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This is a brief overview of information about behavioural interventions, taken from the Autism CRC report, Interventions for children on the autism spectrum: A synthesis of research evidence (Autism Interventions Evidence Report).

There are seven other category overviews available designed to help people learn about different interventions and their research evidence.

To understand the information in its full context, we encourage you to access the full report .

Why are behavioural interventions supposed to support children's development?

Behaviourism proposes that children's behaviour, which includes the development of skills, is governed by their interactions with their environment.

Central to this theory is the role of operant conditioning, which refers to the way intentional behaviours are shaped by ones environment, thus increasing or decreasing the likelihood of the same or a similar behaviour occurring again in the future (note 1).

From a behaviourism perspective, complex tasks (eg. a child joining in a group activity at preschool) can be broken down into a set of specific behaviours, and systematically taught and supported through the application of teaching strategies.

These include creating an environment in which the behaviour is likely to occur; cueing the behaviour; prompting, modelling, and shaping the behaviour; and reinforcing attempts toward successful use of the behaviour.

How are these interventions used in clinical practice?

Behavioural interventions for children on the autism spectrum have arisen primarily from Applied Behaviour Analysis (ABA).

ABA is the scientific application of behavioural principles to, first, identify variables that are responsible for behavioural change, and second, to use these variables to improve socially significant behaviours (note 2).

ABA can involve the use of intervention techniques (e.g., modelling, prompting, reinforcement, shaping) and/or the combination of these in an intervention practice (eg. Discrete Trial Training, Early Intensive Behavioural Intervention).

ABA became a widely used intervention for children on the autism spectrum following the 1987 publication of a clinical trial that suggested positive developmental outcomes for children on the autism spectrum who received intensive ABA, compared to a control group (note 3).

Although methodological limitations mean that the findings should be interpreted with caution, the publication of the study was followed by the development of a range of intervention practices that were based on behaviour theory.

Behavioural techniques and practices may be used:

1. in the delivery of ABA intervention (eg. by people trained as Board Certified Behavior Analysts), and
2. as part of other interventions, within and across intervention categories, and delivered by a range of professionals.

To illustrate, behavioural principles have formed part of the evolution of a new category of intervention Naturalistic Development Behavioural Interventions (NDBIs) .

These principles are also foundational to Positive Behaviour Support, which aims to address challenging behaviour through broadening an individual's skills and experiences, enhancing their environments, and improving quality of life (note 4).

While the extent to which these different approaches reflect fundamentally different interventions has been debated (note 5), at a practical level, behavioural principles and practices continue to be relevant to new and evolving interventions.

What are the principles that underpin the use of behavioural interventions?

When behavioural interventions are used in the context of ABA, they reflect seven dimensions (note 6):

- Applied - targeting socially significant behaviours.
- Behavioural - specifically addressing a measurable behaviour.
- Analytic - demonstrating a functional relation between the delivery of an intervention and change in the behaviour.
- Technological - including a clear and replicable explanation of procedures.
- Conceptually systematic - using strategies that are clearly linked to the underlying theory.
- Effective - ensuring that the magnitude of behaviour change is clinically and socially significant.
- Generality - ensuring the change in skills/behaviour generalises across interactions and contexts, and is maintained over time.

Who delivers these interventions?

Children on the autism spectrum often have needs across multiple domains of learning, and physical and mental health.

Accordingly, children and families may benefit from the expertise of a range of clinical practitioners spanning health, education and medical disciplines.

For all intervention categories, it is essential that clinical practitioners have acquired appropriate qualifications, are regulated (eg. by a professional or government body), and deliver interventions that are within their scope of practice.

A detailed explanation is provided in the full report.

What is the evidence for the effect of behavioural interventions on child and family outcomes?

Below is a summary of the evidence for the effect of behavioural interventions on child and family outcomes, taken from systematic reviews published since 2010.

This means that a range of relevant individual studies have been considered, and thus reflects the best available evidence at this point in time.

Listed first are findings from systematic reviews that considered a mixture of behavioural interventions. Following that are findings relating to specific behavioural intervention practices.

- Each cell represents evidence for the intervention category or practice (horizontal rows) on various child and family outcomes (vertical columns).
- The effect of these interventions on a range of child and family outcomes is summarised as positive, null, or mixed.
    - **+** means that all available evidence indicated a positive effect of the intervention on a given child or family outcome.
    - **?** means that there was a mixture of positive and null effects reported for the intervention on a given child or family outcome.
    - **0** means that all available evidence indicated a null effect of the intervention on a given child or family outcome.
- H / M / L indicates the methodological quality of the evidence that contributed to the overall intervention effect for a given child or family outcome. The quality of evidence on which these findings are based is summarised as high, moderate, or low. These quality ratings are relative to those that met the minimum standards to be included in the report. Where there is more than one quality rating, it means more than one systematic review is represented.
    - **H** indicates evidence from a high quality review
    - **M** indicates evidence from a moderate quality review
    - **L** indicates evidence from a low quality review
- Where a cell is empty, it means there was no evidence available from the systematic reviews included in the report.

Please refer to the full report for a detailed explanation of the process used to collect, summarise, and synthesise the evidence presented here.

