

Implementing the Neurosequential Model of Therapeutics in Tennessee: Parent and Clinician Perspectives

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Introduction

The Quality Improvement Center for Adoption and Guardianship Support and Preservation (QIC-AG) recently completed its evaluation of an enhanced approach for Adoption Support and Preservation (ASAP) services in Tennessee. Specifically, the Tennessee Department of Children's Services (DCS), in collaboration with a private agency (Harmony Family Center, or Harmony), implemented the Neurosequential Model of Therapeutics (NMT; see sidebar on page 2) in the eastern area of the state.ⁱ The QIC-AG compared outcomes for families served in that part of Tennessee (the treatment group) with families that received services as usual (the comparison group) in the remainder of the state. A second private agency under subcontract with Harmony—Catholic Charities—served the comparison group.ⁱⁱ Across four outcome measures (child behavior problems, staff satisfaction with their delivery of ASAP services,ⁱⁱⁱ familial relationships, and caregiver commitment), the QIC-AG observed gains for treatment and comparison groups, on average, in all four fields. However, the only statistically significant impact that emerged—that is, the only area in which progress was greater for the treatment than for the comparison group—was for behavior problems, and the effect size was small.

To better understand and contextualize the evaluation findings, Child Trends partnered with the QIC-AG on a qualitative study to learn more about how NMT was implemented and how families in both the treatment and comparison groups experienced ASAP services. If the NMT training, assessment, and recommendations did not affect clinicians' practice with families, then we would not expect to find impacts. Differences in the progress that treatment and comparison group families achieved would also be unlikely if treatment and comparison families experienced similar services.^{iv}

The National Quality Improvement Center for Adoption and Guardianship Support and Preservation (QIC-AG)

The QIC-AG is a five-year project working with eight sites that implemented evidence-based interventions or developed and tested promising practices which, if proven effective, can be replicated or adapted in other child welfare jurisdictions. Effective interventions are expected to achieve long-term, stable permanence in adoptive and guardianship homes for waiting children as well as children and families after adoption or guardianship has been finalized.



Child Trends, a research organization, was hired by Spaulding for Children to conduct a process evaluation of the Neurosequential Model of Therapeutics (NMT), implemented in Tennessee through the National Quality Improvement Center for Adoption and Guardianship Support and Preservation (QIC-AG).



The QIC-AG is funded through a five-year cooperative agreement between the Children's Bureau, Spaulding for Children, and its partners: the University of North Carolina at Chapel Hill, the University of Texas at Austin, and the University of Wisconsin-Milwaukee.

Key findings

- Agencies providing post-adoption services can successfully implement the NMT.
- Strong similarities between the services received by the treatment and comparison groups may help explain the lack of observed differences in outcomes for the two groups.
- A tailored, flexible, in-home approach facilitates both the NMT implementation and the provision of ASAP services, thereby enhancing agencies' abilities to support adoptive families with intensive needs.
- Additional strategies may be needed to effectively engage families who are experiencing crises or higher levels of stress, parents with more children in their home, and teenagers who are hesitant to engage in services.
- Given that a few parents agreed that extending services beyond nine months could further benefit their families—and that the NMT is designed to help clinicians identify the optimal timing, intensities, and types of treatment activities in relation to a child's developmental status—an evaluation *might* find stronger impacts favoring NMT if services were extended for longer time periods.

Methodology and Data

To better understand families' and clinicians' experiences with the NMT approach, in addition to families' experiences with ASAP services as usual in Tennessee, we interviewed clinicians and adoptive parents. Staff at Harmony collaborated with Child Trends to recruit participants. We randomly selected parents served by each clinician to ensure a geographic distribution across Tennessee and to enhance the likelihood of reaching families with a variety of experiences. In total, we interviewed nine parents whose families received NMT-informed services^v and 10 parents whose families received services as usual.

Ten clinicians who implemented NMT during the original evaluation period participated in virtual small group interviews. The interviews took, on average, 60 minutes. We did not interview clinicians from the private agency that served the comparison group, as that agency no longer provides adoption support and preservation services. The clinician interviews focused on the clinician's training in the NMT, how they

Neurosequential Model of Therapeutics (NMT)¹

The NMT is not a specific treatment protocol; rather, it provides a structured, neurobiologically informed approach for organizing a child's developmental history and current functioning to inform the clinical decision making and treatment planning.

