Evidence-Based Practice: Science. Pseudoscience, and the Importance of Practice-Based Evidence and Scientific Thinking
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Themes of the Presentation
- Evidence-Based Practice
- Prevention Programs and Practices
- Collaboration and Problem Solving in the Educational Context
- Scientific Thinking and Self Practices
- Examples of Mental Health Service Systems
- Brainstorm ways to Optimize Mental Health Services in Canada

Evidence-Based/Scientifically-Based Interventions
- Practices Based on Research Support
- Emphasis is on Randomized Controlled Trials to Test Interventions
- Many options: What Works Clearinghouse (a U.S. Department of Education IES initiative to provide literature reviews that include mental health interventions)
- See: http://ies.ed.gov/ncee/wwc/

An Example of an Evidence-Based Intervention
An Intervention that can change Parent and Child Behavior
Characteristics:
- Simple to Develop
- Simple to Implement
- Inexpensive
- Time Efficient
- Evidence of Effectiveness Based on Practice

An Evidence-Based Practice

The Rise in Popularity of the term “Evidence-Based” (from Medline)

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Number of Articles Retrieved
Using "Evidence-Based" as a Keyword
(Norcross, Hogan, & Koocher, 2008)

Developments in Prevention Science

- Prevention Programs and Practices are moving into educational settings
- Multi-Tiered Prevention Approaches are being considered more often in the context of Response-to-Intervention initiatives
- Prevention is a Critical Component with Base Rates of Mental Health Problems (1 in 5 in Canada)

Prevention within Multi-Tiered Models

- Single Prevention Programs Implemented in General Education Settings
- Multi-Tiered Prevention Programs and Practices
- Universal/Selected/Indicated (Primary, Secondary/Tertiary; Tier 1/Tier 2/Tier 3)
- Focus on Reducing Base Rates of Child Mental Health and Academic Problems

Response-to-Intervention (RtI): In the U.S. Provided a Context for Thinking about Evidence-Based Mental Health Practices in Schools

RtI Practice Components

RtI is the practice of:
- providing high-quality intervention matched to student needs;
- using learning rate and other outcomes over time to make important decisions (NASDSE, 2005).
- (Guided by reducing the number of children in special education, reducing disproportionate representation, and only the use of standardized tests to make decisions)
The R in RtI
- Selecting At-Risk Students (involves “screening”)
- Monitoring of At-Risk Students (involves “progress monitoring”)

The I in RtI
- The Focus has been Primarily on Reading (but other domains are included)
- Interventions are Multi-tiered
- Problem Solving Model Used; and/or
- Standard Treatment Protocol Used
- Intervention-as-Test (break with tradition)
- Intervention Integrity

High-Quality Intervention
- Use of Evidence-Based (Scientifically Supported) Programs and Procedures (NASDSE, 2007)
- Includes Effective Curriculum
- Includes Effective Instructional Procedures
- Includes Effective Social/Emotional (Mental Health) Interventions
- Includes Combinations of the Above

Research Supported Foundations of RtI:

Research Foundations of RtI:
- Two principal origins of current RtI practices are:
  - Deno’s data-based program modification model (Deno, 1985; Deno & Mirkin, 1977)
  - Problem solving consultation model (see Bergan, 1977; Bergan & Kratochwill, 1990; Kratochwill & Bergan, 1980; Sheridan & Kratochwill, 2008).

“Evidence-Based Practices” that Support RtI
- Both models incorporate RtI practices in that problem solving steps are implemented systematically
**Progress Monitoring and Evaluation**
- Screening to Identify Students At-Risk (typically at the universal level)
- Ongoing Monitoring of Students in Priority Areas (e.g., reading fluency and comprehension, discipline referrals)
- Use of Student Outcome Data to Make Intervention/Instructional Decisions
- Technologies for Assessment (e.g., curriculum-based assessment, goal attainment scaling, School Wide Information System [SWIS]).

