CHAPTER 2

The Neurosequential Model of Therapeutics

Application of a Developmentally Sensitive and Neurobiology-Informed Approach to Clinical Problem Solving in Maltreated Children

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Human brain development involves billions of complex, interactive biochemical processes, influenced by a myriad of factors (e.g., genetic, epigenetic, and developmental experiences). When these processes are disrupted or altered during development by intrauterine substance use, neglect, chaos, attachment disruptions, or traumatic stress, the development of the brain will be compromised (Perry 2001, 2002). The functional consequences will be complicated by the timing, severity, pattern, and nature of these developmental insults, resulting in a complex and heterogeneous clinical picture with increased risk of physical health, self-regulation, relational, cognitive, and other problems (e.g., Anda et al. 2006; Felitti et al. 1998). Perhaps no other group of individuals experiences a greater degree and duration of disruption in these developmental processes than maltreated children. The consequences are pervasive; the cost to these individuals is incalculable, and the economic cost to society is staggering, with an estimated lifetime economic burden of $585 billion for 1 year's worth of new cases of child maltreatment in the United States (Fang et al. 2012).

The complex and multidomain functional compromise associated with maltreatment poses several major challenges to the current clinical frameworks. This includes the inability of the new DSM-5 (American Psychiatric Association 2013)—and formerly the DSM-IV (American Psychiatric Association 1994)—neuropsychiatric labels to adequately describe this complexity. It is not unusual for maltreated children to accumulate multiple DSM diagnostic labels, assigned across multiple assessments. This heterogeneity has been a chal-

lenge for research, including outcomes research such as that required for the development of evidence-based treatments. The variability of developmental history and functional presentation impedes the creation of homogeneous "groups" required for quality neurophysiological, phenomenological or outcomes research (e.g., Jovanovic and Norrholm 2011).

The clinical and systemic issues posed by this complexity are even more challenging. A 10-year-old child, for example, may have the self-regulation capacity of a 3-year-old, the social skills of an infant, and the cognitive capabilities of a 5-year-old. Also, because of the unique genetic, epigenetic, and developmental history of each child, it is difficult—and ineffective—to apply a "one-size-fits-all" therapeutic intervention (Ungar and Perry 2012). The Neurosequential Model of Therapeutics (NMT) is an approach to clinical problem solving that attempts to incorporate this complexity into a practical assessment and treatment planning process (Perry 2006, 2009).

Overview of the Neurosequential Model of Therapeutics

The NMT is not a specific therapeutic technique; it is an approach that provides the clinician a "picture" of the client's developmental trajectory to his or her present set of strengths and vulnerabilities. This neurodevelopmental viewpoint, in turn, allows the clinical team to select and sequence a set of enrichment, educational, and therapeutic interventions to best match the individual's developmental needs in multiple domains of functioning. The splintered development seen following maltreatment makes it very difficult to select educational, therapeutic, and enrichment experiences that are appropriately matched to the client's development unless there is first some understanding of the child's current developmental picture. Selecting these experiences based on the child's chronological age is often a mistake. As well articulated by various developmental theories—for example, the zone of proximal development (Vygotsky 1978) and the Goldilocks Effect (Kidd et al. 2012)—optimal development in any domain (e.g., cognitive, social, motor, emotional) occurs when the child is given opportunities and expectations that are neither too familiar and simple nor too unfamiliar and complex. In other words, optimal caregiving, teaching, and therapeutics require awareness of the child's developmental capacity as well as his or her current internal "state" of arousal (Perry 2008). This means that developmental age, and not chronological age, in any given domain is the best indicator for where to target educational and therapeutic experiences; due to the complex developmental experiences of maltreated children, they often have wide variation in their developmental capabilities across domains of functioning.

To help address these challenges, the NMT draws on research from multiple disciplines (e.g., the neurosciences, anthropology, developmental psychology, public health) to create a semistructured, practical way for the clinical team to quantify elements of the client's developmental history and current functioning. These tools help the clinician practice in an evidence-based, developmentally sensitive, and trauma-informed manner (Brandt et al.

2012). The goal of this semistructured process is to "force" the clinician or clinical team to systematically consider key developmental factors that influence the client's current functioning. The NMT assessment elements are intended to complement but not replace other metrics or assessment elements; each organization and clinical team has developed some assessment process, and the NMT is designed to provide a neurodevelopmental framework for the data obtained in these various assessments. The functional data for a client gathered in either quantitative (e.g., Wechsler Intelligence Scale for Children, Wide Range Achievement Test, Child and Adolescent Functional Assessment Scale, Child and Adolescent Needs and Strengths, Child Behavior Checklist, Trauma Symptom Checklist for Children, Parent Stress Index) or qualitative ways are organized into a neuroscience-focused "map." This "brain map" provides the clinical team with an approximation of current functional organization of the client's brain (see Appendix 2–1; http://test.childtrauma.org/Appendix_BDP_2012_redact.pdf).

Manualized training elements have been developed for the NMT. These include the NMT Clinical Practice Tools (Table 2–1), an NMT Certification Process (90 hours of didactic and case-based training to ensure exposure to core concepts of traumatology, developmental psychology, neurobiology, and related areas relevant to a developmentally sensitive and trauma-informed approach), an ongoing NMT Fidelity process for certified users, NMT Psychoeducational Materials, and related caregiving and educational components (the Neurosequential Model in Education and Neurosequential Model in Caregiving) to facilitate the creation of a developmentally sensitive, trauma-informed clinic setting, home, school, or community (see www.ChildTrauma.org for information on these NMT elements).

The NMT is used with multiple clinical populations across the developmental spectrum (infants to adults), including maltreated children and youth (see, e.g., Barfield et al. 2012). Although the detailed theoretical background and rationale for the NMT have been reported previously (Kleim and Jones 2008; Ludy-Dobson and Perry 2010; Perry 2006, 2009), the best way to understand the NMT is to see it applied. The following clinical vignette (with names changed for confidentiality) provides an example of how a clinical team can use the NMT and the NMT metrics to develop and implement a developmentally informed treatment plan with a young maltreated girl.

> Suzy is a 5-year-old girl currently living in a preadoptive foster home. She has three older biological siblings, all living in other out-of-home settings after being removed from parental care at various ages. The preadoptive family includes two older biological children living in the home: a 9-year-old girl and a 15-year-old boy. The preadoptive parents are both employed, although the mother has flexibility that allows her to spend significant time at home when necessary. Suzy has been in this home for 14 months. This is the fifth foster/adoptive placement since final removal from her mother at age 3.
>
> Suzy's mother, Kay, was the third of eight children born to her mother. Kay was well known to child protective services (CPS) systems in three states and spent her youth in various foster and residential settings. She struggled with polysubstance abuse and dependence throughout her youth and young adulthood. Her first two children were born while Kay was

TABLE 2–1. Key elements of the Neurosequential Model of Therapeutics Web-based Clinical Practice Tools (NMT Metrics)

1. Demographics
2. Developmental history
   - A. Genetic
   - B. Epigenetic
   - C. Part A. Adverse Events measure
   - D. Part B. Relational Health measure
3. Current status
   - A. Part C. Central Nervous System (CNS) Functional Status measure
     - i. Brain stem
     - ii. Diencephalon/cerebellum
     - iii. Limbic
     - iv. Cortex/frontal cortex
   - B. Part D. Relational Health measure
4. Recommendations
   - A. Therapeutic web
   - B. Family
   - C. Client
     - i. Sensory integration
     - ii. Self regulation
     - iii. Relational
     - iv. Cognitive

in the CPS system. Kay was involved in a series of abusive relationships characterized by transient living arrangements, substance use, and domestic violence. By the time she was pregnant with Suzy, her other children had been removed from her care due to multiple reports of neglectful supervision and suspected physical abuse by Kay's various boyfriends. Kay reports that she stopped drinking and using when she discovered she was pregnant with Suzy at the beginning of the second trimester. When Suzy's father learned that Kay was pregnant, he disappeared and has remained absent from her life. After Suzy's birth, Kay moved in with another man and resumed her chaotic, substance-using life. At 18 months, CPS removed Suzy from the home after reports from neighbors. Suzy was placed in temporary shelter care for 1 month and then in a foster home with six other foster children. She was described as lethargic, hypotonic, nonreactive, and severely malnourished, with multiple bruises, healed burns, and a large bald area on her scalp at the time of removal, and was below the fifth percentile in height, weight, and head circumference. In foster care she received no services or testing aside from routine pediatric care. She was reported as being "shy and compliant." She was an easy child to care for, but review of the minimal records available suggests that she was delayed in motor, social, and cognitive development; none of this triggered any additional assessment or services.

