Attention Autism™ training for occupational therapists: a pilot study

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Abstract

Purpose – At present, there is no reference to Attention Autism (AA) as a framework and therapeutic tool with autistic children in occupational therapy (OT) literature. By way of introducing AA as a potential intervention to the OT community, this study aims to investigate the extent to which participation in a two-day AA training could contribute to increasing confidence and inspire changes in practice for Irish occupational therapists (OTs) supporting autistic children.

Design/methodology/approach – A pilot study design with mixed qualitative and quantitative methods was used to evaluate the impact of a two-day AA training on six OTs. The OTs support autistic children throughout Ireland across public, private and voluntary sectors. They completed brief, non-standardised questionnaires 2 weeks before the training (Time 1) and again 12 weeks post (Time 2) training session. At Time 2, additional exploratory questions were answered by OTs regarding their use of AA in practice.

Findings – This explorative study's quantitative findings presented percentage change increases within three areas of confidence for all OTs. These include establishing attention, motivating and developing functional skill goals with autistic children. One of the participants did not score any change in confidence in a fourth area, building rapport, however, the five other participants scored percentage change increases. Qualitative data provided by participants showed that they were implementing AA in practice since attending the training. Five of the participants reported positive experiences of using AA and one participant reported the programme was not suitable for her caseload because of their level of understanding and need.

Research limitations/implications – This was a small, exploratory, practice-based study. As this is the first study exploring this area of practice for OTs, to the best of the authors' knowledge, there were no standardised methods of assessment available, therefore a self-designed survey was used by the author which had a limited number of open-ended questions and four Likert scale questions. This study was also limited in that there was one main researcher who also delivered the two-day AA training. The sample data set was small which resulted in the limitation of the choice of methods used to analyse the quantitative data. Percentage changes were used as the only available and reliable method for a small data set.

Originality/value – Findings of this study, despite their preliminary nature, indicate that AA training may be a useful professional development consideration for OTs who provide a service for autistic children. Further AA research in OT is required including larger and more rigorous studies. An alternative training option of The Curiosity Programme may be considered for OTs supporting children who may not yet be ready to participate in AA.

Keywords Occupational therapists, Attention autism, Autism, Children

Paper type Research paper

Introduction

Attention Autism (AA) is a programme developed by Gina Davies (Speech and Language Therapist). AA is a framework and a set of skills which can equip professionals and parents/caregivers in supporting children to increase engagement with others, attention and communication. Through formal training in AA, parents/caregivers and professionals are taught how to share and develop joint attention during sessions. The sessions are carefully designed to offer an "irresistible invitation to learn" by creating exciting, fascinating activities that are worth attending to and communicating about (Davies, 2013). The activities themselves are designed with the behavioural

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Key findings: AA training for OTs may improve confidence and practice in supporting autistic children.

What the study has added: This is the first study, to the authors' knowledge, to evaluate the impact of AA training on the confidence and practice of OTs supporting autistic children.

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characteristics and developmental level of the children in mind (Morgan, 2011).

The programme progresses through a series of four stages, each of which builds on and expands the attention skills of the children. During the sessions, the environment is structured in a way that allows for adults and children to share attention for hands-on practical activities that provide a fun and engaging experience (Buckingham, 2012). The leading adult ensures attention is on them by showing enthusiasm and excitement whilst creating suspense over what might happen next. At the beginning of an AA session, a whiteboard is used to display the steps of the activities for the children using line drawings, each activity is crossed out as it is completed by the lead adult. All activities used during the intervention stages are visual in nature. AA is intended to be implemented in small groups, the group transition through each of the stages as their skills emerge. An overview of the four stages is presented in Figure 1.

The emphasis placed on visual teaching strategies throughout the programme capitalises on the visual learning style of autistic children (Egan, 2018). The content and strategies are underpinned by strengths and interests which include excellent memory, persistence and admirable concentration and focus for things that appeal. The programme also acknowledges and accommodates core differences associated with autism (social communication, joint attention and engagement) (Chang *et al.*, 2016). To date, AA is used mainly by parents, teachers, teaching assistants and speech and language therapists.

