

# ADVANCES IN ASSESSMENT: THE USE OF CHANGE SENSITIVE MEASURES IN COMPREHENSIVE SCHOOL-BASED MODELS OF SUPPORT

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# AGENDA

- McDougal's up first
  - My story
  - EBD problems predictable and outcomes poor
  - Preventative 3 tier models can help but require different types of assessment
  - The BIMAS and 2 applied studies
- Andria Adamor- "batting clean-up"
  - Andria's story
  - The Comprehensive Behavioral Health model, Boston Public Schools
  - Using change sensitive measures for screening, progress monitoring, and program evaluation
  - Implementation- challenges and successes

# EMOTIONAL AND BEHAVIORAL DISORDERS

- About 20% of children present themselves with diagnosable disorders (i.e., U.S. Department of Health and Human Services, 1999)
- 3–6% of children with serious and chronic disorders (Kauffman, 1997)
- Progression of disorders is very predictable
  - Externalizing behaviors (severe tantrums, disobedience)
  - Internalizing difficulties (anxiety, depression, suicide)

# NEGATIVE LONG TERM OUTCOMES

- 75% of children with significant externalizing behaviors (severe tantrums, disobedience) eventually engage in predictable and serious law breaking and antisocial behavior (e.g., Reid, 1993).
- Internalizing disorders (anxiety, depression) result in increased rates of pathology and lower rates of socialization and academic attainment (Hops, Walker, & Greenwood, 1988). Suicide is the 3<sup>rd</sup> leading cause of death for teens

# EARLY IDENTIFICATION

- early identification and intervention with children who are at risk for EBD appear to be the “most powerful course of action for ameliorating life-long problems associated with children at risk for [EBD]” (p. 5). Hester et al. (2004)
- Younger children are more likely to be responsive to and maintain the positive outcomes from early prevention and intervention programs (Bailey, Aytch, Odom, Symons, & Wolery, 1999)

# 3 TIER MODELS

- Hold the promise for early intervention and effective intervention
- But they require different types of assessment data



# 3 TIER MODELS

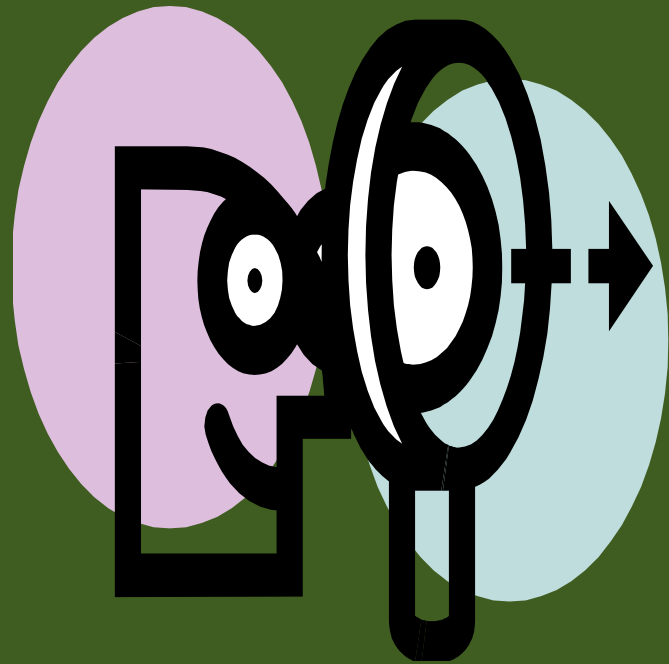
- Yet traditional assessment techniques are inadequate for 3 tier models
- Short comings of traditional observations and rating scales



# EVOLUTION OF CHANGE SENSITIVE MEASURES GEARED TOWARD 3 TIER MODELS

## Purpose

- Screening,
- Progress Monitoring,
- Program Evaluation





# CHANGE SENSITIVE MEASURES

- Must be:
  - Brief
  - Repeatable
  - Useful for screening
  - Sensitive to change/useful for progress monitoring



# Creating “Change Sensitive” Measures

Based on the Work of  
Dr. Scott Meier

Intervention Item Selection Rules:  
A model For chance sensitive scale  
development



# IISR's Overview

1. Based on  
Theory

4. Detect  
Change

7. No Pre-Test  
Difference

2. Aggregate  
Items

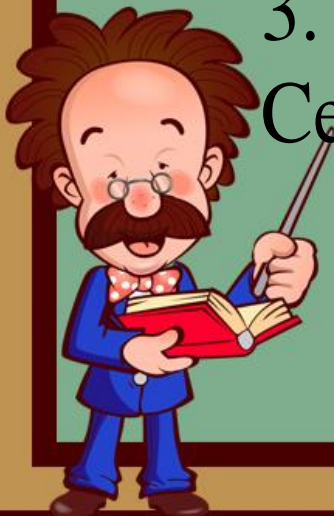
5. Expected  
Direction?

8. Systematic  
Errors dropped

3. Avoid  
Ceiling Effect

6. Relative to  
Comparison?

9. Cross-  
Validate



# SCALE DEVELOPMENT

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## **Development of a Change-Sensitive Outcome Measure for Children Receiving Counseling**

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Achilles Bardos

*University of Northern Colorado*

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# RTI & BEHAVIOR



## School Psychology Forum:

R E S E A R C H I N P R A C T I C E

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VOLUME 4 • ISSUE 2 • PAGES 1-14 • Summer 2010

### **The Use of Change-Sensitive Measures to Assess School-Based Therapeutic Interventions: Linking Theory to Practice at the Tertiary Level**

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# Behavior Intervention Monitoring Assessment System

By James L. McDougal, Psy. D., Achilles N. Bardos, Ph.D., & Scott T. Meier, Ph.D.

# WHAT IS THE BIMAS?

1. **Screening-** To detect students in need of further assessment and to identify their respective areas of strengths and needs.
2. **Student Progress Monitoring-** To provide feedback about the progress of individual students or clients.
3. **Program Evaluation -** To gather evidence that intervention services are effective.

# BIMAS OVERVIEW

## BEHAVIORAL CONCERN SCALES

Conduct

Negative Affect

Cognitive/Attention

anger management  
problems, bullying  
behaviors,  
substance abuse,  
deviance

anxiety, depression

attention, focus,  
memory, planning,  
organization

## ADAPTIVE SCALES

Social

Academic  
Functioning

social functioning,  
friendship  
maintenance,  
communication

academic  
performance,  
attendance, ability  
to follow directions





# Bimas overview

BIMAS Scales	<i>T</i> -score	Scale Descriptors
Behavioral Concern Scales	$T = 70+$	High Risk
	$T = 60-69$	Some Risk
	$T = 60$ or less	Low Risk
Adaptive Scales	$T = 40$ or less	Concern
	$T = 41-59$	Typical
	$T = 60+$	Strength



# The BIMAS-Flex

- 10 extra Flex items for each screener item with specific to or closely related behaviors /emotions.
- Flex items can be selected by the intervention team (Parent, school, clinician) and customize for each child as needed.



# BIMAS Flex Example

Standard Item:

Fought with others (verbally, physically, or both)

## Negatively worded:

- Argued with peers
- Argued with teachers
- Argued with parents
- Argued with siblings
- Talked back to parents
- Talked back to teachers
- Physically hurt peers
- Physically hurt parents
- Physically hurt teachers
- Physically hurt siblings
- Threatened peers
- Threatened teachers
- Threatened parents
- Threatened siblings

## Positively worded:

- Showed regret after a fight
- Was respectful to adults
- Walked away from a fight
- Prevented a fight
- Stopped an argument
- Found a positive outlet for frustration
- Avoided a verbal confrontation

Or...custom create  
your own!





