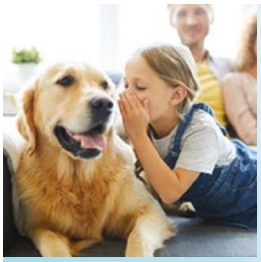
CENTRE FOR AUTISM
MIDDLETOWN

Lego/Pets: Popular Supports

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INTRODUCTION

This is the thirty-ninth Research Bulletin produced by Middletown Centre for Autism, providing summaries of elevenfrom 2015 to 2022.

For this bulletin we are looking at two different topics: Lego and pets. Formal and elaborate supportive practices for autistic people are often available at a cost or at the end of a long waiting list. Our own homes have plenty of opportunity for uncomplicated but hugely beneficial avenues of support and the research in this bulletin focuses on two of those.

Lego

A growing body of research is focusing on the possible benefits of Lego as a way to share experiences and, if nothing else, have fun. The bulletin begins with an interview with Dr Gina Gómez de la Cuesta, Dr Margaret Laurie and Dr Catherine Latimer who all have experience of how Lego can be used to support learning through Play Included.

Gina is founder and one of the directors of Play Included. She is a clinical psychologist but has also trained as a teacher and has a PhD in autism.

Margaret (known as Maggi) is research and evaluation lead at Play Included.

Catherine trained as a Brick Club facilitator through Play Included and recently facilitated her first Brick Club for a small group of children in a local primary school. As part of the Research Department at Middletown, she is also involved in the evaluation of the programme; looking at its impact from the perspectives of the child, parent(s) and facilitator.

Pets

While research reviews are yet to find robust support for autism-specific practices tailored around animals, research has found that for some autistic people, even the presence of an animal can have a beneficial impact. Certainly, anecdotal evidence suggests that many autistic people gain plenty of joy from their pets. The bulletin includes an interview with Dr Ana Maria Barcelos, an expert in human–animal interaction. Based at the University of Lincoln, she recently ran a research project looking at the impact of dog ownership on the well-being of autistic adults.

Please note that the views represented in this document do not necessarily reflect the views of Middletown Centre for Autism.

The language used in this bulletin is autism-affirming and neurodiversity-informed. Some of the papers summarised use more medical and deficit-focused terminology and approaches. This bulletin is created for autistic people, family members and professionals to learn more about research being conducted. The language chosen here is intended to be as inclusive as possible to the broad autism community.

INTERVIEWS WITH DR GINA GÓMEZ DE LA CUESTA, DR MARGARET LAURIE AND DR CATHERINE LATIMER

Why are you interested in play in relation to autism?

Maggi: From a personal perspective I became interested in play when I worked at a school for autistic children. I realised that during play children would do certain things that maybe in other settings, like the classroom, they wouldn't do as frequently, and it would sometimes lead to staff underestimating children's abilities. For example, tricky things like getting someone else's attention or maintaining focus on a task seemed easier for children to do during play than perhaps it was in other settings, so I started thinking about how different contexts and activities, like play, a nd specifically play with manipulatives and digital toys, could empower children and more accurately show their own capabilities.

At Play Included we believe play has the power to help all young people grow. We're on a mission to design the world's leading play-based development programmes for young people – empowering professionals, enabling parents and families, and building community, so that we can live in a world where all young people get the opportunity to thrive in their own way. We focus on playful approaches to emotional and social well-being as well as skills development.

Gina: I became interested in play and autism during my PhD back in 2004. I learned about the methodology of Lego-based therapy, on which the Brick-by-Brick programme is based, and evaluated sessions with children. I saw how much fun the children were having, how motivated they were by the Lego models and how this was often a very different experience from the one they were having at school. Brick Club was a place they could be themselves, relax and be successful. Some of the friendships went beyond the sessions too, which was lovely to see.

Catherine: Play is the main way in which children learn, develop and explore the world around them. My background is in education, and the value of play for all children, regardless of age and ability, is undeniable. Play can emerge differently in autistic children compared to their non-autistic peers, so it is important to understand how this might look and what we as educators and parents can do to support it.

Can you explain a little about Brick-by-Brick and Brick Club?

Maggi: In Brick Club children build Lego sets and their own Lego creations and do other fun Lego-related activities together, in pairs or small teams, depending on the child's preferences and abilities. The important thing is how the activities are set up and facilitated by the adult – child led, playful and non-directive. Adult facilitators train in the methodology of the Brick-by-Brick programme to be able to run Brick Clubs.

In Brick Clubs, as children build, they collaborate, communicate, negotiate and problem-solve, developing friendships and creating social opportunities along the way. All children are encouraged to interact in ways that work for them so that everyone understands each other. Playful and skilled adult facilitation is crucial to the success of Brick Clubs. The adult role is to support and guide where needed, and this requires specialist training and support to do well.

What does research tell us about the potential impact of playing with Lego?

Gina: Research so far has focused on using the Brick-by-Brick programme with autistic children and young people 5–18 years of age. Evidence has shown improvements in social and emotional well-being and communication in autistic children, and high levels of acceptability and cost-effectiveness. The programme may be especially helpful for autistic children who might feel socially isolated, socially anxious, lonely or missing out on friendships. Many professionals and families have reported positive outcomes on children's self-esteem, confidence, attention and concentration, anxiety, communication, friendships and well-being.

What are some positive experiences that you've seen through Lego play?

Maggi: We have learned that neurodivergent children get a lot of joy from building Lego models in a supportive environment with peers, and that this can lead to feeling more self-confident, less anxious, and for them to have greater opportunities for meaningful relationships and friendships.

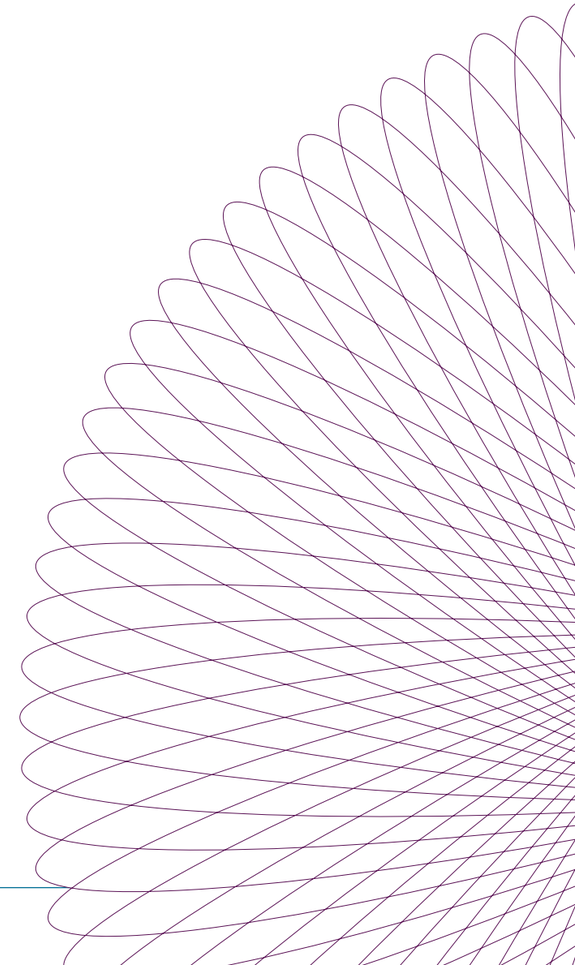
One Brick Club member, Thomas, aged 10, said, 'When you make friends at Brick Club, you know them for the rest of your life.'

Catherine: Many of the children and young people supported by Middletown are passionate about Lego – and very skilled too! Through Lego play their strengths shine in ways that may not have otherwise been apparent; for instance, in terms of creativity, technical ability and problem-solving.

We know that autistic children often play in a different way to non-autistic children. How can Lego play create room for autistic kids to just be themselves?

Maggi: Playing with Lego is often a familiar activity for children who come to Brick Club, meaning that many children come with some confidence and curiosity in building Lego models. There's so much choice when it comes to different Lego sets and models that children can often find something they're interested in or know a bit about already, which can help them settle into a new group.

