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This is a brief overview of information about developmental 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 developmental interventions supposed to support children's development?

Developmental interventions draw primarily on cognitive (notes 1 and 2) or social (note 3) constructivist theories, which suggest that children construct knowledge and skills primarily through personal discovery.

From a constructivist perspective, children acquire layers of knowledge, skills, and experience through their interactions with people and in everyday settings, and that this gradually improves their capacity to engage in increasingly complex tasks.

Constructivist theories focus on children’s acquisition of knowledge and skills over time and as part of typical stages of development (note 2).

This has led to the term ‘developmental’ being commonly used in the autism research literature to refer to interventions that have these elements at their core.

How are these interventions used in clinical practice?

Developmental interventions focus on supporting children’s learning through interactions with other people, particularly caregivers.

These interventions target skills that are either delayed or not apparent in children on the autism spectrum, but that are assumed to be critical to learning. These skills include initiating interactions and sharing interest (eg. use

of gestures, joint attention), observing and then copying others' behaviour (eg. imitation), and taking turns in play sequences as well as early conversations (note 4).

Developmental interventions are often described as being 'child-led', because they use children's intrinsic motivation to communicate, and 'naturalistic', because of the contexts in which they are delivered. Common techniques include modelling words and actions, imitating the child's actions to give them meaning, and using personal strategies (eg. pausing, expectant looking) and environmental strategies (eg. placing toys out of reach) to motivate communication.

Caregivers are taught to use these techniques as part of everyday routines to increase the frequency, duration, synchrony, and reciprocity of interactions with their children (note 4).

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

There is no set of universal principles that has been explicitly articulated for developmental interventions.

However, specific intervention practices, such as Paediatric Autism Communication Therapy (note 5), provide examples of principles that are often reflected in other developmental interventions.

These principles include:

- The intervention is designed with a developmental orientation, such that intervention goals are organised in relation to a hierarchy of developmental learning stages.
- Intervention is delivered with a focus on naturalistic interactions involving caregivers and children.
- The intervention is caregiver-directed, meaning that caregivers are partners in the intervention delivery, and are supported to build their own skills, independence and confidence in supporting their child(ren)'s learning.

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 developmental interventions on child and family outcomes?

Below is a summary of the evidence for the effect of developmental 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 developmental interventions. Following that are findings relating to specific developmental intervention practices.

Summary of evidence tables

- 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.

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 developmental interventions	2		+ M		
Developmental relationship- based treatment	1				
DIR/Floortime	2		+ M		

Interventions	No. of systemic reviews	Overall autistic characteristics	Social-communication	Restricted and repetitive interests and behaviours	Sensory behaviours
Naturalistic teaching strategies	2		+ LL		

Related skills and development

Interventions	No. of systemic reviews	Communication	Expressive language	Receptive language	Cognition	Motor	Social-emotional/ challenging behaviour	Play	Adaptive behaviour	General outcomes
Systematic reviews of assorted developmental interventions	2	0 M								
Developmental relationship-based treatment	1									? L
DIR/Floortime	2	0 M				0 M				0 L
Naturalistic teaching strategies	2	0 LL			+ L	+ L	+ L	+ L	+ L	

Education and participation

Interventions	No. of systemic reviews	School/ learning readiness	Academic skills	Quality of life	Community participation
Systematic reviews of assorted developmental interventions	2				
Developmental relationship-based treatment	1				
DIR/Floortime	2				
Naturalistic teaching strategies	2	+ LL	+ L		

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 developmental interventions	2	+ H
Developmental relationship- based treatment	1	
DIR/Floortime	2	
Naturalistic teaching strategies	2	

Practices included in systematic reviews of assorted developmental interventions

Child Talk; Developmental Individual-Difference Relationship-Based (DIR)/Floortime; Hanen More Than Words; Joint Attention Mediated Learning (JAML); Milton and Ethel Harris Research Initiative Treatment (MEHRIT)-DIR based; Parent-Mediated Communication Focused Treatment; Parent-mediated intervention for autism spectrum disorder in South Asia (PASS); Pediatric Autism and Communication Therapy (PACT); Play and Language for Autistic Youngsters (PLAY) project - DIR based; Scottish Early Intervention Program; Social Communication Intervention for Children with Autism and Pervasive Developmental Disorder; Social communication, emotion regulation, transactional support (SCERTS); Video-feedback Intervention to Promote Positive Parenting adapted to autism (VIPP-AUTI).

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. Piaget, J. (1951). Play, dreams, and imitation in childhood. London: Routledge and Kegan Paul.
2. Piaget, J., & Inhelder, B. (1969). *The psychology of the child*. London: Routledge & Kegan Paul.
3. Vygotsky, L. S. (1978). *Mind in society: the development of higher psychological processes*. Cambridge, MA: Harvard University Press.

4. Sandbank, M., Bottema-Beutel, K., Crowley, S., Cassidy, M., Dunham, K., Feldman, J. I., . . . Woynaroski, T. G. (2020a). Project AIM: Autism intervention meta-analysis for studies of young children. *Psychological Bulletin, 146*(1), 1-29.
5. Aldred C, Green J, Adams C. A new social communication intervention for children with autism: pilot randomised controlled treatment study suggesting effectiveness. *Journal of Child Psychology and Psychiatry*. 2004;45(8):1420-1430. doi:10.1111/j.1469-7610.2004.00848.x