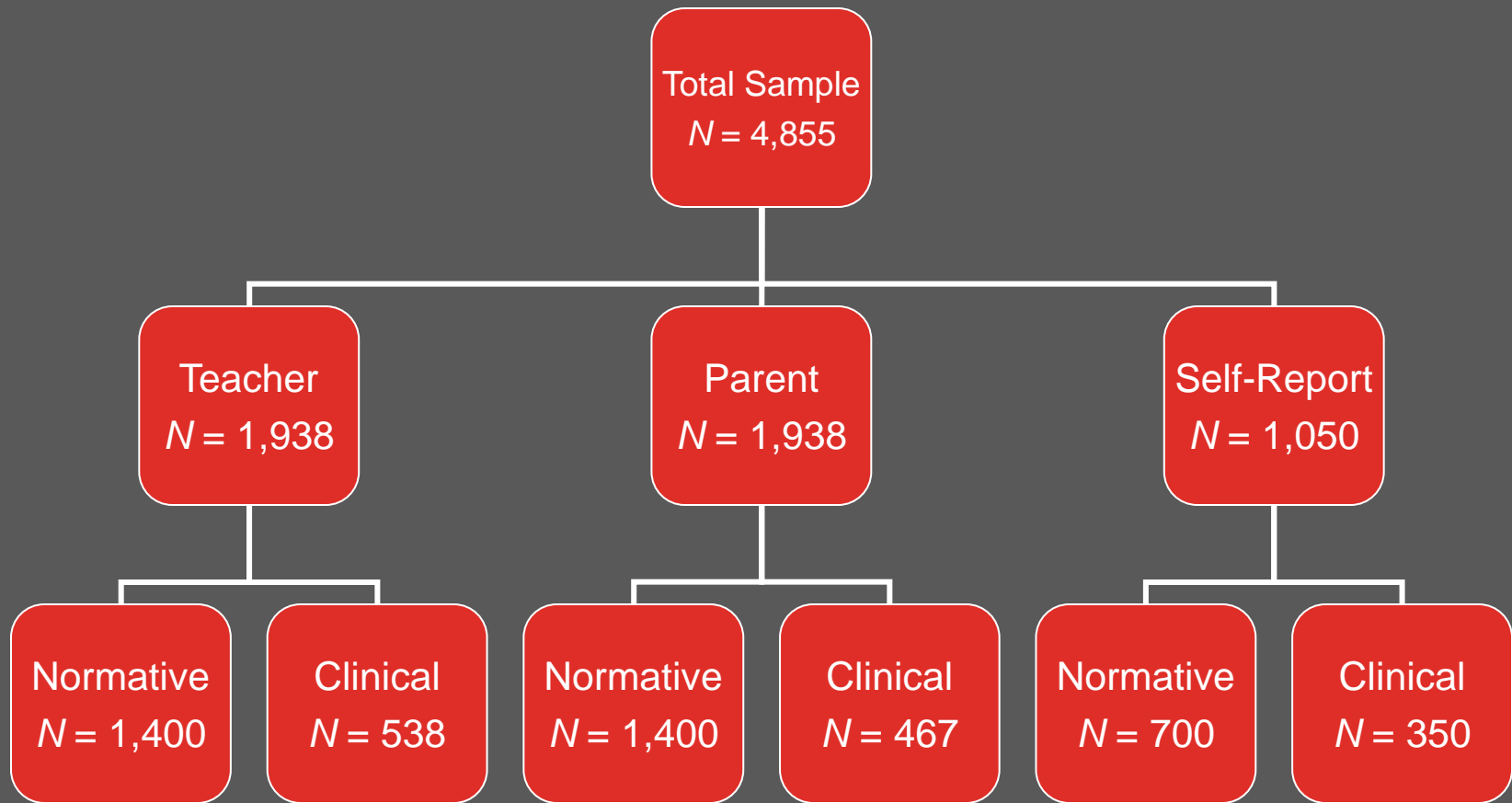
# FORMAT OF THE BIMAS

- A multi-informant assessment system
  - Teacher
  - Parent
  - Self-Report (12 -18 yrs old)
  - Clinician



# PSYCHOMETRIC PROPERTIES

# LARGE NORMATIVE SAMPLE



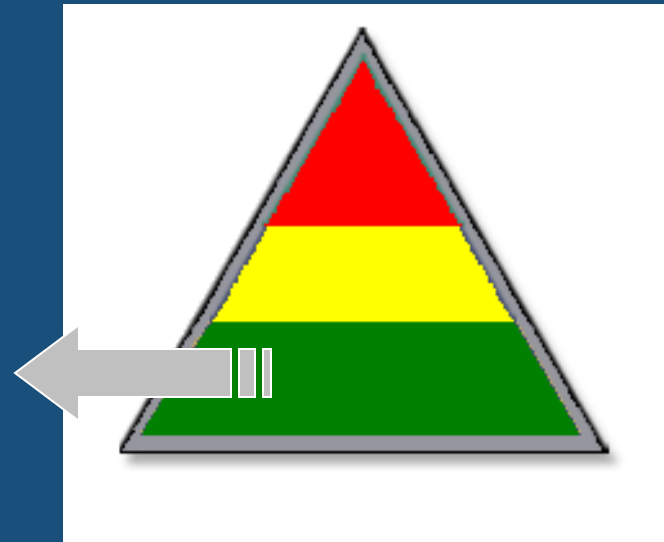
# PSYCHOMETRIC PROPERTIES

- Large normative sample closely matching U.S. Census
- Reliability (internal consistency, test-retest reliability & inter-rater reliability)
- Validity - content based on IISRs & scale developed based on EFA & CFA
  - converged with another behavioral assessment (Conners CBRS)
  - showed good ability to screen
  - showed good ability to detect change post intervention

# APPLIED STUDY 1 COMPARISON OF SCREENING APPROACHES

## Tier 1 PBIS school

- Universal Level
- Compared ODRS, SSBD, and BIMAS results





# PBIS SCREENING: LANIGAN SCHOOL

- Elementary school  
approximately 400 students
- Grades Pre-K to 6

# ODRS- OFFICE DISCIPLINE REFERRALS

## Most commonly used data

- Pros-

- Easy to collect
  - Of interest to schools
  - Helps to identify areas, times, places and students in need of improvement