Summary of evidence tables

Core autism characteristics

Interventions	No. of systemic reviews	Overall autistic characteristics	Social-communication	Restricted and repetitive interests and behaviours	Sensory behaviours
Systematic reviews of assorted behavioural practices*	3	+ M	+ M	+ L	+ L
Discrete Trial Training	1		+ L		
Early intensive behavioural intervention	4		+ M		
Functional Communication training	2		+ L		
Language Training (production)	1				
Language Training (production and understanding)	1				
Picture Exchange Communication System (PECS)	2		+ L		

Related skills and development

Interventions	No. of systemic reviews	Communication	Expressive language	Receptive language	Cognition	Motor	Social-emotional/ challenging behaviour	Play	Adaptive behaviour	Gener outcom
Systematic reviews of assorted behavioural practices*	3	+ M			+ M	+ M	+ M	+ L	+ M	
Discrete Trial Training	1	+ L			+ L		+ L	+ L	+ L	
Early intensive behavioural intervention	4	+ M	+ M	+ M	+ M	+ L	0 M		+ L	
Functional Communication training	2	+ L					+ L	+ L	+ L	? L

Interventions	No. of systemic reviews	Communication	Expressive language	Receptive language	Cognition	Motor	Social-emotional/ challenging behaviour	Play	Adaptive behaviour	Gener outcom
Language Training (production)	1	+ L								
Language Training (production and understanding)	1									? L
Picture Exchange Communication System (PECS)	2		0 L							? L

Education and participation

Interventions	No. of systemic reviews	School/ learning readiness	Academic skills	Quality of life	Community participation
Systematic reviews of assorted behavioural practices*	3	+ L	+ L		
Discrete Trial Training	1	+ L	+ L		
Early intensive behavioural intervention	4	+ LM	+ L		
Functional Communication training	2	+ L			
Language Training (production)	1				
Language Training (production and understanding)	1				
Picture Exchange Communication System (PECS)	2				

Family wellbeing

Interventions	No. of systemic reviews	Caregiver communication and interaction strategies	Caregiver social emotional wellbeing	Caregiver satisfaction	Caregiver financial wellbeing	Child satisfaction
Systematic reviews of assorted behavioural practices*	3					
Discrete Trial Training	1					

Interventions	No. of systemic reviews	Caregiver communication and interaction strategies	Caregiver social emotional wellbeing	Caregiver satisfaction	Caregiver financial wellbeing	Child satisfaction
Early intensive behavioural intervention	4		0 M			
Functional Communication training	2					
Language Training (production)	1					
Language Training (production and understanding)	1					
Picture Exchange Communication System (PECS)	2					

*Combines practices for each category not included in the intervention listing below.

Behavioral Parent Training; Behavioural early intervention programmes; Discrete Trial Training with Motor Vocal Imitation Assessment; Early Intensive Behavioral Treatment; Functional Behavior Skills Training Home-based behavioral treatment; Home-based Early Intensive Behavioral Intervention (EIBI); Intensive ABA; Intensive Early Intervention; Low Intensity Behavioral Treatment; Managing Repetitive Behaviors; Peer-Mediated Intervention; Picture Exchange Communication System (PECS); Rapid Motor Imitation Antecedent; Regular Intensive Learning for Young Children with Autism; Schedules, Tools, and Activities for Transitions (STAT); Social Skills Group; Stepping Stones Triple P Positive Parenting Program; Strategies for Teaching Based on Autism Research (STAR).

View the full evidence table for all intervention categories

Full reference of report

Whitehouse, A., Varcin, K., Waddington, H., Sulek, R., Bent, C., Ashburner, J., Eapen, V., Goodall, E., Hudry, K., Roberts, J., Silove, N., Trembath, D. Interventions for children on the autism spectrum: A synthesis of research evidence. Autism CRC, Brisbane, 2020

Intervention category overviews

- Behavioural interventions
- Developmental interventions
- Naturalistic developmental behavioural interventions
- Sensory-based interventions
- Technology-based interventions
- Animal-assisted interventions
- Cognitive behaviour therapy

- Treatment and Education of Autistic and related Communication-handicapped Children (TEACCH) interventions

Notes

1. Skinner, B. F. (1953). *Science and Human Behaviour*. New York: Macmillan.
2. Cooper, J. O., Heron, T. E., & Heward, W. L. (2020). *Applied Behaviour Analysis* (Vol. 3rd Ed). United Kingdom: Pearson.
3. Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology*, 55(1), 3-9. doi:10.1037//0022-006x.55.1.3
4. Carr, E. G., Dunlop, G., Horner, R. H., Koegel, R. L., Turnbull, A. P., Sailor, W., . . . Foz, L. (2002). Positive behaviour support: evolution of an applied science. *Journal of Positive Behavior Interventions*, 4(1), 4-20.
5. Johnston, J. M., Foxx, R. M., Jacobson, J. W., Green, G., & Mulick, J. A. (2006). Positive behaviour support and applied behavior analysis. *The Behavior Analyst*, 29(1), 51-74. doi:10.1007/BF03392117
6. Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of Applied Behavior Analysis. *Journal of Applied Behavior Analysis*, 1(1), 91-97. doi:10.1901/jaba.1968.1-91