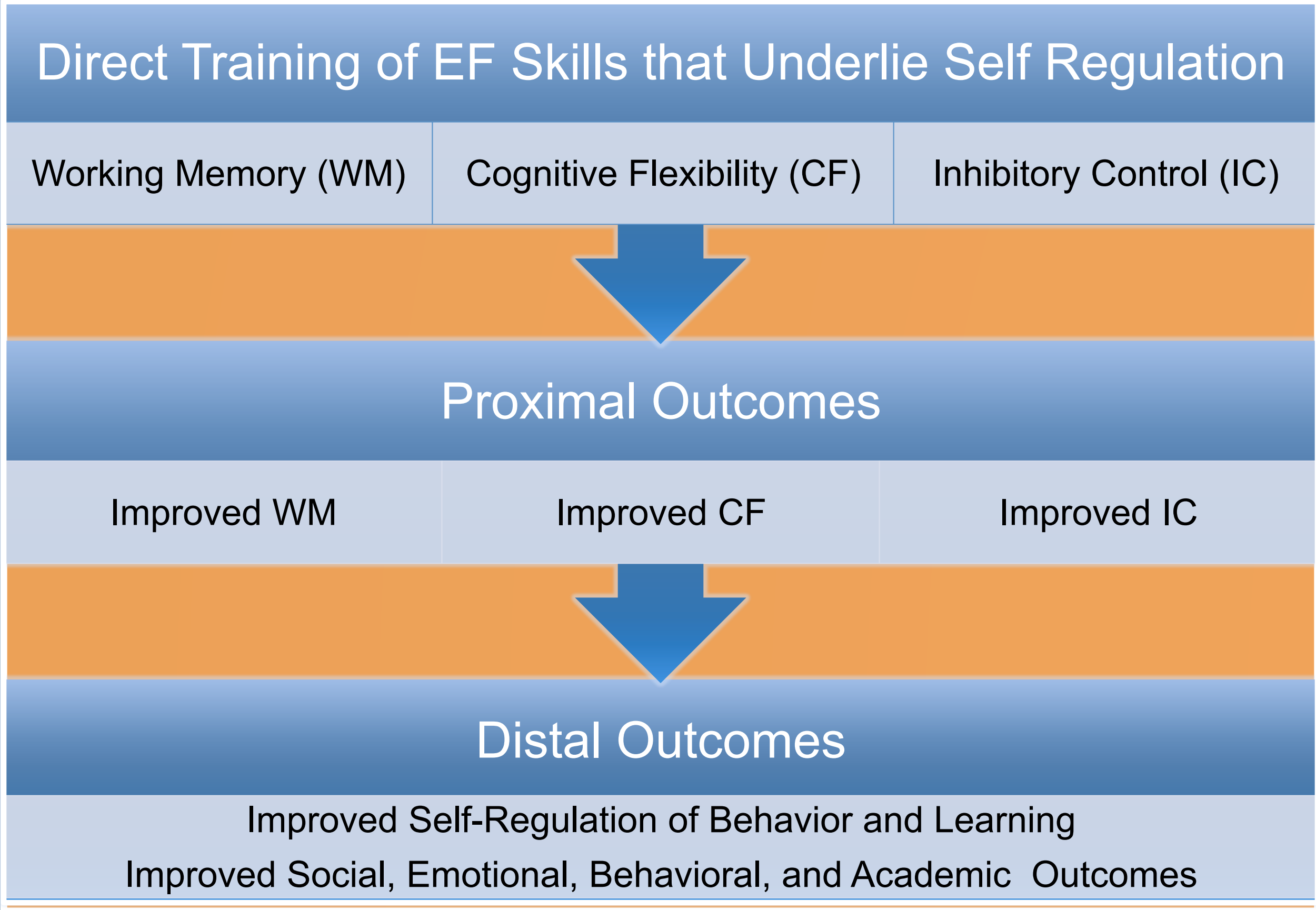


# Effect of Direct Training of Executive Function Skills in Middle School Students with Emotional-Behavioral Disorders (A Proposed Study)