Because Kay complied with the parent training classes, met the 85% attendance requirement, and was present and compliant during supervised visitation, Suzy was returned to Kay's care when the child was 28 months old. At 42 months (3.5 years), Suzy was brought

to the emergency room with multiple broken bones (in various stages of healing) in her arms and legs. Kay initially reported that Suzy fell out of bed. Kay's boyfriend at the time was charged. After 3 weeks in the hospital, Suzy was placed in foster care. She was described as extremely anxious, with extreme touch defensiveness (crying and flinching when anyone attempted to physically comfort her), sleep problems with short periods of sleep interrupted by nightmares, long periods of screaming during the day with no apparent precipitating event, delayed speech and language development, abnormal fine motor and large motor development (odd gait, stereotypies, tremor), head banging, rocking, and self-mutilatory scratching and picking at scabs. Suzy had no self-care capabilities; had enuresis, fecal smearing, and pica; and hoarded food. She showed no interest in engaging with other children in the foster home. She was profoundly undersocialized (e.g., she was unable to use silverware and ate with her hands) and motorically overactive alternating with lethargic. She was unable to focus on age-appropriate activities and seemed easily overwhelmed by loud noises, including television, group conversation, and raised voices. This challenging behavior led to a series of failed placements (four previous). At each placement, mental health or developmental pediatric specialists evaluated Suzy. She was given several diagnoses during this time, including autism spectrum disorder, pervasive developmental disorder, attention-deficit/hyperactivity disorder, and posttraumatic stress disorder. She was prescribed methylphenidate and risperidone, which were continued through the multiple placements. In one placement, two sessions of therapy were provided (play therapy was the primary modality). In the other placements, therapy was recommended but the placement disrupted prior to the onset. Kay ultimately agreed to relinquish parental rights, and Suzy was eligible for adoption and placed in a preadoptive foster home.

Within several weeks of placement at the current home, Suzy demonstrated several extreme behavioral outbursts a day, alternating with lethargic, nonresponsive periods lasting up to several hours. At night she was found wandering the house and occasionally would come into the carers' bedroom and lie on the floor of their room and rock herself back to sleep. Carer-initiated touch was always rejected, but within a month of placement Suzy would initiate physical contact and could sit with her foster mother while being rocked for extended periods of time. Efforts to leave Suzy in any child-care setting were met with extreme and prolonged tantrum-like behaviors, which were interpreted by the carers as anxiety related. Suzy was unable to tolerate minor transitions (such as leaving the house), new adults, or any shifts in daily routines without significant "meltdowns." After several "excruciating" weeks of attempting to leave Suzy at an early childhood therapeutic preschool, the foster mother stayed home and provided the primary caregiving for Suzy. When home alone with her foster mother, Suzy would explore the home, sometimes in a hyperactive and frenetic fashion. Conflict between the carers started when the foster father began to insist that Suzy was being spoiled, in that she was never leaving the foster mother's side, insisting on being fed by her foster mother, and having long periods of rocking and sleeping only with physical contact with the foster mother. At this point, the family consulted a local physician (a general practitioner who provided pediatric care for the family). He doubled the dosages of Risperdal and Ritalin and added clonidine at night. Even without the increase in Ritalin, Suzy's resting heart rate was 132. The physician recommended that the foster parents lock the bedroom door, suggested that the foster mother stop feeding and rocking Suzy, and insisted that Suzy be left at the therapeutic preschool (despite her meltdowns). There was an immediate deterioration in Suzy's behaviors. After a long "tantrum" she would sit "in a daze" at the preschool, rock herself, and gently bang her head. The therapeutic preschool program suggested that the family consider a consultation with a clinical team trained in the NMT.

Case Consultation

The initial NMT Metric Report for Suzy is shown in Appendix 2–1 (see also http://test.childtrauma.org/Appendix_BDP_2012_redact.pdf). The first portion of the report (pages 34–35) summarizes Suzy's developmental history; the NMT process asks the clinician to estimate the nature, timing, and severity of adverse experiences, as well as potential resilience-related factors (primarily related to relational health). These two scales are combined to create an overall estimate of developmental risk. Other commonly used metrics and inventories measuring so-called trauma do not have this developmental dimension and do not incorporate potential stress-attenuating factors such as relational buffers or connection to community.

As can be seen in the graphs on pages 34–35 of Appendix 2–1, estimates of developmental adversity and relational health for Suzy put her at high risk (the scoring strategy when there is incomplete historical information is to use clinical judgment to reconstruct the history but to be conservative so that the reconstruction is, if anything, an underestimate of developmental risk). The levels of developmental adversity (along with minimal relational or social buffers) that Suzy experienced would predictably alter her developing brain and lead to broad-based functional compromise. Complex and pervasive functional compromise was well documented in Suzy's history and was seen in her current presentation.

The second portion of this initial assessment (Appendix 2–1, pages 36–37) illustrates the organization of brain-mediated functioning into the NMT brain map. (See color plates near end of this book for all references to colors in discussion of the maps below.) This map readily illustrates Suzy's pervasive neurobiological compromise at the time of this assessment. The column on page 36 lists the specific functional areas that are scored, and the column on page 37 includes a series of "maps" that organize these functions into a heuristic construct that is reflective of the actual organization of the brain. The functional scores are color coded (see key in color plates near end of this book), with pink and red indicating either underdevelopment or severely impaired functioning, yellow shades indicating moderate compromise or precursor developmental functioning, and green shades indicating typical and appropriately emerging functioning (all in comparison to a young adult). Each client, therefore, is compared against a fully organized young adult (Mature) *and* age-typical peers. The report compares Suzy's brain map (the top map on page 37) against that of age-typical peers (ages 4–5; the second map on page 37). As can be readily seen, Suzy's map demonstrates significant and pervasive functional problems; there are multiple pink or red boxes (severe functional compromise) throughout her brain. This is a typical pattern scene for individuals with extreme and prolonged histories of developmental chaos, neglect, and trauma. As is obvious in the descriptions of her functioning at this time, Suzy has developmental capabilities in multiple domains that are more similar to those of an infant rather than a 4-year-old. The chart on page 38 indicates how far Suzy is behind her same-age peers in four main functional domains. Values in sensory integration, self-regulation, relational, and cognitive domains are derived by clustering the 32 items from the functional brain mapping process. Suzy is far behind her age-typical peers in every domain.

One of the most important items on this assessment report is the cortical modulation ratio (CMR), listed at the end of the graph on page 38. The CMR gives a crude indicator of the "strength" of cognitive regulatory capacity relative to the "dysregulation" (i.e., disorganization, underdevelopment, impairment) of lower networks in the brain; in essence, it is an estimate of how hard it is for an individual to use cortical (top-down, executive functioning) mechanisms to self-regulate. This factor is related to the executive function and self-control indicators known to be predictive of positive outcomes in high-risk children (Moffitt et al. 2012; Piquero et al. 2010). The higher the CMR value, the "stronger" the cortical mechanisms of self-control will be. A typical 4-year-old child would have a CMR of 2.42, whereas Suzy has a CMR of 0.42 (more typical of an infant—there is 1 millisecond between impulse and action). For an individual to function in any cognitive-predominant activity (e.g., following verbal commands from a caregiver, sitting and attending in the pre-K classroom), he or she needs the capacity for cortical (top-down) regulation; using this CMR construct, the value needs to be greater than 1.0. Even with a CMR of 1.0, the level of sustained attention will be very brief. The older a child gets, the more he or she is expected to be capable of listening, following directions, sitting for sustained periods of time, and "learning." These are all challenging tasks for many severely maltreated children. These children are often not biologically able to do the things that are expected of them based on their chronological age—the result can be a toxic negative feedback cycle of adults getting frustrated, angry, confused, and demoralized while the child feels stupid, inadequate, misunderstood, rejected, and unloved. This cycle just creates more threat, loss, rage, and chaos, and thereby reinforces and adds to the child's history of developmental adversity.

