Foundations
What Works Centre for Children & Families

Last reviewed: January 2019

Intervention website: https://www.avuk.org/

GUIDEBOOK INTERVENTION INFORMATION SHEET

Auditory Verbal Therapy

Please note that in the 'Intervention summary' table below, 'child age', 'level of need', and 'race and ethnicities' information is **as evaluated in studies**. Information in other fields describes the intervention as **offered/supported by the intervention provider**.

Intervention summary	
Description	Auditory Verbal Therapy (AVT) is a highly specialist early parenting intervention to support deaf children aged 0 to 5 years. The intervention works with parents to help their child make best use of hearing technology and support listening and spoken language development through play-based therapy sessions. It is delivered at Auditory Verbal UK (AVUK) centres, by Listening and Spoken Language Specialist certified Auditory Verbal practitioners who have undergone additional specialist training after qualification as speech and language therapists, teachers of the deaf, or audiologists.
Evidence rating	2+
Cost rating	4
Child outcomes	• Enhancing school achievement and employment - Improved maths ability - Improved speech, language and communication - Higher academic achievement.
Child age (population characteristic)	0 to 5 years
Level of need (population characteristic)	Targeted Indicated

Intervention summary	
Race and ethnicities (population characteristic)	Not reported
Type (model characteristic)	Individual
Setting (model characteristic)	Out-patient health setting
Workforce (model characteristic)	Listening and Spoken Language Specialist (LSLS) certified Auditory Verbal practitioner
UK available?	Yes
UK tested?	Yes

Model description

Auditory Verbal Therapy (AVT) is a highly specialist early parenting intervention, which equips parents and carers with the skills to maximise their deaf child's listening and spoken language. The intervention is designed for children with hearing loss between the ages of 0 and 5 years and aims to improve children's listening and language skills, and academic outcomes.

AVT focuses on the development of spoken language through listening. Through play-based therapy sessions, parents/carers are coached and empowered with the tools to develop their child's listening, talking, thinking and social skills from an early age. Parents are coached by a certified Auditory Verbal practitioner in play-based sessions with their child in how to develop their child's listening so that listening becomes part of their personality.

Play activities are set at a cognitively appropriate level and may include activities such as instructional activities (e.g. making cupcakes) to develop auditory comprehension and auditory memory skills, role-play activities and storytelling (e.g. with dolls or toy people) to develop expressive language, social skills, and theory of mind. Parents are coached in how to frame these activities to allow their child to develop and improve their listening, thinking and spoken language skills. The intervention enables parents/carers to help their child to make the best possible use of their hearing technology (usually hearing aids or auditory implants).

AVT is delivered in between 40 to 60 fortnightly hour-long sessions, over a period of two to three years, by one practitioner to parents/caregivers. It is delivered by Listening and Spoken Language Specialist certified Auditory Verbal practitioners who have undergone additional specialist training after qualification as speech and language therapists, teachers of the deaf, or audiologists. In addition, a family support officer provides two parent consultation sessions per year, and additional support if required/requested, for each family on the intervention. It is delivered at Auditory Verbal UK (AVUK) centres.

Target population

Age of child	0 to 5 years
Target population	Children aged 0 to 5 years who have hearing loss

Please note that the information in this section on target population is as **offered/supported by the intervention provider**.

Theory of change

Why		Who	How	What		
Science-based assumption	**Science-based assumption**	**Science-based assumption**	**Intervention**	**Short-term outcomes**	**Medium-term outcomes**	**Long-term outcomes**
Deaf children can be deprived of auditory brain stimulation, and they can experience delays in spoken language.	Optimally functioning hearing technology and Auditory Verbal techniques protect deaf children from deprivation of auditory brain stimulation, underdeveloped listening behaviours and delays in spoken language.	Children aged 0 to 5 years who have hearing loss.	The intervention coaches parents in Auditory Verbal techniques, such as checking and troubleshooting hearing technology, promoting listening behaviours with comprehension, and expression of spoken language, together with developing social skills and theory of mind.	Deaf children are better able to develop listening and spoken language skills.	Existing language delays can be reduced, and deaf children can develop age-appropriate language.	Children are better able to access a mainstream school curriculum, fulfil their educational potential, make and keep friends at school, and access equal opportunities in further education and employment.

