CENTRE FOR AUTISM

MIDDLETOWN

Autism and Behaviour

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Supporting the promotion of excellence throughout Northern Ireland and Ireland in the education of children and young people with autism.

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This is the twelfth Research Bulletin produced by Middletown Centre for Autism; the aim of the Centre's Research Bulletins is to provide accessible summaries of relevant peer-reviewed research articles and reviews of literature. The current Research Bulletin contains nine articles related to behaviour in children with autism that cover the period 2010 to 2012.

The Bulletin commences with an interview with Dr. Patricia Daly.

Dr. Patricia Daly is Head of the Department of Special Education at Mary Immaculate College Limerick. For the past six years, she has served as an Advisor (part-time) to the Special Education Support Service (SESS) in the area of behaviour and autism. She was a class teacher in Ireland prior to 1981 when she went to the United States and completed her M.A. and Ph.D. in Applied Behaviour Analysis and Special Education. She taught undergraduates and graduates there for over 20 years. She is a Board Certified Behaviour Analyst and is interested in effective instructional practices for children and young people with learning difficulties as well as positive approaches to behaviour management.

Please note that the views represented in this document do not necessarily reflect the views of Middletown Centre for Autism. Reviewers have, where possible, used the original language of the article, which may differ from UK and Ireland usage and the usage of a range of terminologies for autism.

An Interview With Dr. Patricia Daly

1. At what stage should a teacher or parent consider specialist intervention to support the child or young person with autism to overcome challenges related to behaviour?

Specialist interventions would be in order when a child's behaviour interferes negatively with his/her quality of life, the quality of life of the parents and family, or when the behaviour is such that a child's world is becoming smaller and smaller as fewer people can manage the behaviour. Safety of the child and of those around him/her also would be a consideration. Finally, when a child exhibits behaviours at the intensity that precludes being "available" to learn new skills, some specialist advice might be helpful.

2. Can all forms of problem behaviour displayed by a child with autism in the classroom be successfully addressed with the right intervention?

Long-term, complex problem behaviour will require a complex "package" of interventions, some of which may be medical, some psychological, some environmental, and some behavioural. Success is a relative term also. How the success of an intervention or selection of interacting interventions is determined could mean using different measures. For example, if parents use shaping and backward chaining procedures to teach their son to go grocery shopping weekly with them without any tantrums, the parents might consider this challenging behaviour to be successfully addressed. Their son might still engage in other "minor" behaviours such as demanding they move in exactly the same pattern around the shop each time, and select only items on their pictorial list. Other parents might not consider this acceptable. The success of interventions can be assessed by comparing a child's behaviour to what it was prior to the intervention, or by comparing it to that of typically developing children – these are two very different standards sometimes.

3. In your opinion, how influential are schools and families on children's behaviour?

Both schools and families have hugely significant and even critical influences on children's behaviour. Between them, teachers and families literally spend 24/7 with children when they are young. Families and schools view children through different lenses though, and this is important. Parents teach their children but they don't have to be in "teacher" mode all the time. Schools expect children to learn to manage themselves in peer groups of different sizes most of the school day.

4. What factors influence the frequency and intensity of problem behaviour?

The biggest factors that influence these are the success of the problem behaviour for the child, the lack of availability of fluent, appropriate behaviour repertoires that can achieve the same outcome for the child as the problem behaviour, and sometimes, the resistance the child meets at the start of a behaviour pattern that can escalate. In other words, the more skilled a child is in communicating his needs, in managing himself in social situations, in making choices (quality of life indicator), the less a child needs to engage in problem behaviour to have his needs met, to interact in satisfying ways with others, and to have some control in his life. I think that sometimes we forget how many choices we allow and expect typically developing children to make in a day, at home and at school. With children who have autism we tend to focus more on structure than providing some sense of control over one's own daily events and activities. There needs to be a very conscious balance between structure and choice.

5. How does the regulation of sensory input influence behaviour?

This comes down to knowing the individual child. Some children are more sensitive to some sensory inputs than others. If a sensory input such as loud sounds are felt like pain, and if the child who experiences this is not skilled at communicating, his efforts to manage what feels like a sensory assault are very likely to be considered challenging. We need to continue to refine our knowledge about how to distinguish sensory regulating behaviour from behaviour that serves other functions for children such as getting attention, or avoiding or escaping from some aversive situation. Sometimes parents will know their son does a specific repetitive behaviour to calm himself, and other parents will know that when their son starts a particular

repetitive behaviour it signals the beginning of an escalation and is not sensory.

6. What, in your opinion, is the single most important thing for teachers and parents to understand in relation to a child or young person with autism engaging in problem behaviour?

The problem behaviour serves a function for the child. It is not random or malicious. It "works" for the child whether he could ever tell you this or not. One way to think about this is ask yourself the following: "if I were the child and I could speak, what would I be SAYING to those around me by doing this behaviour?"

7. From your experience, what are the most common triggers for children with autism engaging in problem behaviour in the classroom?