For the NMT assessment, clinicians enter information about a child into a web-based application to complete the "NMT Metrics." The resulting report describes:

- The child's developmental history (examining both adversity and resilience-related factors)
- The functional status of 28 brain-related capacities across four domains (sensory integration, self-regulation, relational, and cognition) in comparison with the child's same-age peers ("brain map")

The NMT Metrics include recommendations for consideration in treatment planning. Neurosequential development suggests that "lower" needs (i.e., earlier in sequence of brain development) should be addressed before "higher" needs can be effectively addressed. Accordingly, the NMT provides recommendations for therapeutic, educational, and enrichment activities, and on the ideal sequence, urgency, timing, and intensity of recommended services. Clinicians also identify the child's "therapeutic web"—that is, the network of individuals in the child's life capable of providing positive interactions to support the child and family.

In addition to the assessment and recommendations, a third important component of the NMT is training and capacity building for staff implementing the approach, including training on the core principles of traumatology and neurodevelopment that underly the model, as well as how to generate and use the NMT Metrics.

completed the NMT assessment process and used the NMT Metrics to guide treatment planning, and their impressions of the NMT.

Telephone interviews with parents lasted, on average, 45 minutes, and explored alignment between treatment plans and parents' perceptions of their family's needs, factors that made it harder or easier to carry out treatment plan recommendations, and parents' satisfaction with services. For families receiving NMT-informed services, interviews also explored comparisons of those services with other services families had received to address their needs, whether prior to finalization (such as when parenting their child while in foster care) or after finalization, if applicable.

Parents participating in the study reported a range of adoption experiences. They adopted children at different ages, and some adopted sibling groups. We interviewed relative and non-relative adoptive parents, as well as parents who adopted from the foster care system, internationally, and through private domestic adoptions.^{vi} Since the NMT-informed services and comparison group services were focused on adoptive families experiencing intensive needs,^{vii} it is not surprising that nearly all families had experienced significant challenges, ranging from ongoing tantrums to child residential treatment or out-of-home placement following their adoptions.

"It's a lot that these kids have gone through, and you're parenting blind. You don't know what their triggers are, what fully happened to them. It's like putting a blindfold on and try[ing] to parent and walk through the world. It's hard. I was underwater, except for my nose. That was the only thing allowing me to breathe, that my nose was above water."

–Comparison group parent

To analyze the data, two research staff coded the interviews in Excel using a coding scheme based on the interview questions. One researcher then reviewed the content to identify common themes.

Findings

Clinician training and preparation in the NMT

As they prepared to implement the NMT, clinicians participated in a variety of training activities staggered over 12 to 14 months. Activities included a "bootcamp" process,^{viii} formal training, observation of trained staff, individual readings, and consultation with NMT developer and purveyor Dr. Bruce Perry.^{ix} Clinicians participating in the second certification phase—a train-the-trainer model—completed additional training activities, including teaching NMT modules to colleagues.^x Some clinicians also described receiving mentoring from more experienced colleagues and observing the assessment and treatment planning process.

Helpful factors. Clinicians found the monthly consultation calls with Dr. Perry very helpful, along with their opportunities to practice assessment skills and observe a certified clinician complete the NMT assessment. Clinicians said that pairing up with a colleague to teach NMT module(s) had reinforced their skills.

Challenges. While staff reported generally positive experiences with the rigor and content of the training, they also noted some challenges. One clinician compared the process to taking a graduate-level course, with an "overwhelming" amount to learn in a short time. Also, most clinicians went through the training as a cohort, but a few joined between cohorts and reviewed materials on their own. These clinicians felt overwhelmed and confused, took longer to understand and integrate NMT into their practice, and stated a preference for more opportunities to shadow experienced colleagues.

The NMT assessment process

Clinicians typically gathered information needed for the NMT assessment during one or two visits with the family. In accordance with the NMT guidelines—and in addition to asking interview questions during in-home interviews with the parent(s)—clinicians conducted record reviews, observations of the child at home, and interviews with the child (when developmentally appropriate), and they contacted other providers, teachers, and counselors who were working with the child and family. At least one clinician gathered sensory and physical information using tools such as heart rate monitors and an eye-roll test.^{xi} A few also mentioned that they assessed parents' personal resources and capacity for self-care using the NMT's Caregiving Challenge Estimator. Clinicians reported entering the compiled information into a web-based "NMT Clinical Practice Tools" app that generates the brain map and treatment recommendations.^{xii}

Helpful factors. In tandem with implementing the NMT, Harmony had expanded its pre-existing comprehensive assessment questionnaire. Specifically, the agency added topics to the questionnaire that aligned with what clinicians needed to know to complete the NMT Metrics. Clinicians appreciated how the questionnaire dovetailed with the NMT, finding that both the questionnaire and existing NMT resources helped them ask the right questions. Building rapport with parents, particularly with parents who were skeptical about the services or overwhelmed by their responsibilities, helped clinicians engage parents in the process, as did conducting the assessment in the family's home. Parents and clinicians indicated that carrying out the assessment in families' homes was convenient and comfortable for parents, and facilitated clinicians' understanding of the child's functioning and needs.

