

Strengthening Executive Function Skills of Students with EBD through Self-Regulation Training: The *I Control* Curriculum



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Advance Organizer

- I. Project Overview
- II. Theoretical Background
- III. Curriculum Overview, Scope & Sequence
- V. Brain Training Lab
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Project Overview

Funded by:

IES

Institute of Education Sciences
US Department of Education

3-year funded project

Goal 2 – Development & Innovation grant

Project Overview: R&D Goals

Develop a year-long, intensive intervention that is:

- Appropriate for middle school students identified with EBD
- Grounded in current neurocognitive theory
- Designed to enhance self-regulatory processes
- Focused on improving executive functions (EF)

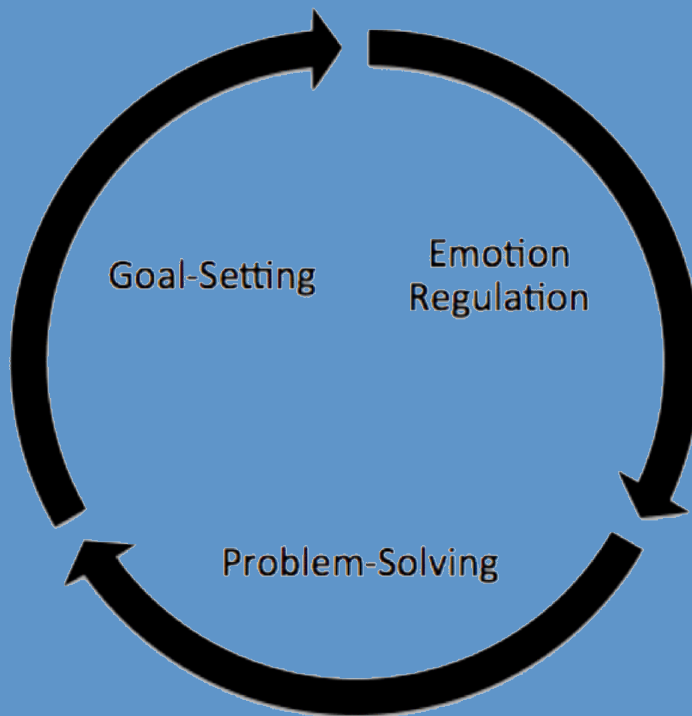
Project Overview: R&D Goals

I Control is a self-contained package that includes instruction in areas related to self-regulation:

- Contextualized content in goal-setting, emotion regulation, & problem solving
- EF skill development through a concurrent, computerized training regimen
- Two-day professional development for teachers

Theoretical Background – Self-Regulation

- Self-regulation (SR) refers to capacities involved in regulating motivation, emotion, and cognition.



- SR results in ability to delay gratification and sustain attention & effort.
- Conflict modulation is foundational to SR.*