In Brick Clubs children are encouraged to work together as a team. With playful facilitation from adults, Brick Clubs create a space for children to be themselves, recognise their own and others' skills and have fun together. Lego bricks lend themselves really well to being creative: they can be taken apart and rebuilt in different ways, they have clear instructions for sets and lend themselves to individuals who have strengths in visual and spatial skills.



Catherine: Many autistic children enjoy play that is solitary and repetitive in nature. Lego offers a range of experiences that might appeal to the child, from sorting bricks into colour and size to following step-by-step instructions to complete a model. According to *A Lego Brickumentary*, there are 915,103,765 ways to combine six classic 2x4 Lego bricks. This allows children the freedom to experiment and pursue their creativity, while retaining the familiarity and predictability of the Lego concept. Lego offers the child opportunities for solitary and parallel play, which can progress to more socially demanding contexts if the child expresses interest. Playing with Lego together informally, or within a more structured setting such as Brick Club, allows autistic children to engage with peers through a shared interest they are familiar and comfortable with.

We often look to special interests as a way to encourage learning. Do you ever worry about putting too much pressure or emphasis on an interest? How do you keep it fun?

Maggi: With Lego more generally, it really helps that there's a lot of variety in terms of sets, models and themes that Brick Clubs can explore. The magic in Brick Club is that it is a child-led programme, meaning that children must choose as a group those sets, models and themes that they build in the club, with support from the adult facilitator if needed. For some clubs this could mean the introduction of new sets and themes or combinations of different children's interests (for example, let's all build an underwater world, and one child might choose to build a vehicle while another builds a creature).

Lego building is often what brings children together to the group and starts their engagement, but it's the playful facilitation, the choices that children make and the learning through play experience that provides the outcomes. Also, the children lead the way in terms of what happens in the clubs, and they'll soon tell us if it's getting boring! We keep it fun following the imaginations of the children who come to Brick Clubs and the decisions they make together.

I also think it's important to remember sometimes that Brick Clubs aren't for everyone – for example, children who aren't interested in Lego building at all or don't enjoy it. Children should be given the choice of whether or not to attend.

Catherine: It can be difficult for a child who is very adept at playing with Lego on their own terms to make that switch to building as part of a team and relinquishing control. I think having an initial interest and passion for Lego is therefore important to keep the child invested if and when frustrations arise. If the child is motivated by the activity and outcome, they are more likely to engage with the Brick Club concept and feel a sense of pride and achievement when they finish a model as part of a team. Having the children choose the sets and take ownership of the building process ensures there is always something to look forward to.

If parents or teachers don't have access to a Brick Club, how can they bring some of the ideas into their play?

Gina: Play Included have developed free-to-download resources to engage children in play and support social and emotional well-being using learning through play methodologies, both at home and at school.

Building Friendships offers a range of whole-classroom activities to help all children and young people connect with each other, play together and support social and emotional well-being.

Play at Home provides opportunities for learning through play for the whole family using quick Lego activities at home to develop a range of skills. They can be adapted to suit individual strengths and needs and may help some children prepare for a Brick Club setting.

Both resources are available for free on our website at https://playincluded.com. The Lego Foundation also created a playlist (literally) of learning through play ideas, which can also provide some inspiration: https://learningthroughplay.com/let-s-play.

AN EXPLORATION OF A COMMUNITY-BASED LEGO® SOCIAL-SKILLS PROGRAM FOR YOUTH WITH AUTISM SPECTRUM DISORDER

BACKGROUND

One of the diagnostic characteristics of autism is a difference in social interaction. Compared to non-autistic peers, autistic children have been found to show differences in the way they mirror behaviour, infer mental states and share attention. They play differently to their non-autistic peers, spending less time initiating and responding to social bids and they show less interest in shared complex imaginative games.

Some researchers suggest that these differences may limit the amount of attention that autistic children receive from their peers, which may result in anxiety and loneliness.

Community-based autism programmes like Lego clubs are often a convenient and cost-effective way for parents to support their children in their interests. The natural, non-clinical setting can make it easier for autistic children to transfer learning to other contexts; however, they can be difficult for researchers to study because they often vary in setting, time frame, attendance and content. Nevertheless, the benefits of community-based programmes are worth s tudying because they are regularly used.

The Lego community programme used in this study focuses on dividing tasks between three roles: the builder, the engineer and the supplier. The engineer tells the supplier which building block is needed (which the supplier provides) and tells the builder where the block goes (which the builder places). These roles are rotated so that every young person has a chance to participate in all three roles. This approach encourages collaboration, shared attention, communication and joint problem-solving.

RESEARCH AIMS

The study aimed to capture the natural, real-world experiences based around a Lego club developed for autistic young people. Through observation and interviews, the researchers hoped to highlight the most useful aspects of the programme and see whether such a community-based programme may create more opportunity to transfer learning into other social settings.

RESEARCH METHODS

The programme was run with seventeen young people aged 7–10 years. Twelve of them were autistic (three also had ADHD). All were male except for one of the non-autistic young people.

The research team conducted observations of the Lego sessions and interviews with staff, parents and young people. Unfortunately, the interviews with the young people were not included as they did not speak much. Offering an alternative way for the young people to communicate their experiences was not offered but would have been useful.

Staff were asked their thoughts on perception of the programme and their training and experience. Parents were asked to discuss social and play behaviour of the young people and their perceptions of the programme.

Interviews were transcribed and observations of Lego sessions were coded by two researchers.

RESEARCH FINDINGS

The study illustrated what they consider to be the impact of the programme through observation quotes:

While they play, Liam shows Derek every block he is adding, and the two boys comment to each other on the structures they are building. Both boys are laughing and building for each other's enjoyment. At the next week's session, Liam seeks out Derek. When the coordinator asks, 'Who wants to build the four wheeler?' Liam puts up his hand and raises Derek's hand saying, 'I do, and Derek wants it too!'

Parents stated that they found the programme to be useful. They felt that it increased the rate of social initiations made and enhanced meaningful relationships.

Observation suggested that specific elements of the programme were central in creating positive social interaction for the young people, namely: the instruction given, a focus on the child's interests, play-based learning and the structured nature of the programme.

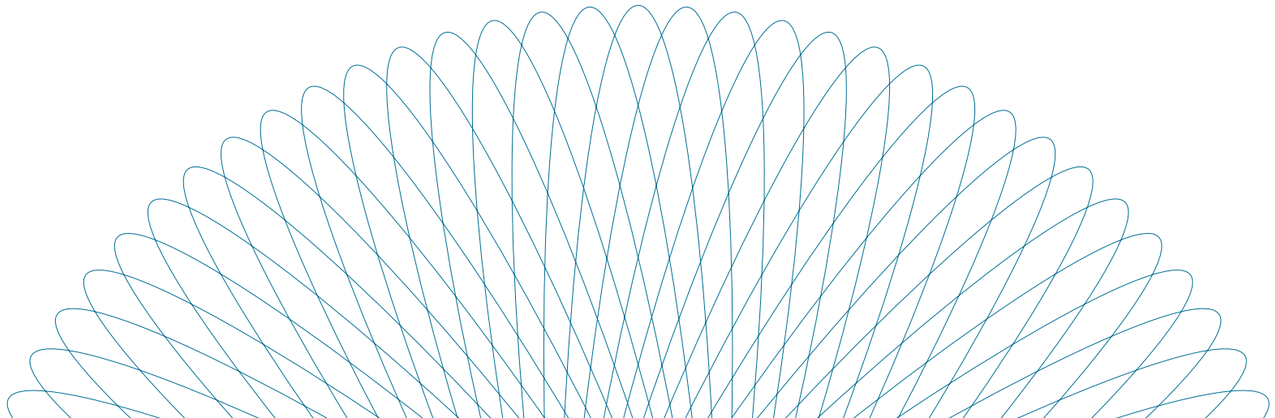
Instruction

Instruction may have been beneficial because it was delivered in varied and indirect ways – through modelling, guiding and mentoring. The volunteer staff acted as 'glue' that kept the children interested in the shared activity.