Challenges. Gathering information from families was challenging in some cases. Clinicians reported that some parents did not understand the assessment process, its scientific grounding, or why the clinician needed detailed biological and historical information about their child. In other instances, parents were managing crisis situations that limited their engagement. For example, one clinician explained that, when families were consumed by urgent situations in the home, they had less capacity to process new information. Another challenge was that a child's early history was not always available (e.g., information was unknown due to international adoption or not provided by the adoption agency). In addition, children were sometimes unable or unwilling to participate in the process. Regarding the web-based application that generates the assessment (i.e., the NMT Metrics), clinicians reported difficulty scoring items consistently, noting some subjectivity involved in scoring.^{xiii} Further, some clinicians were not initially aware of all NMT resources available to them (e.g., a form to document the individualized plan for the family), and instead learned of these resources over time. A few parents said the clinician did not ask for all available, relevant information (e.g., did not speak with the child's previous clinician), or appeared overwhelmed. One parent wished that the clinician had assessed all of their adopted children rather than limiting the assessment to just one of their children participating in services.

Using the NMT to inform treatment planning

Clinicians used the NMT Metrics report to inform treatment plans they developed collaboratively with parents, setting goals for the child, parent, and family. As part of their treatment plans, some clinicians developed an extensive list of activities and suggested a few activities for families to begin with; others recommended a smaller number of activities based on what the family could feasibly implement. Most described weighing children's and parents' willingness to engage in therapeutic activities, interests, abilities, and access to resources when deciding what to include in the treatment plan. Clinicians and parents agreed that the plans contained specific, goal-oriented activities that could be integrated into the family's daily routines.

Clinicians and several parents described the treatment plans as tailored and flexible to best meet the family's needs. Examples of treatment plan activities included the following:

- **Activities to address development in the lower areas of the brain, focusing on sensory integration:** For children who had experienced trauma at a young age, clinicians and parents mentioned games and activities such as yoga, tactile exercises (e.g., rubbing different textures on the child's skin, like a cotton ball or feather), and regulation exercises (e.g., swinging, jumping on the trampoline). These activities were part of the child and family's daily routine, were often implemented together as a family, and used equipment the family owned or could easily access.
- **Relational and bonding activities:** Treatment plans often included activities to build trust and help the entire family regulate their behaviors.
- **Therapeutic web of support:** Plans sometimes addressed connections to community supports for the child (e.g., mentors), in addition to similar supports for parents (e.g., education, other supportive adults, support groups) and retreats for adoptive families.
- **Other therapies:** Plans sometimes called for other therapies (e.g., occupational therapy) depending on the child's needs, the availability of community resources, and parental capacity to implement these therapies.

"[Treatment plans are] just so much more in-depth, richer content, more specific activities based on the NMT recommendations. I feel like it really has been a game-changer in our treatment planning and the activities that we recommend. Before [NMT], we may have recommended that the child get involved in an extracurricular activity, but we wouldn't have been so specific to say swimming or taekwondo, but now we know crossing the midline is important for brain development."

—Clinician

"I think [the brain map] does a great job at putting the visual representation in front [of the parent]."

—Clinician

"I think all the information that I was given upfront about this type of therapy ... I knew what to expect, and I saw that there was scientific research to back it up."

—Treatment group parent

Helpful factors. The NMT approach helped clinicians and parents implement the treatment plan. Clinicians and parents found the resulting recommendations to be valid, and the charts, brain map, and recommendations generated as part of the NMT Metrics helped clinicians identify and explain treatment priorities to parents. Most parents found that these visuals (including the brain map) helped them understand how trauma affects brain development and how trauma has persistent impacts on behavior and functioning over time. Supplemented with other education from the clinicians (e.g., educational videos and books), parents reported a greater understanding of trauma, which helped them modify their parenting styles to fit their child's needs. The scientific basis of NMT added credibility to the treatment plans for clinicians and parents. Overall, clinicians and parents appreciated that NMT was respectful of the child's history and offered a hopeful perspective.