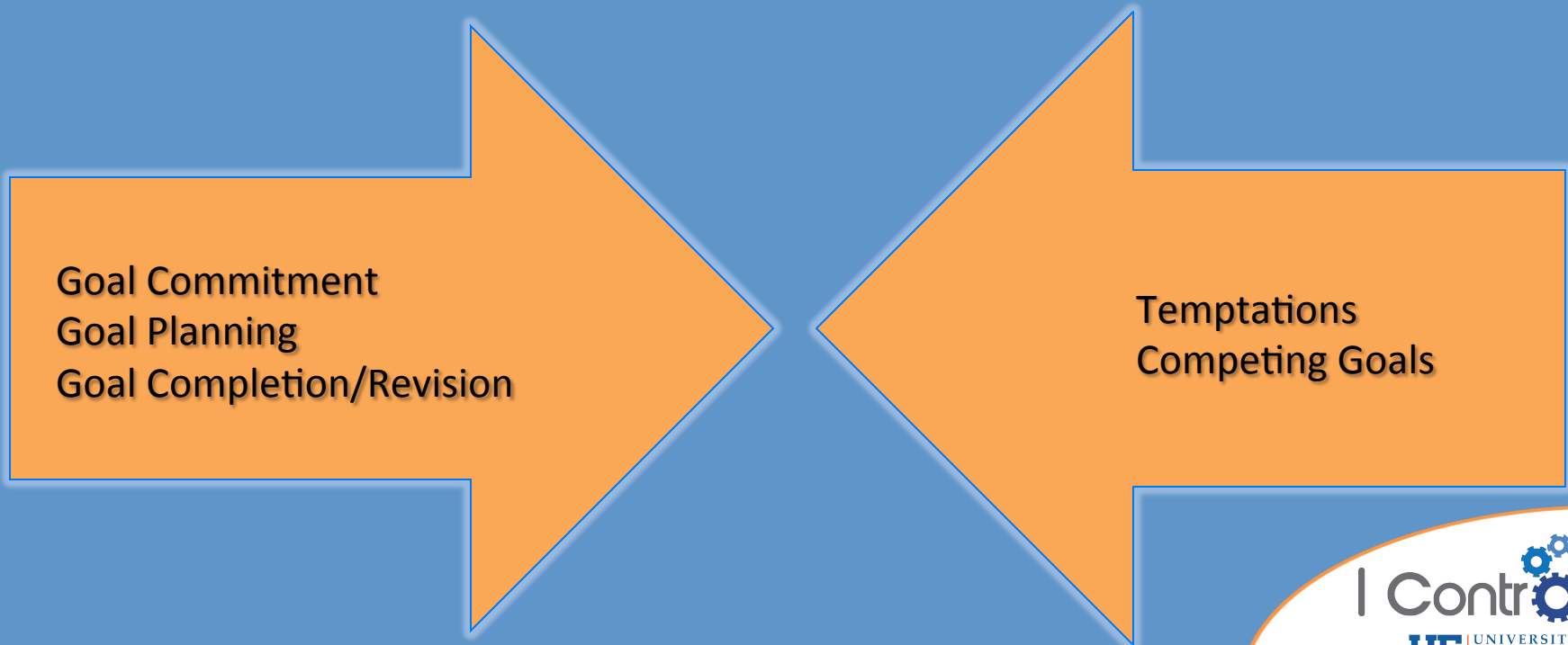
Theoretical Background

Classic SR Test



Theoretical Background – Goal-Setting

- Based on Gollwitzer's (1997) Action Phase Model
- Rather than focus on goal *content*, focus on how students can overcome implementation problems.