Recommendations

The rationale for the selection and sequencing of recommendations is provided on pages 38–39 of Appendix 2–1. The specific set of recommendations for Suzy following the initial assessment is provided in Appendix 2–2. A central element of NMT recommendations involves recognition of the importance of the therapeutic, educational, and enrichment opportunities provided in the broader community, especially school. The power of relationships and the mediation of therapeutic experiences in culturally respectful relational interactions are core parts of the NMT recommendations (Ludy-Dobson and Perry 2010). While not a formal wraparound, the NMT recommendation process starts with the therapeutic web, one of the most essential elements of successful intervention (Bruns et al. 2010; Mears et al. 2009). As seen on page 42 of Appendix 2–2, various elements of the community, culture, and school are considered as the clinical team attempts to increase and support healthy relational connections. Suzy was so developmentally immature that full engagement of the therapeutic web was not yet recommended. She was so easily overwhelmed by transitions and novelty that the recommendations for these resources were primarily psychoeducational and preparatory to the time when she would begin to venture into the broader community—primarily via her therapeutic preschool.

The next set of recommendations focuses on the family (Appendix 2–2, page 43). The family is often the key to the therapeutic approach. In many cases, the parents' history will

mirror the child's developmental history if chaos, threat, trauma, or neglect is involved. When this is the case, the NMT will include the parents and provide recommendations to help address their multiple needs. Transgenerational aspects of vulnerability and strength in a family play important roles in the child's educational, enrichment, and therapeutic experiences. When the caregivers and parents are healthy and strong, their capacity to be present, patient, positive, and nurturing is enhanced. When the parents' needs are unmet, it is unrealistic to ask them to play a central role in the child's healing process. In Suzy's case, although the foster parents were experienced and nurturing, they were not accustomed to the level of dysregulation and dysfunction present in Suzy. Furthermore, the conflicting opinions and advice from family, physician, school, and each other contributed to confusion and frustration, all of which altered the relational and emotional atmosphere in the home. Suzy, being very sensitive to this, was further dysregulated by the family's growing confusion about how best to provide structure, predictability, and nurturing for her. Psychoeducation was recommended to help the parents understand her need for control, her "relational" sensitivity (i.e., sensitized to both intimacy and abandonment, making it difficult at times for the foster parents to find the "right" emotional distance), her developmental capabilities and needs, and the need for their own self-care. Also, the siblings needed to be included in psychoeducational efforts (see Appendix 2–2, page 43, for more detailed descriptions).

The last set of recommendations (Appendix 2–2, pp. 44–45) focuses directly on the individual client. These recommendations are based on the client's neurodevelopmental organization. As described on pages 38–39 of Appendix 2–1, the general direction for the selection and sequencing is based on selecting the lowest "level" of significant impairment and then moving up the neurodevelopmental ladder. The selection and timing of various enrichment, educational, and therapeutic experiences are guided by the child's developmental capabilities and vulnerabilities. The NMT consultation process suggests some, but not all, activities that can provide patterned, repetitive, and rewarding experiences. The goal is to help create therapeutic experiences that are sensitive both to developmental status in various domains and to state-regulation capacity. Again, because all functioning of the brain is state dependent, it is imperative, in order to find the "Goldilocks" point (i.e., the point where an expectation and experience is "just right" for optimal development; outside the child's comfort zone but not so far that it is impossible for the child to practice and, ultimately, master) for any given activity or experience, that the clinician, teacher, or caregiver know the stage and watch the state. As shown in the recommendations for Suzy, the clinical team targeted sensory integration and self-regulation domains. At this point in treatment, Suzy was not capable of benefiting from cognitive-predominant or even typical relational interactions; after all, her CMR was only 0.42, far below 1.0. She was too dysregulated. The individual recommendations (see Appendix 2–2, pages 44–45) suggest a variety of activities to provide rich somatosensory experiences, few transitions, and a limited variety of relational experiences to provide the necessary density of patterned rhythmic experiences required to help create bottom-up regulation and reorganization (see Kleim and Jones 2008; Perry 2008). The goal is to provide the bottom-up regulation that can allow other relational and cognitive

experiences to succeed; the challenge in this case is to make sure that when Suzy is regulated, the relational and cognitive expectations and opportunities are developmentally appropriate for her (not selected by chronological age).

Reevaluation and Progress

The family and preschool staff responded well to the recommendations derived from the NMT assessment and sought frequent psychoeducational support and ongoing consultation. The school and foster family acted on the key initial recommendations (Appendix 2–2, pages 42–45); the foster father was very supportive and shifted from feeling that Suzy was being spoiled to guarding against moving her up the developmental ladder too fast. Suzy stayed home for the first 3 months following this initial assessment. Gradual introduction of novelty was successful in ultimately allowing transition back to school with no extreme behaviors (e.g., walking in the backyard; then walking in the front yard; walking down the block; and ultimately taking short drives to school, initially sitting in the car watching the children on the playground, then walking around the playground alone, and gradually starting to have brief visits to the school with the foster mother). An occupational therapy evaluation allowed the team to develop a more detailed sensory diet and range of activities used both at home and in school to focus on fine motor, large motor, and sensory integration issues. The therapeutic massage consultation and exercises resulted in a gradual tolerance of foster mother–initiated touch that ultimately led to a more generalized tolerance of touch. Suzy ultimately found touch very regulating and was described by siblings and teachers at the school as "warm and loving." A little over 1 year later, the team repeated the NMT metrics (see Appendix 2–3). The results of Suzy's multidimensional enrichment, educational, and therapeutic experiences are visible in the change in the brain map (Appendix 2–3, pages 50–51). Suzy was successfully tapered off all medications. Her resting heart rate dropped to 102. Her CMR doubled from 0.46 to 0.78, a level suggesting that she will soon be able to begin to tolerate and benefit from cognitive-predominant experiences such as more traditional educational experiences. Ongoing improvement seems likely, because no fundamental, nonresponsive domains of functioning have been seen.

Conclusion and Future Directions

The Neurosequential Model of Therapeutics offers a cost-effective way to integrate core concepts of developmental psychology and neurobiology into clinical practice. This approach can be used in public systems, thereby allowing the systematic assessment of large numbers of complex children with relatively high fidelity. This model will allow better studies of the complex clinical phenomenology and neurobiology associated with maltreatment.

The single case presented in this chapter is representative of hundreds of similar positive outcomes using this developmentally sensitive, neuroscience-informed approach. Ongoing studies of outcomes in several large clinical settings using the NMT will allow a more

comprehensive evaluation of this approach in comparison with treatment as usual. Research needs to address which aspect(s) of this multidimensional approach resulted in the positive outcome: Was it the "in room" aide, therapeutic massage or occupational therapy–directed activities, psychoeducation for the foster family, and/or stopping the medications? The challenge of tracking outcomes and developing an "evidence base" and outcome studies for the clinical settings using the NMT will have to be dissected, to some degree, from the application of specific treatments (many of them evidence-based treatments) that end up being recommended by the NMT process. The NMT is a relatively new approach; however, the collection of data using the NMT Web-based metric is allowing a very rapid accumulation of data. The current data set includes information from more than 5,000 children, youth, and adults. The projected number of NMT-assessed individuals will approach 15,000 in the next 2 years. Over 50 organizations are using this approach in their standard clinical practice. More than 100 individuals and sites are currently being trained. As with any approach, there are shortcomings, primarily the time required to become trained to use the NMT metrics with fidelity and the challenge of having the resources and capacity to act on the NMT-derived recommendations. The developers of the NMT believe that these shortcomings are outweighed by the capacity to track outcomes, ensure acceptable fidelity, and help create a developmentally sensitive, trauma-informed lens through which to understand complex children and their families.

