ENCYCLOPEDIA
on Early Childhood
Development

The Emergence and Developmental Course of the Social Characteristics of Autism

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July 2012

Introduction

Autism is a neurodevelopmental disorder that is the result of genetic and other organic etiological factors that affect brain development very early in life.[1] It is a behaviourally-defined disorder characterised by difficulties in social relating, social communication and rigid patterns of behaviour, and, for many individuals, sensory abnormalities.[2] Autism is now considered to be a “spectrum” of disorders; both in terms of etiology and in terms of the highly heterogeneous presentation amongst individuals meeting the diagnostic criteria and within individuals across development. It is now recognised that 1% of children meet the criteria for broadly defined autism spectrum disorder.[3,4]

Subject

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Although autism is diagnosed on the basis of difficulties in a number of areas of development and behaviour, its core defining characteristics are difficulties in social relating and social communication. However, the social world and social behaviour of infants is very different to that of an individual in mid-childhood, adolescence or adulthood. The focus of the current entry is the nature of the early emergence of these social difficulties in infancy and the preschool years and their developmental trajectory into mid-childhood and beyond.

Problems

Despite the fact that, as initially recognized by Kanner,[5] in most cases autism has an onset in infancy, it is not often diagnosed until a child is two or three years of age, and in some cases considerably later.[6,7] In part this is because the full syndromic pattern of symptoms of impairments in social relating, communication and rigid and repetitive behaviours required for a diagnosis are not reliably identified before this age. As a consequence, until the last decade much of what we knew about the early emergence of the social characteristics of autism had relied on retrospective parental report which is subject to a number of biases and influences.

Research Context

However, in the past two decades significant progress has been made towards earlier identification and diagnosis, motivated by the hope that early intervention may have a lasting positive impact for children and their families.[8] A number of research designs, including the retrospective analysis of home movies of children who later go on to receive a diagnosis and the study of infant siblings of an older child with a diagnosis, have allowed us to map the developmental trajectory of the core, defining social difficulties from their early emergence in infancy, through the school age years and into adolescence, and more recently into adulthood.

Key Research Questions

Following the emphasis on early identification and early intervention, one critical question has been: What are the earliest emerging signs of autism? Related to this, given the very wide variability in progress that different children with autism make in their social interaction and social communication outcomes, what are the internal and external factors associated with outcomes? What are the emerging early intervention approaches for which the best evidence-base exists?

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Recent Research Results

From the retrospective study of infant home movies a wide range of early social-communicative differences are apparent, including reduced orienting to name; impoverished joint attention behaviours; some early motor abnormalities and reduced emotional expression.[9] These early symptoms were usually most clearly identified during the second year of life, although some studies identified differences around the child's first birthday.

Over the past decade a number of groups worldwide have initiated truly prospective observational studies by exploiting the relatively high recurrence rate of autism in families. This allows the possibility to recruit a cohort of younger siblings of an older child with an autism diagnosis and to follow their development over time to identify who will go on to develop autism.[10,11] To date, no clear behavioural differences have been identified in infants in the first year of life that predict later diagnostic outcome. Several groups have shown that from early in the second year of life some clear differences have emerged, including orienting to name, gestures and imitation, social smiling, reactivity, social interest, and sensory-oriented behaviours. Recent studies have suggested that some social skills may plateau or decline for some of those children who go on to receive a diagnosis of autism, providing prospective evidence of the "regression" or loss of skill that has long been reported in the literature from retrospective parental report.[12]

Other studies have looked at the trajectory of social and communication symptoms from toddlerhood (two to three years) into mid-childhood. Charman et al.[13] found that social and communication symptoms decreased with development to age seven years. However, another significant challenge for many children with autism is the increasingly demanding social environment as children enter high school. Another study tracked language and communication abilities from two to nine years and found very wide variability in outcome despite many children having had delayed language milestones as toddlers.[14] At the later age some children had age appropriate language while others had made only very slow progress.

After many decades when few randomised controlled trials were conducted in the autism field, the past ten years has seen an explosion in such studies.[15] Many have focused on enhancing early social-communication skills, either by working with children in kindergarten settings, working with parents or a combination of therapist-led and parent-training. Several studies have found improvements in interactive ("dyadic") behaviour, both with parents and unfamiliar adults, and some have reported improvements in language. No studies to date have reported objective

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reductions in autism severity, although to date the length of interventions studied have only been over several months or at most one or two years. In combination with more general evidence that behavioural intervention approaches can benefit adaptive outcomes for children with autism, intervention approaches that focus on enhancing social communication abilities are now considered to have a good emerging evidence base.[16] Further trials of such programs rolled out to community services are required to establish their effectiveness.

Research Gaps

Despite the increase in the past decade in well-controlled intervention studies, further such trials are required to improve the evidence-base for established and newer interventions, in particular to identify the effective elements and moderators ("who benefits") and mediators ("how does change occur") of effectiveness. Only recently have longitudinal studies begun to examine the trajectories of social development beyond mid-childhood into adolescence and adulthood (for exceptions see reference 17). Mechanistic studies that employ experimental and neuroscientific methodologies, where possible embedded within genetic and familial designs, are required to elucidate the neurodevelopmental processes that lead to the social difficulties in autism. Such studies will also help us to understand the associations between social difficulties and common comorbidities in adaptive function, sensory difficulties and mental health problems.

Conclusions

The common characteristics of atypical early social development in autism have now been well described. However, basic scientific questions about the underlying neurodevelopmental processes that lead to the autism phenotype, as well as associated common comorbidities, are less well understood. One common feature of the recent wave of longitudinal studies is the increasing heterogeneity in social and other outcomes over development. While there is an increasing evidence base for some early intervention approaches that improve outcomes at least in the short term, in particular those that combine aspects of behavioural and interactive social communication interventions, we know less about the effectiveness of interventions in mid-childhood and adolescence.

Implications for Parents, Services and Policy

The costs of autism to individuals, their families and society are considerable.[18] Once considered a rare condition, some form of autism is now understood to affect around 1/100 children and

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young people. Parents and professionals, in particular in early years community health and education settings, need to be educated about the earliest emerging signs of the disorder to help early identification and referral. Difficulties in social relating and social communication emerge as the core characteristic in many children soon after infancy, especially as children enter the more challenging social world of kindergarten and school. Social and communication abilities continue to develop into mid-childhood and beyond, although at different rates for different individuals. An evidence base is emerging for psychosocial interventions that target early social communication skills and behaviour. Internationally, as more children are recognised in the preschool period, demand for early intervention services will increase and require funding. A more general societal issue is the need for a greater acceptance of “social difference” alongside support for those affected, their families and those who care for them.

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