OTs who provide a service to autistic children usually focus on one or more of the following categories of intervention and support: *sensory integration* and sensory-based interventions, relationship-based interactive interventions, developmental skill-based programmes, social cognitive skill training, parent-directed or parent-mediated approaches and intensive behavioural intervention (Case-Smith and Arbesman, 2008). AA can provide a framework for OTs to provide intervention within these categories through joint attention. Joint attention is the sharing of attention between two people with a third external element (Mundy, 2018). Eschenfelder and Gavalas (2017) examined the impact of teaching joint attention strategies on engagement in co-occupation for autistic children and their families. Co-occupation can be defined as any occupation in which two or more people share engagement physically, emotionally and intentionally (Dooley, 2014). Childhood co-occupations require active participation from both the supporting adult and the child. Promoting joint attention and social interaction performance skills can directly benefit occupational engagement for autistic children and is a possible intervention technique for OTs (Eschenfelder and Gavalas, 2017).

The author has used AA as an OT intervention with groups of autistic children to address functional living skills such as dressing, exploration of food, sensory motor development, body awareness and emotional regulation. Özkan *et al.* (2023) explored the benefit of a joint attention-based occupational therapy program with autistic pre-schoolers through a randomised control trial. They established improvements in social communication, reduced behaviours of concern and improved visual perception. They recommended that a viable OT program based on joint attention is needed in supporting autistic children.

The current evidence base for AA as an intervention is in its infancy and at present it is regarded as an evidence supported approach due to its inclusion in evidence-based autism strategies (Robinson *et al.*, 2018). Research which has been completed to date shows promising results of the benefits of AA for autistic children. A study by Ferguson *et al.* (2020) found that participation in AA over a 6-week period led to significant improvement in social communication and attentional behaviours as well as overall duration of communication. A study by McKeown (2015) evaluated the effect of AA on secondary aged students and found gains in social skills. Findings from a study by Watson *et al.* (2017) suggest that trained teaching staff using AA with input from therapists

Figure 1 Stages of an AA session

Stage 1	Stage 2	Stage 3	Stage 4
			
Orientation	Sustained Attention	Interaction	Transition
Visually motivating toys and objects are presented to the group by the lead adult from an opaque container such as a bucket or a box with a lid.	Attention is built for a longer period using a visually interesting activity with carefully organised resources and materials. The activity builds to a visually motivating finale. It does not have to look good at the end. It can be about an interesting process, but it should have a clear end.	An interactive game is modelled by the lead adult and a supporting adult. The activity is as motivating to watch as it is to take part in. Participants take turns as they are selected by the lead adult however not everyone will have a turn.	The lead adult models a task. Participants are then supplied with their own individual packs to replicate the activity at the group table. Once complete, everyone transitions back to the group area to share their end result.

Source: Author's own work

might be less costly but as effective as separate therapy sessions. Moore (2020) found that autistic children displayed significant increases in joint engagement with their teacher over 6 weeks of participating in AA. Buckingham (2012) found positive improvements in joint attention for autistic children in a special school setting after a 6-week period.

Method

This research project was carried out as a pilot study to generate preliminary findings in relation to AA as a potential intervention used by OTs. It is hoped to act as a starting point for the development of more rigorous future studies. All of the participants voluntarily applied to take part in this study and to attend the two-day AA training. The training was funded as a result of the Eva Duggan 2022 award won by the author.

The following criteria were used to ensure OTs with rich information on the topic were included:

- have provided a service as an OT for autistic children for at least three years;
- work individually and in groups with autistic children across either clinic, home or school settings; and
- no previous AA training.

The main objective of the study was to examine the perceived impact of AA training on OTs' confidence for practice in relation to the following:

- establishing attention;
- building rapport;
- motivating children to engage; and
- developing goals for functional skills.

An additional objective was to explore the potential of AA training to inspire changes to participants' practices with autistic children.