- Cons-

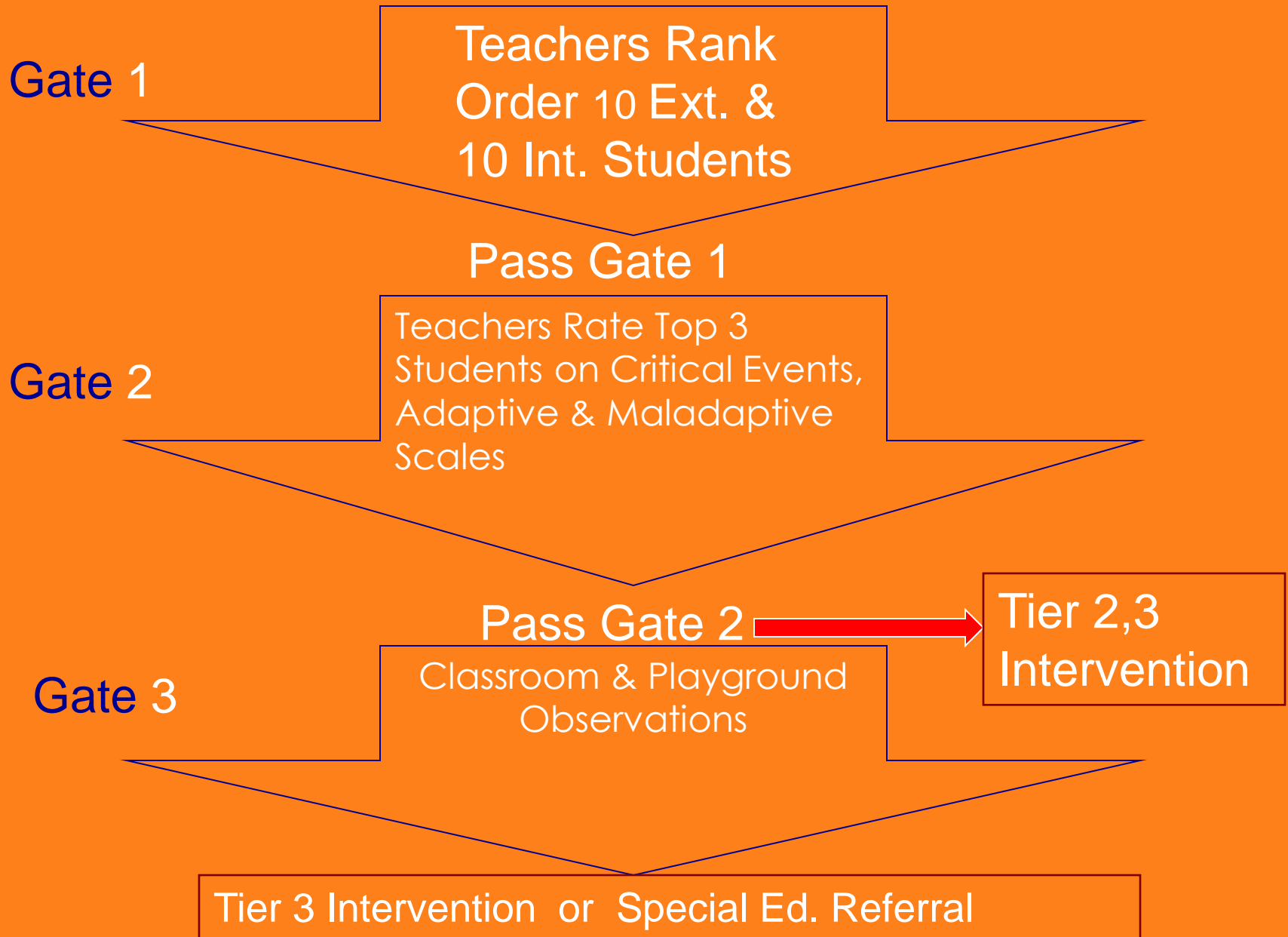
- Lack of validity and reliability for screening and PM
  - Under-identify non-externalizing students

# THE SYSTEMATIC SCREENING FOR BEHAVIOR DISORDERS (SSBD) (WALKER AND SEVERSON, 1992)

Developed as a school-wide (Universal) screening tool for children in grades 1-6

- Provides systematic screening of ALL students in grades 1-6 based on teacher nomination from class lists
- Screens for externalizing (e.g. “acting out”) AND internalizing (e.g. introverted) behaviors

# Multiple Gating Procedure (Severson et al. 2007)



# SSBD- REFERRED TO AS THE GOLD STANDARD OF SCREENING IN THE SCHOOLS

- Pros-

SSBD does have demonstrated validity (and to a lesser extent reliability) especially for externalizing behaviors

Better sensitivity than ODRs for proactively identifying externalizing students

Feasible for teacher and schools to use- though playground observations are not likely typical

- Cons-

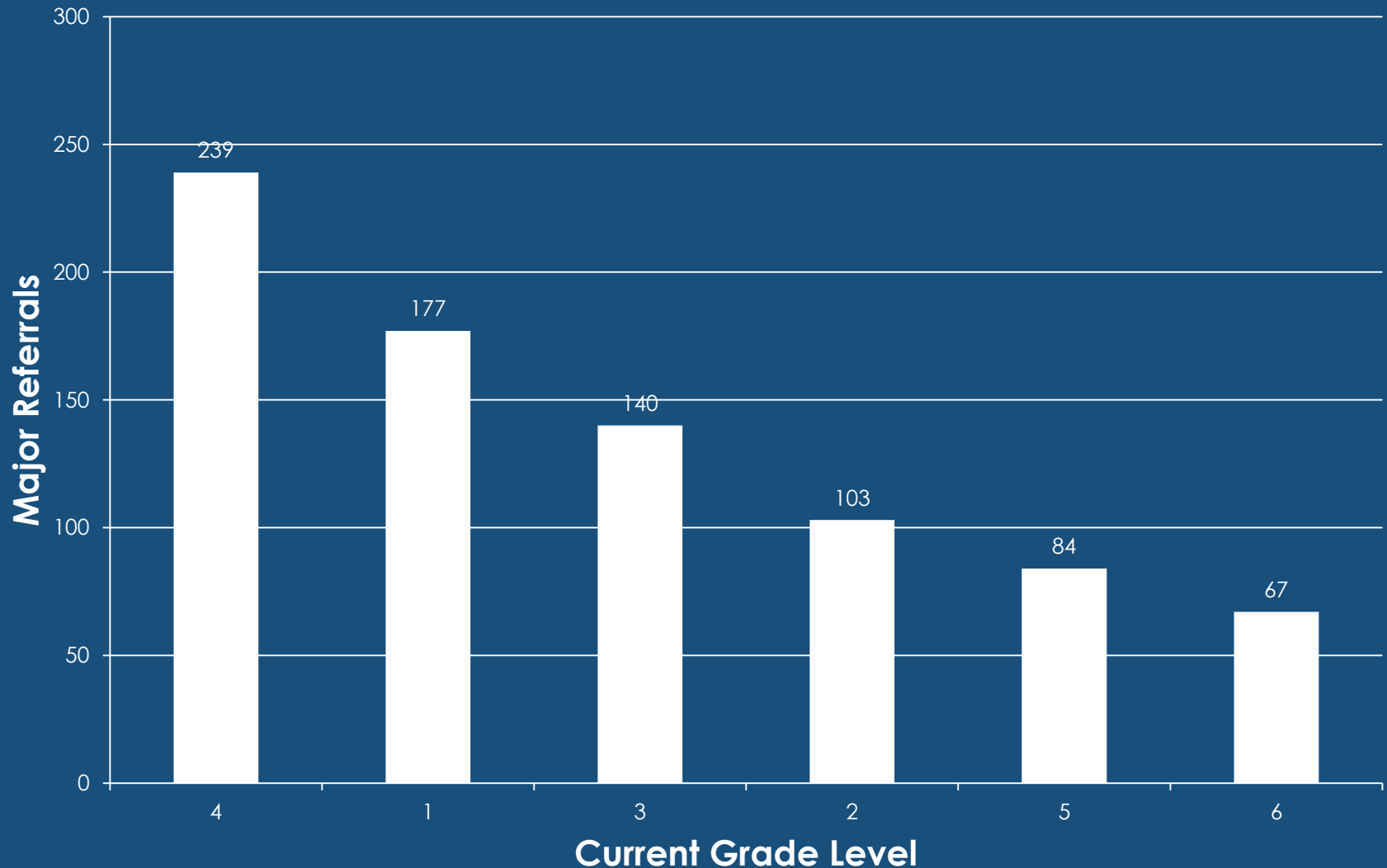
Forced nomination of 3 students per category per class (maybe too many/few)