**Intervention Approaches:**
- **Frameworks for Implementation**
  - Early Intervening Services: support for students (K-12 with emphasis on K-3) who have not been identified as in need of special education or related services but who need additional academic and behavioral support to succeed in the general education environment.
  - Problem Solving Approach and/or
  - Standard Protocol Approach

**Problem Solving Approaches**
- Focus on Customized Interventions for the Student
- Implemented through Problem Solving Consultation and/or Problem Solving Teams

**Framework for RtI**
- RtI is most frequently conceptualized within a three tiered model (e.g., Fuchs, & Fuchs, 2006; Peterson, Prasse, Shinn, & Swardik, 2007; Reschly & Bergstrom, 2009; Vaughn & Fuchs, 2003)
- Majority of RtI models described in the literature combine standard protocol and problem-solving approaches (Jimerson, Burns, & VanDerHeyden, 2007)
  - **Standard Protocol** = same evidence-based interventions for students who experience difficulty in a common area
  - **Problem-Solving Approach** = relies on a team of educators to systematically analyze student problems and develop individualized appropriate intervention plans

**Standard Intervention Protocol Approaches**
- Focus is on a Standard Intervention Routine
- Intervention Typically Administered in Small Group Format
- Intervention Typically Administered for Fixed Period of Time

**Example Problem Solving Models:**
- Problem Solving Consultation and Instructional Consultation Teams (Kratochwill & Bergan, 1990 Rosenfield et al., 2008; Sheridan & Kratochwill, 2009)
- Outcomes: Planning, Monitoring, Evaluating (Stoiber & Kratochwill, 2002)
Problem Solving Consultation
- Problem Identification
- Problem Analysis
- Intervention Implementation
- Intervention Evaluation

Applications of Outcomes: PME
- Individual Consultation with Teacher and/or Parent
- Collaborative Consultation Problem Solving Team
- Framework for Special Education Eligibility/Decision Making
- Program Planning and Evaluation

Steps of the Problem Solving Process in Outcomes: PME
- Step 1: Concern Description
- Step 2: Goals and Benchmarks
- Step 3: Intervention Planning
- Step 4: Progress Monitoring & Analysis
- Step 5: Evaluation of Outcomes/Decisions

Response to intervention

No Response to intervention

Some Challenges to Evidence-Based Practices in Schools: Things to Consider as You Move Forward
- Cultural Challenges
- Organizational/Structural Challenges
- Professional Development Challenges
- Sustainability Challenges
- Research Foundation Challenges
- Scientific Thinking Challenges
Cultural Challenges

- The Culture of the School and Mission Disparity: Mental Health Focus is a Challenge (e.g., unions, tradition, leadership)
- The Culture of Research: The Limited Focus in Mental Health Research on Educational Interventions and Outcomes and vice versa (Hoagwood & Kratochwill, 2007; Algozzine, Putnam, & Horner, 2007)

Cultural Challenges (Cont.)

- The Value Placed on Scientific Research in Some Areas of Education is Mixed (e.g., despite the best efforts of the Institute for Education Sciences in the US) (qualitative research emphasized, implementation based on policies/politics, emphasis on personal experience) (to be discussed later)

Organizational/Structural Challenges

- The Physical Structure of the School (e.g., children are in classrooms, little or no space outside of classrooms)
- Teacher-Student Ratios (25:1 to 35:1)
- Time for Implementation of Interventions
- Organizational Traditions (Leadership, Unions)
- Extracting Non-Evidence-Based/Discredited Programs a Challenge (e.g., DARE, Past Lives Therapy)

Professional Development Challenges

- Educators as a Group have Typically not been Trained (Undergraduate and Graduate) in Evidence-Based Mental Health Practices
- Professional Development for In-service Educators can be Challenging (“I'd rather be fishing syndrome” or “I'm already overwhelmed syndrome” or “my curriculum is crowded syndrome”)
- EBP Requires Systemic Large Scale Change to be Effective (e.g., district-wide training, province-wide training initiatives)

Sustainability Challenges

- Information Dissemination Networks are Limited
- Sustainability of Programs Depends on Teams of Professionals Working in Collaboration (e.g., problem solving team efforts)
- Leadership is Key but Turnover is High
- Fiscal Resources are Limited to Sustain Programs

Research Foundation Challenges

- Randomized Trial Research and the What Doesn't Work Clearinghouse
- Slow Progress in Summarizing Single-Case Design Research
- Limited Translational/Implementation Research
- Limited Practice-Based Evidence (less well-known as a data base for research)
Limited Practice-Based Evidence in Evidence-Based Practice

See Kratochwill, Hoagwood, Kazak, Weisz, Hood, Vargas, & Banez (in press).