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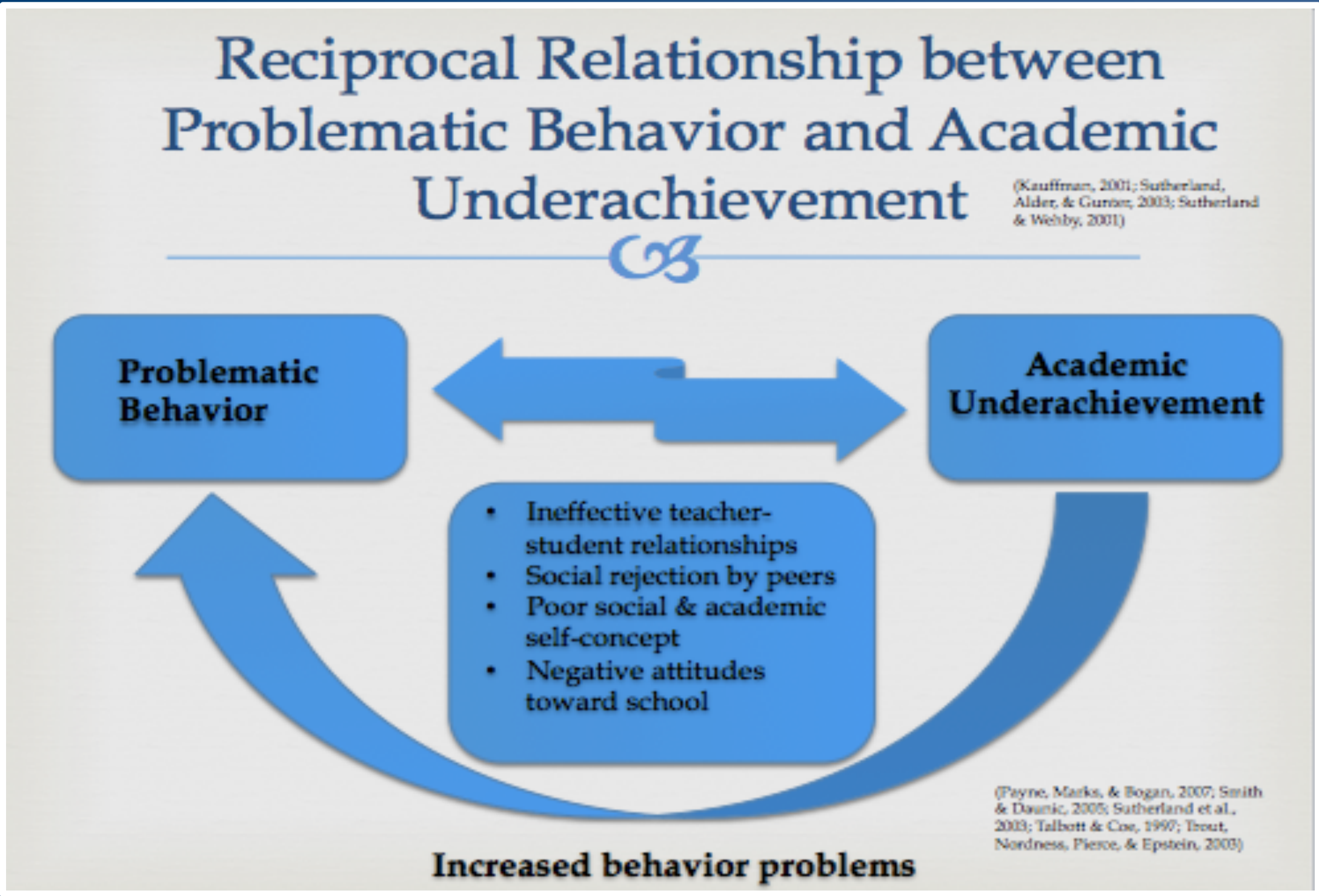
## Conceptual Framework

It is believed that Executive Function (EF) skills can be trained and associated neural pathways strengthened, resulting in improved Self-Regulation (SR) and improved social-emotional and behavioral outcomes in problem populations



## Statement of the Problem

Current literature reveals that students with EBD often have the intellectual ability to succeed, but their disruptive behaviors result in poor academic outcomes, student frustration, and subsequently, more disruptive behavior.



## Overview of Proposed Study

The purpose of this study is to determine whether computerized direct training of EF skills improves results on measures of EF & SR of behavior and learning.

### Research Questions

1. Does direct training of EF skills (i.e., WM, CF, & IC) improve results on measures of EF?
2. Does direct training of EF skills improve SR of behavior in middle school students with behavior problems, including those identified with EBD?
3. Does direct training of EF skills improve SR of learning in middle school students with behavior problems, including those identified with EBD?

### Intervention

Brain Training Lab – a series of computer based tasks, empirically shown to be useful for training EF skills:

- Working Memory – Span Board, List Sorting tasks
- Cognitive Flexibility – Dimensional Change Card Sort, Trail Making tasks
- Inhibitory Control – Flanker, Stroop tasks

Dosage:

- Tx: 20 sessions (25 minutes each)
- Ctrl: 20 sessions of computer based academic skill builder games not linked to targeted EF skills.

### Participants & Settings

- Tx: 70 middle school students with educational diagnosis of EBD
- Ctrl: 70 typical middle school students without EBD diagnosis
- Age: 11 to 15 years of age
- Setting: School computer lab, counselor's office or classroom

### Design & Measures

- Pretest-posttest randomized efficacy trial
- One fixed between-subjects factor with two conditions: (a) direct EF skill training intervention; (b) non-EF computer task comparison
- Randomly assigned classrooms
- Pre- and posttests of WM, CF and IC using data generated from the empirically validated NIH Toolbox
- Pre- and posttests of students' SR of behavior using *Behavior Rating Inventory of Executive Function® (BRIEF)*, *Self-Regulation Questionnaire (SRQ)*, and the *Clinical Assessment of Behavior Teacher Rating Form (CAB-T)*
- Pre- and posttests of students' SR of learning using the empirically validated *Junior Metacognitive Awareness Inventory (Jr. MAI)*.

### Data Analysis

Following posttests: ANCOVAs with pretest as a covariate for all RQs to determine if condition is related to change in students' EF skill levels (proximal outcome) and SR of behavior and learning (distal outcomes).



## Theoretical Framework

- Students with significant social, emotional, and behavioral problems display inappropriate/ineffective behaviors often rooted in a failure to self-regulate.
- Skills necessary for successful SR and social interactions depend on adequate development of neurocognitive processes known as EF.
- Students with EBD often have deficits in EFs that support emotional/motivational and behavioral regulation processes and are evidenced by a lack of emotional control and difficulties in cognitive flexibility and inhibition
- EF research confirms three distinct processes:
  - Working Memory
  - Cognitive Flexibility
  - Inhibitory Control
- EF is theoretically linked to SR and amenable to intervention, such that positive changes in the social-behavioral and academic trajectories of students with EBD are achievable.
- Evidence suggests that the training of EF skills has significant potential for improving poor SR of behavior and learning for students identified as EBD

## Key References

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