Observations are time consuming

Better sensitivity for externalizing than internalizing

Limited usefulness for progress monitoring and program evaluation

# ODRS 2011-2012. DATA USED TO TARGET 4<sup>TH</sup> GRADE



# SSBD/ ODR Information 2012-2013

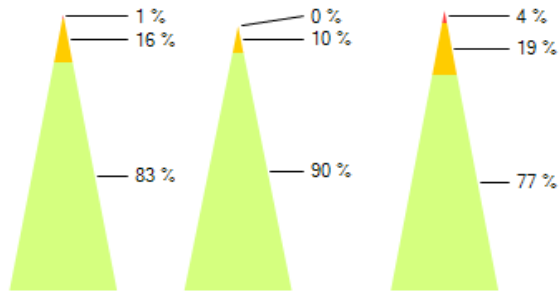
<u>Externalizing</u>		
SSBD Concern Level	2012-2013 Major Referrals	
	1	21
	1	6
	1	19
	2	4
	2	5
	2	6
	3	0
	3	7
	3	23
	4	0
	4	8
	4	0
	5	0
	5	6
	6	0

<u>Internalizing</u>		
SSBD Concern Level	2012-2013 Major Referrals	
	1	0
	1	2
	1	0
	2	0
	2	0
	3	0
	4	0
	5	0

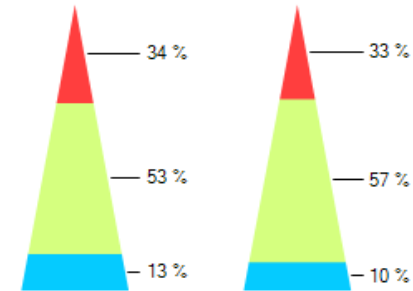
# 4<sup>th</sup> Grade Screening Results - BIMAS

Total For Grade 4  
70 Students

**Behavioral Concern Scales**  
Percent of Students



**Adaptive Scales**  
Percent of Students



Levels Of Risk	Conduct	Negative Affect	Cognitive/ Attention	Levels Of Functioning	Social	Academic Functioning
High Risk	1 (1 %)	0 (0 %)	3 (4 %)	Concern	24 (34 %)	23 (33 %)
Some Risk	11 (16 %)	7 (10 %)	13 (19 %)	Typical	37 (53 %)	40 (57 %)
Low Risk	58 (83 %)	63 (90 %)	54 (77 %)	Strength	9 (13 %)	7 (10 %)
<b>Total</b>	70 (100%)	70 (100%)	70 (100%)	<b>Total</b>	70 (100%)	70 (100%)

Note: Total percentage may not always add up to 100% due to rounding.



# CLASSIFICATION STATS: REFRESHER

## Sensitivity

- **Sensitivity- true positive rate-** measures the percentage of sick people who are correctly identified as having the condition

## Specificity

- **Specificity- true negative rate-** measures the percentage of healthy people who are correctly identified as not having the condition.

# SSBD SCREENING EXTERNALIZING BEHAVIORS

		BIMAS				
		Externalizing	Not identified			
SSBD	Externalizing	10	5	15	Sensitivity	0.83
	Not identified	2	11	13	Specificity	0.69
		12	16	28	Efficiency	0.75

# SSBD SCREENING INTERNALIZING BEHAVIORS

		BIMAS				
		Internalizing	Not identified			
SSBD	Internalizing	2	6	8	Sensitivity	0.40
	Not identified	3	17	20	Specificity	0.74
		5	23	28	Efficiency	0.68

# ODRS SCREENING EXTERNALIZING BEHAVIORS

		BIMAS				
		Externalizing	Not identified			
2012-2013 ODR	identified	9	2	11	Sensitivity	0.75
	Not identified	3	14	17	Specificity	0.88
		12	16	28	Efficiency	0.82

# ODRS SCREENING INTERNALIZING BEHAVIORS

		BIMAS				
		Internalizing	Not identified			
2012-2013 ODR	Identified	0	11	11	Sensitivity	0.00
	Not identified	5	12	17	Specificity	0.52
		5	23	28	Efficiency	0.43



# IMPLICATIONS

- SSBD & ODRs demonstrate moderate to strong classification rates for externalizing behaviors
- SSBD & ODRs demonstrate low classification rates for internalizing behaviors
- Neither approach is ideal for progress monitoring after screening

# STUDY 2 INTEGRATED RTI ACADEMICS AND BEHAVIOR

- Data Evidencing the Reciprocal Relationship Between Behavior and Academic Problems
- From a Local School



# SCHOOL DEMOGRAPHICS

- Moderate needs school district in Central New York
- 24% eligible for free or reduced lunch
- 91% white, 3% Hispanic or Latino, 2% Asian, 1% African American, 1% American Indian





# SAMPLE & PROCEDURE



- Students in 3<sup>rd</sup> and 4<sup>th</sup> grade were screened using AIMSweb and the BIMAS
- AIMSweb
  - 3<sup>rd</sup> grade (reading n=71; math n=72)
  - 4<sup>th</sup> grade (reading n=64; math n=63)
- BIMAS
  - 3<sup>rd</sup> grade (n=70)
  - 4<sup>th</sup> grade (n=66)

# BEHAVIOR & ACADEMIC PROBLEMS IN 3RD GRADE



- At-risk for academic problems
  - Reading - 30% below benchmark
  - Math - 28% below benchmark
- At-risk for behavior problems
  - Conduct – 13% at-risk
  - Internalizing – 24% at-risk

# BEHAVIOR & ACADEMIC PROBLEMS IN 4TH GRADE



- At-risk for academic problems
  - Reading - 53% below benchmark
  - Math - 60% below benchmark
- At-risk for behavior problems
  - Conduct – 3% at-risk
  - Internalizing – 12% at-risk

- For students screened for behavior, to what extent were they at-risk for academic problems?