There are many of these. The most common are being asked to do a non-preferred activity, being asked to stop a preferred activity and move to a less preferred one, getting no positive attention, or no attention at all unless the child engages in a challenging behaviour, being asked to do "one more" of anything when they have worked very hard and are tired, having a routine changed without warning or preparation, being told "no". These all relate to lack of predictability which raises stress, lack of choice, impoverished negative environments where small improvements are not noticed and praised in meaningful ways, and having to do more hard work as a consequence for doing some hard work.

8. What do you think are the most important steps for parents/professionals to take in successfully addressing problem behaviour?

Try to step back from an emotional involvement in the behaviour if possible. Keep a log or count instances of the behaviour with a view to figuring out what function the behaviour is accomplishing. Do an environmental check to see if there are things or events in the environment that provoke or maintain the problem behaviour, or things or events missing from the environment that, if present, would support appropriate behaviour and help prevent the problem behaviour from happening. It helps if you can think of the problem behaviour as a puzzle and you must figure out how to solve the puzzle. Getting an extra pair of eyes and ears can help you solve the puzzle, so conferring with other parents or other school personnel can provide you with a sounding board and you don't feel out there by yourself.

9. What, in your opinion, are the most useful environmental supports and positive strategies that a teacher or parent can use to reduce the likelihood of problem behaviour occurring?

Provide clear visual ways for the child to predict the events in his day. Try to always include some choice by the child in some events. Use pictures of routines, sequences that commonly occur, as reminders to do things, and ways to organise the environment. Visual supports are key to success for children with autism. Make some visual supports small, laminated and put them on key rings so the child can carry them with him to remind him, to prompt him, and to serve as personal supports.

Create as many opportunities as you can to praise and support and reward small improvements in behaviour. This requires you to be vigilant and attentive. Set up structured rewards for hard-to-learn skills. Remember that not all interesting, positive events should have to be earned. Providing surprise fun events helps to build positive relationships between the child and key adults in his life. Create clear routines and then make small changes in them. Use peers to support play.

Prepare the child for known changes ahead of time. Be patient and provide a lot of reminders and assurances about these changes.

10. Is there research evidence to support the use of these strategies?

There is extensive research support for using visual supports to structure the environment and daily activities for children and youth with autism. For example, there is a useful article in TEACHING Exceptional Children (2006), Volume 38(6) entitled Learning Through Seeing and

Doing: Visual Supports for Children with Autism. There is also a very dynamic research support basis for behavioural strategies such as using various types and arrangements of positive reinforcement for children with particular learning difficulties. Note the suggested resources below.

11. What advice would you give to a teacher or family who experience severe instances of problem behaviour on a daily basis?

I would advise teachers to get some assistance from anyone in the school who has training or experience applying behavioural principles to managing serious challenging behaviour. Ultimately, teachers who work with children with autism should upskill in the area of Applied Behaviour Analysis and develop those skills in their repertoire. For parents, I would seek support from any local parent organisation, and the school (if the child is attending a school). For both parent and teacher, the key is to discover what function this severe challenging behaviour serves for the child. This process can be fairly straightforward or really require the support of an expert. Some questions might help. Are there any ways you could prevent the severe behaviour from happening? Is the overall environment highly positive for the child? Could someone else in the home or classroom work with the child during the times this behaviour seems to happen? Would this make a difference?

12. What supports are available to teachers to assist them in devising an effective behaviour support plan?

There are in-service/professional development opportunities for teachers to learn how to set up and evaluate behaviour support plans (BSPs). An excellent website is the BIP Desk Reference on www.pent.ca.gov. The key to a good BIP is that an appropriate functional assessment precedes and informs it, and that it addresses both short-term and long-term interventions.

13. What do you consider to have been a major development in our understanding of problem behaviour and autism?

The key shift in our understanding occurred in the mid-1980s in the behavioural research community. Researchers showed clearly that challenging behaviour served a function or multiple functions for children with autism – it was communicative. Tailoring interventions to specific functions immediately led to reduced or eliminated challenging behaviours. Prior to this discovery, interventions typically focussed on ways to stop or prevent the challenging behaviour from happening. Sometimes this worked for a short while but then the behaviour came back. Often, efforts that were not function-based led to increased use of punitive interventions.

The focus on function has led to what I would consider the second major development in our understanding of behaviour, and that is assessment and teaching of learning and language skills from the behavioural perspective. This has become systematised since the late 1990s. Understanding language as "verbal behaviour" changes our perspective on a lot of challenging behaviour. If verbal behaviour can be vocal or non-vocal, then we can respond to the communicative intent of gesture and voice. We can then interpret specific gestures or actions (such as pulling someone towards something) as language, even if the pulling is rough or hurts.

New Directions in Behavioural Treatment of Autism Spectrum Disorders

RESEARCH AIMS

This review explores current trends in the behavioural intervention literature for children with an autism spectrum disorder (ASD) during 2008 and 2009. Noteworthy findings and intervention strategies are highlighted.

RESEARCH METHOD

The researchers examined 68 behavioural intervention studies published between January 2008 and November 2009. These studies were published in peer-reviewed social science journals.

