Approaching Significance

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International Conference Signs of Autism in Infants: Recognition & Early Intervention

This past May a group of researchers and clinicians gathered together to present and discuss recent findings in the recognition of and intervention for early signs of autism in infants. This prestigious group, from the United States, Canada, France, England, Scotland, Israel, and Italy, have been involved in research and intervention studies utilizing brain mappings, home videos, "sib studies," documented outcomes of family psychotherapy, and longitudinal studies in order to identify early social-emotional, postural, communication, and physical indicators of Autism Spectrum Disorder; and to discern the implications for language development, attunement and intervention for children who exhibit these early signs. (see "Early Signs of Autism" in the July-December 2005 edition of WAIMH's *The Signal* for more background)

Autism is universally accepted as a genetically based, neuro-developmental disorder involving stereotypic behaviors. In the 1980's, the age limit for diagnosing autism was lowered to 3 years. But the continuing drive by parents of children with autism for earlier diagnosis resulted in DSM-IV criteria being lowered in the 1990's to include children as young as two years. And now, research is showing that early signs of autism can be identified during the first year of life, possibly as early as the first few hours of life. Despite their dispersed locations and varied research focuses, these presenters all agreed that there is a need, not for earlier diagnosis of autism, but for earlier identification of "pre-autistic" behaviors. The mutual hesitation among these individuals to "diagnose" autism during the first year of life stems from research suggesting that early intervention during the first year of life can alter the developmental path prior to full advancement to autism, preventing symptoms of autism evolving, and totally avoiding a diagnosis of autism. So the task set forth at this conference for all who work with young children was to come to agreement on the early signs of autism, to design an appropriate screening instrument to identify these early signs, and to develop appropriate early intervention for any child exhibiting them.

It became apparent that the work these individuals have been doing independent of each other was threaded together by a common theme which provides the foundation and direction for the task given us. This theme takes the perspective that autism is a *disorder of coordination* which is detectable during the first year of life through identifiable signs based on a lack of typical behaviors rather than on the presence of atypical behaviors, and that there is a critical period of brain development in the first six months of life during which there is potential to make a significant impact on the outcome in the development of these children with identified pre-autistic signs.

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Examples of physical, psychological or relational *dis*-coordination include: the inability to do the various things a child has to do at the same time, (e.g., coordination of lips and vocal cords to produce syllables, coordinate body movements to bear weight and make stepping motions), and the inability to organize body rhythms and temporal synchronicities to mutually co-regulate dyadic interactions, (e.g., turn taking; shared emotions; shared meanings; understanding other's actions, intentions, goals; postural adjustment; joint focus). In addition, research presented at this conference suggested that autism interferes with the performance of the cingulate cortex of the brain, which plays an important role in coordinating quick attentional shifts, cognitive control, executive functions, emotional expression, evaluative processes, body movements, some autonomic functions, relaying information between areas of the brain, developing "self-other" distinction, and allowing flexibility in neural transmissions.

Early signs of autism are related to an absence or lack of coordination for tuning and early exchanges and an inability for the brain to coordinate two or more actions or body parts. The pre-autistic child is unable or has difficulty doing the various things a child has to do at the same time (make sound in throat and move lips) and to adjust and synchronize his/her own movements, reactions and vocalizations to those of his/her partner's. This results in an inability to process, recognize and recreate the rhythmic flow of language; an absence of well-timed co-regulation of actions and movements with the parent; frequent overlap in turn taking; a lack of anticipation or build-up of emotional arousal between the child and parent; an inability to coordinate attention between an object and a person in order to establish shared meanings; to understand other's actions, intentions, goals, to enter into joint focus. Based on this, a preliminary list of *Red Flags* for pre-autism is beginning to take shape.

As this list of red flags grows, the task becomes identifying which ones are most predictive of later diagnosis of autism; how many red flags must be present; and how to develop a screening tool that has reliability and validity for a wide population of children. Some research is already underway developing screening instruments, which also include the significant intersubjective elements of the parent/child relationship. Home video studies show that when smooth mutual-regulation and rhythmic coordination of a typical parent/child interaction is missing, parents do not receive the reinforcement for the elements of their social interaction and their natural rhythm and synchronicity of interactions are affected. Unconsciously as they attempt to adapt to their child, the parents' interactions become irregular, insistent and/or physical resulting in them missing shared moments with their child. As a result of these natural parental adaptations, the parents inconsistently respond to the social initiations the child does make or do not encourage social interaction, which adds to the child's progressive social withdrawal. Here in lies the key to developing appropriate intervention for the pre-autistic child. Here in also lies another common thread among the presenters at this conference, the importance of early intervention and utilizing family therapy as an early intervention tool.