And when the kids are getting goofy, [the volunteers will] say, 'Come on, quit messing around. I'm here to build Lego®. What do you come here to do? Are you here because you want to do this? I thought you came to build Lego® with us.'

Interest-based

Parents reported that the children loved playing with Lego. The programme was different from others because their child did not 'drag their feet' in taking part. Shared interest was also an essential part of the programme, with a requirement to cooperate with other children in order to achieve their Lego build.



I love seeing him cooperate … [with] his Lego® classmates. It's thrilling to see that because his attention span is quite short when learning a new activity at home. I'm thrilled to see him engaged and enjoying himself here. And paying attention.

Play-based learning

The programme combined structured and free play. The structure of shared engagement was encouraged initially, with increasing room for free play. Staff noted a change in attitude across sessions.

There's a big difference between the first couple of sessions [when they] really don't know each other, where they just want to build things apart, [and] you have to tell them to play with a partner. And then by the end of the [series of sessions] they go to groups by themselves. They'll play together on their own. And I think that's the success.

Structure of the programme

The three roles within the programme allowed the young people to engage in different types of interaction and act as models for each other. Parents discussed how these designated roles may have encouraged the young people to interact in new ways.

IMPLICATIONS FOR PRACTICE

The researchers highlighted the importance of incorporating individual interests into play for young autistic people. Beyond that, they suggest that it is essential to mix structured and free play, allow for peer modelling and instruction that allows for a gradual increase in responsibility for the young person. They also advise structured play that encourages directed initiations with peers to allow for shared experience and enjoyment.

Reference

MacCormack, J.W.H., Matheson, I.A. and Hutchinson, N.L., (2015). An exploration of a community-based LEGO® social-skills program for youth with autism spectrum disorder. *Exceptionality Education International*. **25**(3), pp. 13–32.

MATERNAL EXPERIENCE OF LEGO-BASED THERAPY IN FAMILIES WITH CHILDREN WITH AUTISM SPECTRUM CONDITIONS: WHAT IS THE IMPACT ON FAMILY RELATIONSHIPS?

Autistic children commonly show differences in how they prefer to interact socially compared to non-autistic children. For some children, this may make it more difficult to form relationships. Research shows that relationships with family members can also appear different compared to non-autistic families, with some research focusing on the very strong relationship between parents and their autistic child. Other researchers have focused on sibling relationships, which were found to be less close and nurturing but can also be calmer and feature greater levels of admiration. Relatively little research has looked at the role that the family can play in supportive practices for autistic children.

While lots of supportive practices have been developed, many are designed in a way that is difficult for the autistic young person to recreate in a real-world setting and many are not engaging for the young person. Using Lego in structured collaborative play offers the potential to engage the child in something they genuinely enjoy with a chance to learn in a real-world but structured setting. Lego therapy usually involves pairing three autistic children to take on specific roles within play sessions (planner, searcher and builder). This study sought to explore Lego therapy as a family-focused supportive practice with the play roles filled by the autistic child, their sibling and their mother.

RESEARCH AIMS

- To explore the maternal experience of implementing Lego therapy at home.
- To explore how Lego therapy influences maternal perceptions of their family relationships.

RESEARCH METHODS

A total of fifteen mothers were contacted through a local Child and Adolescent Mental Health Service (CAMHS), seven of who opted to participate. Participants had a minimum of two children aged 5–16 years, and at least one was autistic. Two participants were subsequently excluded: one because it was not possible to complete the interview in the timescale required, and one due to considerable variability in administration of the supportive practice.

Mothers and their children were invited to attend a training session at the CAMHS clinic where further information about Lego therapy was provided, including the structure of the sessions to be carried out at home, ideas for planning these into family life and how each session should be facilitated using the rules provided.

Participants held six 1-hour Lego therapy sessions weekly using a Lego set and the instructions provided to try to build a Lego model. Each family member (parent, child and sibling) adopted one of the three previously outlined roles, swapping at regular intervals.

Following the supportive practice, individual semi-structured parental interviews gathered qualitative data about the experience of implementing Lego therapy and the parent–child and sibling relationships following the supportive practice.

Example questions include: 'Can you tell me about your experience of Lego therapy over the last 6 weeks?', 'In what ways do you think Lego therapy has affected your relationship with [your] child?' and 'In what ways do you think Lego therapy has strengthened or weakened your family relationships?'.

No child-level measures were administered.

RESEARCH FINDINGS

Three superordinate themes were identified: family-specific factors, child-specific factors and intervention-specific factors. Seven subordinate themes were noted within these. In relation to family, themes that emerged included improved family communication, new perspectives and understanding of each other, and the positives of time spent together as a family and the experience of more appreciative and interactive relationships.

In relation to the child, themes focused on the benefit of structure, but also the difficulty maintaining attention. Changes in the child were perceived by parents, including a reduction in anger, improved focus, increased flexibility, higher self-esteem and improved communication.

In relation to the supportive practice itself, mothers discussed some barriers to implementation such as finding time for sessions, external factors such as difficulties in school, and questioning the potential impact of the practice. Overall, few negative experiences were reported.

IMPLICATIONS FOR PRACTICE

There may be external factors that demand time or attention, making it difficult for families to engage with Lego therapy. This paper suggests that if there are limited external barriers, engagement may positively impact family relationships and child-specific characteristics. The researchers suggest that joining forces with other parents who are using the supportive practice may help parents feel more supported and offer more opportunity for children to generalise their play in other contexts.

For parents who can engage with the practice, it may offer a strength-based approach to engage children in a process that is non-stigmatising and flexible. The researchers suggest that it is also evidence that it may be beneficial to involve parents and siblings more often in supportive practices.

Reference

Peckett, H., MacCallum, F. and Knibbs, J., (2016). Maternal experience of LEGO-based therapy in families with children with autism spectrum conditions: What is the impact on family relationships? *Autism*. **20**(7), pp. 879–887.

LEGO THERAPY: BUILDING SOCIAL SKILLS FOR ADOLESCENTS WITH AN AUTISM SPECTRUM DISORDER

BACKGROUND

The authors explain that autistic young people often have differences in the development of social skills, which can then affect academic development and relationships, and subsequently impact mental health. Social skills training programmes have therefore become part of the intervention offered to some autistic young people. These programmes have a diverse range in the techniques and teaching methods used.

Lego therapy is one example of a social skills programme designed specifically for autistic people. It adopts a peer-mediated model and is based on the concept that social skills will develop in a group setting through a shared interest.

The young people work in pairs or small groups to collaboratively build a Lego design, and each person has a specific job role. It is reported that this may support exploration of joint attention, turn-taking, sharing, joint problem-solving, social communication and listening skills.

Previous research shows increases in social engagement for children participating in Lego therapy, with more positive engagement when compared to other control groups or other intervention programmes; however, as individual therapy sessions continued alongside groups, it is not conclusive that the outcomes were due exclusively to Lego therapy. In addition, most of these studies were carried out in clinical settings and so results cannot be generalised to the school context. Some were also carried out in home settings with positive outcomes reported in family relationships.

Researchers state that it is difficult to define the specific characteristics that make Lego therapy effective as there is variation across previous research. They also explain that skills may not be generalised from a clinical to a school setting, and that it may be important to locate the groups within the natural context of school.

RESEARCH AIMS

The authors state the following research questions:

1. Are Lego therapy groups effective at improving the social skills of autistic students?
2. Are learned skills generalised to situations outside of the Lego club setting?

RESEARCH METHODS

The research study used single-case non-concurrent multiple-baseline design. Baseline length increased for each participant with a staggered commencement date, meaning that the number of baseline sessions ranged from three to thirteen. This allowed for experimental control and improved internal validity.

Participants were six male students, aged 11–14 years, from an inner city secondary school in London. All had a diagnosis of autism, autism spectrum disorder or Asperger syndrome and had no significant learning disability. None were attending other social skills programmes during the course of the research study.