All children in the reviewed studies required an ASD diagnosis that did not co-exist with other developmental disabilities. Additionally, the behavioural interventions detailed in the studies were required to target deficit characteristics of ASD, such as:

- Social impairments
- Communication and language impairments
- Restricted and repetitive behaviours (including anxiety and emotion regulation).

Therefore, studies only focusing on challenging behaviour or academics were not included in the review.

RESEARCH FINDINGS

Social impairment interventions

Most of the behavioural treatment studies reviewed targeted social impairments. Studies focused on core ASD difficulties in interpersonal relationships and used multiple techniques to teach children, and a few included others, such as peers and parents. The majority of reviewed studies saw improvements in nearly all targeted social skills, such as recognition of emotions, conversation skills, theory of mind, teasing, eye contact and peer relationships. However, concerns were raised that the children included in these studies may not have been able to generalise the use of their newly improved social skills across other environments, such as their natural school environment.

Communication and language interventions

Most studies targeting communication and language interventions focused on the development of spoken communication. The majority of these interventions used applied behavioural analysis and initially focused on recruiting the child's attention.

Augmentative communication studies were also reviewed. These studies investigated requests and, again, almost always reported treatment efficacy. However, the researchers highlighted that it was unclear whether improvement resulting from augmentative communication use generalises to environments other than the one in which the augmentative communication is taught.

Interventions targeting restricted and repetitive behaviours as well as emotion

Several studies reviewed explored the treatment of anxiety in populations who have high functioning autism or Asperger's syndrome, through the use of adapted cognitive behaviour therapy (CBT) techniques. These studies found that CBT can significantly reduce anxiety symptoms, particularly as reported by parents.

Emotion regulation was the focus of just one study reviewed, as this is a relatively new area of intervention. This study reported positive changes in the emotions of the children taking part and points towards this being a promising area for future research.

Comprehensive interventions

Comprehensive interventions are those that target all areas of the child's development. The researchers reported an increase in the number of such studies during the review period. These interventions were reported to rely mostly on Applied Behavioural Analysis (ABA) principles and typically consisted of short play sessions, discrete training, and/or functional communication training.

Improvements were noted through comprehensive intervention studies and the authors highlighted a particular study which suggested that very young children with ASD

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New Directions in Behavioural Treatment of Autism Spectrum Disorders

may achieve higher cognitive scores, high adaptive scores, and better autism diagnoses through a comprehensive intervention that includes developmental strategies and family involvement.

A number of limitations of these studies were highlighted. These included the lack of consistency across the studies reviewed in relation to the length of treatment and density of sessions.

IMPLICATIONS FOR PRACTICE

The reviewed studies suggest that ASD-specific deficits can be improved through behavioural intervention. However, the researchers stated that although they had made much progress in intervention research over the review period, they "still have a distance to go". They stated that there is a need for higher quality studies in this area.

Continued research in behavioural interventions is critical to ensure that intervention is effectively matched to the unique characteristics of the individual with ASD.

FULL REFERENCE

Kasari, C. and Lawton, K. (2010). New Directions in Behavioural Treatment of Autism Spectrum Disorders. *Current Opinion in Neurology*, 23, p. 137-143.

Evidence-Based Practices in Interventions for Children and Youth with Autism Spectrum Disorders

Research Aims

Evidence-based practices (EBP) are the basis on which teachers and other service providers are required to design educational programmes for learners with autism. However, it may be difficult to locate and implement these practices without sufficient guidance. A focused intervention practice is supported when the practice has been tested in an experimental research study, with learners who resemble the target students in critical ways, i.e. age, diagnosis, and intellectual and language levels.

The aims of this article were:

1. To provide a definition of EBP used with infants, children and youth with autism.
2. To describe a process for identifying EBPs.
3. To identify the practices which have sufficient empirical support to qualify as evidence-based.
4. To describe how information is used to select practices to address specific goals and objectives.

Research Method

In order to accept evidence about a practice from a particular study, the study had to:

- Be conducted with participants having autism between birth and 22 years
- Have outcomes for participants as dependent measures
- Demonstrate that the practice was followed by gains in targeted teaching skills.

For a specific practice to meet criteria it had to have evidence from:

1. At least two experimental or quasi-experimental group design studies carried out by independent researchers
2. At last five single case design studies from at least three independent investigators
3. A combination of at least one experimental study, one quasi-experimental study and three single case design studies from independent investigators.

Research Findings

From the review of the literature, 24 EBPs were identified and two sets of practices were grouped with a larger descriptor:

- Behavioural teaching strategies – fundamental intervention techniques based on the principles of applied behavioural analysis.

  Behavioural teaching strategies:
  - Prompting
  - Reinforcement
  - Task analysis and chaining
  - Time delay
  - Computer aided-instruction
  - Discrete trial training
  - Naturalistic interventions
  - Peer-mediated instruction/intervention
  - Picture exchange communication system (PECS)
  - Pivotal response training.

- Positive behavioural support – used primarily to reduce or eliminate interfering behaviours.