The training was carried out by a member of staff from Middletown Centre for Autism who has completed post graduate training in AA and is also the author of this paper. The author is the first OT in Ireland and the UK to become an advanced practitioner in AA. Data collection was completed by an independent post-doctoral researcher of the research team from Middletown Centre for Autism who was not involved in this study. The OTs participating in this study were advised in advance that the responses they submitted in the survey were anonymised before they were reviewed. The survey was designed by the author to capture quantitative and qualitative data included in this study.

As no research was currently available on this topic, this study also aimed to explore the experiences and views of OTs on supporting children with autism. The pre-training survey (Time 1) collected data to inform current practice in providing a service for autistic children. A mix of closed- and open-ended questions in a Likert scale were used to allow the OTs flexibility and to facilitate the collection of exploratory data. Time 1 data collection took place two weeks prior to the two-day AA training through an online survey. After 12 weeks the training Time 2 data collection took place again through an online survey. Both surveys were identical with the exception of the additional exploratory qualitative questions at Time 2 after the OTs had used AA in practice.

Ethics

Full informed written consent from all participating OTs was received before participation in this study. Ethical considerations were taken by Middletown Centre for Autism's research department.

Participants

Ten OTs from throughout Ireland attended the two-day training and six consented to participate in this study. The OTs work across public, private and voluntary sectors. Each OT applied to attend the training which was advertised through the Association of Occupational Therapists Ireland.

All of the OTs had between 3 and 15+ years postgraduate experience. The age range of children and young people they provided a service for was 0–18 years. The main types of groups they offered autistic children and young people prior to attending the trainings were sensory, handwriting, motor and social skill groups. Three of the OTs were clinic based and three were across all settings (home, school and clinic). Four of the OTs had not heard of AA prior to applying for the training.

Data analysis

Quantitative results were derived from the questionnaire which used close-ended questions on a Likert scale at Times 1 and 2. Data was compared and percentage change was used to review how the OTs rated their own confidence in four areas over time. When there is data from two points in time, the change which has occurred during this period can be calculated to give an overall percentage change (Polgar and Thomas, 2013).

To analyse the qualitative data, repeated readings of data took place to search for meanings and patterns. Recurring items of interest were highlighted and coded as they related to one another. The *QSR International's NVivo 11 Qualitative Data Analysis Software* (QSR International, 2015) was then used to collate and organise all relevant data extracts into topic areas. Thematic analysis was used, as it can produce trustworthy and insightful findings (Braun and Clarke, 2013).

Results

The four closed questions relating to confidence in practice which were included in the questionnaire at Time 1 and Time 2 are detailed in Table 1. Percentage change increases were derived from all OTs in all four questions with the exception of one: OT2 on confidence in building rapport with the autistic children they support. This OT rated 65% at both Time 1 and Time 2. Percentage change increases for all other questions ranged from 7.69% to 200%. Overall, the highest percentage increase was in confidence in establishing attention with the autistic children they support (56.25%) and the lowest percentage increase in confidence in building a rapport with the autistic children they support (25.81%).

Qualitative results

Two overarching topic areas were derived from the qualitative data using thematic analysis: "engaging and motivating" (Topic area 1) and "strategies used in intervention" (Topic area 2). Table 2 details OT extracts within each topic area at Time 1 and at Time 2.

Table 1 OT ratings at Time 1 and Time 2 and percentage changes over time

	OT1	OT2	OT3	OT4	OT5	OT6	Average
Please rate your confidence in establishing attention with the autistic children you support							
Time 1	40	35	25	60	60	70	48
Time 2	55	65	65	80	90	100	75
Percentage change	37.5%	85.7%	160%	33.33%	50%	42.8%	56.25%
Please rate your confidence in building a rapport with the autistic children you support							
Time 1	50	65	60	60	70	70	62
Time 2	70	65	75	70	90	100	78
Difference	40%	0%	8.33%	16.66%	28.57%	42.86%	25.81%
Please rate your confidence in motivating the autistic children you support to engage with you							
Time 1	25	50	45	60	70	70	53
Time 2	55	60	60	90	95	100	76
Difference	120%	20%	33.33%	50%	35.71%	42.86%	43.4%
Please rate your confidence in developing functional skill goals with the autistic children you support							
Time 1	20	65	35	50	75	80	54
Time 2	60	70	60	70	90	100	75
Difference	200%	7.69%	71.43%	40%	20%	25%	38.89%