What is Practice-Based Evidence

- Research outcome data derived from implementation of an evidence-based intervention in a typical practice context
- Contextual information gathered on the intervention
- Research partnership between practitioners and researchers

Example Criteria for Practice-Based Evidence

- Systematic Evidence Searching (for an EBP)
- Implementation and Adherence to Intervention Integrity
- Invoking Standards for Drawing Inferences from Interventions
- Using Quality Assessments to Assess Intervention Outcomes
- Adopting Formal Data Analysis to Assess Intervention Outcomes

Scientific Thinking Challenges

- Evidence-based practice is more than implementing an evidence-based mental health intervention
- To engage in evidence-based practice, it is necessary to engage in scientific thinking
- The challenge is that there are diverse ways of thinking about practice

| TABLE 1. Phases of Change in Adopting Evidence-Based Practice |
|-----------------|-----------------|-----------------|
| Phase of Change | Decision-Making | Implementation |
| Recommendation | Consider each intervention's worth and potential for change |
| Consideration   | Consider the pros and cons of each intervention |
| Preparation     | Decide which interventions are feasible and practical |
| Action          | Implement the intervention |
| Maintenance     | Follow up and document successes and potential barriers to implementation |

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Ten Take-Home Prescriptions for Improving Mental Health Research and Practice:

- Seek out disconfirming evidence
- Do not become too attached to one's hypotheses
- Consider rival hypotheses
- Do not cherry-pick
- Put one's intuitions to systematic tests
- Be skeptical of clinical wisdom
- Be cognizant of one's blind spots
- Encourage dissent
- Quantify, quantify, quantify
- Maintain a self-critical attitude

Evidence-Based Mental Health Practice: Moving Forward With the Help of Our Friends

Some Things to Ponder:
- What Have We Learned From Prevention Science That Can Help?
- What Can We Learn From Safe, Supportive and Successful Schools?
- What Can We Learn From Positive Behavior Support?
- What Have We Learned From Research on Implementation of Innovations?
- What Guidance and Resources Do We Have From State Initiatives

Prevention: Example Developments in Mental Health
- The President's New Freedom Commission on Mental Health
- Center for Mental Health in Schools Initiatives (Regional and State Summits) website: http://smhp.psych.ucla.edu
- Collaborative for Academic, Social, and Emotional Learning: www.casel.org
- Center for the Advancement of Children’s Mental Health (at Columbia University): http://www.kidsmentalhealth.org/

Successful Program Implementation: Lessons Learned from Blueprints
Blueprints for Violence Prevention, Center for the Study and Prevention of Violence at the University of Colorado-Boulder and supported by the Office of Juvenile Justice and Delinquency Prevention
Website: www.colorado.edu/cspv/blueprints/index.html

Critical Components of Successful Program Implementation
- Site Assessment
- Effective Organization (strong administrative support)
- Qualified Staff
- Program Champion(s)
- Program Integration
- Training and Technical Assistance
- Implementation Fidelity
Safe, Supportive and Successful Schools: Step by Step (Osher, Dwyer, & Jackson, 2004)

- Designed to Support School Improvement in Mental Health
  1. School-wide programs for all students
  2. Early interventions for students who have behavioral problems
  3. Intensive interventions for students who have significant emotional and behavioral disorders.