  Positive behavioural support strategies:
  - Functional behaviour assessment
  - Stimulus control/environmental modification
  - Response interruption/redirection
  - Functional communication training
  - Extinction
  - Differential reinforcement
  - Self-management
  - Social narratives
  - Social skills training groups
  - Structured work systems
  - Video modelling
  - Visual supports
  - VOCA/speech generating devices.

Implications for Practice

- EBPs must be used strategically if they are to be valuable.

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Evidence-Based Practices in Interventions for Children and Youth with Autism Spectrum Disorders

This includes basing the selection of practices for individual children on carefully identified learning objectives for learners with autism and careful implementation of the practice as it was designed.

- The first necessary step in building a programme for learners with ASD is through assessment of learners' skills, requirements of their environments and use of information to establish learning objectives.
- Once a learning objective is established, practitioners can consult the EBPs that are applicable to the general skill area and select a practice.
- In some cases there may not be an EBP that has been used successfully in teaching. When this occurs the practitioner may draw on his or her teaching or clinical experience to select a practice which has a high likelihood of teaching the learner the identified objective.
- Researchers examined the 24 EBPs thoroughly and constructed step-by-step guidelines and corresponding implementation checklists to guide teachers and other practitioners in their use of practices. These have been assembled into web-based modules which also contain information about the evidence base for each practice.
- The 24 identified EBPs are not a final set as new research literature in autism is being published monthly – this set of practices will grow with the literature.

FULL REFERENCE

Odom, S. L., Collet-Klingenberg, L., Rogers, S. J. and Hatton, D. D. (2010). Evidence-Based Practices in Interventions for Children and Youth with Autism Spectrum Disorders. *Preventing School Failure*, 54(4), p. 275-282.

Gender Effects on Challenging Behaviors in Children with Autism Spectrum Disorders

Research Aims

The aim of this study was to investigate the effects of gender of children and adolescents with autism on the frequency of challenging behaviour in an effort to clarify the relationship.

Research Method

Three hundred and ninety-one children aged 2-17 years and their parents/legal guardians participated in the study. They were divided into four groups: Males with autism, males without autism, females with autism and females without autism.

Researchers used Autism Spectrum Disorder-Behavior Problems for Children to assess the presence and severity of challenging behaviours. Participants completed the measure in their own homes or in a clinic. The following behaviours were measured:

- Harming self by hitting, pinching, etc.
- Kicking objects
- Throwing objects at others
- Banging on objects with hand
- Aggression towards others
- Yelling or shouting at others
- Property destruction
- Poking him/herself in the eye
- Mouthing/swallowing objects
- Removal of clothing at inappropriate times
- Unusual play with objects
- Inappropriate sexual behaviour
- Playing with own saliva
- Smearing or playing with faeces
- Leaving the supervision of caregiver
- Repeated and unusual vocalisations
- Repeated and unusual movements.

Research Findings

It was found that individuals with autism did display higher levels of challenging behaviours than individuals without autism. However, the researchers did not find that gender had an effect on the rates of challenging behaviour among children with autism.

In general, regardless of gender, participants with autism exhibited more challenging behaviours than those without autism. The only exceptions to the rule were with regard to yelling or shouting at others, kicking objects and throwing objects at others. For yelling or shouting at others, females with autism tended to exhibit more of this challenging behaviour than either gender group without autism.

For kicking and throwing objects, males without autism exhibited similar rates of behaviour in comparison to females with autism. For inappropriate sexual behaviour, there was an increase in rates of behaviour for males with autism as opposed to females with autism.

Implications for Practice

(by the authors)

Data regarding intellectual ability of the participants were unavailable. Therefore future research should examine the combination of intellectual impairment and gender to discern whether intellectual impairment alone is associated with specific challenging behaviour patterns, or whether the combination of gender and intellectual impairment affects the frequency of challenging behaviours.

In general, the researchers note that gender does not lead to the presence of challenging behaviours and even where differences are observed, the degree of these differences is small.

FULL REFERENCE

Kozlowski, A. M., Matson, J. L. and Rieske, R. D. (2012). Gender Effects on Challenging Behaviors in Children with Autism Spectrum Disorders. *Research in Autism Spectrum Disorders*, 6(1), p. 958-964.

Explosive, Oppositional, and Aggressive Behavior in Children with Autism Compared to Other Clinical Disorders and Typical Children

RESEARCH AIMS

Children with autism will often have symptoms of other clinical disorders including self-injurious behaviour, aggression, irritability, and symptoms of oppositional-defiant disorder (ODD), anxiety and depression.

The aim of this study is to analyse the frequency and types of behaviour problems in children with autism, in comparison to children with typical development and also those diagnosed with a number of other clinical disorders. The study aims to understand more about the types of behaviour problems experienced by children with a diagnosis of autism, with the aim of improving their life skills and daily functioning.

The study also aims to provide recommendations for the formation of the DSM-V, and assert whether behaviours are part of autism, or represent a disorder in addition to autism.

RESEARCH METHOD

One thousand six hundred and nine children participated in the study, aged between 6 and 16 years. Participants consisted of 302 children who had a diagnosis of high functioning autism (HFA) with an IQ ≥ 80, 133 children who had a diagnosis of low functioning autism (LFA) with an IQ < 80, 186 typically developing children and 988 other children, all of whom had diagnoses of other clinical disorders including ADHD-Combined Type (ADHD-C), ADHD-Inattentive Type (ADHD-I), anxiety disorders, depression and acquired brain injury.