KEY POINTS

- Developmental trauma, chaos, and neglect can result in complex functional compromise in multiple domains, including physiological, motor, emotional, social, and cognitive.
- The specific nature and presentation of this multidomain functional compromise will vary depending on genetic and epigenetic factors, as well as the timing, nature, and pattern of both stressors and relational "buffers" in the child's life.
- A developmentally sensitive and neurobiology-informed clinical approach can aid the clinical team in understanding the impact of maltreatment and other developmental insults.
- The Neurosequential Model of Therapeutics is an evidence-based practice that can provide a practical and useful clinical framework to help clinicians identify the strengths and vulnerabilities of the maltreated child and implement developmentally appropriate therapeutic, educational, and enrichment services.

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Additional Resources

www.ChildTrauma.org: The Web site of the ChildTrauma Academy includes a variety of resources about online training activities and other multimedia resources for clinicians and others. A monthly electronic newsletter is available with updates on research, promising clinical practices and programs, and ongoing training opportunities.

www.ChildTraumaAcademy.com: The ChildTrauma Academy's online classroom provides several free, self-paced teaching modules for parents, caregivers, educators, and other professionals on the brain, brain development, and the impact of maltreatment on children.

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Appendix 2–1

Excerpts of Initial Report for Suzy[1]

[1]See color plates near end of this book. For full report, see http://test.childtrauma.org/Appendix_BDP_2012_redact.pdf.

Neurosequential Model of Therapeutics : Clinical Practice Tools

A Brief Introduction:

The Neurosequential Model of Therapeutics (NMT) is an approach to clinical work that incorporates key principles of neurodevelopment into the clinical problem-solving process. The NMT Metrics are tools which provide a semi-structured assessment of important developmental experiences, good and bad, and a current "picture" of brain organization and functioning. From these tools estimates of relative brain-mediated strengths and weaknesses can be derived. This information can aid the clinician in the ongoing therapeutic process.

The results from the NMT Metrics should not be viewed as a stand-alone psychological, neuropsychological, psychiatric or psychoeducational evaluation. These reports are intended to supplement the clinical problem solving process and provide broad direction for the selection and sequencing of developmentally appropriate enrichment, therapeutic and educational activities.

Client Data

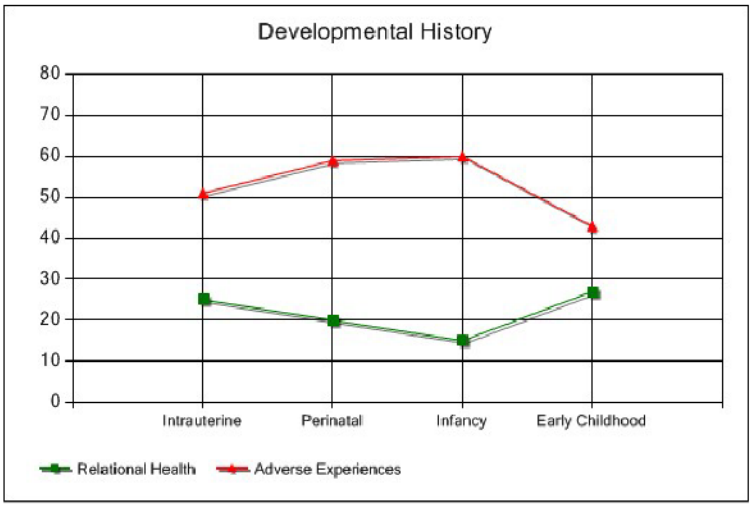
Client: SuzySample
Age: 4 years, 1 month
Gender: Female
Case ID: CTA_Teach

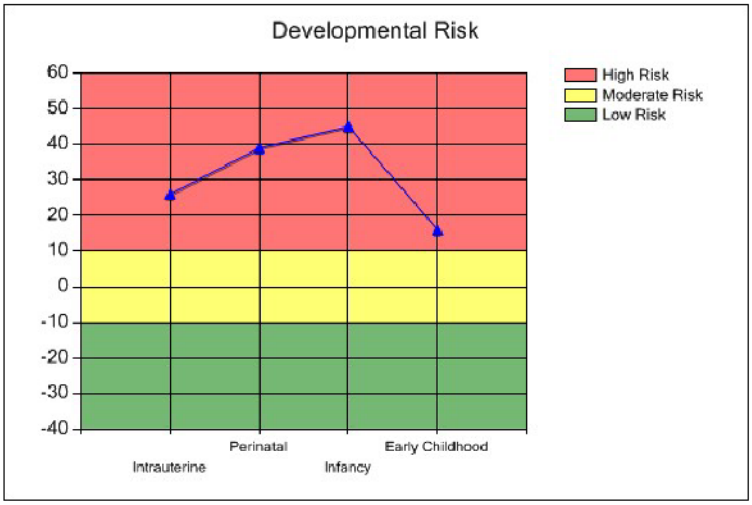
Report Data

Clinician: Bruce Perry
Report Date:
Time: 1
Site: CTA_Teach

Developmental History

A brief introduction





Developmental History Values

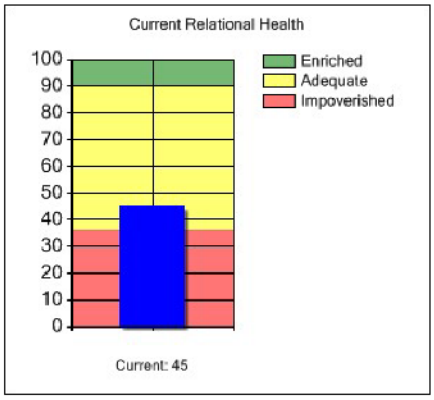
	Adverse Events	Relational Health	Developmental Risk
Intrauterine	51	25	26
Perinatal	59	20	39
Infancy	60	15	45
Early Childhood	43	27	16

Adverse Experience Confidence: Moderate
Relational Health Confidence: Moderate

Current CNS Functionality

	Brainstem	Client	Typical
1	Cardiovascular/ANS	4	11
2	Autonomic Regulation	6	12
3	Temperature regulation/Metabolism	6	12
4	Extraocular Eye Movements	8	12
5	Suck/Swallow/Gag	6	11
6	Attention/Tracking	3	10
	DE/Cerebellum		
7	Feeding/Appetite	4	10
8	Sleep	3	10
9	Fine Motor Skills	5	8
10	Coordination/Large Motor Functioning	4	7
11	Dissociative Continuum	2	9
12	Arousal Continuum	3	9
13	Neuroendocrine/Hypothalamic	6	10
14	Primary Sensory Integration	4	9
	Limbic		
15	Reward	4	10
16	Affect Regulation/Mood	3	9
17	Attunement/Empathy	2	9
18	Psychosexual	5	7
19	Relational/Attachment	3	7
20	Short-term memory/Learning	6	9
	Cortex		
21	Somato/Motorsensory Integration	5	8
22	Sense Time/Delay Gratification	2	6
23	Communication Expressive/Receptive	5	9
24	Self Awareness/Self Image	4	6
25	Speech/Articulation	4	8
26	Concrete Cognition	4	7
	Frontal Cortex		
27	Non-verbal Cognition	5	6
28	Modulate Reactivity/Impulsivity	2	6
29	Math/Symbolic Cognition	1	6
30	Reading/Verbal	1	6
31	Abstract/Reflective Cognition	2	6
32	Values/Beliefs/Morality	2	6
		Total 124	271

