"You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete."

- Buckminster Fuller

"Essentially, all models are wrong, but some are useful.


WHAT IS NMT?

The Neurosequential Model of Therapeutics is a neuroscience-informed, developmentally-sensitive, approach to the clinical problem solving process.

It is not a therapy – and does not specifically imply, endorse or require – any single therapeutic technique or method.

The NMT is both an ‘evidence-based’ and an ‘evidence-generating’ practice.

The web-based, standardized assessment elements allow the collection of aggregate data to facilitate the ongoing monitoring of a range of individual and program outcomes.

The model is designed to allow iterative modifications to improve program and treatment plan elements.
The Neurosequential Model

The brain mediates our thoughts, feelings, actions and connections to others and the world.

Understanding core principles of neuroscience, including neuroplasticity and neurodevelopment, can help us better understand ourselves and others.

Neurons: 86,000,000,000 (86 Billion)
Soma: 111,800,000,000 (111 Billion)
Synaptic bouton: 430,000,000,000 (430 TRILLION)
Synaptic proteins: 8,603,956,000,000,000,000 (8.4 QUADRILLION)
Polarizations/minute: 2,581,186,800,000,000,000 (2.5 QUADRILLION/minute)

Heuristic (Greek: "ὑĕρικ"; "find" or "discover") refers to experience-based techniques for problem solving, learning, and discovery that employs a practical method not guaranteed to be optimal, but sufficient for immediate goals. Where finding an optimal solution is impractical, heuristic methods are used to speed up the process of finding a satisfactory solution via mental shortcuts to ease the cognitive load of making a decision. Examples of this method include using a rule of thumb, an educated guess, an intuitive judgment, stereotyping, or common sense.

In more precise terms, heuristics are strategies using readily accessible, though loosely applicable, information to control problem solving in human beings and machines.

The Neuroarchaeology of Experience and the Neurosequential Model

- The age at which an experience (e.g., an adverse event) takes place will determine the neurodevelopmental impact and the resulting functional consequences
- Therefore, a developmental history of the timing of adverse experiences (as well as positive, attenuating experiences) is crucial to understanding current functioning
- The NMT includes a developmental review of adverse experiences and the buffering effects of relational health ("connectedness").
The Neurosequential Model
Humans are complex – individually, in families, communities, cultures and across generations.
Overly simple constructs – including the Neurosequential Model – do not capture the depth and breadth of the human experience.

Neurosequential Model
It is important to understand mechanisms underlying current functioning.

Your understanding determines your solution
- Stuart Ablon (CPS, 2010)

The Neurosequential Model
Each person has a unique pathway to the present and deserves individualized care.
“One-size fits all” approaches rarely meet the needs of the individual – more often they meet a need of the provider (or system).

Relational Complexity in Groups

<table>
<thead>
<tr>
<th>Size of Group</th>
<th>Number of Relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>5</td>
<td>90</td>
</tr>
<tr>
<td>6</td>
<td>301</td>
</tr>
<tr>
<td>7</td>
<td>966</td>
</tr>
<tr>
<td>8</td>
<td>&gt;3000</td>
</tr>
</tbody>
</table>

Adapted from Kephart, W.M. (1950) A quantitative analysis of intragroup relationships. American Journal of Sociology 60: 544-549
**Typical Age Targeted Programs (Education, Mental Health, Caregiving):**

**Early Childhood**

*Developmental lag* – the younger you are, the easier it is to tolerate the "lag".

**Children Who Start Behind Stay Behind**

Of 50 Children Who Have Trouble Reading in First Grade
44 Will Still Have Trouble in Fourth Grade

**Because we have minimal early identification and intervention**

**Typical Grade 5**

*Developmental lag* – as you get older, the skills "lag" becomes viewed through various lens – (e.g., ADHD, oppositional defiant, "reading" disorder)

**Youth**

**Age Targeted Programs (Education, Mental Health, Caregiving):**

**NM is not “On the Shelf”**

86% of clinical research is never used in direct patient care (Balas & Boren, 2000)

It takes ~17 years for the 14% of research that does influence practice to get there! (Morriss, Wooding & Grant, 2011)

- NMT was first manualized in 2008 (NMT Certification: 3 levels)
- NME was first manualized in 2012 (NME Certification: 3 levels)
- NMC was manualized in 2020 (NMC TRAINEE Certificate)
- NM Sport was manualized in 2021 (NM Sport Phase I Certification)

