Evidence-based social skills interventions for children with autism: a meta-analysis

Wang P, Spillane A

CRD summary
This review synthesised the research on interventions to increase social skills for children and adolescents with autism spectrum disorder. Of the interventions investigated, only video modelling demonstrated high effectiveness. Taking into account a number of methodological limitations in the review and the quality of study designs included, the authors’ conclusions should be treated with some caution.

Authors’ objectives
To synthesise the research on interventions to increase social skills for children and adolescents with autism spectrum disorder to evaluate outcomes and to consider whether specific interventions constitute evidence-based practice

Searching
A search of ERIC and PsycINFO between 1997 and 2008 was carried out using keywords described in the report. Six relevant journals were handsearched.

Study selection
Eligible studies needed to include participants diagnosed with autism spectrum disorder up to 21 years of age. Participants were required to be accessing special education services at home or in school settings. Other settings were not eligible. Studies were required to specifically target and measure outcomes related to social skills. Interventions could not be of a pharmacological nature. Unpublished studies and dissertations were not eligible for the review. Studies could be group experimental or quasi-experimental designs or have a single subject design. For group designs, effect sizes needed to be presented or able to be inferred. Single subject designs needed to allow calculation of percentage of non-overlapping data points (PND).

Five categories of interventions were identified: social stories, peer-mediated, video modelling, cognitive-behavioural training and others. A number of social behaviours were targeted and many studies targeted more than one behaviour. Most participants were male and between the ages of six and 12 years old, where reported.

The authors did not state how many reviewers were involved in selection of studies for the review.

Assessment of study quality
Treatment integrity (defined as the extent to which intervention conditions were implemented as intended) was assessed.

It was unclear how many reviewers were involved in the assessment of study quality.

Data extraction
Single-subject studies were coded based on published criteria and data extracted (including PND) by one reviewer. The second reviewer randomly selected 30% of the studies and independently coded and calculated PND. Inter-rater agreement was calculated.

Methods of synthesis
Studies were grouped according to intervention category and a narrative synthesis was conducted. Within each category, the range and mean of PND values was presented. Those with PND values of between 0 and 50 were interpreted as not effective, between 51 and 70 mildly effective, between 71 and 90 moderately effective and between 91 and 100 highly effective interventions.

Results of the review
Thirty-eight studies were included in the review (n=147): 36 single-subject research designs and two group...
experimental studies. Treatment integrity was reported in 14 studies and (where reported) was found to be high.

Social stories (six studies) had PND scores between 46.7% and 100% (mean 67.21%) and were deemed of questionable effectiveness. Peer-mediated interventions (nine studies) had PND scores between 35.09% and 100% (mean 60.69%) and were deemed low to questionable effectiveness. Video modelling (11 studies) had PND scores between 50% and 100% (mean 84.25%), which was considered to be effective. Cognitive-behavioural training (three studies) had one study with a PND of 100%; effect sizes in one study ranged from 0.24 to 0.59 and in the other study ranged from 1.24 to 1.47. Other interventions (single studies) included pivotal research training, theory of mind, scripts and cue cards, picture exchange communication system (PECS) training and tactile prompting device.

Across the categories of interventions, 12 out of 36 studies reported maintenance effects with PND scores from 38% to 100% (mean 78.5%). Nine studies reported generalisation effects of the intervention with PND scores that ranged from 40% to 100% (mean 80.95%). Nine studies reported follow-up data with PND scores that ranged from 60% to 100% (mean 92.15%).

**Authors' conclusions**

Social stories, peer-mediated and video modelling interventions all met evidence-based criteria, but only video-monitoring demonstrated high effectiveness as an intervention strategy.

**CRD commentary**

This review was based on broadly defined inclusion criteria for participants, interventions, outcomes and study designs. Searching was restricted to two databases supplemented by handsearching of journals. Only published material was eligible for inclusion in the review, which opened up the possibility of publication bias. It was unclear whether material in languages other than English was eligible for inclusion; if not, language bias was possible. It was unclear whether more than one reviewer was involved in the selection of studies for the review, which would have helped to avoid bias. It was unclear whether quality assessment of included studies was conducted and whether this addressed aspects other than treatment integrity. Studies appeared to be grouped appropriately, but it was possible that differences between studies within these groupings affected PND calculations. Given these issues and the study designs included, the authors’ conclusions should be treated with some caution.

**Implications of the review for practice and research**

**Practice:** The authors stated that practitioners who implemented video modelling as a method of teaching social skills could be more confident of its effectiveness. Social stories and peer-mediated techniques should be monitored closely for effectiveness. Other strategies needed continuous monitoring of effectiveness.

**Research:** The authors stated that more research was needed to build on the highly effective studies found in the social stories and peer-mediated categories of intervention. More research was needed on cognitive-behavioural training. Future research should determine which intervention is most effective for which students, taking account of zero baseline performance in the skills being targeted. Future studies should aim to meet the criteria for evidence-based practice and should report treatment effects. Studies that targeted children over 12 years of age would be useful. Generalisation of skills across multiple persons and settings needed investigation.

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