The Pediatric Behavior Scale (PBS) was used, where mothers rated their children on a 4-point scale from "not at all a problem" to "very often a problem".

RESEARCH FINDINGS

Children with autism had significantly higher explosive, oppositional and aggressive scores than children with ADHD-I, anxiety, brain injury or typical development. Children with autism did not differ from children with depression or ADHD-C on explosive scores, while children with ADHD-C scored higher on opposition and aggression than children with autism. The occurrence of ODD was much higher in children with autism than other clinical disorders, while children with ADHD-C had a higher frequency of ODD than those with autism.

Behaviour problem scores were significantly higher for children with autism and ADHD-C than for typical children. Similarly, behaviour problem scores in children with ODD were higher for children with autism and ADHD-C than for typical children.

Total behaviour scores were also higher in males than in females. Scores were also higher for children of lower socio-economic status (SES) than higher SES. Children on medication also displayed higher frequencies of behaviour problems than those not on medication.

IMPLICATIONS FOR PRACTICE

(by the authors)

- This study confirms previous research showing a high frequency of behaviour problems in autism and ADHD-C. Aggression and oppositional behaviour can be reduced in children with autism using applied behaviour analysis and risperidone, with combined treatment more effective than either alone.
- For children with ODD, behaviour problems were more severe in children with autism and ADHD-C than in typical children. This suggests that behaviour problems are, to some degree, intrinsic in autism and ADHD-C and that ODD is on a continuum.
- Behaviour problems such as aggression and symptoms of ODD were more pronounced in male gender and this is consistent with previous studies.
- This article had implications for the development of the DSM-V.
  - Since behaviour problems are common in autism, the

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researchers recommended that the DSM-V should clarify whether or not an additional diagnosis of ODD is to be made in children with autism.

- The authors acknowledged the need for further research in this area. They recommended that different instruments and sources should be used to investigate co-morbid behaviour problems in autism.
- Behavioural techniques are effective in reducing behaviour problems, and early intensive behavioural intervention can significantly reduce symptoms of autism and improve overall functioning.

FULL REFERENCE

Mayes, S. D., Calhoun, S. L., Aggarwal, R., Baker, C., Mathapati, S., Anderson, R. and Peterson, C. (2012). Explosive, oppositional and aggressive behavior in children with autism compared to other clinical disorders and typical children. *Research in Autism Spectrum Disorders*, 6(1), p. 1-10.

Positive Behavior Support Through Family-School Collaboration for Young Children With Autism

RESEARCH AIMS

Positive Behavioural Support (PBS) is an approach which teaches more appropriate behaviour and provides supports necessary for positive outcomes. Current literature on family-school collaboration is limited, in that families are seldom involved in the entire process of assessment and intervention. This study assesses the impact of individualised behavioural support using the PBS approach of family-school collaboration and addresses the following questions:

1. Does it increase appropriate behaviour and decrease problem behaviour across classroom and home settings?
2. Does it result in collateral changes in target behaviours of children during non-targeted classroom and family routines?
3. Does it increase mother-teacher positive interactions and decrease negative interactions with the children?

RESEARCH METHOD

The study sample included three children in South Korea aged 4-6 with autism who have challenging behaviour. Baseline targets were established through in-depth observations and video recording. Target behaviours were categorised into the following:

- Child - Appropriate Behaviour/Problem Behaviour
- Adult - Positive Interactions/Negative Interactions

The intervention was implemented during circle time at school and indoor play at home. A multiple-baseline design was then used to evaluate how the intervention altered the child's behaviours at school and at home; the impact on mother and teacher behaviours was also considered.

RESEARCH FINDINGS

- The study found that problem behaviour significantly reduced during the intervention whilst appropriate behaviour increased. During follow-up, however, levels of problem behaviour increased slightly and appropriate behaviour decreased slightly.
- During the intervention phase improvements were also noted during non-targeted activities, and this improvement remained stable during follow-up.
- Teachers' and mothers' positive interactions increased and negative interactions decreased during the intervention period.
- There were substantial changes in mothers' interactions in particular, which resulted in levels of change in children's behaviours at home being greater than those in school.
- During follow-up, positive and negative interactions in both mothers and teachers were maintained.

IMPLICATIONS FOR PRACTICE

- Results indicate that a PBS model which includes family-school collaboration increases appropriate behaviour whilst decreasing problem behaviour both in school and at home.
- Family-school collaboration is essential in supporting children with autism who have challenging behaviours, and the intervention should be implemented in both settings to maximise outcomes.
- Feedback revealed that peers and siblings participated in procedures by prompting and demonstrating, therefore it is imperative to involve them in order to increase the effectiveness of the intervention. Training procedures may be required for peers and siblings as well as future research to explore their role in autism intervention.