Implementation requirements

Who is eligible?	Children aged between 0 and 5 years with hearing loss.
How is it delivered?	AVT is delivered in between 40 to 60 fortnightly hour-long sessions, over a period of two to three years, by one practitioner to parents/caregivers.
What happens during the intervention?	Parents are coached by a certified Auditory Verbal practitioner in play-based sessions with their child in how to develop their child's listening, incorporating the child's hearing technology if appropriate. Play activities are set at a cognitively appropriate level and may include activities such as instructional activities (e.g. making cupcakes) to develop auditory comprehension and auditory memory skills, role-play activities and storytelling (e.g. with dolls or toy people) to develop expressive language, social skills, and theory of mind. Parents are coached in how to frame these activities to allow their child to develop and improve their listening, thinking, and spoken language skills.
Who can deliver it?	The practitioner who delivers this intervention is a Listening and Spoken Language Specialist (LSLS) certified Auditory Verbal practitioner. In addition, a family support officer provides two parent consultation sessions per year, and additional support if required/requested, for each family on the intervention.
What are the training requirements?	The Listening and Spoken Language Specialists have 124 hours of intervention training. Booster training of practitioners is recommended.
How are practitioners supervised?	It is recommended that practitioners are supervised by one host-agency supervisor, who have received 124 hours of intervention training.
What are the systems for maintaining fidelity?	Intervention fidelity is maintained through the following processes: • Training manual • Other online material • Face-to-face training.
Is there a licensing requirement?	No

Implementation requirements (Cont.)

***Contact details**	Contact person: Rachel French Organisation: Auditory Verbal UK Email address: info@avuk.org Website: https://www.avuk.org/ *Please note that this information may not be up to date. In this case, please visit the listed intervention website for up to date contact details.

Evidence summary

Auditory Verbal's most rigorous evidence comes from two QEDs and a one-group pre–post study which were conducted in the UK, Israel, and Australia.

These studies identified statistically significant positive impact on a number of child outcomes, including improved maths grades, increased likelihood of high school graduation, and improved language and communication abilities.

While the reviewed studies are limited by methodological issues pertaining to the lack of a comparison group which has been sufficiently demonstrated to be equivalent to the treatment group, the intervention received a Level 2+ on the basis of the weight and context of evidence – in particular, the fact that a large number of studies have assessed the impact of Auditory Verbal and have consistently found large effects across different contexts/countries.

This intervention has preliminary evidence of improving a child outcome, but we cannot be confident that the intervention caused the improvement.

Search and review

	Number of studies
Identified in search	20
Studies reviewed	2
Meeting the L2 threshold	2
Meeting the L3 threshold	0
Contributing to the L4 threshold	0

	Number of studies
Ineligible	18

Individual study summary: Study 1

Study 1	
Study design	QED
Country	Israel
Sample characteristics	52 young people with hearing loss, aged between 18 and 29
Race, ethnicities, and nationalities	Not reported
Population risk factors	Young people with hearing loss, the majority with profound hearing loss and using a cochlear implant
Timing	Post-intervention
Child outcomes	• Improved maths grades • Improved Hebrew grades • Improved literature grades • Improved English grades • Increased use of 'verbal talk' • Increased use of oral communication • Reduced use of sign language • Increased use of total communication • Increased rate of entitlement to a matriculation certificate.
Other outcomes	None
Study Rating	2
Citation	Goldblat, E. & Pinto, O. Y. (2017) Academic outcomes of adolescents and young adults with hearing loss who received auditory-verbal therapy. *Deafness & Education International*. 19 (3–4), 126–133.

Brief summary

Population characteristics

This study involved 52 participants living in Israel, aged between 18 and 29 years old (born up to the year 1998, mean age 22 years old) who experienced hearing loss. 50% were boys. 26 participants (the intervention group) had received the AVT intervention as a child. 73% of participants were reported by their parent to have profound hearing loss, and 67% used a cochlear implant.

