# Early social communication interventions for autism

***Given the impact of autism as a disorder there has been surprisingly little rigorous research into its treatment. Positive findings from pilot trials of parent–child interventions have led to funding of the Pre-school Autism Communication Trial, which will be an important step in developing an evidence base for early intervention.***

Autism is a highly heritable developmental disorder, often diagnosed in the preschool years, which has a high burden of care for families and the community. Better recognition and characterization has led to increased prevalence estimates for the spectrum of the disorder (e.g. the prevalence of pervasive developmental disorders in a population cohort of children in South Thames is 1.16%; Baird et al, 2006). Prevalence is much greater than would have been recognized some years ago and makes autism a considerable public health challenge. Until fairly recently there was relative pessimism about the possibility of useful treatment for the core social and communication features of the disorder, reflected in a relative lack of intervention research in the field. However, there is gathering evidence that early intervention can show significant positive effects, at least short term. One of the most promising areas for intervention is adapted early social communication interaction between children and their parents.

Research has identified specific social communication impairments in young children with autism that are thought to underlie their atypical development. These include deficits in joint attention, the pragmatics of communication and the capacity to read non-verbal signals. In normal development, shared or joint attention between parent and child to a task or object of mutual interest, along with synchronous interaction, provides the scaffolding for language growth (Baldwin, 1993) and is a crucial precursor in the development of the child's understanding of both what is being said by others and the intention behind what is being said (Tomasello, 1995).

The relative absence of early joint attention is a notable feature of autism (Prizant and Wetherby, 1987) and has been associated with language delay and disorder in the condition (Mundy et al, 1986). Autistic children also have difficulty reading non-verbal signals (Tager-Flusberg, 1993), and have characteristic difficulties in signalling their own needs (pragmatic impairment) (Prizant and Wetherby, 1987). Pragmatic impairment is evident in less frequent and less overt child communicative initiations and a limited range of communicative acts (Eales, 1993). Abnormal language development is characterized by use of rote language, echolalia, verbal scripts and lack of reciprocal verbal interaction (Mundy et al, 1990; Eales, 1993), difficulties that persist into later development (Adams et al, 2002).

There is increasing evidence that such impaired joint attention, lack of communication initiation and lack of referencing in infancy results in a failure of adult and child to interact verbally in a manner which facilitates language development (Reddy et al, 1997). The adult and autistic infant typically fail to establish a communicative meshing or fit. The infant communicative signals are often too weak or infrequent (Reddy et al, 1997), drawing adults into a didactic asynchronous style of discourse which uses adult-orientated initiations and strategies to take over from the child's topic and control and re-direct the child's focus of attention (Sigman et al, 1986; El-Ghoroury and Romanczyk, 1999). Observed rates of adult initiations and non-reciprocal communications increase (Koegel et al, 1996).

Research on interventions with language-impaired children suggests that an adult communication style that uses joint attention to mesh into and build on the current focus of the child's attention (semantic contingency; Conti-Ramsden, 1990) and adapted adult talk (Tannock and Girolametto, 1992) leads to more rapid vocabulary development. Heightened parental–child social interaction increases child social engagement and language (Jocelyn et al, 1998; Kasari et al, 2008). If adults become more sensitive and synchronous with the autistic child's communication, the child's initiations and language development increase (Aldred et al, 2004). Interventions which elicited child communication initiation also increased sensitivity in adult response (Yoder and Warren, 2001).

There is converging evidence that interventions from an early age which specifically address these core communication impairments in autism through parent–child interaction are effective in promoting social and communication competence (Lord et al, 2005; Charman and Stone, 2006). The rationale is that children with autism require a high level of specifically focussed and adapted adult communication (Aldred et al, 2001). This first concentrates on promoting a more highly sensitive adult interaction,

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where actions made by the child are interpreted by the adult as having meaning and related to assumed intentions and desires (Watson, 1998). Once greater joint attention and reciprocity are achieved, further development of child communication is facilitated by the use of action routines and repeated scripts and the introduction of elaborations, pauses and teasing to promote participation, anticipation and intentional actions from the child (Wetherby and Prizant, 1992; Yoder and Warren, 2001).