Since 2008
- 90,000 NMT metric reports
- 100,000 NME "mini-map" reports
- 5000 + NMT, NME, NMC & NM Sport certified professionals
- 600 + NMT or NME certified organizations
- 28 countries

**The Neurosequential Model**

The Big Picture: 2021

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The Neurosequential Model Core Slides
"Best Hits" Package

The Neurosequential Model
North America (NMT): 2021

The Neurosequential Model
North America (NME): 2021

The Neurosequential Model
North America: 2021

The Neurosequential Model
Europe: 2021

The Neurosequential Model
Australia & New Zealand: 2021

NMT Certified Clinicians

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**Neurosequential Model Core Slides**

**“Best Hits” Package**

---

**Sequential Engagement & Processing**

- **Reason** ➔ Reflect
- **Relate**
- **Regulate**

**Outside world:** Sensory Input

**Inside world:** Somatic Input

---

**Regulate Sequential Engagement & Processing**

- **Cortex**
- **Limbic**
- **Diencephalon**
- **Brainstem**
- **Cerebellum**

**Outside world:**
- **Sensory Input**

**Inside world:**
- **Somatic Input**

---

**Afferent Components: Modulation of Primary Regulatory Networks**

- **Cerebro-modalatory**
  - Top-down modulation
- **Somatosensory**
  - Bottom-up modulation

**External World:** Primary Senses

**Internal World:** Brain

---

**Predictable disruptors of CRN functioning resulting in ‘cascade’ of vulnerability for global (pervasive) health problems**

1. **Intrauterine insults**
   - EtOH, methamphetamine, malnutrition, maternal distress

2. **Bonding & attachment disruptions**
   - Domestic violence
   - Maternal isolation, postpartum depression
   - Maternal history of attachment/bonding issues

3. **Sensitizing pattern of stress response activation**
   - Chaos, unpredictability, ‘splinter’ neglect
   - “Out-group” experience – e.g., racism, gender, identity
   - Exposure to violence, physical, sexual abuse
   - Emotional humiliation, shaming,

---

**Cortical Modulation of Reactivity**

- **Neocortex** ➔ **Limbic**
  - **DC** ➔ **BS**

---

**“Self-regulation” (SR)**

**Somatosensory regulation/self-soothing (SS)**

- Starts in womb: suck/swallow
- Tied to intrauterine and perinatal associations
- Breathing, walking, running, rocking, swimming, rhythm
- Doodle, hum, swing, jump, dance

**Cortical Modulation (CM)**

- Top-down: Secondary
- Tied to cortical development & state-dependence
- Slower process:
  - **Dissociation (Diss)**
    - In-Out: Universal
    - Inescapable, unavoidable, painful: Universal
    - Adaptive continuum
    - Mind-wandering to threat-induced full dissociation
    - Used rhythmically (“in-out”)
**REGULATORY OPTIONS**

- **“Self-regulation” (SR)**
  - Self-soothing – using SS
  - Cortical regulation
  - Dissociation
- **Somatosensory regulation (SS)**
  - Self vs Other
- **Relational regulation (Rel)**
  - Positive co-regulation
  - Co-dysregulation
  - Tied to primary relational templates
- **Pharmacological regulation (Rx)**

Optimal regulatory interactions use “multiple” pathways:
- SS and Rel
- Cort and SS
- Diss and SS

---

**The Six R’s**

Key Elements of Positive Developmental and Educational Settings

- Relevant (developmentally-matched)
- Rhythmic (resonant with neural patterns)
- Repetitive (patterned)
- Relational (safe)
- Rewarding (pleasurable)
- Respectful (child, family, culture)

---

**Creating the Relational ‘Space’ for Optimal Development, Learning & Healing**

(or How do you like those P’s?)

- Present,
- Parallel,
- Patient & Persistent in Providing
- Patterned, Predictable, Positive doses of
- Protected (safe) experience

---

**The Cycle of Learning**

It all starts with a sense of safety

- Discovery
- Pleasure
- Practice
- Mastery
- Curiosity
- Confidence

---

**The Relational Landscape is Changing**

Children have fewer emotional, social and cognitive interactions with fewer people.

The impact of “modern” life on the developing child has yet to be fully understood.

---

The brain – particularly the human NEOCORTEX - allows us to absorb the accumulated and distilled experiences of thousands of previous generation – in a single lifetime.
Poverty of Relationships

The compartmentalization of our culture has resulted in material wealth yet poverty of social and emotional opportunity.

So What? Why does this matter?