Source: Author's own work

Table 2 Topic areas from qualitative data at Time 1 and Time 2

Topic area 1 "engaging and motivating"	
Time 1	Time 2
"Difficulties with engagement, shared attention, motivation for functional tasks" OT1	"AA is difficult to implement with more complex cases which make up the majority of my caseload" OT1
"Trying to motivate and support regulation in a setting that may be unfamiliar to the child is really hard" OT2	"Looking at engaging and highly motivating toys that hook the child in and using these to build rapport" OT2
"Trying to understand what they are motivated by and the types of tools and activities that they enjoy engaging in" OT5	"Definitely see a huge difference in terms of engaging autistic children since I started AA. For younger children at times trying to gain their attention can be difficult if dysregulated" OT5
"Finding the motivators is a challenge" OT6	"After using AA in practice, it has informed and enhanced my approach to sessions. It is now one of my go-to tools" OT6
Topic area 2 "Strategies used in intervention"	
Time 1	Time 2
"Preferred activities, sensory play, Zones of Regulation" OT2	"I am using visually attractive items and preparing any adults in the room to help support me during AA sessions" OT2
"I use visuals which I find often help transitions from one activity to another and helps hold attention. I also use sensory input, changing tone of voice, dimming the lights in the room" OT3	"Since doing the training, I'm relying more heavily on visual items which is working very well. A lot of my clients aren't ready for AA yet, but I think using this technique in the future would be very beneficial" OT3
"I am DIR floor time trained, so I use this model and their preference for play". OT4	"I use DIR and now I use AA in a school setting with teachers and support staff. I also plan to introduce it with families" OT4
*__Developmental individual differences and relationship-based model (DIR)__	
"Finding what interests and bringing that into sessions" OT5	"I have found AA brilliant in establishing attention. I still use visual and timers but to gain intrinsic motivation. I find AA the best tool I have tried" OT5

Source: Author's own work

**Tables include direct quotes from OTs. A range of terminology is used and reference to the children they are supporting including "client", "difficulties" "caseload", "Intervention" "complex". Throughout this paper the author has endeavoured to consistently use terminology which has been accepted by the autistic community as neurodiversity affirming.*

OTs were asked at Time 1 and at Time 2 about how they engaged and motivated the autistic children they supported.

Descriptions given by OTs at Time 1 referred to challenges experienced within this area as can be seen in Table 2. At Time 2, OTs referenced their use of AA in practice having completed the two-day training. OTs 1 and 3 referred to how their caseload may not yet be ready for AA. All other OTs describe AA specific strategies which they were now using to engage and motivate the autistic children they support. Reference to visually appealing and attractive toys and items were made as well as involvement of supporting adults within the room which are key components of AA. OT 4 referred to her use of DIR floor time at both Time 1 and Time 2, at Time 2 they added AA as an additional strategy in intervention.

At Time 2, OTs were asked additional questions to further explore their use of AA following the training. Two overarching topic areas were derived from the qualitative data using thematic analysis: "Role of AA within Occupational Therapy" (Topic area 3) and "Barriers to using AA as an OT" (Topic area 4). Responses are displayed in topic areas from qualitative data at Time 2.

Topic area 3 "Role of AA within OT":

1 "AA lays the foundation for learning higher level cognitive skills and independence in activities of daily living". OT2
2 "I'm offering a group to previous clients I have worked with that I now know would benefit from AA. I'm going to use AA to work on proprioception activities and fine motor skills". OT3
3 "I would love to continue to use AA. I have been using it to support a young girl's participation in school. She was on a reduced day, AA has allowed her to have a positive participation in a routine for the first time in school, one of the primary occupations of childhood. I think AA is a wonderful approach that can be used as a means to engage a child on any functional goal". OT4
4 "I have a number of children over sensitive to tactile input so have used AA as an opportunity to engage them in messy play with shaving foam, paint etc. I have also introduced dressing skills and let them have a try in stage 3". OT5
5 "We need to establish the child's attention prior to expecting them to learn from us no matter what our profession is. I am using AA to increase stamina for tummy time, to encourage school readiness and teach boundaries and to increase independence in activities of family living and play". OT6