Parents and clinicians also highlighted the importance of in-home service delivery, which facilitated their ability to work together. Clinicians indicated that the availability and affordability of vetted, trauma-informed clinicians and activities in the community also strengthened treatment planning.

Challenges. Challenges appeared in two categories: factors intrinsic to the families receiving services and services the clinician provided.

Clinicians reported that implementing the treatment plans was more difficult with families who were socially isolated, experienced financial stress, lacked medical insurance or transportation, or had less time to devote to treatment plan activities because of the demands posed by multiple children. Clinicians reported that some parents struggled to understand the concept of emotional regulation, both as it pertained to themselves and to their children. Several parents reported that the brain map and charts felt scripted, too generic, and not reflective of their child's specific issues. Several parents also said their child had difficulty engaging in the assigned activities due to their child's mental health challenges.

A few treatment group parents reported that their clinicians were not following a specific plan, or that the plan was not tailored to their child's needs. Treatment plans were also sometimes less accepted by adolescents, whom clinicians viewed as resisting engaging in treatment. A few clinicians and parents said clinicians did not share information with the child's school; parents felt this would have helped teachers better understand and support the child. Clinicians and parents reported a lack of needed resources in a few communities, particularly for adolescents. They felt that this lack of resources (such as yoga, occupational therapy, and animal therapy) hindered treatment planning and implementation. A couple parents also thought the duration of services was too short, especially for children with attachment difficulties.

“And the six months [that the agency works with kids], to me, was pointless. Adopted kids don't just have immediate problems ... [The clinician] said we could ask for an extension for a couple of months but that's all it would be. How can you do that to a kid with abandonment issues?”

—Treatment group parent

The influence of NMT on ASAP services

In our interviews, we sought insight into the effect of the NMT on clinicians' approaches to working with families. We asked for clinicians' perceptions on their practice, both pre- and post-NMT training. One caveat is that, in making these comparisons, many clinicians included clinical experience outside of ASAP services. Since we could not speak with comparison group clinicians, we cannot judge the degree to which the two groups' work with families differed systematically.

Assessment. Prior to NMT, clinicians in both treatment and comparison groups used the same assessment form to gather information from families. The Harmony clinicians we interviewed reported that, typically, this did not include extensive historical or prenatal information. Upon NMT implementation, both treatment and comparison group clinicians used an updated version of the same comprehensive assessment form, which had been modified to align with the information needed for the NMT Metrics. The form focused more heavily on historical and prenatal information than before NMT implementation. Indeed, parents in both groups reported that clinicians took extensive histories of their children, including past and current functioning, and that the clinicians discussed brain development and trauma with the family.

Treatment plan. Clinicians reported that, prior to the NMT training, they had already been creating customized treatment plans, checking on progress, and working on goals. However, their prior plans included less emphasis on positive relationships and focused more on cognitive skills and interventions, rather than sensory activities.

“I wish I could verbalize how much better [our work is with NMT]. I don’t want to discredit our team and say we weren’t doing a good job before, but to look at a previous treatment plan and one today, it would just look a little basic and now it’s very individualized, specific, all around a richer plan.”

—Clinician

Helpful factors and challenges. Clinicians mentioned several factors that they believed aided treatment, including the flexible approach of NMT. This approach is adaptable, takes a family perspective, and gives clinicians an arsenal of tools. Because of the model’s flexibility, clinicians could formulate treatment plans based on children’s interests and families’ capacity and access to resources.

Clinicians found NMT unique for its inclusion of adults in the community (e.g., church and school) in the treatment plan. One clinician described such a therapeutic web as “add[ing] in positive adult connections in the community (i.e., a coach), that gets them [the child] more positive interactions with people.” Clinicians observed that NMT-informed services go beyond case management, acknowledging that parents need support with trauma symptoms that can emerge at any age and any time.

Perspectives on the NMT

In general, clinicians and parents were very positive about their experiences with the NMT approach. They reported that it helped parents and clinicians understand—and helped clinicians explain—the effects of trauma on brain development and led to better outcomes for children and families.

“I wish I had this way of working with clients during my entire time helping kids.”

—Clinician

Clinicians and parents described the NMT as helping families develop compassion for children of all ages. It helped them understand that children’s needs may not be correlated with their chronological age—particularly for children with attachment issues—and understand the rationales for recommended treatment activities. Parents and clinicians agreed that the NMT is a positive, scientifically supported way to look at brain development that helps clinicians and parents assess and understand behaviors and be creative in finding ways to treat them.