Some small to medium-sized studies testing variations on this approach have shown a positive effect in reducing autistic symptomatology (Diggle and McConachie, 2001; Shields, 2001; Charman et al, 2005; McConachie et al, 2005; Kasari et al, 2006) and increasing communication initiation and language. Such intervention does not claim to cure people with autism, but rather to normalize their interactions as far as possible and thus significantly enhance their social and communicative functioning. In the primary pilot study on which the Pre-school Autism Communication Trial (PACT) is modelled (Aldred et al, 2004) this form of target social communication intervention was tested against treatment as usual (TAU) in pre-school children ($n$=28, 14 in each group). Following the 12-month intervention, there was a significant relative improvement in autism-specific symptoms tested on the autism diagnostic observation schedule (ADOS), language and parent–child synchrony in the treatment group. There was an improvement in the primary outcome of autism symptoms of 0.9 standard deviations. Other studies in the UK (Le Couteur and Sowter, 1997; Shields, 2001; Drew et al, 2002; Diggle et al, 2003; McConachie et al, 2005) and the USA (Kasari et al, 2006; Yoder and Stone, 2006) have found benefit from similar intervention approaches, and Charman et al (2003) made the case for a larger effectiveness trial of this form of intervention, including measures of mediating and moderating variables.

## The PACT

This work has led to Medical Research Council funding for the first large scale trial of a social communication intervention approach for preschool children with autism. The PACT is a multi-site, randomized controlled trial run from the University of Manchester, Newcastle University, and Guy's Hospital, the Institute of Child Health and Institute of Psychiatry in London.

### The intervention

The PACT treatment works with parents of children with autism and uses video feedback of parent–child interaction to elicit parent observation and highly sensitive parental responses to the child's (even subtle) communicative initiations. Thus parents become adapted to the child's communication and use techniques that extend the quality and quantity of the child's communication initiations and language development. The treatment is manualized and staged to reflect the developmental progression of pre-linguistic and early language skills.

After an initial home visit, families attend bi-weekly 2–3-hour clinic sessions for 6 months with a speech and language therapist. The parent and therapist view a recording of parent–child play each week and the therapist elicits heightened parent observation, understanding and progress within the specific stages of the manual. Parents do 30 minutes daily home practice between clinic sessions based on specific written goals. The pace and therapy process is individualized to the parents' style and progress, and measures interim goals achieved before moving to the next stage. Following the 6-month primary intervention, there are monthly maintenance sessions for 6 months. The intervention first aims to increase parental sensitivity and responsiveness, and thus increasing shared attention, and then aims to promote incidental development of child communication facilitated by the use of adapted adult language commensurate with child comprehension. Child anticipation, initiation and intentional communication acts are extended with elaborations to develop language and reciprocal conversations in the later stages.

### Trial design

PACT is a three-site two-arm single blinded randomized controlled trial study of this treatment against treatment usually used in routine NHS clinics, evaluated on standard autism and behavioural instruments including an economic evaluation. Trial sites in the north east, north west, and south east of the UK have been chosen to ensure generalizability of the findings. The sample will be 152 children between the ages of 2 years and 4 years 11 months, fulfilling diagnostic criteria for core autistic disorder on the ADOS. Families in both arms continue to receive TAU provided by their local services. The outcome measures include standard measures of autism severity and language and communication development. The trial began in February 2006 and will complete in November 2009.

Although there have been some indicative cost estimates in relation to autism (Jarbrink et al, 2003, 2007) this study will provide the first systematic empirical exploration of the economic burden of autism to families and service providers. It will also investigate the cost effectiveness of the PACT intervention in comparison to TAU.

The PACT trial systematically measures the mediating effect of adapted adult communication, therapeutic alliance and fidelity to the treatment process. Key precursor skills to the onset of child communication competence and the individual developmental patterns are video recorded and analysed in the treatment process.

## Conclusions

The results of PACT will inform clinical and policy decision making and generate further refinement of autism treatment in the NHS and in schools. The trial intervention is of moderate intensity and will, if shown effective, represent a practical option for service enhancement. It could have a significant impact on provision of treatment services for children with autism nationally and

internationally. The measures of mediating variables will help to elucidate factors impacting on clinical treatment outcomes and contribute to individualized adaptation of the treatment process in future practice across psychosocial interventions in routine clinical practice. **BJHM**

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*Further details can be found on www.medicine.manchester.ac.uk/pact/*

*Conflict of interest: none.*


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## KEY POINTS

- There is evidence that intervention addressing the core communication impairments in autism from an early age promotes social and communication competence.
- The Pre-school Autism Communication Trial is the first large scale study to look at the effectiveness of a specific approach to promoting parent–child communication for preschool children with autism, and will produce the first systematic economic model of family and social costs related to autism.
- Qualitative measures of individual variation and factors which mediate change in child communication functioning are systematically gained and evaluated.
- The results will inform clinical and policy decision-making and generate further refinement of autism treatment in the NHS and in schools, and could have a potential impact on provision of treatment services nationally and internationally.