FULL REFERENCE

Blair, K. C., Lee, I., Cho, S. and Dunlap, G. (2011). Positive Behavior Support Through Family–School Collaboration for Young Children With Autism. *Topics in Early Childhood Special Education*, 31(1), p. 22-36.

Changing Behaviours by Changing the Classroom Environment

RESEARCH AIMS

This paper evaluates the impact of modifying the classroom environment on both academic engagement and disruptive behaviours. The researchers detail the principles of changing the classroom environment based on findings from previous research, and then apply these principles to the case study within this paper.

RESEARCH METHOD

A case study was undertaken in an "inclusive classroom" in an elementary school in an urban area of south-eastern United States. The class teacher teaches a fourth grade class (ages 9-10 years) who were reported to have "high levels of disruptive behaviour". Of the 17 pupils in the class, one received special educational services and several were awaiting referrals for special educational assessment.

The researchers collected data for overall classroom academic engagement and disruptive behaviour in two phases. During phase 1 (Baseline) the following methods were utilised:

1. Teacher interview

The class teacher was interviewed to establish where and when disruptive behaviour occurred in the classroom, the types of disruptive behaviours and the best time to observe an academic lesson. Researchers were then able to define academic engagement as purposeful attention such as raising a hand, answering a question, working independently, or watching the teacher conduct the lesson. Disruptive behaviour would comprise behaviour that did not follow the "classroom rules", such as speaking without permission, getting out of seat, making unwanted physical contact, or non-compliance to teacher direction.

2. Observation

The researchers measured academic engagement and disruptive behaviour by direct observation over a two-week period, during the class "reader's workshop": The class teacher would direct a mini-reading lesson, after which students worked independently. Each observation session was 15 minutes long. During this time, researchers noted any instances where one or more students were not academically engaged during any 15-second interval. It was also noted if disruptive behaviour occurred any time during the 15-second interval.

Following this, the researchers began phase 2 (Intervention). They met with the class teacher to discuss their recommendations for changes in the classroom environment. These included:

- Changing the seating arrangement
- Creating group space
- Adding organisational materials such as shelves, hooks and labels
- Creating clear pathways in areas of high congestion
- Adding plants and inspirational posters
- Providing chair bags to hold supplies needed for academic and "sponge" activities (actives not requiring teacher input such as crossword puzzles and colouring diagrams)
- Study carrels for each student for independent work.

Following implementation of these recommendations, the researchers collected further data for four weeks and completed a questionnaire with the class teacher regarding her perception of the effectiveness of changing the classroom environment to improve student behaviours.

RESEARCH FINDINGS

Comparison of the baseline and intervention data showed that there was an immediate increase in academic engagement, from 3% of the time to at or near 45% of t he time. This improvement was seen to remain consistent over time. Prior to intervention, overall disruptive behaviour occurred approximately 90% of the time. After the intervention, disruptive behaviour immediately decreased, but was inconsistent during the final observations.

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Changing Behaviours by Changing the Classroom Environment

The researchers suggested that this was due to the modifications not being used consistently.

The class teacher reported that she was satisfied with modifying her classroom environment to improve student behaviours. She reported that the intervention helped some of her pupils increase academic engagement and decrease disruptive behaviour.

IMPLICATIONS FOR PRACTICE

(by the authors)

Modifications to the classroom environment are a feasible, minimally intrusive intervention resulting in increased academic engagement and decreased disruptive behaviour.

Teachers are encouraged to use a specific framework, such as the one detailed in this study paper, to aid them in modifying the classroom environment to encourage academic engagement and discourage disruptive behaviour.

The researchers highlighted the need for future research in this area and stated that this should include a greater number of classrooms and begin at the start of the school year to ensure modifications are preventative and proactive.

FULL REFERENCE

Guardino, C. A. and Fullerton, E. (2010). Changing Behaviors by Changing the Classroom Environment. *TEACHING Exceptional Children*, 42(6), p. 8-13.

Effects of Activity Schedules on Challenging Behavior Exhibited in Children with Autism Spectrum Disorders: A Systematic Review

RESEARCH AIMS

The aim of this article was to provide a review of the relevant literature pertaining to the effect of activity schedules on challenging behaviour exhibited in children with autism spectrum disorders (ASD).

RESEARCH METHOD

Researchers reviewed 18 articles on the use of activity schedules to decrease challenging behaviour in children with ASD. All participants were aged between 3 and 18 years. Activity schedules included photographs, line drawings and videos. Articles were analysed under the headings of self-regulation, independence, transitions and play skills. Results from each article were categorised as positive or mixed. There were no negative results.

RESEARCH FINDINGS

Self-Regulation

Four articles were reviewed in relation to the promotion of self-regulation. All articles involved the use of activity schedules to target one or more of the following: challenging and disruptive behaviour, engagement, social initiation and self-injury. All researchers reported positive results, in that an increase in engagement and a decrease in disruptive behaviour was observed.

Independence

Three articles were reviewed in relation to the promotion of independence. All articles involved the use of activity schedules to target the following behaviours: on task, on schedule, task engagement, challenging or inappropriate behaviour. Two of the articles reported positive results, in that an increase in engagement and on task behaviour and decrease in inappropriate behaviour was observed. One article reported mixed results. The researchers found that the use of activity schedules resulted in an increase in task engagement and decrease in challenging behaviour with regard to work-related activities; however, an increase in challenging behaviour was reported with regard to leisure activities. An increase in task engagement was also noted with regard to leisure activities.