Both the STRESS RESPONSE and the REWARD networks in the brain are shaped by relationships in early childhood – in healthy and unhealthy ways.

Relationships have a key role in global health, creativity and productivity of a group.

On Becoming Humane

Being born a human being does not ensure a child will become humane.

Humans become humane. The capacity to care, to share, to listen, value and be empathic – to be compassionate – develops from being cared for, shared with, listened to, valued and nurtured.

Humane caregiving expresses our capacity to be humane. Inhumane caregiving can decrease or even destroy this capacity.

The brain develops and organizes as a reflection of our genetic gifts, epigenetic heritage, intrauterine, perinatal and developmental experiences, organizing in response to the pattern, intensity and nature of our sensory and perceptual experience.
Relational Poverty

Relational Wealth

Figure B
Nonparametric Local Regression: Predicted Trajectories of CNS Functioning Given Perinatal Adversity and Relational Health

Note.
The High Adversity group is comprised of children across all age categories in the NMT Metric database ages 0 to 216 months (comprised of metric raters with "Acceptable" or "High" fidelity, N = 15,140) with scores ranging from four to six on the AE (adverse experiences) severity variable during the perinatal period (0 to 2 months), but not on the RH (relational health) severity variable during the perinatal period (n = 1,433). The Low RH group is the opposite (n = 2,440).

The Typical group is comprised of individuals whom clinicians have deemed to have "typical" functioning on whom they completed metrics. "Typical" children and adults may have had some developmental adversity; the selection of "typical" is based upon the clinician's impression that this individual's current functioning is within a non-clinical range (n = 945).

Connectedness is the key.

Your history of connectedness is a better predictor of your health than your history of adversity.

Be with each other. Celebrate diversity. Listen and learn from others. Share time, food, work.

The 'super-power' of humankind is our capacity to connect; it is regulating, rewarding and the major "route" by which we can teach, coach, parent, heal and learn.
Following the lead of Dr. Mason at Loyola-Chicago, multiple graduate programs in social work and education are integrating NM concepts or NMT into their curricula; these include Case Western Reserve, University of Texas, Smith College, Cleveland State, and the University of Chicago.

Sensory Deprivation Neglect: Enhanced Effects of Early Intervention on Brain Growth

Creating Policy and Practice that Capitalize on Biological Gifts

Democracy, public education, suffrage, civil rights – and, ultimately, early childhood investment and communities rich in relational health

Rates of Return to Human Development Investment Across all Ages

Mismatch between Opportunity and Investment

Spending on Programs to "Change the Brain"

Brain's Capacity for Change

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People *not* programs change people!

The effective agents of change in any successful program, project or system are human beings.

Yet successful programs provide the people, process and “program” elements that put the “right” people together in “right” ways at the “right” time.

The effective agents of change in any successful program, project or system are human beings.

**NIMH Research Domain Criteria**

**RDoC**
- Focus on genetic, epigenetic, neural network and related biomarkers along with “symptoms”
- The major RDoC research domains:
  - Negative Valence Systems
  - Positive Valence Systems
  - Cognitive Systems
  - Systems for Social Processes
  - Arousal/Modulatory Systems

**DSM**
- “a diagnostic system limited to clinical presentation could confer reliability and consistency but not validity”
- Minimal focus on mechanism: fundamentally “descriptive” and symptom focused

**The Challenge of “Diagnosis” in Mental Health**

**Brain**
- 86 billion unique neurons
  - 5 times as many glia
  - Each neuron 5000-20,000 synaptic connections
  - 100s of neurotransmitters
  - Hundreds of major neural networks
  - Thousands of functions
  - 90% of children/youth in public MH Clinics have 1 of 8 “diseases” – often co-morbid

**Heart**
- 2 billion heart cells
- Dozens of major sub-systems
  - Nerve, muscle, vessels
- A handful of major “main” functions
- Hundreds of distinct cardiac “diseases”

**Stress**

- Unpredictable
  - Severe
  - Prolonged

- Predictable
  - Moderate
  - Controlled

- Vulnerability
- Resilience

**Sensitizing Pattern**

**State**

**Time**
Neurosequential Model Core Slides
"Best Hits" Package

Resilience-building Pattern

Differential “State” Reactivity

The Developmental Window
State Dependence & Differential “Dosing”

Responses to Stress, Distress, Trauma
- Heterogeneity of response patterns
- Adaptive changes in cognition
- Adaptive changes in affects
- Adaptive changes in behavior
- Adaptive changes in neurophysiology
- Adaptive changes in physiology

Dissociation

DISSOCIATIVE/AROUSAL BALANCE

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All Brain Functioning is “State” Dependent

The brain is a rhythmic, dynamic organ.