Several parents in the treatment group specifically mentioned that activities (in particular, the sensory activities), parenting videos, and books and pamphlets they received were very beneficial. They felt that services were tailored to the child based on the NMT assessment and were effective in helping their child manage daily routines at home and at school, be more aware of their bodies and personal space, trust people more, and feel more confident and less ashamed of their history. (As described below, most parents—whether working with Harmony or Catholic Charities—felt their families had made progress.)

“Like I said, it was all kind of over my head, but [the clinician] was very good about trying to explain exactly what [the clinicians] were doing. Just the trauma that [my child] had gone through had wired her brain to be one way and we needed to get the other side of her brain working and dealing with situations better.”

—Treatment group parent

Parents' perspectives on ASAP services

Although treatment group parents described ways in which services differed from other therapies they had received prior to ASAP,^{xiv} parents in both groups generally described receiving similar types of services. One exception was that treatment group parents commented on the utility of the brain map as a tool for understanding their child's struggles.

Treatment group parents described receiving services in their home. Services sometimes involved the whole family with hands-on sensory activities, such as wrapping the child in a special weighted blanket, jumping on a trampoline, and blowing a cotton ball across the room with a straw.

"Absolutely, having a person coming to the home that was everybody's friend, not on anyone's side, it was a connecting point ... ASAP was a lifesaver."

—Treatment group parent

As with treatment group parents, comparison group parents received in-home services and said that clinicians helped them understand brain development, the impacts of trauma, and how sensory development relates to trauma. In addition, clinicians provided videos and reading materials to support parents' learning. Clinicians also recommended activities that supported sensory integration, and parents incorporated these into their daily family routines; such activities included rocking the child in a blanket, feeding them after each activity, and yoga. Parents also said that clinicians in the comparison group used trust-based therapies and recommended extracurricular activities to learn

new skills. One parent said the agency set up multiple services, including training for church members and individual play therapy for the child and family.

For some parents in both groups, the demands of work, multiple children, and other responsibilities made following recommendations challenging. Several parents in both groups thought it was helpful to have a clinician provide suggestions on tackling problems, including strategies for self-care. Several parents in both groups valued flexibility and reported that clinicians' flexibility with treatment plans and with the locations and scheduling of therapy helped families engage in the process.

Parents in both groups were generally satisfied with the services they received, finding clinicians to be caring, understanding, and non-judgmental. They said they would recommend ASAP services for others. Most parents would have liked to receive the services earlier, noting their ongoing struggles to overcome certain challenges. Services brought families closer together and having a clinician with an outside perspective was very helpful in normalizing their situation.

"I was struggling, and the counselor wrote up what she saw. Seeing it through her eyes helped me understand it was changing for the better."

—Comparison group parent

"I just think the program is so beneficial, and I don't think it's the end-all answer, but it's a good foundation for changing your family and helping a family to be happier to live together."

—Treatment group parent

“It’s important that you understand that—because of the services—that our adoptions were successful. We have a now 21-year-old who is a productive member of society ... I can’t stress enough that this is because of the services that we have had a successful adoption ...”

—Comparison group parent

Most parents in both groups also said that clinicians invested considerable time learning about their families and needs, and that clinicians held deep knowledge around trauma. Clinicians were able to engage all family members, and proposed activities that made sense to families and were easy to implement. A few parents in the comparison group specifically mentioned that learning new parenting skills was especially helpful.

Not everyone was satisfied with the services they received. A couple parents in both groups were dissatisfied with the short length of service (generally limited to nine months), especially for children with a history of abandonment, who

are slow to trust someone new. A couple parents explained that they were able to extend services by asking for an extension or requesting services for another child in their family. And a small number of parents across groups found their clinicians to be inflexible, unwilling to deviate from a set script, inconsistent, and less supportive or empathic than expected.

Most parents in both groups reported positive gains, including some or all of the following factors:

- Learning new, positive parenting techniques, including how to interact with their children with understanding and empathy, rather than in a punitive manner
- Helping assure children that their basic needs would be consistently met (for children who had experienced neglect)
- Understanding reasons for misbehavior and how to give children positive feedback
- Feeling more confident as parents

Parents’ new skills and deeper understanding helped their children become less anxious, both in general and in social situations; become more empowered to speak up and share their past experiences; and gain a better understanding of their struggles and how to overcome them.

Implications

We interviewed clinicians and parents to learn about their experiences providing and receiving (respectively) Adoption Support and Preservation (ASAP) services. We also hoped to learn more about how the state implemented the Neurosequential Model of Therapeutics (NMT), and how the NMT may have influenced the provision of ASAP services. Our study provides context for understanding potential reasons for the lack of positive findings in the QIC-AG’s prior evaluation of the NMT in Tennessee.

