

Theory of mind interventions can be effective in treating autism, although long-term success remains unproven

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WHAT IS ALREADY KNOWN ON THIS TOPIC?

Limited theory of mind (ToM) skills are a key problem for individuals with autism.¹ Interventions targeting ToM abilities are highly prevalent among treatments for autism.² However, there is no consensus on the efficacy of these treatments, and a wide variety of outcome measures are used.²

WHAT DOES THIS PAPER ADD?

- ▶ This is the first systematic review of interventions for ToM skills in individuals with autism.
- ▶ The inclusion of interventions on ToM, but also on related domains (eg, emotion recognition) or precursors of ToM (eg, joint attention), and the focus on a wide range of outcome measures provides relevant information for clinical practice.
- ▶ There is some evidence that ToM can be taught to individuals with autism spectrum disorder (ASD), but little evidence on maintenance and generalisation of ToM skills, or the effects of these skills to other domains of functioning.

LIMITATIONS

- ▶ The widely varied outcome measures used in the included papers complicate the comparative analysis of different studies.
- ▶ Blinding participants and personnel in intervention studies may not always be an option. Rather than emphasising possible performance bias, it would be practical to consider alternatives for this problem. For instance, individual differences approaches in larger samples may highlight both child and clinician features that are related to performance bias.

WHAT NEXT IN RESEARCH?

- ▶ The inclusion of long-term intervention effects of ToM treatment, to examine the accumulation of social skills during development.

- ▶ The analysis of individual differences in treatment effects, including child features (eg, subtypes of autism, age, intelligence and gender), and also features of the delivery of the treatment (eg, clinician vs non-expert, participation of parents, individual vs group-based, duration, use of computers or social media). This approach will improve our understanding of whether, why and for whom these interventions are effective.
- ▶ The development of a uniform battery of sensitive outcome measures, which allows the direct comparison between outcomes of different effect studies on ToM. Outcomes should include both conceptual abilities (ie, the level of ToM understanding) and practical abilities (ie, the use of ToM skills in daily life, as reflected by parent and teacher questionnaires and standardised observation scales).

COULD THESE RESULTS CHANGE YOUR PRACTICES AND WHY?

The results change clinical practice because they show that ToM interventions are effective. These results highlight the merit of interventions in older children and early adolescents. However, they also show the poor maintenance and generalisation of skills, which require specific attention in addition to the ToM intervention.

Competing interests None.

doi:10.1136/eb-2014-101855

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ABSTRACT FROM: Fletcher-Watson S, McConnell F, Manola E, *et al*. Interventions based on the ToM cognitive model for autism spectrum disorder (ASD). *Cochrane Database Syst Rev* 2014;3:CD008785.

Data sources CENTRAL, MEDLINE, EMBASE, CINAHL, PsycINFO, ERIC, ASSIA, Social Services Abstracts, metaRegister of Controlled Trials, ICTRP, UKCRN-UK, ClinicalTrials.gov and Autism Data were searched in August 2013. Key authors were contacted for published, unpublished and in-progress data, and reference lists of key articles were hand searched.

Study type included RCTs comparing interventions aimed to teach ToM with treatment as usual, waiting list, placebo contact and interventions with no therapeutic content in people with ASD.

Patients/participants Preschool and primary school children, adolescents and adults with a diagnosis of ASD (ICD-10, or DSM-IV or V).

Intervention ToM interventions, which aim to enable the ability to understand another's thoughts, beliefs and other internal states.

Comparison Treatment as usual, waiting list, placebo and interventions with no therapeutic content, such as group leisure activities.

OUTCOMES

Study characteristics Twenty-two RCTs were identified, with 695 participants and sample sizes ranging from 10 to 61. Most studies focused on pre-school and primary school children, and included more males than females. Interventions were between 30 min and 3.5 h/week and lasted between 2 weeks and 6 months. There was high risk of bias due to the lack of

blinding in almost all studies. Outcomes were variably reported and a wide range of measures were used, making interpretation difficult.

Communication Only two studies used standardised assessments. One study found that the intervention improved vocalisation directed to others, gestures and pointing (median difference of 4 points from baseline), with no improvement in the control group (median difference of 2.5 points from baseline). The other study found that the intervention had no effect on conversational skills.

Social function Six studies used standardised assessments. Three studies (n=92) found that the intervention had no significant effect on social behaviour (standardised mean difference (SMD)=0.23, 95% CI -0.48 to 0.94). Of the remaining three studies, one found that the intervention had a large effect on the responding to joint attention items, but not on other relevant items, such as pointing and giving. Two studies found no significant effect of the ToM interventions overall, but one study found that it improved emotion recognition skills.

Notable secondary outcomes Four studies (n=105) targeting emotion recognition from face photographs found a significant effect immediately following the intervention (SMD=0.75, 95% CI 0.22 to 1.29).

No adverse effects were observed.

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Evid Based Mental Health published online August 27, 2014
doi: 10.1136/eb-2014-101855

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