

CROSS TALK

How early should autism treatment begin?

BY GREG BOUSTEAD

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*Editor note: On Wednesday, 22 October, at 1 p.m. Eastern, we hosted a live Twitter Q & A on early intervention in autism, inspired in part by the perspectives below. The chat featured leading scientists who are designing and testing early intervention programs. The open dialogue also included families and journalists. You can find a **'Storify' summary of the conversation here**.*

In September, we described **results from a small pilot study** that assessed a behavioral interaction delivered by parents to infants with early signs of autism. Five of the seven high-risk children who received the intervention did not go on to develop autism by age 3.

The study, by **Sally Rogers** and her colleagues at the University of California, Davis MIND Institute, suggests that this low-intensity therapy may help the infants improve their behavior and language skills.

The preliminary **success of these sorts of therapies** raises a host of broader questions about the many caveats and challenges of treating autism early.

How early can an intervention for autism reasonably begin? Is there a **critical period**? Why do the interventions work well with some children and fail in so many others? What are the **'active ingredients'** of a successful therapy?

For this installment of **Cross Talk**, we asked several leading scientists who are designing and testing early intervention programs for children with autism.

What do you think? Share your reactions and follow-up questions in the comments section below.

Connie Kasari

Professor of Human Development and Psychology, University of California, Los Angeles

Study supports early parent-mediated intervention

Intervene on all positive screens: “The preliminary data provided in the new paper explores the potential of intervening for early signs suggestive of autism risk in young infants. This uncontrolled study of a small sample of infants precludes definitive interpretation. As the authors note, and I concur, we must exercise caution in interpreting these results because we do not know the level of autism risk pre-intervention and we cannot confidently ascribe the positive outcomes to the intervention alone.

“Given the large variability in test scores at age 3, continued follow-up of these infants may provide further insight into their developmental trajectories. Nevertheless, the study provides support for the idea that early parent-mediated interventions may be beneficial to infants showing developmental signs of autism risk.”

Consolidated evidence: “Last year, **Jonathan Green** and his colleagues at the University of Manchester **tested a video-aided, parent-mediated intervention** for seven 8- to 10-month-old infant siblings of an older child with autism. They too found positive effects in infants whose parents used a number of strategies aimed at improving parent responsiveness and infant attention and engagement. Thus, early interventions incorporating the ‘active ingredients’ of those described by Green and Rogers **may well emerge as best practices** for any child who screens with developmental concerns.”

Stephen Camarata

Professor, Vanderbilt Kennedy Center at Vanderbilt University

Critical periods misunderstood

Professor of Hearing and Speech Sciences, Vanderbilt University

Parent power: “The key active ingredient in this and most other early intervention approaches is teaching parents to better identify their child’s early attempts at communication and social engagement. Parents can then reinforce and increase social and communication behavior in their infant or toddler. In a nutshell, the new study shows that enrichment of this nature from parents is associated with growth in social and communication skills in the children receiving this intervention. However, the study does not conclusively show that early intervention for autism is effective. In that regard, the limitations in the design and the lack of diagnostic specificity for autism in infants are

problematic.”

Identification the key: “With the proper control and comparison groups, early intervention research can be completed at any age, including newborn infants. The problem lies in accurately identifying autism in toddlers and infants. There are some promising markers, but accurate and stable long-term diagnostic methods are still being developed. This is important because evidence-based early intervention requires accurate and stable diagnoses in order to ensure that the intervention is actually effective over and above spontaneous recovery.”

Critical confusion? “There is probably nothing more misunderstood and perhaps misrepresented than the notion of ‘critical periods’ in early intervention. Animal and human studies indicate that there are indeed critical periods for neural development. However, the sensory input needed to activate neural development is actually rather global and nonspecific. For example, it has long been known that sensory input from the eyes is necessary for activating neural organization of the visual cortex. Studies of animals and of clinical populations have shown that even relatively poor visual input is sufficient to provide the basic neural architecture needed for processing visual information. Pawan Sinha’s research at the Massachusetts Institute of Technology is particularly noteworthy in this regard.”

Earlier still better: “On the other hand, because learning is incremental and developmental, one can conceptualize ‘critical periods’ as when infants and toddlers systematically build their language and social skills, which lay the foundation for further complex social and linguistic development. A cessation or plateau in this learning likely has a long-term impact on the infant or toddler’s ability to acquire ever more sophisticated language and social skills.

“In essence, the earlier an ‘at-risk’ infant or toddler can be taught to attend to and learn from parents and others in the ambient environment, the more opportunities there will be to learn from future ongoing social interactions.”

