Authors' objectives
To review recent research on the effectiveness of behavioural interventions for reducing problem behaviour in young children with autism. This was part of a broader overview of existing reviews. Only the targeted review is summarised in this abstract.

Searching
ERIC, Exceptional Child Education Resources and PsycINFO were searched from 1996 to 2000. The search terms were reported. Current issues of 33 journals listed in the report were handsearched for relevant research. Only studies published between 1996 and 2000 were included in the review.

Study selection
Study designs of evaluations included in the review
The authors state that studies with an experimental design allowing the identification of a causal relationship between intervention and reduction in problem behaviour were eligible for inclusion. The included studies used a single-subject design with non-blind observation.

Specific interventions included in the review
Studies of behavioural interventions were eligible for inclusion. The intervention procedures included were stimulus-based and instruction-based, and had single or multiple components. The components included extinction, reinforcement of appropriate behaviour, punishment and systems change. The interventions were tested in community and specialist settings; their duration ranged from 2 to 30 weeks.

Participants included in the review
Studies of children with autism and problem behaviour, aged less than 97 months old, were eligible for inclusion. The children in the included studies had mild to moderate intellectual disability. The majority were boys.

Outcomes assessed in the review
Studies that looked at reducing problem behaviour were eligible for inclusion. To be included, the studies had to provide 3 data points pre- and post-intervention. The problem behaviours measured in the included studies were tantrums, aggression, stereotypy and self-injury. The outcomes included in the review were the percentage reduction in problem behaviour and maintenance of the effect.

How were decisions on the relevance of primary studies made?
Three authors checked the identified studies for eligibility according to the inclusion criteria. To assess for inter-rater agreement, the 9 studies chosen for inclusion by the first author and 9 randomly-selected rejected studies were given to another author for re-assessment.

Assessment of study quality
The National Academy of Sciences' Criteria for Assessing Intervention Studies was used to assess the validity of the included studies. These criteria concentrate on study design and measurement procedures (e.g. blinding), control for selection bias, and generalisability of findings. Two authors independently applied the validity criteria to the 9 included studies.

Data extraction
The data were extracted using a system based on the following variables: demographics, assessment practices, intervention procedures, research design integrity, and outcome measures. The number of comparisons was extracted.
A comparison was any possible independent assessment of the level of a problem behaviour during a baseline phase, compared with the level during an intervention phase. The mean of the last three data points from the first and last intervention phases was calculated for each child. The difference in means was then divided by the baseline mean and multiplied by 100 to calculate the percentage reduction in problem behaviour. The duration over which post-intervention maintenance was assessed, and the level of maintenance as a percentage of the initial reduction, were also extracted.

Inter-rater agreement was assessed and two variables, 'impact of nonproblem behaviour' and 'life-style change', which had less than 90% agreement were removed from the final analysis.

**Methods of synthesis**

*How were the studies combined?*

The authors provided a narrative summary. They also calculated the mean reduction and standard deviation (SD) in problem behaviour across all the comparisons.

*How were differences between studies investigated?*

The authors did not formally investigate differences between the studies.

**Results of the review**

Nine studies with a total of 24 participants and 37 comparisons were included in the review.

There was an 85% (SD=19) mean reduction of problem behaviour across all comparisons. The reduction was 90% or more in 59% of the comparisons. The percentage reduction in the other 15 comparisons ranged from 21 to 89%. Of the 9 studies, 6 provided post-intervention maintenance data. The mean length of maintenance assessment for these studies was 12 weeks. The level of behavioural reduction remained within 15% of the initial reduction levels in all cases (based on 13 children).

The authors reported 100% agreement on article assignment and 100% agreement on decisions made.

**Authors' conclusions**

The authors concluded that there is optimism that behavioural interventions can result in reductions in problem behaviour of up to 90%.

**CRD commentary**

The inclusion criteria were clearly defined for the population group; less definition was provided for the intervention so as to encompass evidence on all behavioural interventions for autism. This review was restricted to published literature and did not investigate the possibility of publication bias. The authors performed a quality appraisal in that the studies were stratified according to predefined criteria; however, this classification was used no further.

The tables showing the included studies were basically 'tick box, Yes/No'; they did not provide adequate information about the specific interventions or participants. The summary of results was basically the number that showed at least a 90% reduction in problem behaviour. This type of 'synthesis' is not robust, especially as validity and heterogeneity were not taken into account. The authors seem to have ignored those studies that did not show a high percentage reduction. Their conclusion, therefore, does not seem to be based on a rigorous review of the evidence.

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

*Practice:* The authors did not state any implications for practice.

*Research:* The authors stated that additional research is needed before confident conclusions can be drawn about problem behaviour reduction in young children with autism. Studies in this field could benefit from investigating longer periods of time. Pragmatic research design is important as in practice these interventions will be delivered in
schools, at home and in community settings.

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