All functioning of the brain will vary depending upon the “state.”

Asleep or wakeful the brain will have varying activation in cognitive, social, emotional, motor and all other brain mediated functions.

Both sleep and wakefulness also have various states which involve shifts in the activity of key neural networks.

Novelty, transition and threat will all shift internal state.

Flock, Freeze, Flight, Fight Continuum

<table>
<thead>
<tr>
<th>Traditional</th>
<th>Reflect</th>
<th>Flock</th>
<th>Freeze</th>
<th>Flight</th>
<th>Fight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>NEOCORTEX</td>
<td>SUBCORTEX</td>
<td>LIMBIC</td>
<td>MIDBRAIN</td>
<td>BRAINSTEM</td>
</tr>
<tr>
<td>secondary</td>
<td>Subcortex</td>
<td>Limbic</td>
<td>Midbrain</td>
<td>Brainstem</td>
<td>Autonomic</td>
</tr>
<tr>
<td>Brain Areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>Abstract</td>
<td>Concrete</td>
<td>Emotional</td>
<td>Reactive</td>
<td>Reflexive</td>
</tr>
<tr>
<td>Mental State</td>
<td>CALM</td>
<td>ALERT</td>
<td>ALARM</td>
<td>FEAR</td>
<td>TERROR</td>
</tr>
</tbody>
</table>

Sense of Time

Extended Future | Days | Hours | Minutes | Seconds | Loss of Sense of Time

Primary secondary Brain Areas

NEOCORTEX | SUBCORTEX | LIMBIC | MIDBRAIN | BRAINSTEM | Autonomic

Cognition

Abstract | Concrete | Emotional | Reactive | Reflexive

Mental State

CALM | ALERT | ALARM | FEAR | TERROR

Organizational Pressures

Prevaling Cognitive Capacity

Prevaling Affective “State”

Prevaling Systemic Solutions

Issue of Solution

Policies and Practice

Stress & Supervisory Practices

Resource-surplus Predictable Stable/Safe | Resource-limited Unpredictable Novel | Resource-poor Threatening Inconsistent

Co-regulation

Reactive child and well-regulated teacher

Present, parallel, patient, persistent – facilitate multisensory, multi-domain, repetitive activity
Co-escalation
Reactive child and overwhelmed teacher

Child

Teacher

Present, overwhelmed, frustrated, angry = escalation = increased incidents/restraint

Time

DISRUPT

Sensitized

Fear

Alarm

Alert

Neurotypical

Engage

Calm

DISENGAGE

Neocortex

15%

Limbic

45%

Diencephalon

5%

Brainstem

Regulated: Internal Focus (Calm:Reflect)

Neocortex

85%

Limbic

90%

Diencephalon

10%

Brainstem

Regulated: External Focus (Calm:Alert)

Neocortex

10%

Limbic

60%

Diencephalon

60%

Brainstem

Dysregulated (Flock/Freeze)

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NMT Brain Mapping Process

- The key indicator of brain organization and neurophysiological status is function
- By creating a simplified construct – the brain map – assessment of key brain-mediated functions can help “localize” neurodevelopmental vulnerabilities and strengths
- This “localization” helps direct developmentally-sensitive interventions

Current Relational Health

- A major factor in healing appears to be the nature, quality, intensity and stability of a person’s relationships
- The NMT assessment process includes a simple metric that looks at current relational health
- The score on this metric is a key indicator of outcome – good relational stability predicts positive outcome – and poor relational health predicts poor outcomes

Neurodevelopmental Risk

- The NMT process involves assessing the timing, nature and intensity of adverse events
- The timing, nature and quality of “buffering” relational health is assessed as well
- An estimate of “developmental risk” is obtained at various times during development by combining the AE and RH scores

Semi-structured, quantitative assessment process: NMT Clinical Practice Tools (Metrics)

- Developmental History
  - Genetic
  - Epigenetic
  - Adverse Experiences
    - Developmental Timing
    - Nature, Severity, Pattern
  - Relational Health
    - Developmental Timing
    - Developing and Attachment
    - Family and Community
- Current Functioning
  - Individual CNS
  - Brainstem
  - Diencephalon/CBL
  - Limbic
  - Cortex/TCTX
  - Relational
    - Family
    - Peers
    - School
    - Community

Relational Contagion

A dysregulated adult can never regulate a dysregulated child

AND

A dysregulated adult will dysregulate a regulated child
### OUTCOMES

See NM Selected Outcomes and NMT as EBP documents available at www.bdperry.com/handouts

---

### Construct Validity: Correlation with Neuroimaging

Correlation Analysis revealed relationships between NMT scores and qSPECT® data

- Amongst 101 acceptable and high-fidelity metric users, metric scores obtained do not differ on average from metric scores obtained by NMT developers (Metric N = 1184).