David Mandell

Associate Professor, Perelman School of Medicine at University of Pennsylvania

Traditional medical model too late

Director, Center for Mental Health Policy and Services Research, University of Pennsylvania

Prevention policy needed: “Despite the limitations acknowledged by the authors, this is an exciting study on many fronts. First, it lends further evidence to the idea that autism comprises a trajectory of brain processes that deviate from typical development early in life. If we intervene early enough, we can change this trajectory. The jury is still out on how early is early enough, but it

is likely to be before we can accurately diagnose autism, especially outside of expert autism clinics. If we stick to the traditional medical model of ‘screen, diagnose, refer and treat,’ we will intervene too late.

“Instead, we should examine the intervention components here and determine whether we could apply a public health model of disease prevention and health promotion. In other words, can we prevent autism? Rogers and her colleagues describe a treatment with specific responses to six target symptoms that, together, qualify children for a diagnosis of autism. We could consider screening for these symptoms during 6- and 9-month ‘well-child visits,’ and teaching parents these basic procedures.”

Parental overload: “It will be important to study the independent effects of these intervention components. Determining the minimal intervention necessary is critical. We may be asking parents to do too much even with these brief interventions. Many pilot studies like this one have shown the promise of parent-implemented interventions, but later randomized trials often are disappointing. While we have become increasingly adept at changing the behavior of children with autism, we are less adept at changing the behavior of their parents. If we wish to expand the population to which we provide intervention, developing easy-to-implement interventions, combined with effective parent training and support, will be an even more critical issue.”

Aubyn Stahmer

Associate Professor, Department of Psychiatry at UC San Diego

Excited for larger trial

Associate Director, Child and Adolescent Services Research Center; Associate Professor of Psychiatry, University of California, San Diego

Early promise: “Coaching parents in specific techniques to increase parent-child engagement has the potential to ameliorate the withdrawal often seen in this population during the early toddler years. Although there is growing evidence that these types of interventions support early development in children with autism, the new study is one of the first to demonstrate positive results in infants this young. It seems that social engagement was affected in this group of children, which has been a core feature of autism that is traditionally quite resistant to intervention. I am excited to see what new information a larger trial of the intervention will find.”

Natural ingredients: “Several researchers are trying to extend these evidence-based behavioral interventions set in natural or home environments to younger age groups. These studies will provide an opportunity to examine the ‘active ingredients’ that are key to positive outcomes across various successful interventions. It is possible, indeed likely, that children at risk for autism

are differentially responsive to certain components.”

Tailored treatment: “Understanding the characteristics that respond best to specific ingredients may help researchers and providers develop individualized interventions that will optimally support an individual child’s progress. This may facilitate progress in children with autism who respond more slowly to our current interventions. We are not at that point. Still, the studies in which complex interventions are simplified for younger populations are beginning to provide clues.”

Lynn Koegel

Clinical Director, University of California, Santa Barbara

How early can we intervene?

Clinical Director, Koegel Autism Center; Director, Eli and Edythe L. Broad Center for Asperger Research, University of California, Santa Barbara

Progress begets progress: “The question arises as to whether a diagnosis of autism is possible before the onset of verbal communication if verbal communication itself is a diagnostic criterion. The important thing to consider is that if we can intervene within the first year of life and decrease the early social deficits that are evident, we may, consequently, decrease the likelihood of a more profound disability.”

Early signs: “Parents, especially those who have other children, are usually the first to express concern about their child’s lack of social development. While there is a wide variability within and across children during the first year of life, we often find a more consistent pattern of difficulties with social engagement in at-risk babies. The research is beginning to suggest that these early social concerns may be improved with intervention. Instead of needing large numbers of weekly hours, infants often improve with just an hour or two a week of parent education. Thus, an early intervention is far more cost- and time-efficient than a ‘wait-and-see’ approach.”

Jennifer Stapel-Wax

Associate Professor, Department of Pediatrics at Emory
University School of Medicine

Early intervention works, and changing

Director, Infant and Toddler Clinical Research Operations, Marcus Autism Center, Children's Healthcare of Atlanta; Associate Professor of Pediatrics, Emory University

Making most of intervention: “This pilot study represents the beginning of a new generation of studies focused on treatment in infancy, while capitalizing on the period of greatest postnatal neuroplasticity.

“Undoubtedly, this study is preliminary and requires further research and exploration. Other labs are already performing similar studies that utilize parent-implemented models focused on making the most of everyday moments. Coaching the parents must involve both empowering them with knowledge of development, as well as helping them to integrate strategies throughout their day to promote engagement and development of new skills.”

Universal design: “Early intervention works, and we need to start as soon as possible in the life of a young child. Our definition of intervention is changing from yesterday's models of clinic-based, expensive, primarily clinician-directed treatment. Instead, we favor naturalistic settings with clinically coached caregivers using models that are uniquely generalizable to community-based, home-based and population-focused efforts.

“Increasingly, we can expect to see interventions that universally produce better outcomes in young children who are at risk for autism or other neurodevelopmental disorders. This universal design will help ensure that all children get the rich and meaningful interactions and opportunities that are integral to their healthy neurodevelopment.”