Sustainable School Improvement Requires at Least 14 Goals

1. Address needs
2. Be strategic and comprehensive
3. Be systemic
4. Don’t do it alone
5. Involve the entire community
6. Understand and manage change
7. Build a learning organization
8. Value and address diversity
9. Access and address strengths and challenges
10. Use Evidence-Based programs and practices
11. Build capacity
12. Use data
13. Evaluate outcomes
14. Focus on the long haul

Sustainable School Improvement (Continued)

Example Contents of Safe, Supportive and Successful Schools

- Funding School Improvement
- Developing School-Wide Interventions
- Building Capacity for Early Interventions
- Building Capacity for Intensive Interventions
- Checklists/Forms

What is Positive Behavior Support (PBS)?

- A collaborative, assessment-driven problem-solving process to develop effective interventions for individuals with challenging behavior.
- PBS is an alternative to traditional interventions for dealing with problematic student behaviors.
- Changes to Student-Level and Systems-Level Practices.

Data-Based Decisions: Three Critical Components

1. **Data must be reliably and validly collected**:
   - Review Definitions of Rule-violating behavior
   - Clear Process of Referrals
   - Range of discipline actions

2. **Mechanism for processing, storing, and manipulating data**:
   - Microsoft Excel Spreadsheet
   - Having a team member responsible for data organization

3. **Structures to facilitate data-based decision making**:
   - Weekly or bi-weekly review with all staff
Referral By Behavior

Referral By Student

Positive Behavior Support Resources
- Office of Special Education Programs (OSEP) Technical Assistance Center on Positive Behavioral Interventions and Supports: http://www.pbis.org/
  - Purpose: The Center has been established by the Office of Special Education Programs, US Department of Education to give schools capacity-building information and technical assistance for identifying, adapting, and sustaining effective school-wide disciplinary practices.
  - Tools and Resources Provided:
    - School-Wide PBS
      - Primary
      - Secondary
      - Tertiary
    - District-Wide PBS
    - State-Wide PBS
    - High School PBS
    - Families & PBS
    - PBS & the Law

Implementation Recommendations
- Information dissemination alone is ineffective
- Training (no matter how well done) by itself is an ineffective implementation method

National Implementation Research Network
- Network: http://www.fpg.unc.edu/~nim/

Core Implementation Components for Evidence-Based Mental Health Practices and Problem Solving
- Select programs and staff
- Provide education/training
- Provide consultation and coaching
- Conduct staff evaluation
- Conduct program evaluation
- Use facilitative administrative supports
- Integrate system interventions
Goals of Mental Health Problem-Solving: Application to Teams

- Remediation and prevention
- Collaboration
- Problem Solving framework
- Ecological framework
  - A long-term goal of team problem-solving is that the process will become institutionalized and ultimately change thinking from a child-deficit orientation to a problem-solving orientation.

Review of the Literature: Evidence Supporting Team Problem-Solving

- Research suggests that systematic problem-solving has the potential to:
  - Prevent and remediate individual mental health difficulties
  - Decrease referrals to and placements in special education
  - Teach educators new skills that generalize to other situations
  - Reduce disproportionate rates of African American students identified for special education

(Burns & Symington, 2002; Gutkin & Curtis, 1999; Reschly & Starkweather, 1997)

Review of the Literature: Team Problem-Solving

- Burns, Wiley, and Viglietta (2008b) argue that team problem-solving should occur across multiple tiers within an RtI model. For example:
  - Tier 1: review the universal screening data
  - Tier 2: help determine appropriate small group interventions, monitor progress, evaluate supplementary services
  - Tier 3: problem-solving occurs in collaborative multidisciplinary teams to develop, implement, and evaluate individualized interventions

Procedural Integrity of Problem-Solving

- Procedural integrity refers to the consistency with which teams implement the problem-solving process.
- Unfortunately, research suggests that the procedural integrity of problem-solving in is not always strong (e.g., Buck, Polloway, Smith-Thomas, & Cook, 2003; Flugum & Reschly, 1994; Fuchs & Fuchs, 1989; Telzrow, McNamara, & Hollinger, 2000)

Why is Procedural Integrity Low?

- Doll et al. (2005) examined barriers with teams and identified a need for:
  - Lack of training in systematic problem solving
  - Stronger and more consistent administrative support is essential
  - Increased leadership from professionals with expertise in data collection, analysis, and problem-solving (e.g., psychologists, special education teachers)

How Can We Increase Procedural Integrity?