Study design

Details of 57 AVT graduates aged 18 to 29 were obtained from a non-profit organisation called AV Israel. Each member of the AVT group was matched with two potential 'twins' with hearing loss based on year of birth, gender, residence, and income of parents. The research team then called participants for consent. For the AVT group, only 44 answered the telephone survey. For the control group, only 87 out of 144 potential participants answered the telephone survey. This resulted in a sample of 40 AVT participants and 40 matched control group participants.

The study reports on 52 participants (26 from the intervention group and 26 from the control group) who were born up to the year 1998. These participants were at least 18 years old.

Participants were equally divided between groups on the basis of gender. More parents of participants in the AVT group had academic degrees compared to the control group. An equal number of participants from each group had additional special needs.

Measurement

Measurement at a single timepoint, post-intervention (between 12 and 29 years after the intervention group received AVT). All measures were parent reported through telephone interview.

- Mode of child's communication (verbal talk, oral communication, sign language, total communication)
- Grade in Maths, Hebrew, English, and Literature
- Matriculation.

Additional administrative data of participants was derived from national records of the National Insurance Institute of Israel (NII).

Study retention

Information on retention not relevant as study conducted assessment at a single timepoint.

Results

Data-analytic strategy

Pearson correlations were performed in order to find relations between AVT and study variables. The data for all participants whose parents completed the telephone survey and who were born up to 1998 (i.e. were over 18 years old) was included in the study. In order to compare dependent and independent variables between the control and intervention groups, a t-test was performed. In order to evaluate the contribution of study variables to academic attainment, order logistic regressions were performed.

Findings

This study identified statistically significant positive impact on a number of child outcomes. T-tests showed a positive intervention effect on all outcomes measured: verbal talk, oral communication, sign language, total communication, grades in Maths, Hebrew, English, and Literature, and matriculation. However, for academic attainment outcomes, marginal effects of the dependent variables were calculated and results showed that the intervention had a positive effect on Hebrew and Literature attainment, but not Maths or English attainment. This information was not calculated for communication outcomes or matriculation. The outcomes table presents the marginal intervention effects where known, and the results of t-tests where this information is missing.

Limitations

The conclusions that can be drawn from this study are limited by methodological issues pertaining to the lack of a comparison group which has been sufficiently demonstrated to be equivalent to the treatment group, hence why a higher rating is not achieved.

Study 1: Outcomes table

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Child outcomes					
Attainment in Maths	Maths grade at end of schooling (parent report)	7.5% calculated marginal effect	Yes	52	Post-intervention (aged 18 to 29 years)

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Attainment in Hebrew	Hebrew grade at end of schooling (parent report)	22.2% calculated marginal effect	Yes	52	Post-intervention (aged 18 to 29 years)
Attainment in Literature	Literature grade at end of schooling (parent report)	18.4% calculated marginal effect	Yes	52	Post-intervention (aged 18 to 29 years)
Attainment in English	English grade at end of schooling (parent report)	10.8% calculated marginal effect	No	52	Post-intervention (aged 18 to 29 years)
Verbal talk	Parent report of child's communication	Not reported	Yes	52	Post-intervention (aged 18 to 29 years)
Oral communication	Parent report of child's communication	Not reported	Yes	52	Post-intervention (aged 18 to 29 years)
Sign language	Parent report of child's communication	Not reported	Yes	52	Post-intervention (aged 18 to 29 years)
Total communication	Parent report of child's communication	Not reported	Yes	52	Post-intervention (aged 18 to 29 years)
Matriculation	Parent report of child matriculating	Not reported	Yes	52	Post-intervention (aged 18 to 29 years)