Twelve male non-autistic students were also recruited. Each Lego group consisted of one autistic student and two non-autistic students, and a different learning support assistant (LSA) led each group. All the LSAs had an undergraduate degree and attended a one-hour training programme with a trainee educational psychologist.

The baseline period was staggered over seven weeks. Data was collected for the autistic students only and was recorded during a 15-minute free play Lego session.

Each group was videorecorded and data was analysed using a social behaviour coding system. The Social Skills Improvement System (SSIS) was completed by parents and form teachers to provide baseline data in home and school settings.

During the intervention phase, each group attended twelve Lego club sessions, held twice weekly, lasting 45 minutes per session. Observational data was collected and analysed during the first 15 minutes of free play. Sessions 3, 6 and 9 were videorecorded and used to measure implementation fidelity. The SSIS was repeated with parents and teachers at the end of the intervention phase.

The maintenance phase consisted of three 15-minute Lego free play sessions carried out immediately after intervention. Data was collected and analysed, again using a social behaviour coding system.

Follow-up took place three months after intervention; data was recorded and analysed again in three 15-minute Lego free play sessions.

The intervention: Lego club

The Lego club intervention was adapted from the Lego therapy model, and a manual by LeGoff. The intervention in the current study included non-autistic peers.

Each session consisted of:

1. 'Hello', recap of the previous session and rules, and giving out of job roles by the LSA.
2. Thirty minutes of structured set building.
3. Fifteen minutes of free play with assorted mixed Lego pieces.
4. Clearing up.

When building structured sets, each student was given the role of engineer, supplier or builder.

The engineer reads the instructions and describes to the supplier which pieces are needed and tells the builder where to place them. The supplier finds the correct pieces and passes them to the builder, and the builder places them according to the engineer's instructions. Roles are rotated during the session so that each person has a turn in each role. During free play students used a random assortment of Lego to play and build as they wished, and could choose to play alone or with other group members.

Groups followed the Lego rules and points system, receiving a certificate when they completed a set. The LSA facilitated the group, prompting when required and helping students find solutions when required.

RESEARCH FINDINGS

One participant withdrew from the study after six intervention sessions. Observational data up to that point showed that he had not made any significant change in his social skills.
Analysis of the observational data between baseline and intervention phases showed that the remaining five participants had substantial increases in duration of social interaction, frequency of social initiations, responses and positive social skills. Inter-rater reliability was substantial to moderate across these measures.

The results of the group observations indicated that Lego therapy had a strong positive effect on duration of social interaction, frequency of social initiations, frequency of social responses and frequency of positive responses. Furthermore, these positive outcomes were maintained when measured at maintenance and follow-up phases.

All results were statistically significant.
The SSIS was completed by parents and teacher pre- and post-intervention to measure any generalisation of skills from the Lego group setting to home and school settings. More improvements in social skills and reductions in "problem behaviours" were reported by parents than by teachers. The authors report some generalisation of skills, but this varied across participants and raters.

Fidelity implementation of the Lego therapy programme was adhered to in five of the six groups. The other group had difficulties in adhering to the programme manual due to a number of factors (this was the group of the participant who withdrew after six sessions).

IMPLICATIONS FOR PRACTICE (by the authors)

- Lego therapy can be an effective intervention in increasing social interactions and the frequency of initiations and responses.
- Lego therapy is equally effective in a school setting as it is in a clinical setting. It remains effective when groups are led by school staff and include non-autistic peers.
- The Lego therapy intervention in the study created a significant increase in the social initiations of autistic students; a behaviour that is considered to be essential for social exchange.
- Skills learned in the group were maintained at three-month follow-up. This supports findings in other research that suggests that behaviours are more likely to be maintained in an older age group, i.e. secondary school students.
- Some social behaviours were generalised to the home setting, as reported by parents, but there was less generalisation of behaviours in the school setting. This suggests that some young people will generalise learned social skills to home environments but are less likely to generalise them in school contexts.
- Generalisation of behaviours from Lego therapy groups to other settings requires further research.
- Lego therapy can be effective even when groups include non-autistic peers. This supports other research that suggests the effectiveness of neurodiverse groups.
- Lego therapy groups can be effectively implemented by LSAs in school, and this will make the intervention more accessible than locating it in a clinical setting.
- The challenges experienced by one participant may suggest that Lego therapy is not suitable for everyone, such as those with social and emotional difficulties. This requires further research before any conclusions can be drawn.
- The results of this study cannot be generalised to the larger population due to the small sample size and intentional homogeneity of the study group. Outcomes may be different for females, other age groups and those with different levels of ability.

Reference

Levy, J. and Dunsmuir, S. (2020). Lego therapy: building social skills for adolescents with an autism spectrum disorder. *Journal of Educational Child Psychology*. **37**, pp. 58–83.

A MIXED METHODS EVALUATION OF THE ACCEPTABILITY OF THERAPY USING LEGO® BRICKS (LEGO® BASED THERAPY) IN MAINSTREAM PRIMARY AND SECONDARY EDUCATION

BACKGROUND

Lego® based therapy (LBT) is a group social skills programme developed to support social communication challenges for children and young people. Many autistic children and young people require some extra support with social skills. Lego® based therapy within a small group setting can facilitate positive social opportunities and support social development. Within the programme children and young people build Lego models collaboratively with their peers in a structured format that is supported by a trained facilitator.

RESEARCH AIM

This randomised controlled trial (RCT) aimed to evaluate the clinical acceptability and cost-effectiveness of LBT for autistic children and young people in a school environment.

RESEARCH METHOD

The LBT programme was embedded within a broader RCT trial taking place in mainstream primary and secondary school across three areas of northern England. The design was a mixed methods evaluation of the acceptability of LBT using qualitative interviews and questionnaires with both parents and facilitators (teachers or teaching assistants trained to deliver the programme).

Participants were randomly selected from the cohort of parents/guardians of autistic children and young people who met the broader trial eligibility criteria. They were asked to complete a questionnaire as part of the trial follow-up at twenty weeks post-randomisation. Teaching and teaching assistants (TAs) trained to deliver LBT in the selected schools were also asked to complete the questionnaire.

The questionnaire was based upon the Theoretical Framework of Acceptability (TFA) to assess the acceptability of the programme for parents/guardians and facilitators. Qualitative interviews were also carried out with a smaller sample of the LBT facilitators to ascertain their experiences of delivering and implementing the programme and explore acceptability within school.

Data analysis of the questionnaire completed by parents and facilitators included between group comparisons using the Mann–Whitney U Test, due to the skewness of the data. Interview data was analysed using the framework analysis approach aided by NVivo software. Interview transcripts were coded by two independent members of the research team.

LBT facilitators received face-to-face training and were given training materials prior to delivery to guide them during the sessions. Sessions were delivered in person and to groups of three participants mixed of autistic and neurotypical children and young people. Sessions were one hour a week for twelve weeks.

In total, 98 schools took part in the broader trial. From this cohort 50 schools were selected, and this included 127 children and young people with 81 facilitators delivering the programme. Questionnaires were completed by 77 per cent of parents/guardians (98/127) and 80 per cent of facilitators (65/81). Qualitative interviews were completed with 16 facilitators, 12 from primary schools.

RESEARCH FINDINGS

Questionnaire findings

Overall acceptability was high for both facilitators and parents/guardians with a median (range) of 5 (4–5) and 4 (3–5). Facilitators rated the acceptability of the programme higher overall than parents, and this difference was statistically significant ($p < 0.001$).

Constructs of the TFA were all rated positively by facilitators, with median ratings of 5 or 4.

All facilitators stated that they liked the programme (affective attitude) and felt confident delivering LBT (self-efficacy). A lower score of 73 per cent was given for perceived effectiveness on behaviour, albeit still high. Overall, 92 per cent of facilitators rated the acceptability of LBT positively.

Parents/guardians gave a maximum score of 5 for the 'affective attitude' construct with 92 per cent assessing LBT positively. The constructs rated least positively included 'intervention coherence' (47 per cent), 'burden' (49 per cent) and 'perceived effectiveness on behaviour' (55 per cent). The overall acceptability score for parents/guardians was lower than facilitators at 71.