- Performance Feedback: brief verbal description and/or graphed data describing the PST’s level of implementation (Burns, Peters, & Noell, 2008a)
  - **Strengths**: Immediate increase in integrity that continued to increase throughout the intervention
  - **Shortcomings**: Still components on the checklist that were not implemented with fidelity, even with this feedback
  - **Recommendations**: (a) teams might require more targeted professional development to learn not only what to implement, but how to implement the most challenging components, (b) examine student outcomes, (c) examine team acceptability
What Else Do We Know About Professional Development?

Research in the area of professional development suggests that training is effective when it:
- Is ongoing
- Promotes active learning through direct strategies
  - Includes “reform activities” such as coaching (i.e., modeling, rehearsal, prompting, contingent praise) data based feedback
- Occurs at during working hours
- Is directly connected to interventions and goals
- (Boyle, Lamprianou, & Boyle, 2005; Garet, Porter, Desimone, Birman, &Yoon, 2001; Spencer & Logan, 2003; Sterling-Turner, et al., 2002)

Acceptance and Acceptability of Problem-Solving

Acceptability refers to how useful, important, and/or feasible the person finds the process
When professionals do not find the problem-solving process acceptable, they are more likely to carry it out with poor integrity and experience limited intervention effectiveness (e.g., Rosenfield, 2008; Yetter & Doll, 2007)

Recommendations - Address limitations in: (a) training, (b) staff availability, (c) time, and (d) administrative support (Ostrom, 2001; Sheridan & Steck, 1995; Yetter & Doll, 2007)

Some Conclusions of this Work

Research suggests that school professionals must address limitations in training to improve problem-solving acceptability and integrity
Burns et al. (2008a) found that graphed performance feedback improved procedural integrity but that this strategy did not improve the implementation integrity of more challenging components
The professional development literature has consistently identified coaching as an effective method to teach educators to implement new skills

The K-3 Intervention Projects funded by OSEP

Set the Stage for RtI scale-up
Set the Stage for the Wisconsin initiative called Responsive Education for All Children (REACH)

The K-3 Intervention Projects

Six Research Centers
- 2 Behavior (Oregon and Nebraska)
- 2 Reading (Texas and Oregon)
- 2 Reading and Behavior (North Carolina and Kansas)
- 1 Coordination Center at Wisconsin
- Multi-tiered Model Examples for Schools

Guiding Assumptions

Early indicators of future problems are identifiable
Most factors relating to academic and behavioral concerns can be positively influenced
Failure can be avoided with prevention and stopped with effective intervention
Monitoring student response to instruction and intervention is the key to success
A shared vision honors all our hopes, dreams, and aspirations for children’s mental health
Framework helps schools

- Enhance the success of all students
- Create a climate of shared responsibility for all learners
- Promote the use of collaborative decision-making in schools
- Support the involvement of key stakeholder groups

Framework helps schools (continued)

- Identify, implement, and evaluate evidence-based prevention and intervention programs
- Analyze local data to determine student and system needs
- Develop a plan to address priorities
- Systematically monitor program effectiveness

The REACH Framework for Student and System Success is based upon a data-driven, continuous improvement model. The framework is organized at four levels:

- **Vision**
- **Context**
- **Process**
- **Content**

**Vision**: Schools provide high quality options to enhance the success of all students

**Context**: Involvement of all stakeholders; Enhancement addressed in all contexts
Data Collection
Data Analysis
Implementation
Planning (strategy/indicators)

Needs Identification & Prioritization
Universal options
Selected options
Targeted options

Process: How data are used to guide continuous improvement

Vision (what responsive schools look like), Context (who/where), Process (how), and Content (what components responsive schools implement).

REACH Framework Components
- Shared vision and commitment (Prevention Focus)
- Administrative leadership and support
- Environment of collaboration
- Resource mapping
- Collaborative procedure for responding to individual needs
- Evidence-based prevention and intervention
- Student progress monitoring system
- Data-based decision-making in teams
- Professional development and support
- Family and community involvement

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