Topic area 4 "Barriers to using AA as an OT":

1 "I have used some of the principles taught to us during the training, but my clients are too complex for AA. Training should cover more ideas for activities. Extensive planning is needed beforehand, having examples of activities could help with this". OT1
2 "Difficult to ensure regular sessions as I'm currently the only Occupational Therapist in the service". OT2
3 "It is an expensive programme to run and requires lots of bits and pieces which can be difficult to maintain with limited storage (I now have an AA wheely suitcase!). I can see it working really well in a school setting with repetition on a daily basis but as an OT in a clinic seeing a child once a week or a fortnight it would limit the effectiveness". OT3
4 "Barriers are at an organisational level- caseload demands, lack of funding to build up resources". OT4

Source: Author's own work

All OTs identified how they now use AA within their practice and referred to specific strategies such as messy play, supporting a student to participate in school, engaging in tummy time, proprioception, fine motor and activities of daily living. Barriers were also recognised and shared such as cost, caseload demands, preparation time and complexity of caseload.

Discussion

This pilot study set out to investigate the extent to which participating in a two-day AA training may contribute to increased confidence and inspire changes in practice for OTs working with autistic children. As this study had a small sample size, the inclusion of quantitative results was intended to add scientific rigour to the study design. Quantitative findings presented percentage increases in confidence in four areas (establishing attention, building rapport, motivating and establishing functional skill goals) for five OTs from the survey completed before (Time 1) and after (Time 2) attending the training. One OT had percentage increases in confidence for three areas and no change in the fourth (building rapport).

Qualitative data corroborated with the quantitative findings. It demonstrated contrasts into how the OTs engaged and motivated the autistic children they support at Time 1 and then again at Time 2. At Time 2, reference was made to their active use of AA and AA specific strategies such as the use of visually attractive items to gain intrinsic motivation. OT 1 had the highest increase in percentage change (200%) between Time 1 and Time 2 in the area of confidence in developing functional skill goals, however, qualitative feedback reported that they found AA "difficult to implement with more complex cases". This demonstrates that increased confidence does not necessarily lead to increased application if use of the new technique/approach is deemed inappropriate within a given context. Confidence in establishing attention had the highest percentage rate increase overall (56.25%). This was also reflected in qualitative data with OTs describing their use of toys and resources within the AA programme and succeeding in establishing attention and engaging the children they supported.

Further insights into using AA as an OT was gleaned at Time 2 with OTs sharing what specific strategies they were now using through AA. OT 5 described working on dressing skills at Stage 3 with turn taking for dress up clothing which echoes findings from Eschenfelder and Gavalas (2017) that OTs can use joint attention during intervention to benefit occupational engagement. OTs 4 and 6 explained how they used AA to support joint attention before focusing on skills required to transition to school successfully. OT 4 shared account of how she used AA to support a child in increasing their time in school each day successfully. OT 6 highlighted that establishing attention is essential before working on a functional goal, and they used it to focus on school readiness and participation in activities of family living. These reports reflect proposals by Özkan *et al.* (2023) for a joint attention-based programme delivered by OTs for preschoolers.

OTs also shared identified barriers to using AA, these may not be specific to the OT profession, however, as they relate to the service and organisational challenges including caseloads and funding. There was also reference to the planning challenges in delivering AA and a suggestion of activity ideas

being available. AA is a framework which is designed to be individualised to suit the group of children it is being delivered to. A template of activities has not been developed for this reason, as it may limit the creativity and intended purpose of why it was designed in this way.

OT3 acknowledged that as an OT seeing a child once per week, the effectiveness of AA may be limited in contrast to being delivered daily in school. This highlights a solution of AA being a transdisciplinary approach in which therapists support educational staff with content for AA which address specific therapy goals. This has a dual benefit, as therapy is incorporated on a regular basis through AA and also may also have cost-saving implications for services. This reflects findings from Watson *et al.* (2017) which recommended the practice of teaching staff delivering AA with input from therapists.