# CONDUCT PROBLEMS & ACADEMIC DIFFICULTY IN 3RD GRADE



- 44% of students rated as at-risk for conduct problems scored below benchmark in reading
- 44% of students rated as at-risk for conduct problems scored below benchmark in math
- 33% of students rated as at-risk for conduct problems scored below benchmark in both reading and math

# CONDUCT PROBLEMS & ACADEMIC DIFFICULTY IN 4TH GRADE

- 100% of students rated as at-risk for conduct problems scored below benchmark in reading
- 100% of students rated as at-risk for conduct problems scored below benchmark in math
- 100% of students rated as at-risk for conduct problems scored below benchmark in both reading and math



# INTERNALIZING PROBLEMS & ACADEMIC DIFFICULTY IN 3RD GRADE



- 35% of students rated as at-risk for internalizing problems scored below benchmark in reading
- 24% of students rated as at-risk for internalizing problems scored below benchmark in math
- 24% of students rated as at-risk for internalizing problems scored below benchmark in both reading and math

# INTERNALIZING PROBLEMS & ACADEMIC DIFFICULTY IN 4TH GRADE



- 75% of students rated as at-risk for internalizing problems scored below benchmark in reading
- 75% of students rated as at-risk for internalizing problems scored below benchmark in math
- 63% of students rated as at-risk for internalizing problems scored below benchmark in both reading and math





**Boston Public Schools**

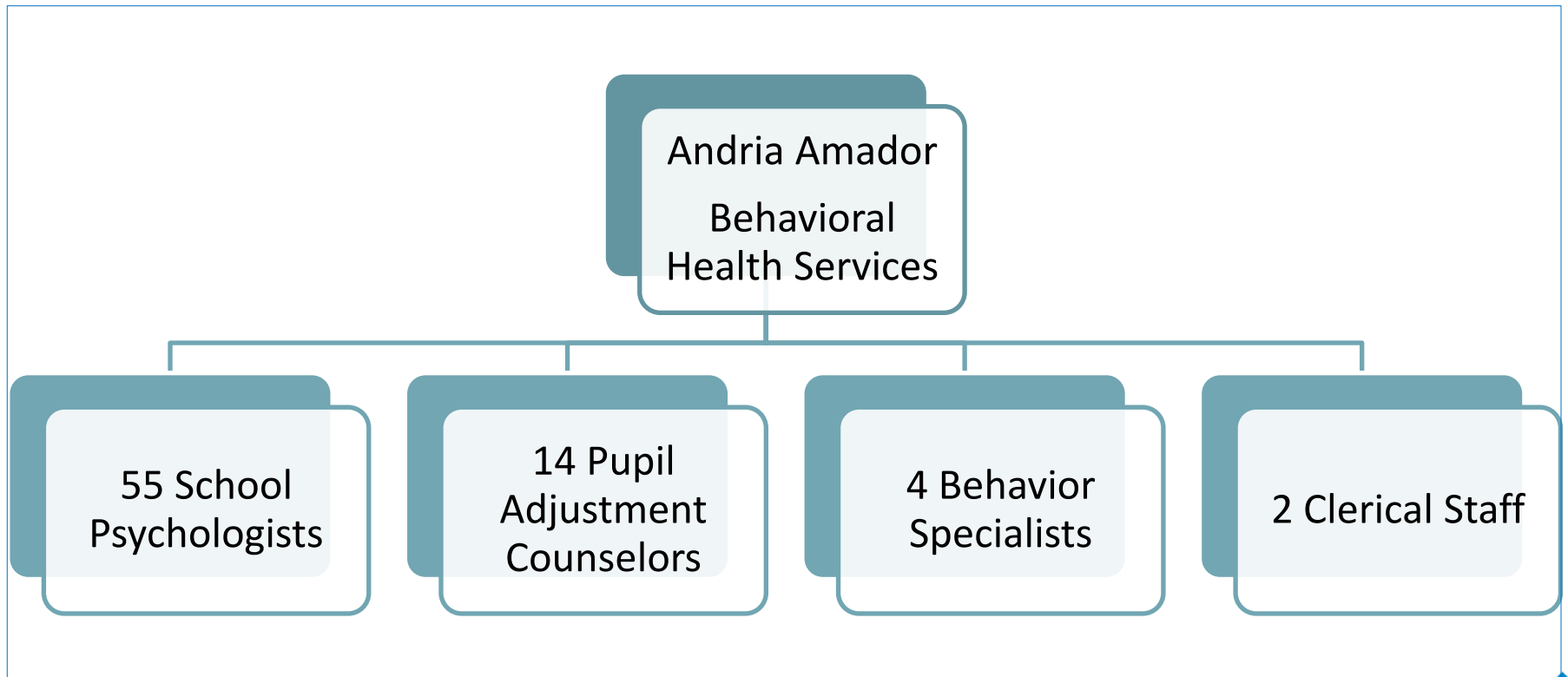
Every Child Deserves a Safe  
and Supportive School



# Behavioral Health Services

November 6, 2015

# BHS Organizational Chart



# BHS Department Overview

## Department Functions

- CBHM: Implementation of a tiered model of support for behavioral health needs
- Implementation of prevention, targeted interventions and intensive interventions
- Psychological evaluations and sociological evaluations
- Counseling
- Crisis Intervention
- Consultation for academic and behavioral health needs
- Provide professional development to administrators, school staff, community partners and parents



# Comprehensive Behavioral Health Model (CBHM)

- CBHM is a multi-tiered framework which has been constructed to integrate behavioral health services in order to create safe and supportive learning environments that optimize academic outcomes for all students.
- 40 schools and 20,000 students served
- Goals
  - Create safe and supportive schools
  - Expand the role of BHS staff
  - Implement a multi-tiered system of support



# About CBHM

- Developed by BPS Behavioral Health Services
  - School Psychologist
  - Pupil Adjustment Counselors
  - Behavioral Specialists
- Collaboration with Boston Children's Hospital and UMASS Boston School Psychology Training Program
- Service Delivery Model
  - Aligned with NASP's 10 Domains of practice and MA Safe and Supportive Schools Framework
  - Replaced a traditional “test & place” model for BHS