Transition

Seven articles were reviewed in relation to the use of activity schedules to increase transitions for children with ASD. The following behaviours were of interest: independent transitions, transition time, physical removal, prompts, disruption, compliance, engagement, on schedule and aggression. All seven articles reported positive results. An increase in transitions, engagement and on task behaviour was observed, while disruption, aggression and the time required to complete transitions decreased.

Play

Four articles were reviewed in relation to the use of activity schedules to increase play skills in children with ASD. The following behaviours were observed: engagement, prompts, play, on schedule and challenging behaviour. Three articles reported positive results, while one article noted mixed results. The researchers of three articles found that the use of activity schedules increased engagement, on task and positive behaviour. One article, however, noted that while activity schedules led to an increase in play activities and challenging behaviour decreased for two participants, it just remained low for another.

Overall the majority of participants reported a decrease in challenging behaviour and improved appropriate behaviour.

IMPLICATIONS FOR PRACTICE

(by the authors)

- The use of activity schedules has proven to be effective in reducing the occurrence of challenging behaviour.
- Activity schedules often include visual images of preferred items, which may serve as reinforcers for the child. This may promote appropriate behaviour due to the visual

continued from overleaf...

Effects of Activity Schedules on Challenging Behavior Exhibited in Children with Autism Spectrum Disorders: A Systematic Review

availability of reinforcement.

- Incorporating child choice and reinforcers may increase the efficacy of activity schedules. Providing the child with the opportunity to arrange the order of activities may decrease the probability of challenging behaviours, particularly during transitions.
- Incorporating individualised reinforcers at the end of each activity may also increase on task behaviours. The use of a token economy or a functional communication training (FCT) component, e.g. a break card, may also add to the success of the activity schedule.
- The authors noted that activity schedules were less effective in general classroom settings than in segregated classrooms. This may be due to challenging behaviours occurring at a higher frequency within inclusive classrooms, due to increased transitions and peer interaction and decreased one-on-one instruction.
- The authors note the need for further research in this area. They have noted the following areas where further research could be undertaken:
  - Investigate the difference in results across the diversity of special and mainstream classroom settings.
  - Evaluate the comparative effectiveness of activity schedules arranged by the student, as opposed to by the teacher.
  - Investigate the effectiveness of activity schedules when transitioning from an activity of interest, e.g. play time, to a demand activity.

FULL REFERENCE

Lequia, J., Machalicek, W. and Rispoli, M. J. (2012). Effects of Activity Schedules on Challenging Behavior Exhibited in Children with Autism Spectrum Disorders: A Systematic Review. *Research in Autism Spectrum Disorders*, 6(1), p. 480-492.

Facilitating Inclusion by Reducing Problem Behaviors for Students with Autism Spectrum Disorders

Research Aims

This article aimed to provide a review of the relevant literature pertaining to the use of interventions to address challenging behaviours, and subsequently facilitate inclusion of students with autism spectrum disorders (ASD).

Research Method

The authors conducted a review of relevant literature and included seven relevant articles in their analysis.

Research Findings

All seven articles analysed in this review generally reported positive outcomes. Decreased levels of problem behaviours were reported in six of the studies. The following themes were discussed:

- Functional behavioural assessment (FBA)
  - This is a method which identifies why a particular behaviour occurs. It identifies the antecedent, target behaviour and consequence. It is an effective method of identifying the function of behaviours to facilitate inclusion.
- Social skill straining
  - This was an effective method of reducing problem behaviour which emerged from the literature. Many children with autism struggle with developing appropriate social skills, and this struggle can often lead to challenging behaviour.
- Behavioural approaches
  - Behavioural approaches have long been associated with improving challenging behaviours in children with autism.
- Tiered models of service
  - Tiered models were also found to be effective in promoting inclusion for students by reducing problem behaviours. They are an extension of behavioural approaches applied universally.

Implications for Practice

(by the authors)

- Carrying out a FBA is an effective method of identifying the function of behaviours and subsequently implementing an intervention. It is an important first step in identifying a problem behaviour. A practical intervention which has been shown to be effective is the use of contingency contracts. A contingency contract, or behaviour contract, specifies the completion or reduction of a target behaviour with the delivery of a reward. Teachers could target problem behaviours to create a contingency contract with the student by establishing behavioural expectations and a specific reward.
- Social skills can be taught through the use of games and video modelling. The use of a FBA can identify which social skills intervention would be most suited to each individual child, and as a result is more likely to be effective.
- Discrete trial training (DTT) derives from applied behaviour analysis and involves teaching skills which students with autism may have difficulty acquiring. It can also be used to target problem behaviours such as inappropriate spitting. Intensive drills are used to prompt a target behaviour and the child is then rewarded for displaying appropriate behaviour.
- Positive behaviour supports (PBS) is an example of a tiered model approach, an extension of behavioural approaches. There are three levels to PBS:
  a) Universal or school-wide supports for all children
  b) Targeted group or classroom supports for a number of students not responding to universal intervention
  c) Intensive individual interaction.

