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

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Contributors: Michael LeBlanc, Carlo Cuccaro, Greg Rossi, Jen VanArsdale
• 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 3rd 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

- Shortcomings of traditional observations and rating scales
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
2. Aggregate Items
3. Avoid Ceiling Effect
4. Detect Change
5. Expected Direction?
6. Relative to Comparison?
7. No Pre-Test Difference
8. Systematic Errors dropped
9. Cross-Validate
Development of a Change-Sensitive Outcome Measure for Children Receiving Counseling

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Achilles Bardos
*University of Northern Colorado*
The Use of Change-Sensitive Measures to Assess School-Based Therapeutic Interventions: Linking Theory to Practice at the Tertiary Level

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Devereux Center for Effective Schools

Robin S. Codding  
University of Massachusetts, Boston

James L. McDougal  
State University of New York at Oswego

Scott Meier  
State University of New York at Buffalo
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: anger management problems, bullying behaviors, substance abuse, deviance
- Negative Affect: anxiety, depression
- Cognitive/Attention: attention, focus, memory, planning, organization

ADAPTIVE SCALES
- Social: social functioning, friendship maintenance, communication
- Academic Functioning: academic performance, attendance, ability to follow directions
# Bimas overview

<table>
<thead>
<tr>
<th>BIMAS Scales</th>
<th>$T$-score</th>
<th>Scale Descriptors</th>
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<td>Behavioral Concern Scales</td>
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<td></td>
<td>$T = 60+$</td>
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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.

Bardos, 2011
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
LARGE NORMATIVE SAMPLE

Total Sample
$N = 4,855$

Teacher
$N = 1,938$
- Normative
  $N = 1,400$
- Clinical
  $N = 538$

Parent
$N = 1,938$
- Normative
  $N = 1,400$
- Clinical
  $N = 467$

Self-Report
$N = 1,050$
- Normative
  $N = 700$
- Clinical
  $N = 350$
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
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)

Gate 1
- Teachers Rank Order 10 Ext. & 10 Int. Students
- Pass Gate 1
  - Teachers Rate Top 3 Students on Critical Events, Adaptive & Maladaptive Scales

Gate 2
- Pass Gate 2
  - Classroom & Playground Observations

Gate 3
- Tier 2,3 Intervention
- Tier 3 Intervention or Special Ed. Referral
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\textsuperscript{TH} GRADE

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<th>Major Referrals</th>
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# SSBD/ ODR Information 2012-2013

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<tr>
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<th>Externalizing 2012-2013 Major Referrals</th>
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4th Grade Screening Results - BIMAS

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<th>Levels Of Risk</th>
<th>Conduct</th>
<th>Negative Affect</th>
<th>Cognitive/Attention</th>
<th>Levels Of Functioning</th>
<th>Social</th>
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<td>3 (4 %)</td>
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<td>Some Risk</td>
<td>11 (16 %)</td>
<td>7 (10 %)</td>
<td>13 (19 %)</td>
<td>Typical</td>
<td>37 (53 %)</td>
<td>40 (57 %)</td>
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<td>Low Risk</td>
<td>58 (83 %)</td>
<td>63 (90 %)</td>
<td>54 (77 %)</td>
<td>Strength</td>
<td>9 (13 %)</td>
<td>7 (10 %)</td>
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<td>Total</td>
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<td>70 (100%)</td>
<td>70 (100%)</td>
<td>Total</td>
<td>70 (100%)</td>
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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

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<td>28</td>
<td>Efficiency</td>
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## ODRS Screening Externalizing Behaviors

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<th>2012-2013 ODR</th>
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<th>Specificity</th>
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<td>Efficiency</td>
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# ODRS Screening Internalizing Behaviors

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<td>Efficiency</td>
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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
Students in 3rd and 4th grade were screened using AIMSweb and the BIMAS.

- AIMSweb
  - 3rd grade (reading n=71; math n=72)
  - 4th grade (reading n=64; math n=63)

- BIMAS
  - 3rd grade (n=70)
  - 4th grade (n=66)
At-risk for academic problems
  o Reading - 30% below benchmark
  o Math - 28% below benchmark

At-risk for behavior problems
  o Conduct – 13% at-risk
  o 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?
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.
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.
Behavioral Health Services

November 6, 2015
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

Executive Work Group

- Implementation
- Communications
- Research
- Partners
- Family Engagement
About CBHM

Comprehensive Behavioral Health Model

**PARTNERSHIPS**
- FAMILIES
- MENTAL HEALTH SERVICES
- HOSPITALS
- UNIVERSITIES

**SYSTEMS**
- DISTRICT
- SCHOOL
- COMMUNITY

**TIER 3**
- Intensive Interventions

**TIER 2**
- Targeted Intervention

**TIER 1**
- Universal Prevention

**Foundational Beliefs**

**DATA**
- OUTCOMES
- FIDELITY
- LOGIC MODEL

**PRACTICES**
- POSITIVE BEHAVIOR INTERVENTIONS & SUPPORTS
- SOCIAL EMOTIONAL LEARNING
- FAMILY ENGAGEMENT
- TIERED
About CBHM

BPS Comprehensive Behavioral Health Model

**Mission:** Ensuring that all students have a safe and supportive school where they can be successful

**If we do this...**

- **Students:** Universal screening and positive skill instruction
- **Schools:** Integrated academic and socio-emotional learning
- **District:** Data management and accountability

**We will see this...**

- Improved academic performance
- Improved school climate and student engagement
- Increased capacity to provide services

**To achieve this...**

- Academic and social competence
- Safe and supportive learning environments
- High-quality, equitable behavioral health services

**Essential Components**

- Collaboration with and support for families
- Aligned district initiatives and policies
- Data-based decision making
- School and district leadership
- Student-centered
- Differentiated instruction

**Guided by Massachusetts Department of Elementary and Secondary Education's Behavioral Health Framework**

**Theory of Change:** Integrating behavioral health services into schools will create safe and supportive learning environments that optimize academic outcomes for all students.
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
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<td>Rafael Hernandez</td>
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<tr>
<td>New Mission High School</td>
<td>Lee Academy</td>
<td>O W Holmes</td>
<td>West Roxbury Academy</td>
</tr>
<tr>
<td>Samuel W Mason</td>
<td>Margarita Muniz Academy</td>
<td>Richard J Murphy</td>
<td></td>
</tr>
</tbody>
</table>
CBHM Outcomes

Cohort 1:
Decrease in Problem Behaviors

<table>
<thead>
<tr>
<th>Year</th>
<th>Conduct</th>
<th>Negative Affect</th>
<th>Cognitive/Attention</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>56</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>2013</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>2014</td>
<td>54</td>
<td>54</td>
<td>54</td>
</tr>
</tbody>
</table>

50th Percentile
CBHM Outcomes

Cohort 1:
Increase in Positive Behaviors

50th Percentile

Cohort 1:
Increase in Positive Behaviors

CBHM Outcomes

Cohort 1:
Increase in Positive Behaviors
Cohort 1:
Increase in Academic Outcomes

MCAS Average Scaled Score

- ELA
- MATH

2012 | 2013 | 2014
---|---|---
232 | 233 | 234
233 | 234 | 235
234 | 235 | 236
235 | 236 | 237
236 | 237 | 238
237 | 238 | 239
238 | 239 | 240
239 | 240 | 241
240 | 241 | 242

PROFICIENT
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

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

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• Website: cbhmmboston.com

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