Individual study summary: Study 2

Study 2	
Study design	Pre–post
Country	UK
Sample characteristics	37 children with permanent hearing impairment
Race, ethnicities, and nationalities	Not reported
Population risk factors	All the subjects had permanent bilateral hearing loss and used hearing technology (hearing aids and/or cochlear implant system). 22 children (60%) had profound hearing loss, 10 (27%) had severe hearing loss, and 5 (13%) had moderate hearing loss in the better hearing ear. 12 children (32%) had difficulties in addition to hearing loss. 5 of the children were born prematurely and had developmental delay, 2 had long-term sensory integration difficulties (1 of whom also had a language disorder), 1 had motor difficulties and partial vocal fold paralysis, and 7 of the 12 children were diagnosed with sensory integration difficulty.
Timing	Baseline and then at six-month intervals, including after intervention completion
Child outcomes	Increased rate of language development (expressive and receptive language) (researcher administered test)
Other outcomes	None
Study Rating	2
Citation	Hogan, S., Stokes, J., White, C., Tyszkiewicz, E. & Woolgar, A. (2008) An evaluation of auditory verbal therapy using the rate of early language development as an outcome measure. *Deafness & Education International*. 10 (3), 143–167.

Brief summary

Population characteristics

This study involved 37 children living within the jurisdiction of 24 different local authorities in the UK All children were aged between 5 to 56 months (average age of 23 months). The onset of hearing impairment was pre- or peri-natal for 32 children and 5 children acquired hearing loss as a result of meningitis. 22 children (60%) had profound hearing loss, 10 (27%) had severe hearing loss and 5 (13%) had moderate hearing loss in the better hearing ear. All of the children with moderate loss and all except one of the children with severe hearing loss used hearing aids only. One child with a severe loss and 17 children with profound losses started the AVT intervention using hearing aids and then transferred to using a unilateral cochlear implant. Five children with profound losses started the AVT intervention with an existing unilateral cochlear implant. Children's gender and ethnicity is not reported. Children received the intervention for between one and five years.

Study design

All participants were assessed at baseline, prior to entry to the AVT intervention, and then assessed again at six-month intervals until they finished the intervention.

Measurement

Assessment took place at baseline and then at six-month intervals, including after the child finished the intervention. Children were tested between two and seven times (majority three or four times).

- **Research-led** measures included the Pre-school Language Scale — 3 (UK) (PLS-3 UK).

Study retention

Study retention is not reported. Each child is included in the analysis at all points for which data is available.

Results

Data-analytic strategy

The study utilised Strong et al.'s (1994) model to calculate an initial rate of language development (RLD) at baseline, expected language age at each test interval in the absence of intervention, and a intervention rate of language development (growth in language during the intervention interval).

Each child's baseline rate of language development was compared to his intervention rate of language growth to establish whether there was an increase in the rate of language development in the course of at least 12 months' AV intervention. Rates were also compared to the rate of typical language growth in hearing children where 12 months' growth in age equivalent score is expected over 12 months' time, yielding a rate of 1.

The distribution of values for pre-intervention and intervention language growth were investigated using Kolmogorov–Smirnov tests, and where appropriate, Student's paired T-tests were used for further analysis.

Findings

A Kolmogorov–Smirnov comparison revealed that following intervention, the mean rate of language growth exceeded that which would be averagely expected from children without hearing impairment.

Limitations

The conclusions that can be drawn from this study are limited by methodological issues pertaining to a lack of a comparison group.

Study 2: Outcomes table

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Child outcomes					
Rate of language development (expressive and receptive language)	Pre-school Language Scale — 3 (PLS3) – researcher administered test	D = 0.68	Yes	37	Change across all timepoints

Other studies

The following studies were identified for this intervention but did not count towards the intervention's overall evidence rating. An intervention receives the same rating as its most robust study or studies.

Auditory Verbal UK (2016). *Investing in a sound future for deaf children: A cost benefit analysis of auditory verbal therapy at Auditory verbal.*

Constantinescu, G., Phillips, R. L., Davis, A., Dornan, D. & Hogan, A. (2015) Exploring the impact of spoken language on social inclusion for children with hearing loss in listening and spoken language early intervention. *The Volta Review*. 115 (2), 153–181.

Constantinescu, G., Waite, M., Dornan, D., Rushbrooke, E., Brown, J., Close, L. & McGovern, J. (2007). Outcomes of an Auditory-Verbal Therapy programme for young children with hearing loss. *The Volta Review*. 107 (1).