Interview findings

Following review of the complete set of transcriptions the two reviewers generated 26 codes across 8 categories. To aid interpretation the data was then mapped to the TFA constructs. Table 1 and 2 below indicate responses by facilitators and parents.

Table 1 Responses from facilitators

Enjoyment	Fifteen facilitators said that the young people enjoyed their sessions and looked forward to them. Twenty-two facilitators said that they found running the sessions rewarding and useful.
Benefits	Eighteen facilitators said that the sessions had clear benefits in relation to communication, social skills and confidence during the sessions. Three facilitators did say that, although they had seen the benefits during the sessions, these might not be reflected in the classroom.
	Eight facilitators said that their children and young people had been more confident and had improved communication in the wider school setting. Two facilitators also said that they had seen a positive effect in non-autistic children and young people, including those with "challenging behaviours".
Resources	Two facilitators stated that they had trouble finding a suitable space for some of their sessions as space in their schools was lacking. Two interventionists said that Lego®-based therapy was easy to set up and deliver.
Challenges	Five of the facilitators found Lego®-based therapy challenging to run at times. One interventionist said that having two autistic children and young people in the group was tough as they needed a lot of prompting to communicate, whereas others found that they struggled to find a suitable space to hold the sessions. One interventionist said that their children and young people struggled with finding the necessary language to describe the pieces, and another said that their children and young people lost motivation after seven or eight sessions, making the final sessions more difficult to run.
Implementation	Five facilitators said that their school has decided to continue with Lego®-based therapy and are trialling it with more groups, or that they have rolled it out across their whole school. One school said they will be implementing this over a half term (6 weeks) then revisiting at a later date rather than delivering it as a 12-week block.
Recommendations	One interventionist said that her group would have liked to have done more than 12 sessions; however, another said that 12 weeks was too long, and that they would possibly split this up into two blocks in the future. Three secondary school facilitators said that Lego®-based therapy may be more suitable in a primary setting rather than secondary, and that secondary schools needed more complex sets for it to be effective. One of the facilitators said that they would include more freestyle in future groups to allow children and young people to be more creative, and another said that they would only use children and young people in the same year group in the future.

Table 2 Responses from parents/guardians

Enjoyment	Twenty-seven parents/guardians stated that their children and young people enjoyed taking part in sessions. Eleven said they had seen noticeable changes in their child's behaviour, communication and social skills. Seven said that, although their children enjoyed the session, they did not see any impact at home.
Benefits	Social skills – seven parents/guardians felt that sessions had improved their child's social skills as it helped them with making new friends and interacting with peers.
	Communication – eight parents/guardians noticed that sessions had a positive impact on their child's communication with peers. Two parents/guardians also said that their child had been more open and spoken about their feelings more at home.
	Confidence – two parents/guardians noticed that their child had grown in confidence.
	Calmness – one parent stated that their child was more relaxed and calmer since taking part in Lego®-based therapy.
Continuing with Lego®-based therapy	Three parents/guardians would have liked their children to continue with Lego®-based therapy because they enjoyed it so much, and to continue to develop their skills further and apply these at home.
Feedback from school	Four parents/guardians felt that they did not receive enough feedback from their children's schools.
Didn't enjoy Lego®-based therapy	Three of the parents/guardians stated that their children did not enjoy Lego®-based therapy due to having lots of previous building experience or wanting more structure to the sessions.

IMPLICATIONS FOR PRACTICE (by the authors)

In general, the study indicates that running LBT was a positive and rewarding experience for both the children/young people and facilitators. Facilitators noted several perceived benefits, including improvement in children and young people's communication, social engagement and confidence.

- Some facilitators described changes, such as socialising in the playground, while others reported these skills were not translated outside the sessions to the classroom.
- Parents/guardians also rated the programme positively but had mixed views on whether improvements had been seen at home.
- Delivering LBT in school settings requires careful planning of staff schedules and funding resources; however, facilitators reported that these challenges did not outweigh the benefits. Overall, the programme was perceived as a worthwhile intervention.
- Many facilitators reported LBT was compatible with current working practices in their schools. They identified that having weekly protected time and a designated workspace made integrating the programme easier.
- Several limitations of this study have been identified: the study recruited mainstream schools only and further research is necessary to explore the effectiveness of LBT in special educational needs schools. Furthermore, inviting the children and young people to complete a feedback questionnaire or interview directly would have gained essential insights into their experiences and opinions.

Reference

Barr, A., Coates, E., Kingsley, E., de la Cuesta, G.G., Biggs, K., Le Couteur, A. and Wright, B., (2022). A mixed methods evaluation of the acceptability of therapy using LEGO® bricks (LEGO® based therapy) in mainstream primary and secondary education. Autism Research: official journal of the International Society for Autism Research. **15**(7), pp. 1237–1248.

INTERVIEW WITH DR ANA MARIA BARCELOS*

**includes mention of suicide*

Why did you want to look at the topic of dog ownership in relation to mental health and autism?

The main reason we thought about this topic is because many studies about autism and pet ownership usually focus on children. They investigate how having a dog in the house helps the autistic child. There is not a lot about autistic adults and pet ownership. The reason why we thought about autistic individuals, instead of doing a study with the general population, is because of the high rate of mental health problems in this population. Just 25 per cent of the general population has a diagnosed mental health problem, compared to around 80 per cent of autistic individuals. We also thought about the suicide rates and suicidal ideation, which are also much higher among autistic individuals. We thought, let's investigate if pets could affect and could help in that.

How did you conduct the research?

First, we got a small grant for this research, which was very helpful to advertise [the project]. We invited them to online interviews because it was during the pandemic. Some interviews lasted for just fifty minutes, and then others could last ninety minutes or even more. It was amazing – I had the opportunity to meet different kinds of people!

During these interviews I asked autistic adults who had dogs what main dog-related activities impact on their well-being. I explained to them what I meant by dog-related activities – any kind of activity that you do with your dog, or even without your dog, but because of your dog. Let's say if you go to the supermarket to buy dog food, that would be dog-related. If you buy a book about how to train your dog to be the best dog in the world, that would also be dog-related activity. Then I explained the concepts of well-being so they knew I didn't want them to only tell me things that made them happy. I wanted to know the whole spectrum of well-being.

We divided well-being into hedonic well-being, which is the emotions, the mood. For example, doing this with my dog makes me happy, it makes me sad, makes me angry. We also have life satisfaction, and the other aspect of well-being that we assess is called ionic well-being, which is more focused on life functioning. For example, how well you can survive and you manage your life – being autonomous, growing as an individual and accepting yourself the way you are.

Considering all these aspects of well-being, they had to tell me the most important activities related to their dog that have an impact on them. I said, please don't only tell me amazing stories about you and your dog. I also want to know the negative things. So please tell me how much your dog makes you angry, how much your dog makes you stressed, because this is very important for us and for future autistic dog owners.

Can you give examples of some of the positive and challenging aspects that your participants spoke about?

For me, the most striking ones were the presence of the dog. Many people told me, 'I only leave my house, I go out, because of the presence of my dog. Without my dog, I would not go to the supermarket. I would not talk to someone.' They struggle so much to leave the house and to have those social interactions with other people and the dog makes them more relaxed.

Many people said, 'I wish all places were pet friendly because it's so important for me to have that emotional support from the dog.' So pet presence was one that came up many times during the interviews.
Another positive aspect that they mentioned was the routine related to the dogs. Feeding the dog, walking the dog, helped them to feel that they have control of their environment, their own life, that they're autonomous.

Another interesting activity was the affection they receive from the dog. An interesting thing that we found in this study is that 16.7 per cent of participants said that they thought about suicide but then because of the dog they did not attempt to take their own life. They said the dog was the main reason why [they] didn't attempt suicide. They thought the dog needed them, so they couldn't leave the dog behind. They felt like the dog loved them, so it was that kind of reciprocal relationship. That's very important to prevent suicide. That was also an amazing finding.
So those are the positives. Thinking about the negatives, the main ones were behaviour problems – the dog behaving in a way that's not expected, the dog does not respond to the recall of the owner, the dog is pulling a lot on the lead.