---

### Inter-Rater Reliability

Hambrick, Brawner, & Perry, 2017

- Amongst 101 acceptable and high-fidelity metric users, metric scores obtained do not differ on average from metric scores obtained by NMT developers (Metric N = 1184).

---

### Tracking Progress in an NMT-guided Tx of a Child

(Severe Total Global Neglect through age 7)
Neurosequential Model Core Slides
“Best Hits” Package

M.; 6 yo M
His intrauterine SA/ETOH; severe neglect and abuse, removed at 12 mos, multiple placements; adopted at age 2
DSM IV Dx at time of eval:
- Oppositional-Defiant Disorder, ADHD, r/o Bipolar Disorder
SPECT scan (top) and NMT functional map of a six year old boy, M follow. He experienced severe neglect and abuse in the first two years of his life and then was adopted. He continues to have problems with impulse control, attention, sleep, age-appropriate social interactions and other functions.

Neurosequential Model of Therapeutics in a Therapeutic Preschool: Implications for Work With Children With Complex Neuropsychiatric Problems
Sharon Sherfey
Health Policy and Research Division, Lawrence, KY
Christine Dobson
The ChildHOME Academy, Houston, TX
Rick Goetzl
Gesmer Weil & Webster Law Firm
Bruce D. Perry
The ChildHOME Academy, Houston, TX and Fooshing School of Medicine, Northwestern University

The two studies presented examine the use of the Neurosequential Model of Therapeutics on the social-emotional development and behavior of 20 children participating in a therapeutic preschool program. Results from these studies indicate that the model may improve the social-emotional development and behavior of children in the context of a therapeutic preschool. The model was used to guide the development and behavior of the participating children. Interventions and activities were provided to the children to help them develop more appropriate social behaviors. The results of the study indicate that the model may be a useful tool for improving the social-emotional development and behavior of children in a therapeutic preschool setting.


Restraining and Critical Incident Reduction Following Introduction of the Neurosequential Model of Therapeutics (NMT)
Erin P. Hambrick, TH, Thomas W. Bravere, Bruce D. Perry, Emily Wang, Gene Griffin, TONI DeMarco, Cara Capparella, Tim Grover, Michelle Mallozzi, Dawn O’Malley, Dave Pardini, Lorraine Farewell, Jeffrey Friedman, Joan MacKenzie, Katharine M. Perry, Pete Cadieux, Jerry Hartman, Elizabeth Kul, Joseph Marni, Caroline Petales and Mark Strother

University of Missouri Kansas City, Department of Psychology, Kansas City, Missouri, USA “The Child HOME Academy, Houston, Texas, USA “Northwestern University Feinberg School of Medicine, Department of Psychiatry, Chicago, Illinois, USA “High Service, Calgary, Alberta, Canada “San Mateo County Behavioral Health, San Mateo, California, USA “Northwestern University, Evanston, Illinois, USA “Vanderbilt University, Nashville, Tennessee, USA “Cedars Sinai, Los Angeles, Geneva, Switzerland “The College of Physicians and Surgeons, Columbia University, New York, New York, USA “All rights reserved © 2008-2022 Bruce D. Perry
Selected Outcomes in Schools

Economic Benefits with Introduction of NMT

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre NMT</th>
<th>After NMT</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restraints</td>
<td>4,269</td>
<td>0</td>
<td>$1,538,027</td>
</tr>
<tr>
<td>Person-hours</td>
<td>2,128.2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total Costs</td>
<td>370,510</td>
<td>0</td>
<td>370,510</td>
</tr>
</tbody>
</table>

Selected Outcomes in Schools

NME Mini-Map: Self-regulation Score

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre NMT</th>
<th>After NMT</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine Motor Skills</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Coordination/Large Motor Skills</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Small Reactions</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Communication/Verbal Skills</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Reading/Verbal Skills</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Affect Regulation/Debate</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Motor/Cognition</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Self Regulation Score</td>
<td>1</td>
<td>1</td>
<td>0</td>
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</tbody>
</table>
Introduction of NME
Columbus Public Schools (2014-2015)