Current CNS Confidence Level: Moderate



Current Relational Health Confidence Level: Moderate

Functional Brain Map(s) and Key

Client (4 years, 1 month) **Report Date: 8/28/2012**

2	1	5	2	1	2
4	5	5	2	4	4
3	2	4	3	5	6
	6	2	3	4	
	5	4	3	4	
		6	3		
		6	8		
		4	6		

Age Typical - 4 to 5

6	6	6	6	6	6
8	9	8	6	6	7
7	9	10	9	7	9
	10	9	9	9	
	8	10	10	7	
		11	10		
		12	12		
		11	12		

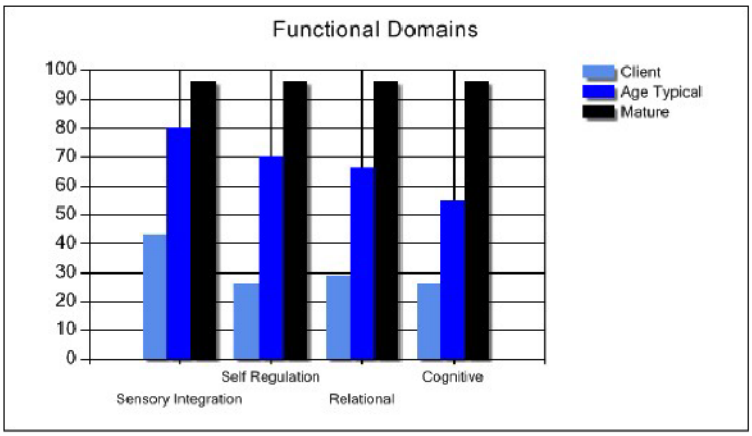
Functional Item Key

ABST (31)	MATH (29)	PERF (27)	MOD (28)	VERB (30)	VAL (32)
SPEECH (25)	COMM (23)	SSI (21)	TIME (22)	SELF (24)	COOG (26)
REL (19)	ATTU (17)	REW (15)	AFF (16)	SEX (18)	MEM (20)
	NE (13)	DISS (11)	ARS (12)	PSI (14)	
	RMS (9)	FEED (7)	SLP (8)	LMF (10)	
		SSG (5)	ATTN (6)		
		MET (3)	BECM (4)		
		CV (1)	ANS (2)		

Functional Brain Map Value Key

DEVELOPMENTAL
Functional

12	DEVELOPED
11	TYPICAL RANGE
10	
9	EPISODIC/EMERGING
8	MILD Comprimise
7	
6	PRECURSOR CAPACITY
5	MODERATE Dysfunction
4	
3	UNDEVELOPED
2	SEVERE Dysfunction
1	



Functional Domains Values

	Client Age	Age Typical	Mature	% Age Typical
Sensory Integration	43	80	96	53.75
Self Regulation	26	70	96	37.14
Relational	29	66	96	43.94
Cognitive	26	55	96	47.27
Cortical Modulation Ratio	0.42	2.42	49	17.35

General Summary

Recommendations are based upon data provided by the clinician when completing the NMT online metrics. Based upon the data provided, cut off scores are used to indicate whether activities in each of the 4 areas are considered essential, therapeutic or enrichment. Activities selected for each category should be age appropriate, positive and provided in the context of nurturing, safe relationships.

Essential refers to those activities that are crucial to the child's future growth in this particular area. In order to fall into the essential category the child's score must be below 65% of the age typical score. It is our belief that unless functioning in the essential area is increased the child will lack the foundation for future growth and development in this and other areas.

Therapeutic refers to those activities aimed at building in strength and growth in the particular area. Scores that fall within 65 to 85 percent of those typical for the child's age are considered appropriate for more focused treatment. Therapeutic activities are viewed as important for the child's continued growth and improvement in the area.

Enrichment refers to activities that provide positive, valuable experiences that continue to build capacity in the given area. Children who fall into the enrichment category are at or above 85 percent of age typical functioning. Activities recommended in this category are designed to enhance and reinforce strengths previously built into the particular area of focus.

The information below is designed to provide the clinician with broad recommendations based upon the NMT approach. These recommendations should be used as guidelines for the treating clinician when considering particular therapeutic activities. Final treatment decisions must be based upon the clinical judgement of the treatment provider. The CTA cannot be held responsible for any of the treatment decisions made by the clinician based upon their own interpretation of NMT principles or recommendations.

Sensory Integration

Client Score: 43 Age Typical: 80 Percentage: 53.75

Essential: (below 65%) – Scores below 65% of age typical functioning indicate poorly organized somatosensory systems in the brain. The introduction of patterned, repetitive somatosensory activities weaved throughout the day have been shown to lead to positive improvements. These activities should be provided multiple times each day for approximately 7-8 minutes at a time for essential reorganization to occur. Examples of somatosensory activities include massage (pressure point, Reiki touch), music, movement (swimming, walking/running, jumping, swinging, rocking), yoga/breathing and animal assisted therapy that includes patterned, repetitive activities such as grooming.

Self Regulation

Client Score: 26 Age Typical: 70 Percentage: 37.14

Essential: (below 65%) – Scores below 65% of age typical functioning suggest the child has poor self-regulatory capabilities. These children may have stress-response systems that are poorly organized and hyper-reactive. They are likely impulsive, have difficulties transitioning from one activity to another, and may overreact to even minor stressors or challenges. Children in this category require structure and predictability provided consistently by safe, nurturing adults across settings. Examples of essential activities in this category include: developing transitioning activity (using a song, words or other cues to help prepare the child for the change in activity), patterned, repetitive proprioceptive OT activities such as isometric exercises (chair push-ups, bear hugs while child tries to pull the adults arms away, applying deep pressure), using weighted vests, blankets, ankle weights, various deep breathing techniques, building structure into bedtime rituals, music and movement activities, animal assisted therapy and EMDR.

Relational

Client Score: 29 Age Typical: 66 Percentage: 43.94

Essential: (below 65%) - Scores below 65% of age typical functioning suggest the child has poor relational functioning. Children who have a history of disrupted early caregiving, whose earliest experiences were characterized as chaotic, neglectful, and/or unpredictable often have difficulties forming and maintaining relationships. In order to make sufficient gains in relational functioning, essential activities must include interactions with multiple positive healthy adults who are invested in the child's life and in their treatment. Examples of essential relational activities include: art therapy, individual play therapy, Parent-Child Interaction Therapy (PCIT), dyadic parallel play with an adult, and when mastered, dyadic parallel play with a peer. Once dyadic relationships have been mastered supervised small group activities may be added. Other examples of essential activities include animal assisted therapy and targeted psychotherapy.

Cognitive

Client Score: 26 Age Typical: 55 Percentage: 47.27

Essential: (below 65%) - Scores below 65% of age typical functioning suggest the child has poor cognitive functioning. As in other areas of focus, essential cognitive activities must take place in the context of safe, nurturing relationships with invested adults. It is in the context of safe, relationally enriched environments that essential healing and growth can occur. Examples of essential cognitive activities include: speech and language therapy, insight oriented psychodynamic treatment, cognitive behavioral therapy, and family therapy.

Cortical Modulation refers to the capacity of important cortical networks to regulate and modulate the activity and reactivity of some of the lower neural systems. As the brain organizes and matures, this capacity increases and the Cortical Modulation Ratio (CMR) increases. The CMR reflects both cortical

Appendix 2-2

Initial Recommendations for Suzy

Initial Recommendations: Therapeutic Web

A central element of NMT recommendations include recognition of the importance of the therapeutic, educational and enrichment opportunities provided in the broader community, especially school. In this section, samples of the sites, activities and relational opportunities that may be important in helping a child heal are listed. These sample listings may be helpful as the clinical team creates its reports and recommendations.