That's something that was mentioned many times Another one, of course, was aggression and the dog getting sick or injured. The dog barking can be annoying for autistic individuals and that didn't appear in my other studies with the general population. Behaviour problems was the top one of negative things, so we should really think about that before recommending a dog to an autistic individual – how much they can cope with?

What are some of the practical takeaways that might come from this research?

For future dog owners I think we could use the activities that are mentioned in this study to help improve mental health, to improve the well-being [of autistic people]. For example, we found out that the routine with the dog and the presence of the dog outside can be extremely helpful for mental health, so if a person is struggling with social interactions and they have a pet, why not bring that animal outside with that individual to help.

Also, in relation to suicide, if we know a person is thinking about suicide, maybe we can use the dog to help create that bond, and to show that the dog loves you, the dog needs you and your affection. You are very important for the dog. To help in that prevention, that could be a very strong protective factor. I think, practically, we could really target those specific activities.

Also, negatively, if the person is struggling and the dog is showing behaviour problems or has health issues, helping that person find a dog trainer and animal behaviourist to help because that can be extremely challenging on the well-being of the individual.

You had an autistic researcher on your team. How did that impact your process and what benefits did it bring?

We had Colin, the autistic individual who helped us. I had a pilot interview with him and then I asked him, 'Is that okay? Should I say something differently?' I think having an autistic individual [on the team] is very, very, very helpful to make sure you are respectful and you are using the right terminology. Then also writing the paper to make sure you are approaching important aspects, not just things that are interesting for researchers, but things that are really interesting for individuals in that community.

UNDERSTANDING THE IMPACT OF DOG OWNERSHIP ON AUTISTIC ADULTS: IMPLICATIONS FOR MENTAL HEALTH AND SUICIDE PREVENTION*

**includes mention of suicide*

BACKGROUND

While a large proportion of autism research focuses on the experiences of children, there is still relatively limited focus on the experiences of autistic adults. We know that nearly 80 per cent of autistic adults have reported facing diagnosable mental health challenges in comparison to just 25 per cent of the non-autistic population. Further, autistic adults are at greater risk of suicidal ideation and suicide attempts compared to the general population.

Dog ownership has been found to have positive effects on well-being for people experiencing a variety of challenging circumstances, such as chronic pain, a positive HIV diagnosis, old age and the Covid-19 pandemic. While some research has focused on the benefits of assistance dogs for autistic children, less is known about the potential benefits of dog ownership for autistic adults.

RESEARCH AIMS

The study aimed to examine the well-being effects and satisfaction levels of 36 autistic adults. Specifically, they looked at positive and negative affect, autonomy, environmental mastery, personal growth, positive relations with other people, a sense of purpose and self-acceptance.

RESEARCH METHODS

Semi-structured interviews were conducted via videoconferencing with 36 autistic adults. The researchers spoke to 18 men and 18 women with a median age of 25–34. They were all diagnosed as autistic, lived in the UK, had co-occurring depression or anxiety and owned dogs.

Interviews lasted, on average, 29 minutes and focused around the dog owner describing the four most important dog–human activities that they shared with their dog and how they impacted on well-being. Interviews were then transcribed, coded and similar answers were grouped together.

RESEARCH FINDINGS

The researchers found that the mere presence of a dog, as well as walking and interacting with their dog, improved all aspects of mood and emotion. The dogs were also found to help their owners feel less sad, depressed or low. Four aspects of dog ownership were repeatedly mentioned as enhancing 'life functioning': the routine of looking after a dog, being with the dog, walking the dog and simply owning a dog. Dogs were found to boost autonomy, increase confidence and build positive relations with others. They were seen as a social lubricant that made interaction easier.

Findings were not entirely positive – some sensory challenges from barking or house soiling were associated with negative emotions. Also, behaviour problems and the death of a dog were associated with negative impacts.

Seventeen per cent of participants felt that their dog had kept them alive when they were feeling suicidal. Researchers suggest that the presence of the dog may mitigate two risk factors: thwarted belonging and burdensomeness. These may be mitigated if the dog shows them affection and if the person is mindful of the essential caring role that they play.

IMPLICATIONS FOR PRACTICE

Some aspects of dog ownership (tactile interactions, dog walking, being greeted by the dog) were linked to boosts in mood. This may relate at physiological changes such as increases in oxytocin, dopamine, endorphins as well as a reduction in cortisol, epinephrine and norepinephrine. More research is required to better understand the physiological impact of dog ownership for autistic people. Equally, further research is needed to better understand the specific protective factors that dogs may present in preventing suicide attempts in autistic adults. This may offer further options for support that may help autistic adults increase their essential sense of belonging and feelings of autonomy.

Reference

Barcelos, A.M., Kargas, N., Packham, C. and Mills, D.S., (2021). Understanding the impact of dog ownership on autistic adults: implications for mental health and suicide prevention. *Scientific reports*. **11**(1), 23655. https://doi.org/10.1038/s41598-021-02504-8.

EXPLORATORY STUDY OF CAT ADOPTION IN FAMILIES OF CHILDREN WITH AUTISM: IMPACT ON CHILDREN'S SOCIAL SKILLS AND ANXIETY

BACKGROUND

Companion animals (CA), particularly dogs, are commonplace in families of autistic children and young people. For autistic children, having a CA is correlated with improved social skills, positive displays of emotion and greater social assertion. Other benefits reported include stress relief, not only for the child but also the caregiver.

However, the researchers note the necessity of the CA being well-matched to the family and for consideration to be given to the time taken to care for the animal as parents of autistic children may already feel they have reduced time for self and family care. The authors also highlighted that there is limited research into the impact of using cats as CAs and the impact of this animal in the home of autistic children. The researchers suggest that given cats' purported quiet nature and less intensive care needs than dogs, they may make ideal CAs.

RESEARCH AIM

The aim of this study was to investigate the impact of introducing a cat as a CA on social skills, anxiety and human–animal bond in autistic children. Three hypotheses were made:

Hypothesis 1: autistic children will have more social skills after the introduction of a shelter cat into their family.

Hypothesis 2: autistic children will have lower anxiety after the introduction of a shelter cat into their family.

Hypothesis 3: autistic children and their parents will develop a bond with their adopted cat.

RESEARCH METHODS

Autistic children aged 6–14 years and their caregiver were recruited using contact information of parents from the database of the University of Missouri Thompson Center for Autism and Neurodevelopmental Disorders. Other methods of recruitment included emails, newsletters, flyers, social media and local websites.

Inclusion criteria included English speakers who lived less than 125 miles from the study site, while exclusion criteria included anyone in the household having a cat allergy, a dislike of animals or history of harming any animal. Families who already lived with a cat were also excluded.

The study used a two-group randomised, repeated measures design. Eleven families were initially recruited and were randomly assigned to an immediate treatment group (n=4) in which they received a shelter cat, and a delayed treatment group (n=7) were they had no cat for an 18-week period in which measures were taken. Cats were assessed using the Feline Temperament Profile (FTP).

Families received supplies such as a car carrier, toys, litter box, scratching post and covered space for the animal in addition to food and cat litter. Families were provided with written information on caring for the animal and were provided access to a veterinarian who could answer concerns or questions.

To assess social skills parents completed the parent form of the Social Skills Improvement S ystem Rating Scale (SSiSRS), while anxiety was assessed by parents completing the Screen for Child Anxiety Related Emotional Disorders (SCARED). Human–animal bond was assessed through the Lexington Attachment to Pets Scale (LAPS) and Companion Animal Bonding Scale (CABS). These were used to assess both parent and child attachment to the pet. Baseline assessments were completed prior to the family receiving a cat and were repeated after eighteen weeks of cat ownership.