- **Agencies providing post-adoption services can successfully implement the NMT.** The NMT capacity building for clinicians, child assessment process, and treatment recommendations can enhance clinicians’ sense of efficacy, and the NMT assessment reports can help parents understand the causes that underly their children’s struggles and need for specific services. When developing treatment plans, use of the NMT Metrics expanded the specificity, range, and individualization of clinicians’ recommendations. And although substantial effort is required, it appears that NMT can be integrated into clinicians’ practice smoothly and effectively.
- **Strong similarities between the services received by the treatment and comparison groups may help explain the lack of observed differences in outcomes for the two groups.^{xv}** The generally high satisfaction among parents in both the treatment and comparison groups suggests that both agencies, in following the statewide ASAP model, were providing high-quality services. In both groups, clinicians

took extensive histories using the same comprehensive form, discussed and provided resources on brain development and trauma, delivered services in the home, and engaged families in sensory engagement and relationship-building activities.

- **A tailored, flexible, and in-home approach facilitates both the NMT implementation and the provision of ASAP services, thereby enhancing agencies' abilities to support adoptive families with intensive needs.** Parents in both the treatment and comparison groups valued in-home service delivery, and most described receiving supports tailored to their child and family. Clinicians found that the model allowed them to tailor their treatment plans by selecting the NMT recommendations that best fit the child and family's needs, interests, and available resources.
- **Additional strategies may be needed to effectively engage families who are experiencing crises or higher levels of stress, parents with multiple children in their home, and teenagers who are hesitant to engage in services.** These families sometimes found that the information from the NMT assessment report was overly complex, and lacked the resources to implement as many treatment plan activities as other families. Clinicians may need to find ways to make the complex information in the NMT Metrics accessible to parents, thereby allowing them to better understand the information and apply it to their relationship with their child.^{xvi} As the NMT model continues to evolve, resources developed for caregivers as part of the NMT and the Neurosequential Model in Caregiving^{xvii} may help meet this need.
- **A few parents felt that extending services beyond nine months could further benefit their families; in addition, the NMT is designed to help clinicians identify the optimal sequencing, timing, intensity, and type of treatment activities in relation to a child's developmental status. Given these circumstances, an evaluation *might* find stronger impacts favoring NMT if services were extended for longer time periods.** Since addressing dysregulation is the initial priority from the perspective of neurosequential development, the fact that many treatment plans for both groups included sensory-type activities or other approaches for improving regulation could explain why both groups experienced progress during treatment. However, most of the children served had a range of needs, in addition to emotional regulation problems. A few parents felt that the length of services was sufficient to make progress but not to address all their family's needs without an extension. Harmony and Tennessee DCS are striving to maximize benefits to families in the context of available funding and will continue to pursue additional funding to extend services.^{xviii}

Discussion

For an evaluation to identify positive impacts of a new model, an agency must be able to implement the model successfully. In addition, the new model must change practice so that it differs from the typical services in some way. This is because experimental and quasi-experimental evaluations compare the progress of treatment group participants with the progress made by participants receiving the services that are typically provided in the absence of the new model.

In Tennessee, demonstrating improvement in ASAP services may have been particularly difficult: both agencies involved in providing post-adoption services followed the statewide ASAP model, and both agencies used the same comprehensive assessment form to collect information about child and family needs and strengths. Further, comments from comparison group parents in this study suggest that the quality of ASAP services was fairly high, even without the NMT. For the NMT to have the best chance to positively affect practice, it should be implemented with fidelity. However, evidence from outside the present study suggests that this was not always the case—because the NMT Metrics were not completed adequately, and/or because many treatment plan tasks were not carried out. To assess fidelity in using the NMT Metrics, Harmony clinicians biannually completed a sample case, which the NMT purveyor then

reviewed. Overall, clinicians did not complete 40 percent of these test assessments with an acceptable level of fidelity.^{xxix} In addition, for about three quarters of cases that closed in 2018 or later, the evaluation team identified the portion of treatment plan activities that families and clinicians completed. Clinicians rated 25 percent of cases as having low adherence to the treatment plan, meaning that one third or fewer tasks were completed; and 32 percent as having medium adherence, meaning that more than one third and up to two thirds of tasks were completed. Given that our study also identified some challenges in family engagement, continued efforts to improve clinicians' skills with the NMT Metrics seem warranted, as do efforts to engage families in completing treatment activities.