A caveat that was echoed at this conference was that intervention should be initiated while the brain is at its most vulnerable point in development. This is because autism is a progressive and "cumulative" disorder. The early deficits determine and effect later brain development. Current brain research is showing that there are two basic phases to the brain; an "up-stream" when growth is positive and rapid, and intervention can be most effective in influencing weaknesses; and a down-stream when growth is slowed or stopped and development becomes established in the circuitry of the brain making it difficult to change. The period between 0-18 months is when the brain is in an "up-stream phase" and at the highest level it will ever reach. After this initial phase, brain growth is in a "down-stream phase" until around the age of six to seven years where it levels off until another "up-stream phase" begins around the age of 16 years.

During that initial phase of positive growth, the neurons of the brain are establishing paths of development. Typically, these paths are flexible and easily changed by experiences, but the developmental neuropathology of autism causes a fairly fixed developmental "groove" that development follows unalterably through the up-stream. Therapeutic intervention may be able to "disturb" the fixed direction of development enough to force it down a different pathway; however, it will fall back into the existing "groove" if the track has already become well established. If the intervention is early enough and strong enough to keep development in an alternative track, the abnormal pathway will not become ingrained. Therein lays the caveat. We have all heard, "the earlier intervention starts, the more favorable the outcome." But for the pre-autistic child, what is "early?"

There is strong agreement that there is a critical period of opportunity to impact and alter the abnormal path of development before "experience-dependent" areas of the brain reach biological maturation; and that this critical period is optimally during the first 6 months of life due to the increased vulnerability of the brain to experiences during this period. Preferably intervention should occur no later than 12 months, but absolutely before 18 months. Currently, the majority of diagnoses and onset of intervention occurs between the ages of 2.5 years – 6 years, after the "up-stream phase" when the path of development is already strongly entrenched in the brain and intervention outcomes are limited. But during the first year of life, development, which is experience dependent, still has the potential to be "normalized" through intense early intervention.

Just as the presenters were in agreement that autism is a *disorder of coordination*, they were also in agreement that pre-autism is a disorder of *engagement*, and this is where intervention is focused; the ability of parent and child to engage with each other. Family psychotherapy has been found by this group to be successful during the first year of life in not only helping the child learn how to attune to the mother, but more importantly, in helping parents attune to their child's reactions and responses, and improve the ability to establish joint attention and synchrony with the child. Intense and prolonged sessions, utilizing a "team" approach, appear to provide that "interruption" to the abnormal path of brain development before it is able to be entrenched sending it in the direction of more typical development and more positive outcomes for the family. As their research continues to determine the optimal family therapeutic model, there is concurrence that it must promote the development of social interaction; enhance the emergence and progression of functional communication skills; foster the development of exploratory, functional, and imaginative play; and reduce and replace maladaptive responses to the environment.

Although the main purpose of the conference was for this group of researchers and clinicians to come together to present and discuss their findings in the recognition of and intervention for early signs of autism in infants, it also provided seeds for future research; direction for public policy and intervention; and hope for the future. If you would like more information on the early signs of autism, you will find a list of conference presenters below.

International Conference: Signs of Autism in Infants: Recognition and Early Intervention

University of California at Los Angeles
May 20, 21 & 22, 2006

Hosted by:
Child Development Media, Inc. and the School of Infant Mental Health, London

Conference Presenters

Filippo Muratori, M.D. & Sandra Maestro, M.D., from the Department of Child Neuropsychiatry of Stella Maris Scientific Institute, University of Pisa, Italy

Stella Acquarone, Ph.D., Director of Parent Infant Clinic & School of Infant Mental Health, London, England

Hanna Alonim, Ph.D., Director of the MIFNE Centre, Rosh Pinna, Israel

Laurent Danon-Boileau, Ph.D., General Linguistics & Language Acquisition, Alfred Vinet Centre, Sorbonne, Paris, France

Barbara Kalmanson, Ph.D., Clinical Director, Oak Hill School in Marin, California

Henry Massie, M.D., Department of Psychiatry, University of California School of Medicine, San Francisco, California

Marian Signman, Ph.D., Clinical Psychology, David Geffen School of Medicine at UCLA & Director of the UCLA Center for Autism Research and Treatment (CART) and of the UCLA Collaborative Program of Excellence in Autism (CPEA)

Jim Stieben, Ph.D., Director, Clinical and Developmental Social Neuroscience, Harris Research Initiative, York University, Toronto, Ontario, Canada

Colwyn Trevarthen, Ph.D., Child Psychology and Psychobiology, Department of Psychology, University of Edinburgh, Edinburgh, Scotland

Lonnie Zwaigenbaum, M.D., Pediatrics, McMaster University, Developmental Pediatrics, McMaster Children's Hospital, Hamilton, Ontario, Canada

Shelley Mitchell, MSC, SLP, Child Development Center and Autism Research Unit, Hospital for Sick Children, Toronto, Ontario, Canada