Theoretical Background

– Emotion Regulation

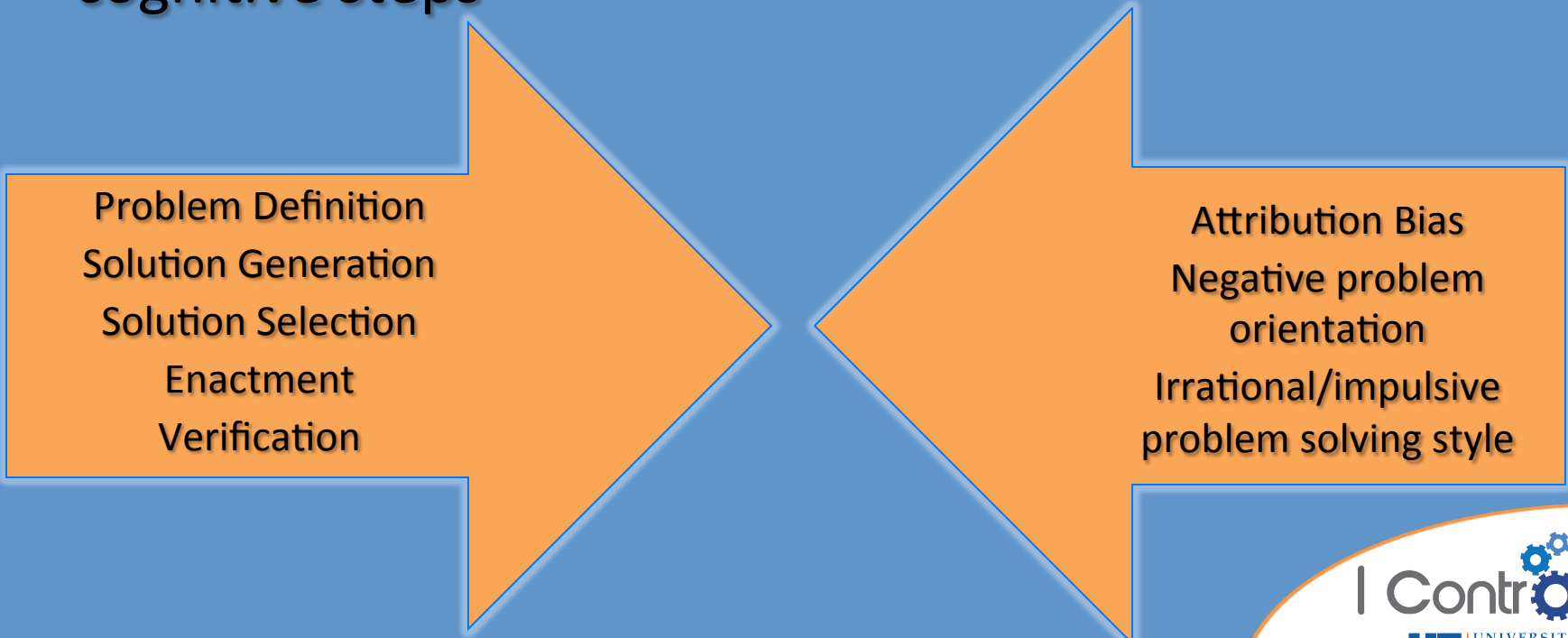
- Based on Gross (1998,2006), Barrett, Oschner, & Gross' (2007) transactional model of emotion
- Sequence of emotional episodes within a social situation; each of which is a potential target for regulation.

Awareness of emotions
Manage intensity of
feeling and expression
Clarity of emotional
expression

Emotional triggers
Lack of efficacy
Failure to understand
emotional consequences

Theoretical Background – Problem Solving

- Based on social problem solving (Change, D’Zurilla & Sanna, 2004; Smith & Daunic, 2006)
- Involves effortful implementation of a series of cognitive steps



Problem Definition
Solution Generation
Solution Selection
Enactment
Verification

Attribution Bias
Negative problem
orientation
Irrational/impulsive
problem solving style

Theoretical Background – SR Failure

Youth with EBD have SR deficits that negatively affect self-control & social interactions

Typical Students

Compare immediate cues to those with which they are familiar

Accurately infer what others might be thinking or intending

Generate pro-social solutions

Perform selected behavior by recalling task steps and implementing them flexibly

Students with EBD

Difficulties interpreting cues/have existing negative schemas

Concentrate more on hostile or negative cues

Generate fewer pro-social solutions

Fail to perform pro-social alternatives because of impulsive choice or persistence