The original evaluation indicated that implementing the NMT did not result in greater satisfaction among clinicians with their service delivery.^{xx} However, interviewing the clinicians enabled us to gather more nuanced information about their impressions of the NMT; clinicians generally found the NMT to be very helpful in their practice. Our study suggests that Harmony was successfully able to implement the NMT (despite some challenges with fidelity), and that clinicians felt that the NMT improved their practice.

Among the four outcomes examined, the original evaluation did identify one small but positive impact—on child behavior problems.^{xxi} This finding is promising, particularly because parents' inability to cope with challenging behaviors is a primary reason for adoption instability.^{xxii} Further, in children with histories of early trauma, deficits in lower brain development make it difficult for children to regulate their emotions, often resulting in behavior problems.^{xxiii} While parents told us that comparison group clinicians often recommended sensory-based activities designed to promote lower brain development, the NMT is specifically designed to assess the functional status of children's brains and to recommend activities aimed at most efficiently targeting development in the lowest areas of the brain in need of development.

It is disappointing that the QIC-AG evaluation did not identify stronger impacts on outcomes. Although the evaluation failed to generate robust evidence that the NMT can improve outcomes for adoptive families with intensive needs, we caution readers against concluding that the NMT is not effective. Identifying robust impacts in child welfare interventions is notoriously difficult due to difficulties in implementing rigorously designed studies, accumulating sufficient samples, and preventing attrition (e.g., families declining to take up services), in addition to the short timeframes for assessing outcomes.

This study identified potential explanations for the lack of consistently observed differences in progress between the treatment and comparison groups in the evaluation, as well as directions for future service delivery and evaluation of the NMT with adoptive families.^{xxiv} Clinicians and adoptive families had positive impressions of the NMT, and families' experiences underscore the importance of flexible, tailored, and trauma-informed services for adoptive families with intensive needs. The theoretical underpinnings of the model and clinicians' experiences point to potential value in further exploration of the potential impacts of NMT-informed services on adoptive families over a longer time period.

ⁱ To learn more about NMT and how it was implemented and evaluated in Tennessee, see QIC-AG. (2020). *Tennessee Implementation Manual: Neurosequential Model of Therapeutics*. Available online at <https://www.qic-ag.org/wp-content/uploads/2020/06/QICAGSiteImplementationManualTennesseeFull.pdf>. See also Rolock, N., Diamant-Wilson, R., White, RevK., Cho, Y., & Fong, R. (2019). Evaluation results from Tennessee-Final evaluation report. In Rolock, N. & Fong, R. (Eds.). *Supporting adoption and guardianship: Evaluation of the National Quality Improvement Center for Adoption and Guardianship Support and Preservation (QIC-AG)-Final evaluation report*. (pp. 9-1 – 9-66). Washington, DC: Department of Health and Human Services, Administration for Children and Families, Children’s Bureau.

ⁱⁱ The study included families served from October 2016 to June 2019, with 215 in the treatment group and 171 in the comparison group. Rolock et al., 2019.

ⁱⁱⁱ Staff satisfaction with service delivery was assessed with questions about satisfaction with the services they provided, the level of support they were receiving, the manageability of their caseload, and the extent to which they felt they were positively influencing other people’s lives through their work.

^{iv} Factors in addition to NMT implementation and comparison group services could also help explain the lack of robust impacts in the prior evaluation. For example, the QIC-AG team suspected that a time period of more than six to nine months is necessary to detect a program impact. In addition, the QIC-AG NMT implementation manual states that the NMT purveyor, Dr. Bruce Perry, indicated that noted functional changes in the child would more likely be detected after one year of service (QIC-AG, 2020). Additionally, when outcome data were collected, some families had not received a full six months of service.

^v Throughout this brief, “NMT-informed services” refers to the services adoptive families received in the treatment group. NMT is not a treatment protocol, but rather a set of tools to inform and guide treatment planning.

^{vi} We did not ask about respondents’ demographic characteristics. The original evaluation included 293 families in the treatment group and 225 in the comparison group. Demographic data were available for 53 percent of families participating in the evaluation who had adopted privately (whether in the United States or internationally) and 63 percent of families who adopted from foster care. Rolock and colleagues (2019) did not identify any systematic differences between treatment and comparison group families who adopted privately; however, they did find that, among families who adopted from foster care, larger shares of comparison group families had children who were Black, who had spent two or more years in foster care, and who had three or more foster care placement changes. The evaluation included children of all ages. However, we cannot know whether the families we spoke with for the present study mirrored the demographics of participants in the evaluation.