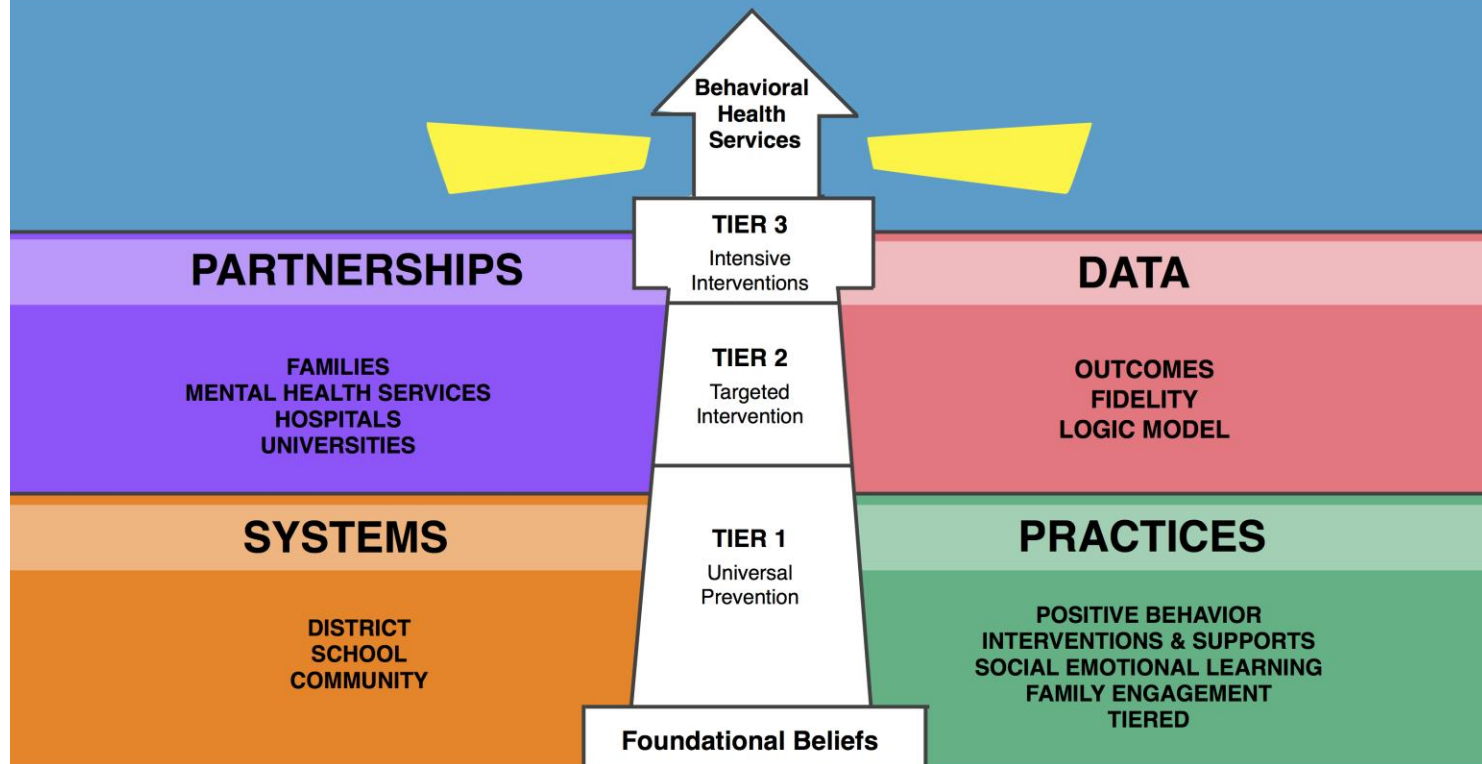


# CBHM Organizational Chart

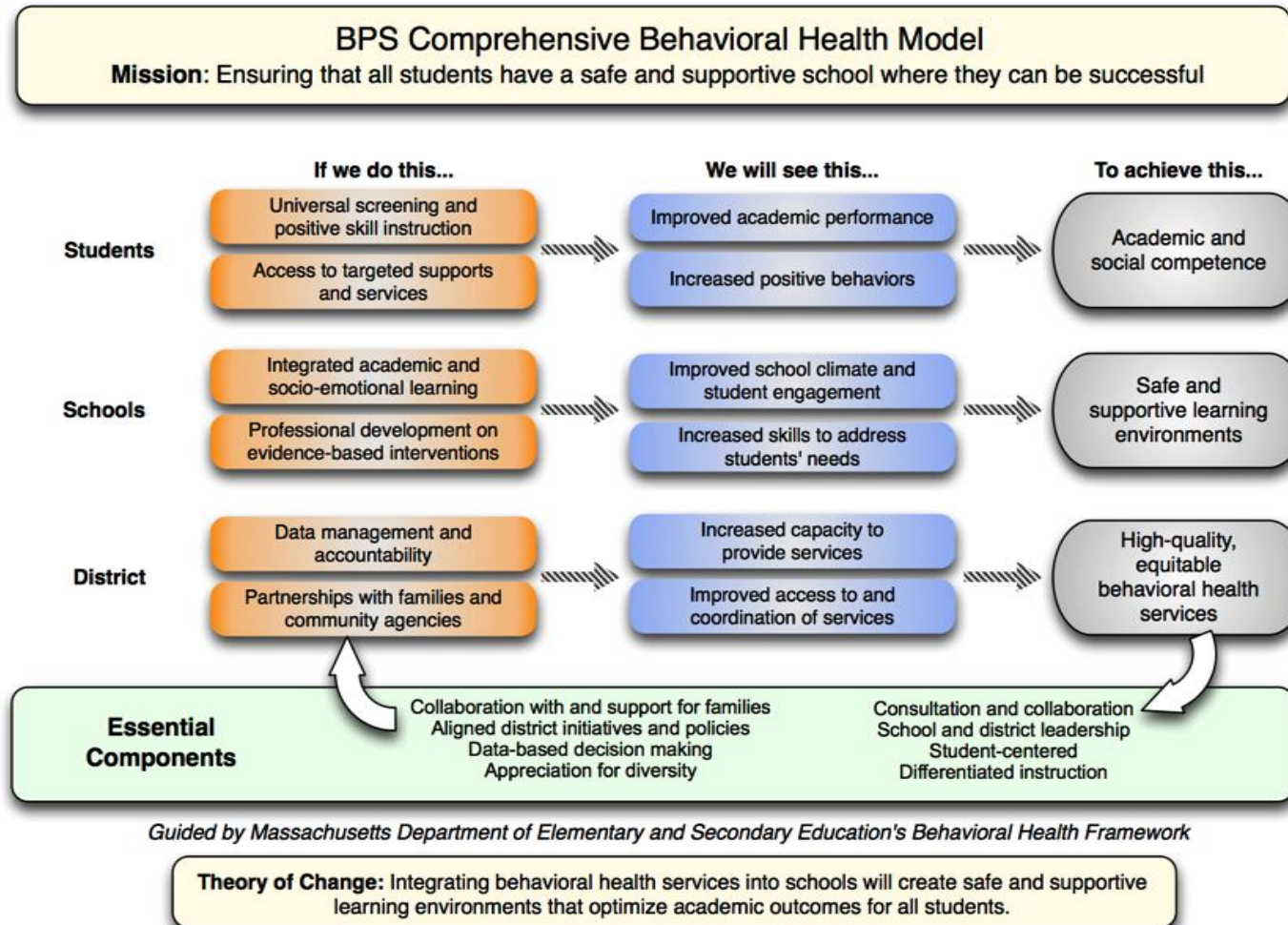


# About CBHM

## Comprehensive Behavioral Health Model



# About CBHM





# Decision to use a Formal Universal Screening

- to identify at-risk students who need additional interventions
- to monitor their progress during those interventions.
- change sensitive measure
- systematically look at needs district, school, grade/class, and individual level.
- evaluation effectiveness of implemented treatments
- Offset the drawbacks of ODRs



# BIMAS overview

- BIMAS = Behavioral Intervention Monitoring Assessment System
- Universal Screener for Behavior (with Progress Monitoring), completed 2X a year – Fall and Spring
- Teacher, parent, and student forms available
- Teacher form includes 34 items per student
- Can be completed online, 3 to 5 minutes per student
- Responses on a 5 point scale:  
Never | Rarely | Sometimes | Often | Very Often



# Implementation Considerations: Before Screening

- Train staff on the need for a universal screening
- Train staff on how to use the BIMAS
- Ensure that teachers know students for 6 weeks
- Send parent letter
- Give opt-out option
- Hold parent information session



# Implementation Considerations: during universal screening

- Set aside designated time to screen
- Monitor teacher completion
- Have building level staff available for technical support
- Share completion results with staff and principal during screening period



# Implementation Considerations:

## After universal screening

- Share with all levels
- Determine who needs additional support
- What support will offer highest benefit at lowest resource cost (ROI)
- Review screening trends to determine needs at student, class, grade, school and district level



# Universal screening successes

- Raises awareness about behavioral health issues
- Raises awareness about the link between behavioral health and academic success
- Looks at behavior objectively
- Changes the conversation on behavior



# Universal screening Challenges

- Funding the screening long term
- Communicating the value of screening
- Getting buy-in at all levels
- Sharing the data
- Using the data:
  - Interventions
  - Integrating with academic data
- Progress Monitoring





# CBHM Schools by Year

## Cohort 1 2012-2013

Boston Arts Academy  
Boston Latin  
Charles Sumner  
George H Conley  
Jackson Mann  
Joseph Lee  
Mattahunt  
New Mission High School  
Samuel W Mason