Constantinescu-Sharpe, G., Phillips, R. L., Davis, A., Dornan, D. & Hogan, A. (2017) Social inclusion for children with hearing loss in listening and spoken Language early intervention: An exploratory study. *BMC Pediatrics*. 17 (1), 74.

Dettman, S. J., Dowell, R. C., Choo, D., Arnott, W., Abrahams, Y., Davis, A., … & Briggs, R. J. (2016) Long-term communication outcomes for children receiving cochlear implants younger than 12 months: A multicenter study. *Otology & Neurotology*. 37 (2), e82–e95.

Dettman, S., Wall, E., Constantinescu, G. & Dowell, R. (2013) Communication outcomes for groups of children using cochlear implants enrolled in auditory-verbal, aural-oral, and bilingual-bicultural early intervention programs. *Otology & Neurotology*. 34 (3), b451–459.

Dornan, D., Hickson, L., Murdoch, B. & Houston, T. (2009) Longitudinal study of speech perception, speech, and language for children with hearing loss in an auditory-verbal therapy program. *The Volta Review*. 109 (2–3), 61–85.

Easterbrooks, S. R., O'Rourke, C. M. & Todd, N. W. (2000) Child and family factors associated with deaf children's success in auditory verbal therapy. *American Journal of Otology*. 21 (3), 341–4.

First Voice. (2015). *Sound outcomes: First Voice speech and language data*.

Fulcher, A., Purcell, A. A., Baker, E. & Munro, N. (2012) Listen up: Children with early identified hearing loss achieve age-appropriate speech/language outcomes by 3 years-of-age. *International Journal of Pediatric Otorhinolaryngology*. 76, 1785–1794.

Hitchins, A. R. & Hogan, S. C. (2018) Outcomes of early intervention for deaf children with additional needs following an Auditory Verbal approach to communication. *International Journal of Pediatric Otorhinolaryngology*. 115, 125–132.

Hogan, S. (2016). *The Auditory Verbal Approach in the UK: A 10 year audit of outcomes for pre-school children in the UK*. British Society of Audiology Annual Conference.

Hogan, S., Stokes, J. & Weller, I. (2010) Language outcomes for children of low-income families enrolled in Auditory Verbal Therapy. *Deafness & Education International*. 12 (4) 204–216.

Kaipa, R. & Danser, M, L. (2016) Efficacy of auditory-verbal therapy in children with hearing impairment: A systematic review from 1993 to 2015. *International Journal of Pediatric Otorhinolaryngology*. 86, 124–134.

Percy-Smith, L., Hallstrøm, M., Josvassen, J. L., Mikkelsen, J. H., Nissen, L., Dieleman, E. & Cayé-Thomasen, P. (2018) Differences and similarities in early vocabulary development between children with hearing aids and children with cochlear implant enrolled in 3-year auditory verbal intervention. *International Journal of Pediatric Otorhinolaryngology*. 108, 67–72.

Percy-Smith, L., Tønning, T. L., Josvassen, J. L., Mikkelsen, J. H., Nissen, L., Dieleman, E., & Cayé-Thomasen, P. (2017). Auditory verbal habilitation is associated with improved outcome for children with cochlear implant. *Cochlear Implants International*. 19 (1), 38–45.

Percy-Smith, L., Tønning, T. L., Josvassen, J. L., Mikkelsen, J. H., Nissen, L., Dieleman, E., … & Cayé-Thomasen, P. (2018). Auditory verbal habilitation is associated with improved outcome for children with cochlear implant. *Cochlear Implants International*. 19 (1), 38–45.

Rhoades, E. & Chisholm, T. (2000) Global language progress with an Auditory-Verbal approach for children who are deaf or hard of hearing. *The Volta Review*. 102, 5–24.

–

Note on provider involvement: This provider has agreed to Foundations' terms of reference (or the Early Intervention Foundation's terms of reference), and the assessment has been conducted and published with the full cooperation of the intervention provider.