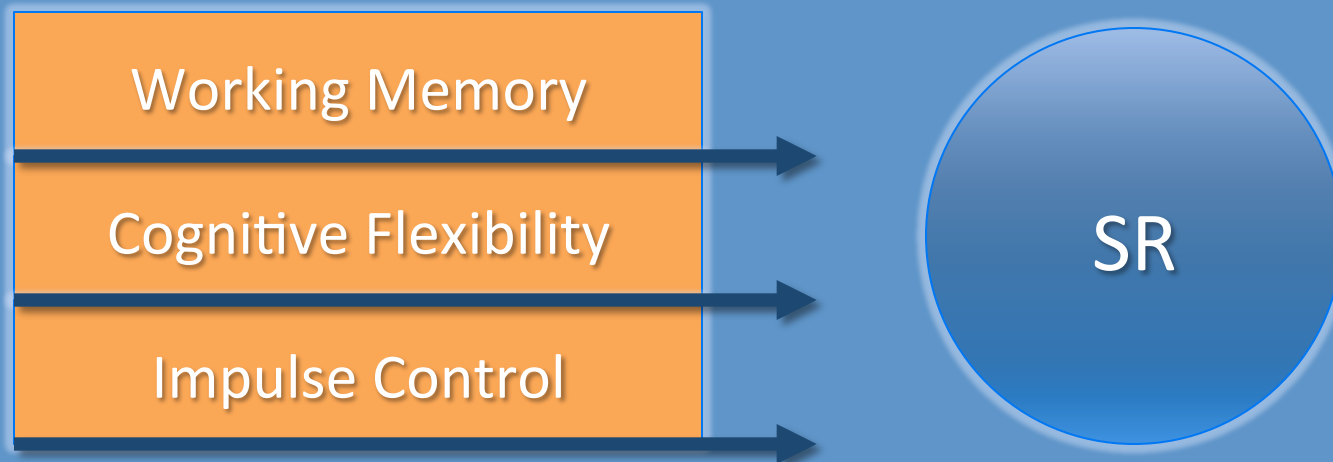
• Theoretical Background - SR-EF Connections

- Skills necessary for successful SR & social interactions depend on adequate development of neurocognitive processes known as EF.
- EF development coincides with maturation of connections between specific pre-frontal brain regions & lower limbic and basal systems.
- Research supports “sensitive” periods of substantial growth and/or re-organization of these connections that coincide with opportunities for intervention & remediation of EF.

Theoretical Background - Executive Function

Although there is no clear definition of unified EF, recent evidence (e.g., Miyake et al. 2000) confirms three distinct processes:

EF



Theoretical Background – EF at Work

- EF is recruited when situations/stimuli are new or novel. As behavior is learned, EF is no longer necessary.