School/Childcare	Rating	Action	Notes
Psychoeducation	Essential	Discuss S. with school staff and provide ongoing consultation	key areas to cover: 1. State-dependent functioning, 2. Relational sensitivity and the intimacy barrier, 3. reassurance re: pros/cons psychopharmacology
Special modifications	Essential	ignore traditional structure to day and minimize transitions	use in-room aide as primary relational anchor
In room aide	Therapeutic	select one primary aide	remember present, parallel, patient and positive
Create somatosensory nest and opportunities	Therapeutic	depending upon OT eval, enrich OT/SS activities	pending report, however provide opportunities for motor vestibular and somatosensory exploration and regulation times

Extracurricular	Rating	Action	Notes
DEFER extracurricular at this time	Enriching	At present defer any extra transitions or out of home or school activities	S. is not yet able to manage this level of transition and novelty

Culture/Community of Faith	Rating	Action	Notes
Psychoeducation	Essential	provide psychoeducation to anticipate future engagement	At some point, Family will include S. in church and church-related activities; essential to prepare them to create gradual and positive transitions

Other	Rating	Action	Notes
DEFER additional relational complexity at this time	Essential	do not yet add complexity to S. life	help family understand the need for "simple" relational environment for S. right now. Ultimately all of these enriching activities can be added

Initial Recommendations: Family

The family is often the key to the therapeutic approach. In many cases, the parent's history will mirror the child's developmental history if chaos, threat, trauma or neglect are involved. Transgenerational aspects of vulnerability and strength in a family play important roles in the child's educational, enrichment and therapeutic experiences. When the caregivers and parents are healthy and strong, their capacity to be present, patient, positive and nurturing is enhanced and maintained. When the parent's needs are unmet it is unrealistic to ask them to play a central role in the child's healing process.

Mother/Female	Rating	Action	Notes
Psychoeducation	Essential	Go over NMT metrics and recommendations	focus on the "Rs" - developmentally relevant, rewarding, repetitive, rhythmic, relational, respectful
Respite	Essential	FM needs to create a regulatory map for herself	self care plan with opportunity to work and 'play' is essential - as is finding time for FM and FF to be alone
Physical hygiene	Therapeutic	FM needs to develop self-care plan	exercise, sleep, nutrition all essential to keep FM 'in the game'
Social Supports	Therapeutic	FM needs to resume her social activities	FM quit many of her activities when S. came and was so demanding. She needs to understand the importance of relational supports for herself

Father/Male	Rating	Action	Notes
Psychoeducation	Essential	As with FM, meet and go over recommendations	FF is likely harder sell but suspect he will be helped by NMT Map
Physical hygiene	Therapeutic	As with FM, same core recommendations	As FM above, Respite, self-care plan, focus on need for sleep, exercise and relational supports

Siblings	Rating	Action	Notes
Psychoeducation	Therapeutic	have family meeting to review impressions	Sibs can be great source of positive interactions for S. If they understand her, they will be more empathic, patient and positive.

Extended Family	Rating	Action	Notes
Engage and recruit	Therapeutic	try to get FF and FM extended family to help with respite and social support	there are multiple older cousins, aunties and uncles in the community who can be a positive presence for S.
Psychoeducation	Enriching	Hold large family meeting to share impressions and answer questions	find dates to hold meeting from FM

Initial Recommendations: Individual

The selection and timing of various enrichment, educational and therapeutic experiences should be guided by the developmental capabilities and vulnerabilities of the child. This listing suggests some, but not all, activities that can help the clinician select various activities and experiences that can provide patterned, repetitive and rewarding experiences as recommended by the NMT Metric. As the clinical team prepares final recommendations, use this listing (and related activities) to help create therapeutic experiences that are sensitive to developmental status in various domains, and to state regulation capacity.

Sensory Integration	Rating	Action	Notes
Healing touch/massage	Essential	refer to KB for therapeutic massage and	KB to teach FM several simple techniques to be used during transition; focus on pattern - 4 to 5 minutes, multiple times/day
Primary somatosensory	Therapeutic	create SS schedule - and try to find S.'s preferences	use NMT Somatosensory mapping tool to figure out the timing
Rocking/Swing	Therapeutic	continue with rocking - but build in schedule	do not let S use rocking to "stay" in comfort zone. Slowly transition to scheduled and predictable rocking patterns during the day
Transitional plan to return to pre-school	Essential	pre-school is too overwhelming at this point	keep at home; and work with us to create a gradual transition plan with somatosensory regulatory "bridges" to help with transitions; after one or two months begin slow transitions to expose to PK - then add 15 min at PK etc.
Modify medications	Therapeutic	taper Risperdal and Ritalin off	no evidence that these are effective in this age-range with this set of problems. Slowly taper these off and closely observe for any behavioral effects.

Self Regulation	Rating	Action	Notes
OT directed activities	Essential	need sensory profile from OT assessment	schedule OT eval
Sleep hygiene	Therapeutic	build in sleep rituals	again - focus on slow and gradual transitions away from FM bed (X work on plan with FM)
Walk, run, exercise	Therapeutic	begin scheduled walks around the yard	as tolerated start to venture out of yard; parallel with FM, hand in hand; as tolerated, let her explore (do this at least 15 min 3x/day)
Music- movement	Therapeutic	let her use the headphones to listen to music	rather than trying to leverage this as reward or punishment view this as an important regulatory tool
Relational regulatory time	Therapeutic	continue to allow FM to be the relational anchor for her	over time sibs and FF wil be able to do this as well - but for now let FM be the primary relational regulator

Relational	Rating	Action	Notes
Parallel play - dyadic adult	Therapeutic	use FM as above and as tolerated, introduce others	S is very relationally 'sensitive' - for her, intimacy is an evocative cue - as is "abandonment" - so she is sensitized to both relational interactions that are intimate and perceived rejection - remember - present, attentive, attuned and responsive - and stay parallel - don't expect words to do too much
Psychotherapy (specify)	Enriching	not sure individual Tx is yet likely to be helpful	use therapeutic time to support and guide FM and school - at a later point, S will be ready for a therapeutic relationship - too dysregulated now to do much effective work
DO NOT push peer interactions	Essential	DO NOT overload S with peer relationships yet	S is not ready for dyadic relationships yet. This will come - remember she is more like an infant in this regard.

Cognitive	Rating	Action	Notes
Speech and Language Tx	Enriching	Needs S/L eval (but not yet)	S is too dysregulated to tolerate either an S/L evaluation or Tx
BE PATIENT about cognitive development	Essential	Do not expect too much from traditional cognitive interactions yet	S. is so dysregulated that she will not be able to either express her current cognitive capabilities nor easily internalize new cognitive experiences. Work on SS/SR domains - and the cognitive needs and strengths can be identified and addressed at a later point in the treatment process.

Appendix 2-3

Reevaluation Report for Suzy

Neurosequential Model of Therapeutics : Clinical Practice Tools

A Brief Introduction:

The Neurosequential Model of Therapeutics (NMT) is an approach to clinical work that incorporates key principles of neurodevelopment into the clinical problem-solving process. The NMT Metrics are tools which provide a semi-structured assessment of important developmental experiences, good and bad, and a current "picture" of brain organization and functioning. From these tools estimates of relative brain-mediated strengths and weaknesses can be derived. This information can aid the clinician in the ongoing therapeutic process.

The results from the NMT Metrics should not be viewed as a stand-alone psychological, neuropsychological, psychiatric or psychoeducational evaluation. These reports are intended to supplement the clinical problem solving process and provide broad direction for the selection and sequencing of developmentally appropriate enrichment, therapeutic and educational activities.