At Time 2, all OTs referenced their continued use of AA, except for OT 1 who stated that AA was not suitable for her group as their needs were diverse and developmentally not at the stage of the activities typically used in an AA session. The Attention Autism Centre also offer a training programme entitled *The Curiosity Programme* (Figure 2) which may meet this need. This programme is designed to support children who may require the following support:

- benefit from 1:1 *provision* before starting the main AA 4-stage programme;
- are too young to work in a group, e.g. younger than two years old;
- have additional learning differences and flourish in the earliest stages of attention development work; and
- do not yet have tolerances for group working.

Consideration could be given to advertising *The Curiosity Programme* alongside the AA programme so that professionals could select which applies to the children they support best.

This study has implications for OT practice, as it has initiated the exploration of AA as a potential intervention for use by OTs. OTs traditionally address functional skills through approaches including sensory integration, sensory motor-based interventions, developmental skill-based programmes and social cognitive programmes (Bagatell and Mason, 2015). They also provide support with recommendations across home and school settings. The approach used in this training may encourage transdisciplinary working and collaboration with other professionals such as speech and language therapists and teachers. Rivera *et al.* (2023) reviewed interventions delivered by OTs in school settings and highlighted the need for OTs' to strengthen their roles in all learning processes and school-related activities and reflect this in research. Gallagher *et al.* (2023) described the need for meaningful collaborative partnerships between therapists with teachers in schools. A shift away from diagnostic-remediation approaches in health-care delivery to those underpinned by inclusive education will support the co-practice of SLTs and OTs in the classroom. AA may be an example of a framework that can guide this classroom-based work.

Limitations

This was a small, exploratory, practice-based study. As this is the first study exploring this area of practice for OTs, there were no standardised methods of assessment available, therefore, a

Figure 2. The curiosity programme

Source: Author's own work

self-designed questionnaire was used by the author which had a limited number of open-ended questions and four Likert scale questions. This study was also limited in that there was one main researcher who also delivered the two-day AA training. Efforts were made to limit researcher bias by availing of support from the research department from Middletown Centre for Autism at data collection stages.

The sample data set was small which resulted in the limitation of the choice of methods used to analyse the quantitative data. Percentage changes were used as the only available and reliable method for a small data set. Having a small sample has implications for the generalisability of the results obtained. Therefore, caution should be exercised if generalising these findings to a larger population. Another factor to consider is that OTs knew they were participating in a study and may have felt that some responses were more desirable. A bias which may have influenced the internal validity of this study is the fact that OTs enrolled on the training of their own volition and were therefore likely to be motivated to learn and acquire new skills in the delivery of AA. It is therefore not possible to say definitively that changes in practice are due solely to OTs having attended the training.

At Time 2, 12 weeks after the training, 5 of the OTs referenced their continued use of AA, further time to determine sustainability for the use of AA by OTs would be a helpful consideration for future studies. A larger sample size would allow generalisability as well as enable a greater choice of robust methods of data analysis. Future research may involve examining the impact of AA training for OTs on the achievement of goals for autistic children and young people. Consideration of the influence that AA training for OTs has on the performance of autistic children in achieving OT specific goals may yield powerful findings. Consideration of the use of a randomised control design in future studies to generate a robust evidence-base for the use of AA in OT practice would be beneficial. Comparisons could be drawn from outcomes of surveys between OTs who had attended the training and those who had not. The control group could then attend the training following the Time 2 data collection.

Conclusion

To conclude, as an exploratory pilot study, the findings indicate that AA training may contribute to increased confidence and inspire changes in practice in OTs supporting autistic children. The results of this study should however be treated with caution given the small sample size, limitations of data analysis and absence of a control group. It is hoped that AA research in OT will be expanded to include larger more rigorous studies in the future. Further research is also warranted to determine sustainability of change in practice and the impact of training OTs in AA has on the achievement of therapy goals for autistic children.

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