## Cohort 2 2013-2014

Boston Community  
Leadership Academy  
Charles H Taylor  
Dennis C Haley  
Ellison-Parks  
Haynes EEC  
Higginson/Lewis K-8  
Josiah Quincy  
Lee Academy  
Margarita Muniz  
Academy

## Cohort 3 2014-2015

Boston Teachers Union  
School  
Brighton High  
Charlestown High  
Henderson  
Franklin D Roosevelt  
James Condon  
Elementary  
Joseph P Tynan  
O W Holmes  
Richard J Murphy  
Winship Elementary

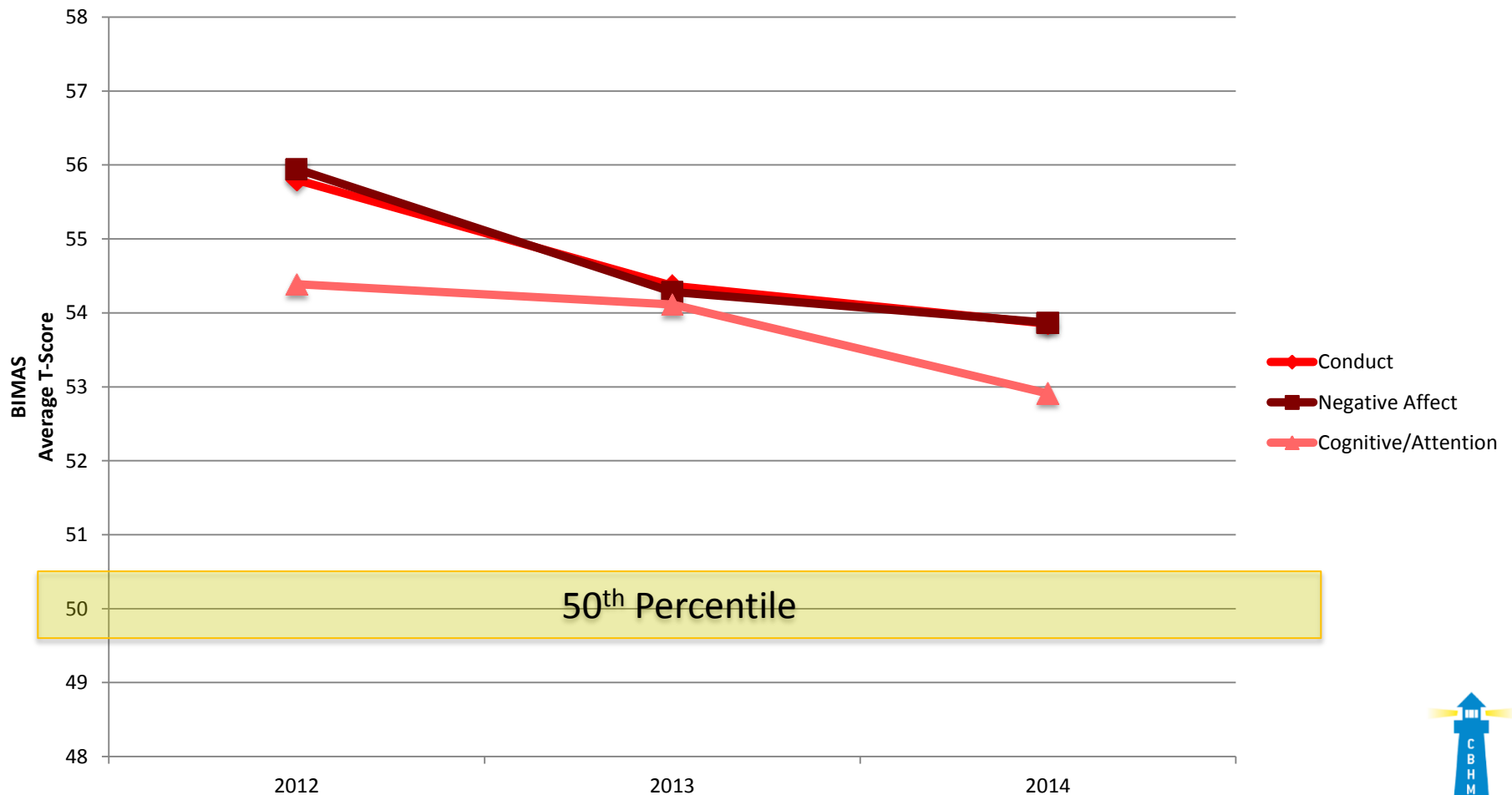
## Cohort 4 2015-2016

Harvard-Kent  
James P Timilty Middle  
John D Philbrick  
King K-8  
Nathan Hale  
Phineas Bates  
Rafael Hernandez  
West Roxbury Academy