<table>
<thead>
<tr>
<th>District</th>
<th>Year</th>
<th>4th-Office Referrals</th>
<th>4th-Office Suspensions / Expulsions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Columbus City - Ohio Ave. ES</td>
<td>2014-15</td>
<td>957</td>
<td>129</td>
</tr>
<tr>
<td></td>
<td>2015-16</td>
<td>957</td>
<td>129</td>
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<tr>
<td>Columbus City - Livingston ES</td>
<td>2014-15</td>
<td>2713</td>
<td>3840</td>
</tr>
<tr>
<td></td>
<td>2015-16</td>
<td>1017</td>
<td>811</td>
</tr>
<tr>
<td>Graham School</td>
<td>2014-15</td>
<td>Not available</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>2015-16</td>
<td>Not available</td>
<td>88</td>
</tr>
<tr>
<td>The Charles School</td>
<td>2014-15</td>
<td>Not available</td>
<td>87 (5 expulsions)</td>
</tr>
<tr>
<td></td>
<td>2015-16</td>
<td>Not available</td>
<td>87 (5 expulsions)</td>
</tr>
</tbody>
</table>

---

Trauma-Informed Movement in Education (TIME)

<table>
<thead>
<tr>
<th>Suspensions By School Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Aug. 31 - Sept. 10</td>
</tr>
<tr>
<td>2: Sept. 11 - Oct. 10</td>
</tr>
<tr>
<td>3: Oct. 11 - Nov. 9</td>
</tr>
<tr>
<td>4: Nov. 6 - Dec. 3</td>
</tr>
<tr>
<td>5: Dec. 4 - Dec. 31</td>
</tr>
</tbody>
</table>

TIME modeled after the ChildTrauma Academy's Neurosequential Model in Education: Long Beach Unified School District and Beach High School

---

Student Academic Performance

<table>
<thead>
<tr>
<th>2017 and 2018 CMAS: Colorado Growth Model Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary School - Math Growth Percentiles</td>
</tr>
<tr>
<td>English Language Arts - Math Growth Percentiles</td>
</tr>
</tbody>
</table>

Colorado

*Median Growth Percentiles reflect data for grades 3-5.*
Focus on Restorative Practices in Discipline

Tigard HS, Oregon

Westerville South HS

• Since NME started in 2017 – 35% increase in attendance
• Graduation rates up from 89.5 to 93.5
• Suspensions decreased by 50%

Ohio

Post Pilot

Tigard High has two new teachers being NME trained Special Education Teacher Christy Goodell and Biology Teacher Geoff Jarman and two new psychologists being NMT trained Tigard School Psychologist Lyndall Benit and District TOSA Alyssa Anderson.

Tigard High ARTIC (Attitudes Related to Trauma Informed Care) Survey Data demonstrated an overwhelming positive gain for NME trained staff when compared to non NME trained staff. The mean for all staff improved over the length of the pilot however.

Tigard HS, Oregon

Graduation Rates Increased in 2017-2018

2017-2018 graduation rate increased by almost 4%
Latinx increase 16%
SPED increase 21%
Econ. Disadv. increase 9%
ELL increase 10%

Tigard HS, Oregon

Walnut Creek ECP DISCIPLINE INCIDENTS 2015 - 2020

Austin, TX (AISD)
Why the Neurosequential Model?

<table>
<thead>
<tr>
<th>Grade 12 (60) - 2018</th>
<th>Grade 11 (60) - 2019</th>
<th>Grade 10 (60) - 2020</th>
<th>Grade 09 (60) - 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Average per student

Traditional ACE Score

Why the Neurosequential Model?

![Graph showing ACES By Category]

Evidence of NM Impact

Clinical outcome data tells us that...

- Suicidality – has reduced
- Red flag Cases reduced and normalised than before
- Psychiatric referrals more investigative than crises
- Numbers in sickbay reduced
- Behavioral challenges – reduced

Towards A Comprehensive Approach

NMT Metric – OWLAG Student

Developing a trauma-informed approach to closing the poverty-related attainment gap

Lesley Taylor & Whitney Barrett

Scotland

What happened to you?
Conversations on trauma, resilience, and healing

Bruce D. Perry, M.D., Ph.D.
Oprah Winfrey

The boy who was raised as a dog
With and Other Stories from a Child Psychologist’s Notebook

Bruce Perry, M.D., Ph.D.
with Maia Szalavitz

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