Client Data

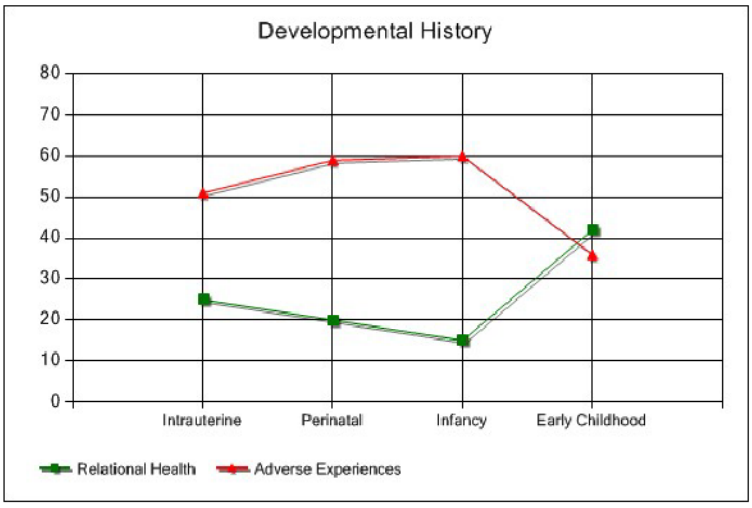
Client: SuzySample
Age: 5 years, 5 months
Gender: Female

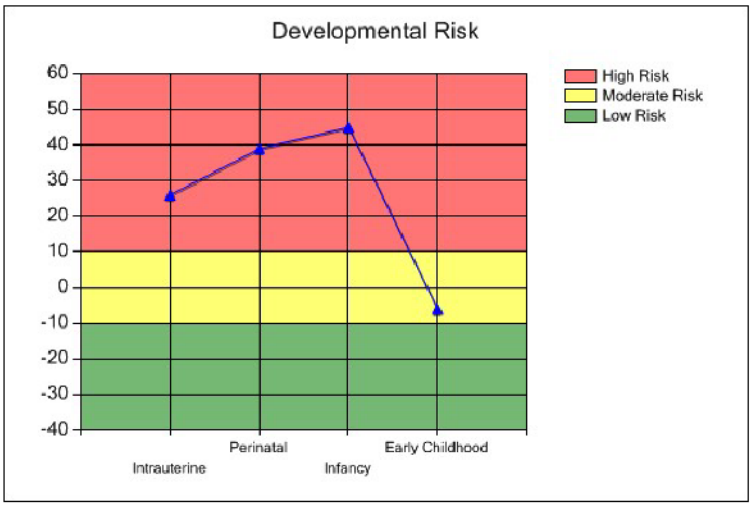
Report Data

Current Clinician: Bruce Perry
Report Date: Redacted

Developmental History

A brief introduction





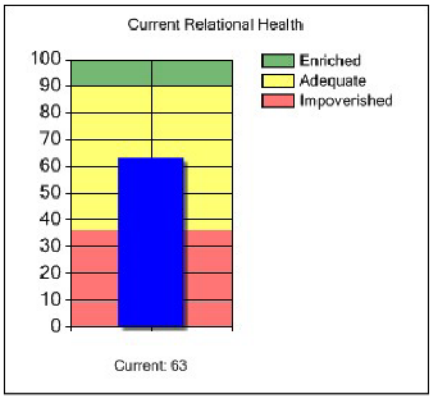
Developmental History Values

	Adverse Events	Relational Health	Developmental Risk
Intrauterine	51	25	26
Perinatal	59	20	39
Infancy	60	15	45
Early Childhood	36	42	-6

Adverse Experience Confidence: Moderate
Relational Health Confidence: Moderate

Current CNS Functionality

		Time 1	Current	Typical
	Brainstem			
1	Cardiovascular/ANS	4	7	11
2	Autonomic Regulation	6	7	12
3	Temperature regulation/ Metabolism	6	7	12
4	Extraocular Eye Movements	8	8	12
5	Suck/Swallow/Gag	6	6	11
6	Attention/Tracking	3	6	10
	DE/Cerebellum			
7	Feeding/Appetite	4	6	10
8	Sleep	3	6	10
9	Fine Motor Skills	5	6	8
10	Coordination/Large Motor Functioning	4	5	7
11	Dissociative Continuum	2	6	9
12	Arousal Continuum	3	5	9
13	Neuroendocrine/Hypothalamic	6	6	10
14	Primary Sensory Integration	4	6	9
	Limbic			
15	Reward	4	6	10
16	Affect Regulation/Mood	3	6	9
17	Attunement/Empathy	2	6	9
18	Psychosexual	5	6	7
19	Relational/Attachment	3	5	7
20	Short-term memory/ Learning	6	7	9
	Cortex			
21	Somato/Motorsensory Integration	5	6	8
22	Sense Time/Delay Gratification	2	4	6
23	Communication Expressive/ Receptive	5	6	9
24	Self Awareness/Self Image	4	5	6
25	Speech/Articulation	4	4	8
26	Concrete Cognition	4	5	7
	Frontal Cortex			
27	Non-verbal Cognition	5	5	6
28	Modulate Reactivity/Impulsivity	2	4	6
29	Math/Symbolic Cognition	1	3	6
30	Reading/Verbal	1	4	6
31	Abstract/Reflective Cognition	2	4	6
32	Values/Beliefs/Morality	2	4	6
	Total	124	177	271



Functional Item Key

ABST (31)	MATH (29)	PERF (27)	MOD (28)	VERB (30)	VAL (32)
SPEECH (25)	COMM (23)	SSI (21)	TIME (22)	SELF (24)	COOG (26)
REL (19)	ATTU (17)	RBW (15)	AFF (16)	SEX (18)	MEM (20)
	NE (13)	DISS (11)	ARS (12)	PSI (14)	
	RMS (9)	FEED (7)	SLP (8)	LMF (10)	
		SEC (5)	ATTN (6)		
		MET (3)	BECM (4)		
		CV (1)	ANS (2)		

Functional Brain Map Value Key

DEVELOPMENTAL
Functional

12	DEVELOPED
11	TYPICAL RANGE
10	
9	EPISODIC/EMERGING
8	MILD Comprimise
7	
6	PRECURSOR CAPACITY
5	MODERATE Dysfunction
4	
3	UNDEVELOPED
2	SEVERE Dysfunction
1	

Client (5 years, 5 months) **Report Date: 8/31/2012**

4	3	5	4	4	4
4	6	6	4	5	5
5	6	6	6	6	7
	6	6	5	6	
	6	6	6	5	
		6	6		
		7	8		
		7	7		

Age Typical - 4 to 5

6	6	6	6	6	6
8	9	8	6	6	7
7	9	10	9	7	9
	10	9	9	9	
	8	10	10	7	
		11	10		
		12	12		
		11	12		

Client (4 years, 1 month) **Report Date: 8/28/2012**

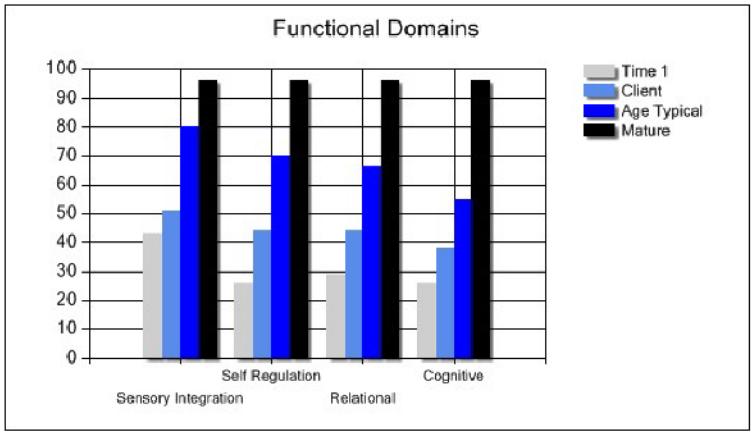
2	1	5	2	1	2
4	5	5	2	4	4
3	2	4	3	5	6
	6	2	3	4	
	5	4	3	4	
		6	3		
		6	8		
		4	6		

Age Typical - 4 to 5

6	6	6	6	6	6
8	9	8	6	6	7
7	9	10	9	7	9
	10	9	9	9	
	8	10	10	7	
		11	10		
		12	12		
		11	12		

Current Functional Domains Values

	Client Age	Age Typical	Mature	% Age Typical
Sensory Integration	51	80	96	63.75
Self Regulation	44	70	96	62.86
Relational	44	66	96	66.67
Cognitive	38	55	96	69.09
Cortical Modulation Ratio	0.78	2.42	49	32.27



General Summary

Recommendations are based upon data provided by the clinician when completing the NMT online metrics. Based upon the data provided, cut off scores are used to indicate whether activities in each of the 4 areas are considered essential, therapeutic or enrichment. Activities selected for each category should be age appropriate, positive and provided in the context of nurturing, safe relationships.