FULL REFERENCE

Von der Embse, N., Brown, A. and Fortain, J. (2011). Facilitating Inclusion by Reducing Problem Behaviors for Students with Autism Spectrum Disorders. *Intervention in School and Clinic*, 47(1), p. 22-30.

Individual Temperament and Problem Behavior in Children with Autism Spectrum Disorders

Research Aims

Temperament is of interest to those working with children with autism spectrum disorders (ASD) because of its relationship to problem behaviour. Research in temperament has produced three factors:

- Negative affectivity:
  - This is defined as the likelihood that an individual will react to a situation in a negative manner, e.g. with anger, sadness, discomfort and (un)soothability.

- Surgency:
  - Children with a high level of surgency appear to have a higher energy level than their peers. This can include high activity levels, high intensity pleasure, impulsivity and (lack of) shyness.

- Effortful control:
  - This is defined as the ability to inhibit a dominant response and/or activate a sub-dominant response to plan and detect errors. This can include inhibitory control, attentional focusing and low intensity pleasure. The possibility that temperament may influence challenging behaviour and subsequently affect quality of life is crucial. The aim of this study was to investigate differences in temperament between children with ASD and neurotypical children, while examining the relationship between temperament and problem behaviour.

Research Method

One hundred and eleven children with ASD and their parents participated in this study. Children ranged in age from 2 to 8 years. Temperament was measured using the Children's Behavior Questionnaire, while problem behaviour was measured using the Aberrant Behavior Checklist. The comparison sample included 517 neurotypical children between the ages of 4 and 5 years.

Research Findings

The ASD sample was not found to be different from the comparison sample in terms of soothability, sadness, activity level, impulsivity and shyness. However, the ASD sample was found to have greater levels of anger/frustration, high intensity pleasure and low intensity pleasure. The ASD sample was found to have less discomfort, less inhibitory control and less attentional focusing.

- Negative affectivity:
  - All four temperament subscales (anger, sadness, discomfort and (un)soothability) were shown to be significantly correlated with problem behaviour.

- Surgency:
  - Two of the four subscales (activity level and high intensity pleasure) were associated with problem behaviour.

- Effortful control:
  - Inhibitory control was found to be correlated with problem behaviour.

Implications for Practice

(by the authors)

- Children with ASD differed from the neurotypical group on 6 of the 11 temperament subscales. They were found to be more angry and frustrated and to have greater liking for both high intensity and low intensity pleasure activities than neurotypical children. Parents also reported that their children showed less discomfort, less inhibitory control and poorer attentional focusing than neurotypical children.
- When working with children with ASD, it is important to acknowledge the individual temperament of each child, which should not be overlooked because of the diagnosis of ASD.
- Anger, frustration, discomfort, sadness, unsoothability, activity level, high intensity level and lack of inhibitory

Individual Temperament and Problem Behavior in Children with Autism Spectrum Disorders

control were all associated with challenging behaviour.

- While behavioural interventions may reduce problem behaviours, it is unlikely that such an intervention could change temperament, due to the genetic influence on temperament. Therefore, a more effective approach would be to consider a strategy which would work with a child's temperament to decrease problem behaviour, rather than trying to change a child's temperament.

There are three steps to choosing a temperament-based intervention:

1. Set point:
   - This is a child's way of behaving based on his/her genetic predisposition.
2. Goodness of fit:
   - This refers to how well a child's temperament matches the environment which he/she is required to manage. If an activity does not match a child's temperament, challenging behaviour is likely to occur.
3. Niche picking:
   - This involves choosing a situation/activity which best suits the child's temperament. It helps identify those situations that may increase the effect of other interventions.

- Future research should investigate if niche picking strategies could be used to improve problem behaviour in children with ASD.

FULL REFERENCE

Adamek, L., Nichols, S., Tetenbaum, S. P., Bregman, J., Ponzio, C. A. and Carr, E. G. (2011). Individual Temperament and Problem Behavior in Children with Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities*, 26(3), p. 173-183.

Conclusion

It is useful to have an understanding of behaviour as a means of communicating and to be mindful of the function of behaviour to a child or young person with autism. This Bulletin examines behaviour as a method of communication and highlights systems of analysis that teachers and parents can use to better understand the function of a behaviour. Behaviour is also seen as being variable between males and females and the Bulletin highlights the impact of individual temperament on the presentation of behaviours. It is a worthwhile reminder that teachers should always factor in the individual characteristics of a child with autism. Gender and individual temperament have been shown to have an impact on the presentation of behaviour and also on its resistance to intervention. Teachers can work to strike a balance between recognised practice in promoting positive behaviour in autism and taking into consideration individual differences and the individuality of children.

Notes

Your Opinion

The Centre trusts that you have found this Research Bulletin informative. It would be appreciated if you would take a few minutes to provide the Centre with feedback in relation to this bulletin by clicking on the survey link below.

» **Survey for Autism and Behaviour**

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