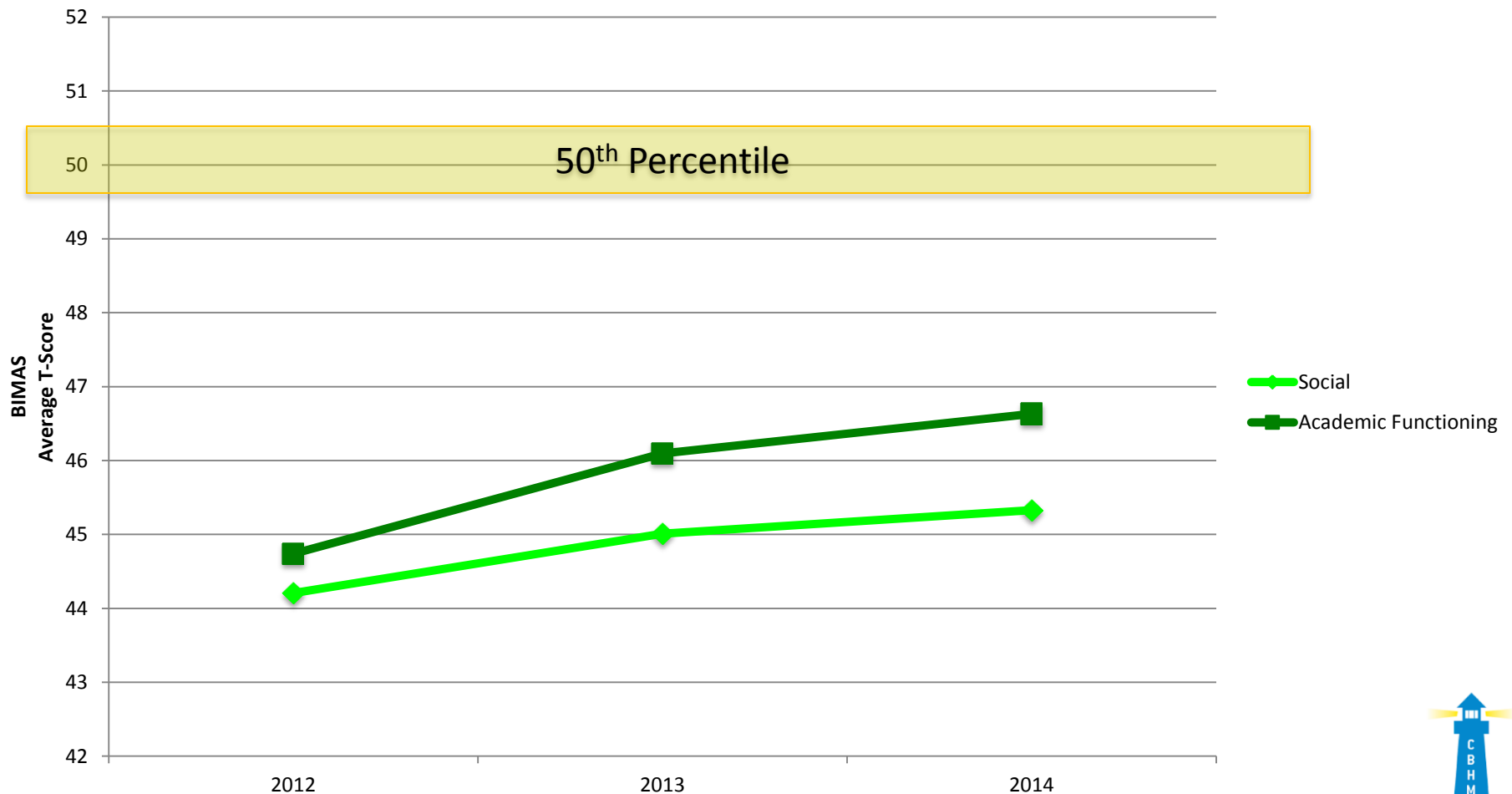
# CBHM Outcomes

## Cohort 1: Decrease in Problem Behaviors



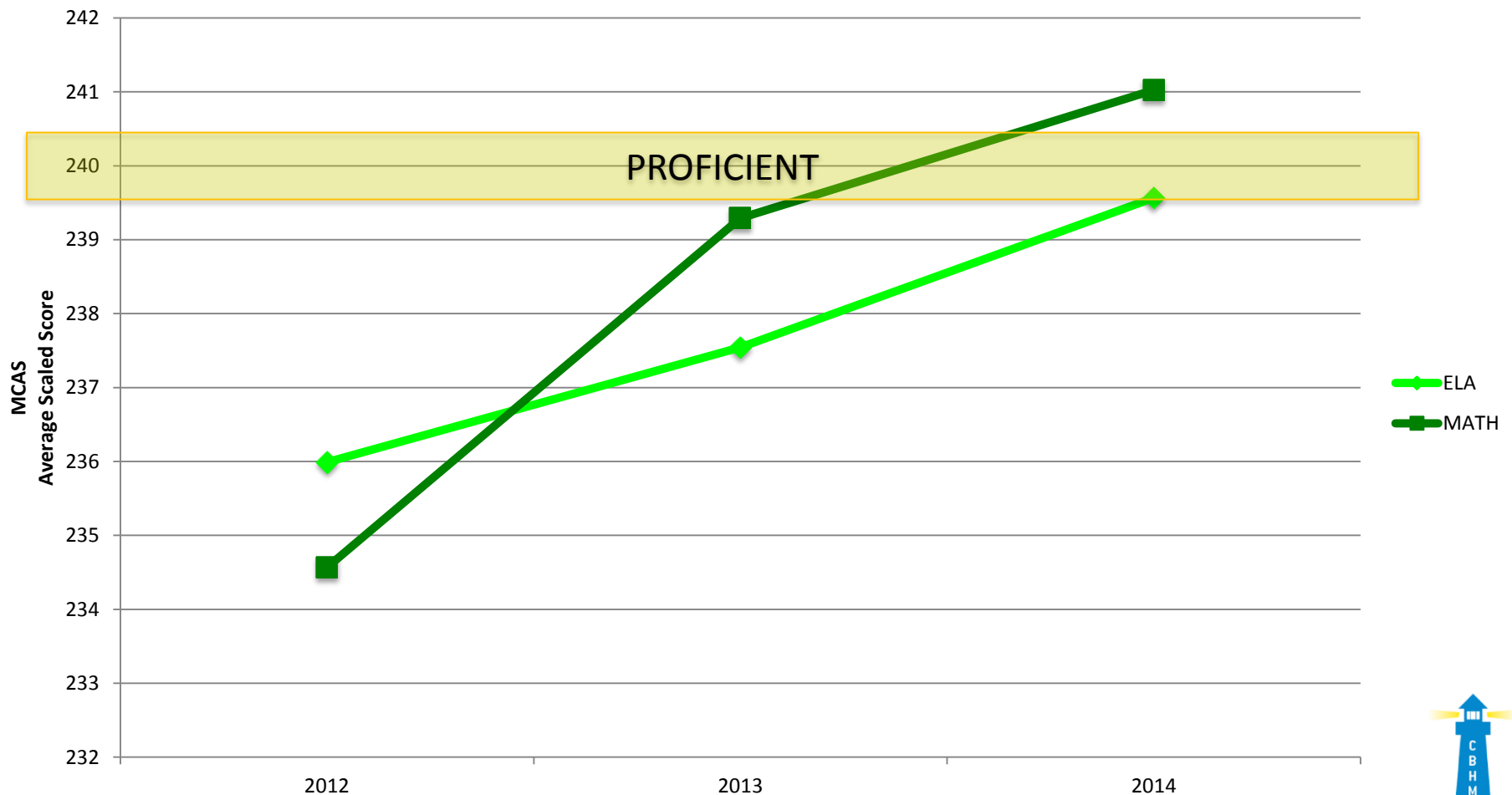
# CBHM Outcomes

## Cohort 1: Increase in Positive Behaviors



# CBHM Outcomes

## Cohort 1: Increase in Academic Outcomes



# BHS Partnerships

- University
  - UMASS
  - NU
  - William James College (formerly MSPP)
  - Tufts
- Hospital
  - Boston Children's Hospital
  - Franciscan's Children Hospital
- Community Mental Health Partners
- Allied City Agencies
  - Boston Police Department
  - Boston Public Health Commission
  - Children's Advocacy Center
- Professional Organizations
  - National Association of School Psychologist
  - Massachusetts School Psychologist Association



# Current Departmental Programs & Initiatives

- **School Based Mental Health Collaborative (SBMHC)**
  - SBMHC is formed to bring community partners and BPS together to support the mental health needs of students through integrated service delivery. SBMHC develops strategies, actions, and suggestions to enhance community partnerships and behavioral health services in schools.
  - 25 Mental health partners and allied agencies providing services in 92 schools
  - Initiative goals
    - Integrate mental health partnerships into CBHM
    - Increase equity and access to mental health services across the district
    - Ensure quality services and use of evidence based practice
  - Initiative outcomes
    - developing standards of practice
    - Yearly resource mapping of all existing mental health partnerships
    - Pilot develop to explore the joint use of a universal behavioral health screening and progress monitoring tool



# Accomplishments

(over the past 3 years)

## Improvements in Student Outcomes in CBHM Schools:

- Improvements in Student Outcomes in CBHM schools, including
  - Increases in positive behaviors
  - Increases in academic skills
  - Decreases in problem behaviors

## National Recognition for Innovative Work:

- National Recognition for Innovative Work:
- CBHM was highlighted in new book Preventative Mental Health at Schools by Dr. Gayle Macklem
- State of Colorado Education Initiative was based on CBHM
- Presented at several national conferences

## Fundraising:

- Received grant from DOJ that was renewed
- Received funding from Boston Children's Hospital
- Received small grant from State
- Actively pursue grants



# Media Coverage



<http://www.myfoxboston.com/story/28986945/schools-struggling-with-psychologist-shortage>

- Time Magazine
- Boston Neighborhood News
- Urban Update
- Phi Delta Kappan
- Highlighted in *Preventative Mental Health in Schools* by Galye Macklem



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