Essential refers to those activities that are crucial to the child's future growth in this particular area. In order to fall into the essential category the child's score must be below 65% of the age typical score. It is our belief that unless functioning in the essential area is increased the child will lack the foundation for future growth and development in this and other areas.

Therapeutic refers to those activities aimed at building in strength and growth in the particular area. Scores that fall within 65 to 85 percent of those typical for the child's age are considered appropriate for more focused treatment. Therapeutic activities are viewed as important for the child's continued growth and improvement in the area.

Enrichment refers to activities that provide positive, valuable experiences that continue to build capacity in the given area. Children who fall into the enrichment category are at or above 85 percent of age typical functioning. Activities recommended in this category are designed to enhance and reinforce strengths previously built into the particular area of focus.

The information below is designed to provide the clinician with broad recommendations based upon the NMT approach. These recommendations should be used as guidelines for the treating clinician when considering particular therapeutic activities. Final treatment decisions must be based upon the clinical judgement of the treatment provider. The CTA cannot be held responsible for any of the treatment decisions made by the clinician based upon their own interpretation of NMT principles or recommendations.

Sensory Integration

Client Score: 51 Age Typical: 80 Percentage: 63.75

Essential: (below 65%) – Scores below 65% of age typical functioning indicate poorly organized somatosensory systems in the brain. The introduction of patterned, repetitive somatosensory activities weaved throughout the day have been shown to lead to positive improvements. These activities should be provided multiple times each day for approximately 7-8 minutes at a time for essential reorganization to occur. Examples of somatosensory activities include massage (pressure point, Reiki touch), music, movement (swimming, walking/running, jumping, swinging, rocking), yoga/breathing and animal assisted therapy that includes patterned, repetitive activities such as grooming.

Self Regulation

Client Score: 44 Age Typical: 70 Percentage: 62.86

Essential: (below 65%) – Scores below 65% of age typical functioning suggest the child has poor self-regulatory capabilities. These children may have stress-response systems that are poorly organized and hyper-reactive. They are likely impulsive, have difficulties transitioning from one activity to another, and may overreact to even minor stressors or challenges. Children in this category require structure and predictability provided consistently by safe, nurturing adults across settings. Examples of essential activities in this category include: developing transitioning activity (using a song, words or other cues to help prepare the child for the change in activity), patterned, repetitive proprioceptive OT activities such as isometric exercises (chair push-ups, bear hugs while child tries to pull the adults arms away, applying deep pressure), using weighted vests, blankets, ankle weights, various deep breathing techniques, building structure into bedtime rituals, music and movement activities, animal assisted therapy and EMDR.

Relational

Client Score: 44 Age Typical: 66 Percentage: 66.67

Therapeutic: (65% - 85%) - Scores between 65 and 85 percent suggest that the child has some difficulty with relational functioning. It is important to remember that unless and until re-organization takes place in the lower parts of the brain, specifically self-regulation, therapeutic efforts on more relationally related problems in the limbic system will likely be unsuccessful. In order to make sufficient gains in relational functioning relational stability with multiple positive healthy adults who are invested in the child's life and in their treatment is required. Examples of relational therapeutic activities include: parallel play, first with an invested adult and/or therapist and when mastered, parallel play with a peer. Once dyadic relationships have been mastered small group activities may be added. Other examples include animal assisted therapy.

Cognitive

Client Score: 38 Age Typical: 55 Percentage: 69.09

Therapeutic: (65% - 85%) – Scores between 65 and 85 percent suggest that the child has some difficulty with cognitive functioning. Once fundamental dyadic relational skills have improved, therapeutic techniques can focus on more verbal and insight oriented or cortical activities. Examples of therapeutic activities include: insight oriented treatment, cognitive behavioral therapy, reading enhancements, and structured storytelling.

Cortical Modulation refers to the capacity of important cortical networks to regulate and modulate the activity and reactivity of some of the lower neural systems. As the brain organizes and matures, this capacity increases and the Cortical Modulation Ratio (CMR) increases. The CMR reflects both cortical "strength" and over-reactivity in lower neural systems involved in the stress response. Any Cortical Modulation Ratio below 1.0 suggests that the individual has minimal capacity to self-regulate. Ratios between 1.0 and 2.0 indicate emerging but episodic self-regulation capacity. This item can provide useful when determining the whether a client is "ready" to benefit from traditional cognitive interventions.

Infant and Early Childhood Mental Health

Core Concepts and Clinical Practice

Edited by

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Ed Tronick, Ph.D.

Foreword by

T. Berry Brazelton, M.D.

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"Recent advances in neuroscience now describe how early relational experiences directly impact the developing brain, and thereby all later social emotional functioning. These data are forging tight links between optimal early brain maturation, the emergence of the infant's adaptive coping capacities, and infant mental health. In this book an impressive group of experts highlight the critical role of the development of mental health in infancy and early childhood. I highly recommend this volume to clinicians and researchers alike."

Allan N. Schore, Ph.D., UCLA David Geffen School of Medicine, author of *The Science of the Art of Psychotherapy*

"For those of us who work daily with parents who never smile at their baby and have no idea how to play, this book explains the reasons for their parenting deficits, the effects of those deficits on the baby, and the interventions that we need to implement to help them become good enough parents. The giants in the field of infant mental health have created this comprehensive volume that so vividly brings the research to life in a way that practitioners can understand and appreciate. I know I will make better decisions for the families in my courtroom as a result of reading this book."

Cindy S. Lederman, J.D., Circuit Court Judge, Eleventh Judicial Circuit Juvenile Justice Center

"This ambitious volume brings together some of the most outspoken theorists, researchers, and practitioners building the field of infant mental health from overlapping frameworks, models and disciplines. It reveals the challenges and excitement of this time, as this field sorts through the psychoanalytic and attachment theories of its origins and integrates emerging neuroscience and epigenetic theories whose applications to practice are still being worked out, to stake out its territory, tests its boundaries, and develops its own identity. More than that, this collection suggests a truly transdisciplinary path for a whole new kind of field, born from a range of others, that is creating new meanings and possibilities at their intersections for babies, families, clinicians, systems of care, researchers, and policy-makers."

Joshua Sparrow, M.D., Harvard Medical School, Boston Children's Hospital

"This book addresses the complex realities of family life and the real work of clinicians in their multifaceted efforts to support families with infants and young children. The essential ingredients for optimal mental health in the first 5 years are insightfully explained with practical approaches to treatment when development is derailed. The authors integrate psychodynamic theory and treatment with developmental theory and research, making well-informed treatment of infant-parent relationships accessible to all clinicians."

Barbara Kalmanson, Ph.D., ICDL Graduate School, KidsAttuned.org

"*Infant and Early Childhood Mental Health* presents a broad perspective using concepts and approaches based on psychoanalytic and psychodynamic theory, observations, neuroscience, and, perhaps most importantly, clinical sensitivity. A goal of the book is to help the reader understand the different meanings of the important statement made many years ago by T. Berry Brazelton that 'the quality of the infant-parent or child-parent relationship is the best predictor of outcome for any child.' This sensitive book provides an interdisciplinary understanding that is fundamental to training and practice with infants, young children, and their families....Examples of events and dilemmas dealt with every day by families and clinicians are interwoven throughout the presentation of theory and practice in a creative and interesting way. This book will be important to help professionals...understand the major historical developments and different perspectives that are needed to gain clinical understanding and implement effective practice addressing issues of prevention, intervention and treatment."

Joy D. Osofsky, Ph.D., Barbara Lemann Professor, Departments of Pediatrics and Psychiatry, LSU Health Sciences Center

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Core Concepts and Clinical Practice
Brandt • Perry
Seligman • Tronick

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