RESEARCH FINDINGS

Of the eleven families who participated, one left before they received the cat, one moved out of state taking the cat to live in a new home, while two were unable to continue looking after the animals and the cats were returned to the shelter. Reasons for returning the animal included that the parent did not feel the child bonded with the animal, and in the second case the parent had expected the child to assume care for the animal but this had not happened.

The first hypothesis predicted that autistic children would have more social skills after the introduction of a shelter cat into their family. According to the SSiSRS following the treatment period, children had significantly higher levels of empathy than in the pre-treatment assessment.

Other social skill areas measured by the SSiSRS improved but did not reach statistical significance.

Children also showed less externalising behaviour, bullying and hyperactivity/inattention. Reduction in inattention also reached statistical significance.

The second hypothesis was that children would have lower levels of anxiety following adoption of the animals. With regards to anxiety levels, there were no statistically significant results for total anxiety scores, but one of the five subscales, separation anxiety, was lower following treatment.

The third hypothesis was that both parents and children would develop a bond with their adopted cat. This was the case and both parents and children reported strong bonds with the cat shortly after adoption and this did not decrease over time, despite the time taking to look after the animal.

IMPLICATIONS FOR PRACTICE

- When a family is considering a companion animal for an autistic child, a cat should be considered a suitable option.
- The temperament of a cat may be a good match, while requiring less care than other animals.
- Parents should note that for several children in the study the caring responsibility for the animal by the child did not increase until around twelve weeks, and therefore parents should have realistic expectations of their own time required to care for the animal.
- Parents must be aware of the settling period for both the animal and their child, and it may take time for a bond to develop.

Reference

Carlisle, G.K., Johnson, R.A., Wang, Z., Bibbo, J., Cheak-Zamora, N. and Lyons, L.A., (2021). Exploratory study of cat adoption in families of children with autism: impact on children's social skills and anxiety. *Journal of Pediatric Nursing*. **58**, pp. 28–35.

SOCIAL-EMOTIONAL ADJUSTMENT AND PET OWNERSHIP AMONG ADOLESCENTS WITH AUTISM SPECTRUM DISORDER

BACKGROUND

For many autistic young people, social interaction can take a different form to that of non-autistic young people. Research has shown that many autistic adolescents are aware of their different approach to socialisation and that they may not be accepted by non-autistic peers. This can lead to frustrations, isolation and higher rates of depressive symptoms and loneliness compared to non-autistic peers. Some research has focused on ways to buffer social-emotional adjustment, including looking at human–animal interactions. Research has found that animals can act as safe and calm companions that facilitate social interaction for people struggling with mental health challenges. Equally, the presence of animals has been found to reduce social anxiety in autistic children. While a number of studies have examined the benefits of assistance animals, few have looked at the impact of a family pet. The few that have, emphasised the role of pet dogs in providing companionship for autistic children and stress relief for parents.

RESEARCH AIM

The aim of this study was to explore the social-emotional benefits of family pets in daily life for autistic adolescents. Specifically, the study looked at certain qualities of pet ownership (e.g. responsibility for pets, turning to the pets for comfort/companionship) and social-emotional adjustment (e.g. depressive symptoms, loneliness, friendship quality).

RESEARCH METHODS

Seventy-three autistic adolescents aged 12–17 years took part in the research. All were verbal and 87.5 per cent were male.

The young people and their parents completed surveys examining pet ownership qualities, social-emotional adjustment and whether the young people experienced challenges in relation to social interaction.

RESEARCH FINDINGS

Autistic adolescents who took greater responsibility for their pets were found to experience fewer depressive symptoms, suggesting that not just interaction but active care can lead to benefits. Further, parents reported that adolescents who struggled with social interaction but turned to their pet for comfort experienced benefits in relation to their friendships. However, adolescents who experienced limited challenges in relation to social interaction were reported to experience more negative associations with friendship quality if they sought comfort from their pet.

IMPLICATIONS FOR PRACTICE

While a large amount of research has focused on assistance animals and the therapeutic potential of animal *interventions*, little research has focused on the everyday experience of pet ownership. This study suggests that supporting the relationship and responsibilities that the autistic young person has in relation to their pet may create broader benefits.

Reference

Ward, A., Arola, N., Bohnert, A. and Lieb, R. (2017). Social-emotional adjustment and pet ownership among adolescents with autism spectrum disorder. *Journal of Communication Disorders*. **65**, pp. 35–42. https://doi.org/10.1016/j.jcomdis.2017.01.002.

THE LONG-TERM BENEFITS OF DOG OWNERSHIP IN FAMILIES WITH CHILDREN WITH AUTISM

BACKGROUND

There is growing interest in animal-assisted therapy and autism. This is evident in autism research where studies show the benefit to families when trained autism assistance dogs are placed in the homes of families with autistic children. The benefits include increased child safety, opportunities for communication, outdoor access, social interaction with others when out with the assistance dog, and parents report the presence of an assistance dog in the home is effective in reducing the autistic child's anxiety. Other studies showing decreased cortisol awakening in autistic children following placement of an assistance dog and increased levels when the assistance dog is removed also support this.

While research on the placement of trained autism assistance dogs in family homes is positive, the authors identify that this is the first study to explore the long-term effects of families acquiring a pet dog rather than a fully trained assistance dog. The authors identify that because a family pet dog is likely to be primarily cared for by the autistic child's main caregiver, this has potential to bring improved quality of life for the primary caregiver and consequently positively affect the autistic child. The authors base this on findings of studies on other pet animals, not dogs, and the benefits they bring to the families of autistic children.

This study wanted to extend understanding of previous research on the impact a new pet dog had on family functioning and the anxiety of autistic children and further research assessing the impact a family pet dog had on stress of primary carers of an autistic child.

Previous studies suggest that getting a new pet dog can bring a range of benefits to the families during the first year of dog ownership, but the longer-term benefits are unknown. Given that acquiring a pet dog is a lifelong commitment, the authors identify the essential need for realistic expectations to be identified, and thus the need for longer-term follow-up studies is warranted.

RESEARCH AIMS

This study aimed to evaluate the longer-term benefits of dog ownership in families with autistic children approximately 2.5 years after getting a pet dog. The study also wanted to explore relationships between family functioning and parenting stress and pet attachment.

RESEARCH METHODS

Participants of this study took part in previous studies. Originally the participants volunteered via three networks: Dogs for the Disabled's PAWS (Parents Autism Workshops and Support), Dogs for Good (originally Dogs for the Disabled) and the National Autistic Society. Eligibility was twofold: if a child in the family had a confirmed diagnosis of autism and the child was aged 3–16 years. No exclusion criteria applied.

The authors made contact with all families who had participated in the last data collection point and who had not requested to be withdrawn from future studies. The time-lapse from the last data collection was approximately 27 months.

In total, 37 families participated in this long-term follow-up: 22 families in the Intervention group (had pet dogs) and 15 in the Control group (did not have pet dogs). To ensure that direct comparisons with the original studies could be made, the authors replicated the tests originally used.

To measure family functioning, the Brief FAM-III, General Scale (FAM-III-GS) was used. It is also effective at discriminating between problem and non-problem family functioning.

To measure parenting stress, the Parenting Stress Index-Short Form (III edition) (PSI-SF) was used.

This measures three domains of stress: Parental Distress, Parent–Child Dysfunctional Interaction, and Difficult Child. When combined a Total Stress score is identified.

To measure attachment to the dog, the Lexington Attachment to Pets Scale (LAPS) was used. This measures the affectionate bond between the main parent carer and the dog.

The authors contacted the parents by telephone to read the questions and response options and recorded responses. Forms were scored anonymously. The researcher who collected the data did not have access to the parents' responses from the earlier studies. No time restriction was set on answering the questions but each telephone call lasted 40–45 minutes.

RESEARCH FINDINGS

Family functioning

This long-term follow-up study showed that the short-term benefits to family functioning associated with acquiring a pet dog appear to be largely maintained 2.5 years after acquiring the dog. The authors observed some trends toward a greater reduction of parenting stress in the dog-owning group (Intervention group) compared to the non-dog-owning group (Controlled group), but these effects were not statistically significant.