In US Crosswalk → Look Left

In England Crosswalk → Look Right

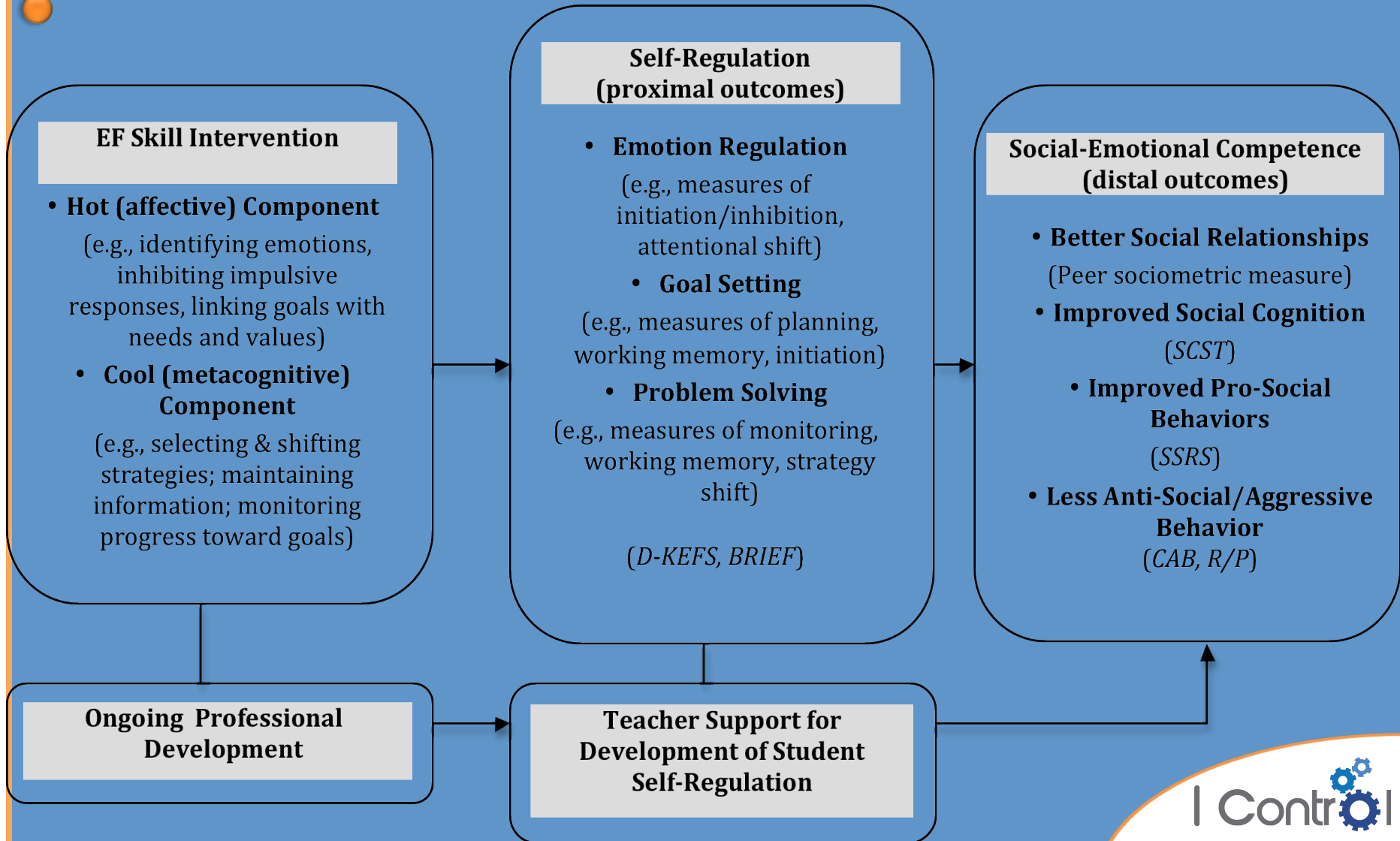


- Requires
 - Holding the rule in mind (working memory)
 - Flexible rule use (shift)
 - Inhibition of impulse to look left (impulse control)

Theoretical Background – Rationale for Intervention

- Delayed or insufficient EF maturation is implicated in social/behavioral problems of students with EBD.
- EF is theoretically linked to SR and amenable to intervention, such that positive changes in the social-behavioral trajectories of students with EBD are achievable.

Theoretical Background - Theory of Change



Curriculum Overview

- Year-long intensive program
(approx. 80 sessions over 27 weeks)
- Implemented 3x per week
(2:1 ratio of lessons to computerized training)
- Lessons progress through skill development in:
 - Goal-Setting
 - Emotion Regulation
 - Problem Solving
- Knowledge & skill instruction integrated with direct EF practice using computerized “gaming” regimen

S&S: Intro to *I Control* (Unit 1)

- Basic introduction to *I Control*
- Introduces 3 EF skill areas:
 - Working Memory
 - Shifting
 - Impulse Control
- Provides instruction & guided practice in EF skill areas linked to self-control

Unit 1
Introduction to
I Control

Unit 2
I Control My Goals

Unit 3
I Control My Emotions

Unit 4
I Control My Problem Solving



S&S: I Control My Goals (Unit 2)

- Goal Commitment
 - Values
 - Resources & barriers
 - Goal commitment
 - Goal planning
- Goal Completion
 - Revised, ongoing, or terminal goals

Unit 1
Introduction to
I Control

Unit 2
I Control My Goals

Unit 3
I Control My
Emotions

Unit 4
I Control My Problem
Solving



S&S: I Control My Emotions (Unit 3)

- Identifying Emotions
 - Emotions vs. feelings
 - Social emotions
- Characteristics of Emotions
 - Emotion families & Intensity
 - triggers
 - Conflicting emotions
- Strategies for Emotion Control
 - Situational strategies
 - Focusing strategies
 - Thinking strategies
 - Using social feedback