^{vii} Although Tennessee implemented NMT with families in crisis (the “intensive” level of service in the QIC-AG’s approach), NMT can be used for any child or adult with neuropsychiatric, emotional, behavioral, or cognitive problems, regardless of whether crisis is imminent.

^{viii} The bootcamp is an intensive two-day introduction to the NMT and serves as an “on-boarding” process for the year-long, 150-hour training required to become NMT Phase I certified.

^{ix} For additional information on the support that was provided around training, including the role of Harmony’s training director, please see the implementation manual (QIC-AG, 2020).

^x For more details, see The Neurosequential Network. (2019). *The Neurosequential Model of Therapeutics© NMT Training Certification for Individuals Phase I and Phase II/TTT Programs 2019*, available online at https://8968bc28-f174-409f-949e-5f60ff828648.filesusr.com/ugd/5cebf2_f171b7d415a244f59e1dad9c9567fcd1.pdf.

^{xi} The eye-roll test can be used to measure capacity to dissociate. Torem, M.S., Egtvedt, B.D., & Curdue, K.J. (1995). The eye-roll sign and the PAS dissociation scale. *American Journal of Clinical Hypnosis*, 38(2), 122–125.

^{xii} Please see the text box on page 1 for more details.

^{xiii} Information demonstrating the reliability and validity of the NMT Metrics—including the high inter-rater reliability between clinicians with acceptable (or better) ratings on the fidelity exercise and program developers—can be found in a separate study: Hambrick, E.P., Brawner, T.W., Perry, B.D., Brandt, K., Hofmeister, C., & Collins, J.O. (2019). Beyond the ACE score: Examining relationships between the timing of developmental adversity, relational health and developmental outcomes in children. *Archives of Psychiatric Nursing*, 33(3), 238-247. Harmony clinicians completed biannual fidelity exercises that the purveyor reviewed for errors in scoring. Clinicians performed at an acceptable standard for research across 60 percent of these exercises (Rollock et al., 2019).

^{xiv} Treatment group parents did not distinguish between the NMT and ASAP services. They generally described their experiences of assessment and therapy in a holistic way and did not refer to the NMT by name (although they were familiar with and described the assessment reports clinicians shared).

^{xv} The evaluation showed that outcomes for families in both the treatment and comparison groups improved over time, with the NMT group making slightly greater gains in only one area: child behavior problems.

^{xvi} The NMT developer designed the NMT assessment for clinicians, not parents. Instead, clinicians should explain the findings to parents. The purveyor has developed psychoeducational materials to support parents’ understanding of how trauma affects children. Personal correspondence, Bruce Perry, August 24, 2020.

^{xvii} Perry, B.D. (2020). *The Neurosequential Model: a developmentally-sensitive, neuroscience-informed approach to clinical problem solving* in (Janise Mitchell, Joe Tucci & Ed Tronick, Eds), *The Handbook of Therapeutic Child Care: Evidence-informed Approaches to Working with Traumatized Children in Foster, Relative and Adoptive Care*. Jessica Kingsley, London.

^{xviii} Nicole Coning, personal communication, August 12, 2020.

^{xix} Rolock et al., 2019.

^{xx} Rolock et al., 2019.

^{xxi} Rolock et al., 2019.

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^{xxii} Child Welfare Information Gateway. (2012). *Adoption, Disruption and Dissolution* Washington, D.C.: U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children Youth and Families, Children's Bureau.

^{xxiii} Van der Kolk, B. A. (1996). *The body keeps score: Approaches to the psychobiology of posttraumatic stress disorder*. New York: Penguin Books; LuDy-DoBSon, C. R., & Perry, B. D. (2010). The role of healthy relational interactions in buffering the impact of childhood trauma. *Working with children to heal interpersonal trauma: The power of play*, 26-43.

^{xxiv} In addition to the factors we identified that may explain the lack of robust program impacts, Rolock and colleague's evaluation (2019) raised some questions about the fidelity with which NMT was implemented. Overall, 50 percent of family-centered recommendations were implemented with high fidelity (meaning that activities were carried out at least two thirds of the time); 36 percent of individual-centered recommendations were implemented with high fidelity; and 45 percent of recommendations regarding the therapeutic web were implemented with high fidelity. Individual-centered recommendations related to cognitive functioning—later in the neurosequential process—were most likely to be implemented with fidelity. The program developer assessed fidelity generating the NMT Metrics through biannual scoring of test cases; 60 percent of clinicians were rated as performing at an acceptable standard for research.



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