Unit 1
Introduction to
I Control

Unit 2
I Control My Goals

Unit 3
I Control My
Emotions

Unit 4
I Control My Problem
Solving



S&S: I Control My Problems (Unit 4)

- Teaches the process of social problem solving
- Relates to goal-setting & emotion regulation
- Pulls together all I Control topics with a focus on generalization

Unit 1
Introduction to
I Control

Unit 2
I Control My Goals

Unit 3
I Control My
Emotions

Unit 4
I Control My Problem
Solving



Acronym

Check for a problem

Name the problem

Think of solutions

Respond with a plan

Look at how you did

Brain Training Lab Components

Brain
Training
Lab

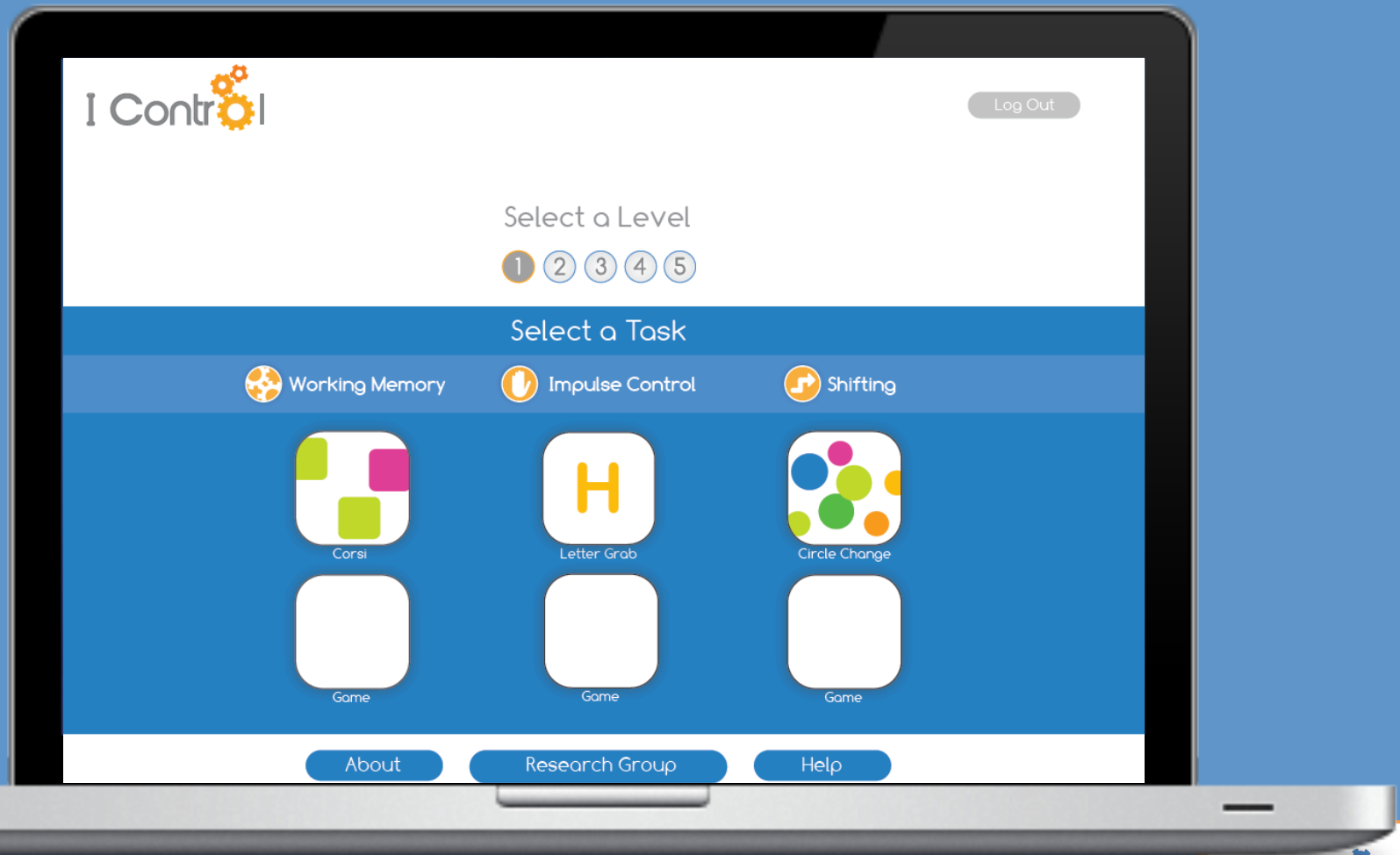


Self-
Monitoring
System



Reward
System

Brain Training Lab



Brain Training Lab

I Control

Hi, Student

Log Out



Shifting

Instructions:

You are going to colored circles on the screen.
One of the circles will change in color and/or size.

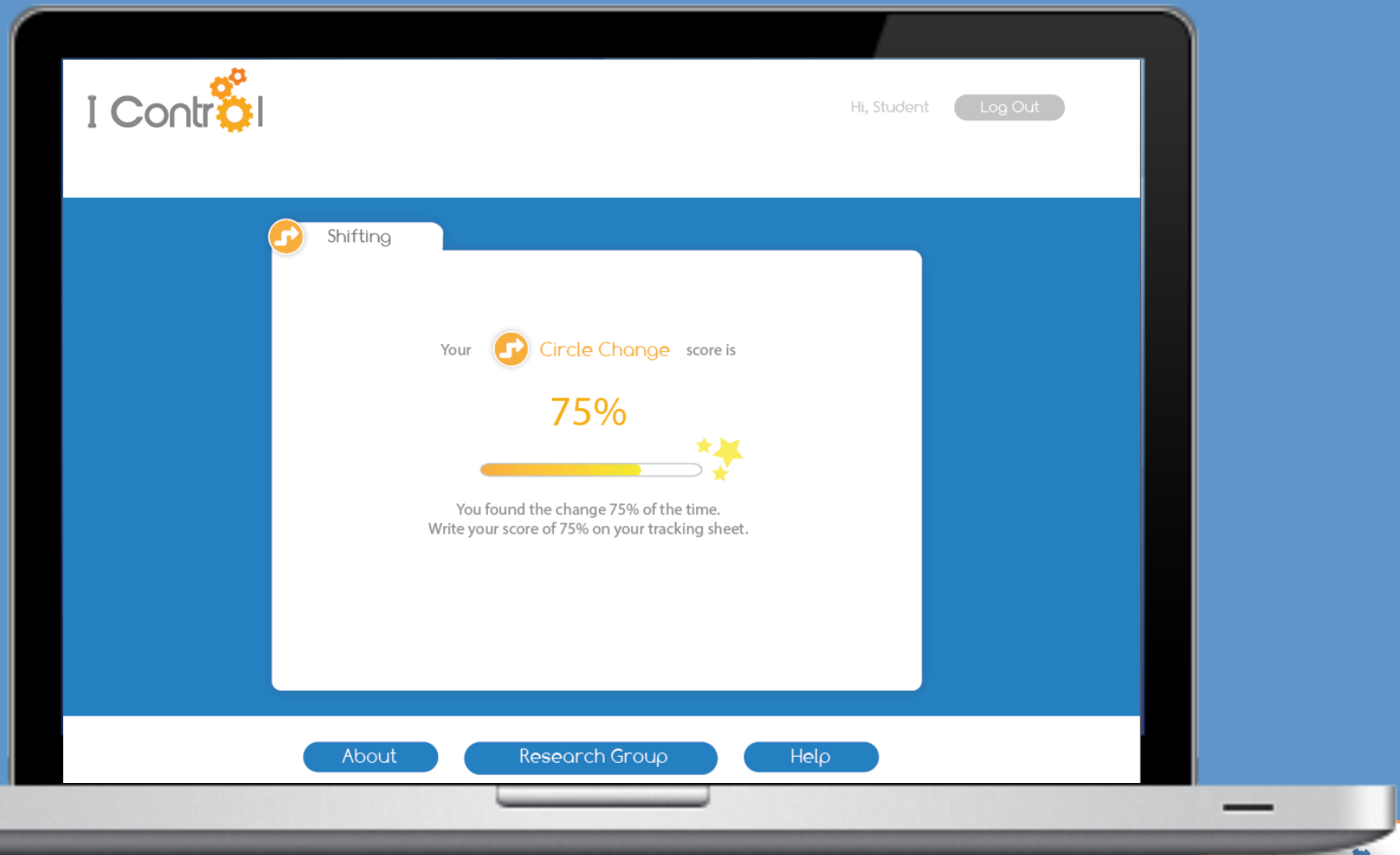


Click on the location of the change.

When you find the changing circle, click the "found it" button.

Play

Brain Training Lab

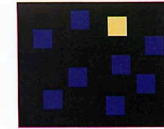




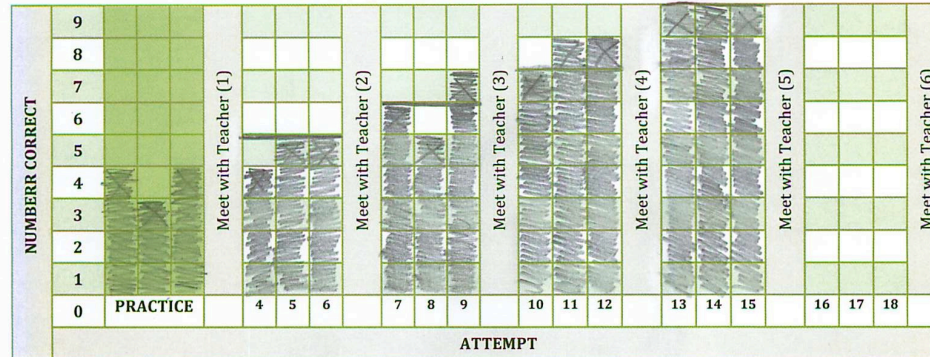
Working Memory

Corsi LEVEL ONE

Complete: ☒



Complete the following bar graph with your performance of each trial.



Teacher Meeting Notes

Meet with Teacher (1)	Points
Great start! Reach for 5 next time!	+3
Meet with Teacher (2)	
Awsome progress. Keep it up!	+5
Meet with Teacher (3)	
Great focus to hit 7!	+5
Meet with Teacher (4)	
You've added in great strategy, keep it up!	+6
Meet with Teacher (5)	
Awsome! Officially done - high as you can go!	+6
Meet with Teacher (6)	

Level One

Novice



Working Memory



Shifting



Impulse Control



Content



Rewards

Level One (Novice) Certificate
Access to Level 2 Training Games
Select a Level 1 Reward

Completed on: _____

Certificate (Front)



Rewards

Level 1

1 pencil or pen	Skip to front of lunch line
1 item from Prize Bin	Restroom pass
15 minutes computer time	Listen to music while working for one activity
15 minutes free time	Snack from teacher

Levels 2 & 3

colored pencils	5 points extra credit on quiz
2 items from Prize Bin	Use teacher's desk during one lesson
30 minutes computer time	Listen to music while working for one day
30 minutes free time	Positive phone call home
Challenge someone to board game	Extra gym time with another class
Mystery Reward	Eat lunch with a friend in classroom

Level 4

20 minutes reading outdoors	10 points extra credit on quiz
3 items from Prize Bin	Read morning announcements
45 minutes computer time	Listen to music while working for one day
45 minutes free time	Design class bulletin board
Select fun activity for class	Class outdoors for one lesson
Bigger Mystery Reward	Teach a lesson with the teacher

Bonus Level

1 hour computer time	Free quiz grade
1 hour free time	Class has lunch outdoors
Select fun activity for class	30 minutes reading outdoors
Bonus Mystery Reward	Any Level 4 Reward

Questions?

I Control