Comparing both groups in relation to family functioning, dog-owning families were found to show a decrease in family difficulties and an increase in family strength. A caregiver survey found that only the dog-owning family reported reduced family difficulties and increased family strengths.

The Control group were found to experience a fluctuation in family functioning over the study period, whereas families in the Intervention group experienced steady, gradual reductions in family difficulties. This means that improved family functioning was maintained at the long-term follow-up stage for dog-owning families.

Parenting stress

Dog-owning parents showed a greater reduction in all domains of parenting stress. From baseline to long-term follow-up, both groups showed a significant decline in Total Stress. Parents of families who had a pet dog showed a significant decline in Parent–Child Dysfunctional Interactions at long-term follow-up stage. Significantly 20 per cent of parents in the Intervention group moved from clinically high to clinically normal stress levels. No clinical-level improvements were observed in the Control group.

An earlier study reported statistically significant changes to parenting stress during the early stages of acquiring a dog, but the scores at long-term follow-up were not statistically different between the two groups. It appears that the greatest benefits of pet dog ownership on parenting stress may only be evident in the initial stages after obtaining a dog.

A significant positive correlation emerged between a parent's perception of how difficult their child was and their attachment to their dog. This indicated that parents who perceive their child as being difficult have greater attachment to their dog, indicating that parents turn to their pets in times of stress.

Attachment to the dog

Not all participants completed every measure; therefore, attachment analysis was conducted on a population of 17 parents. The analysis revealed no significant correlation between parent–dog attachment and family functioning scores. As the FAM-III-GS Scale measures functioning of the entire family rather than that of an individual, the lack of a significant relationship between parent attachment to the dog and family functioning was not surprising for the authors.

The authors identify that these results are based on a small sample of parents, but nonetheless they represent an important foundation for future research questions that could have important implications for both the effectiveness of pet dogs to improve the quality of life for families of autistic children and for the welfare of dogs in these families.

IMPLICATIONS FOR PRACTICE

This long-term follow-up study found that acquiring a pet dog can bring a range of benefits to families with autistic children but the durability of the benefits reported remain unknown. When considering the long-term effects of pet dog ownership, it is worth considering the attachment bond that forms between the dog and the main parent carer over time and the benefits this can bring to the primary caregiver.

There were some trends toward a greater reduction of parenting stress in the group owning a pet dog (Intervention group) compared to those not owning a pet dog (Control group) but these effects were not statistically significant. This long-term follow-up study showed that the short-term benefits to family functioning associated with acquiring a pet dog appear to be largely maintained 2.5 years after families with autistic children acquired the dog.

Reference

Hall, S.S., Wright, H.F., Hames, A., Mills, D.S. and PAWS Team., (2016). The long-term benefits of dog ownership in families with children with autism. *Journal of Veterinary Behavior*. **13**, pp. 46–54.

THE MEANING OF COMPANION ANIMALS FOR CHILDREN AND ADOLESCENTS WITH AUTISM: THE PARENTS' PERSPECTIVE

BACKGROUND

Over the last decade the number of children being diagnosed as autistic in the United States and Europe has steadily risen. This may be attributable to a number of factors, including a better understanding of the condition, broader criteria for diagnosis, and the demands of today's environment on vulnerable children. Many children with an autism diagnosis experience differences in social interaction and communication compared with their non-autistic peers, and many present with co-occurring conditions like intellectual disability, attention deficit/ hyperactivity disorder (ADHD), anxiety, bipolar disorder and epilepsy.

Research into animal-assisted treatment has shown positive outcomes for different groups of children, including those with insecure attachment, hospitalised children and children who are psychiatric patients. Studies offering animal-assisted therapy to autistic children have resulted in reduced stress and anxiety as well as increased social initiative. The biophilia hypothesis is a theory that suggests human beings have an evolutionary predisposition to seek connections with nature and other forms of life. According to this theory, children could benefit from the presence of a friendly animal in a therapeutic situation. Parents and teachers of autistic children have reported that many children appear fascinated by animals and demonstrate greater affection and prosocial behaviour towards animals, as well as appearing more relaxed, happier and calmer in their presence.

RESEARCH AIM

Most studies involving autistic children and animals are either experimental or evaluations of animal-assisted therapy, and so descriptive studies of how autistic children and adolescents benefit from the presence of a companion animal in their everyday lives are needed. The aim of this research was to increase this knowledge by gaining the perspective of parents of autistic children and adolescents.

RESEARCH METHODS

Parents of children and adolescents diagnosed as autistic were recruited from the Habilitation Services Program in south-west Sweden. The reason for choosing parents as opposed to children was due to the children's difficulties expressing and describing their feelings and experiences, and because parents are often good observers of, and experts on, their children's well-being. The twelve children and adolescents involved in the study had a diagnosis of autism, while some also had ADHD, intellectual disability or depression. Their age range was 8–20 years and they were described by their parents as having a very close relationship with their companion animal.

Focus group discussions were used to obtain a deeper understanding of the interactions between companion animals and autistic children and adolescents. Discussions lasted around 1.5 hours and were tape-recorded, with the study authors acting as moderator and active observer. The sessions started with the open-ended question: 'Do your children benefit from companion animals, and what have your experiences been?'. Parents were encouraged to speak freely but follow-up questions (e.g. 'Can you tell us more about that?' and 'What did you mean when you said …') were used to prompt greater detail. Tape-recordings were transcribed after each session and analysed thematically.

RESEARCH FINDINGS

The results show that companion animals can contribute to social and behavioural development support and improved mental health and quality of life. Three themes were identified from transcripts of the focus group sessions: quality of the relationship with the companion animals, increased interaction with people, and the companion animal as an optimizer of the child's function and development. Parents noted the deep bonds and 'tremendous love' between the child and their companion animal, with the animal often described as a good friend to the child. This was seen as particularly important when the child did not have playmates of the same age. The animals provided social support for children, both directly and indirectly, by facilitating contact with others and opening up avenues for conversation. Dogs in particular were reported as important in helping autistic children to have contact with people outside the family. The parents also noted the ways in which the companion animal optimised the child's functioning and development by providing comfort, helping them regulate their feelings, facilitating motor development and coping with difficult life events.

IMPLICATIONS FOR PRACTICE (by the authors)

The findings of this study demonstrate the value of companion animals for autistic children and adolescents by giving them opportunities to expand social contacts, make deep connections with another living being, reduce feelings of anxiety and depression, provide comfort and understanding and strengthen family cohesion. The authors conclude that since the individuals in this study benefited from contact with companion animals, mostly dogs, it is possible that many more autistic people could also benefit from such contact.

Reference

Byström, K.M. and Lundqvist Persson, C.A., (2015). The Meaning of Companion Animals for Children and Adolescents with Autism: The Parents' Perspective. *Anthrozoös*. **28**(2), pp. 263–275, DOI: 10.1080/08927936.2015.11435401.

'THEY ASK NO QUESTIONS AND PASS NO CRITICISM': A MIXED-METHODS STUDY EXPLORING PET OWNERSHIP IN AUTISM

BACKGROUND

It has previously been theorised that the social communication differences exhibited by many autistic people – including reduced eye contact, mimicry and reciprocal communication – stem from a lack of motivation to engage in social interactions. However, self-report data suggests that autistic people share the same social desires as non-autistic people; it is simply that differences in social style and competency make them *appear* disinterested and result in missed opportunities for social engagement and relationship building.

Research has begun to explore how autistic people use alternative means to fulfil their social needs, and for many it is through bonding with animals that these needs are met. Studies show that animals not only help to meet social engagement needs, but can also improve social cognition for autistic people including theory of mind, emotion recognition and social responsiveness. Animal-assisted interventions are therefore growing in popularity as a cost-effective and timely method of supporting the mental health and social needs of autistic people. Research conducted with autistic children has shown promising results in terms of reduced arousal and cortisol levels, social responsiveness, and greater significant therapeutic gains when in the presence of animals.

For this reason, a quarter of autistic children will participate in animal-assisted interventions at some point in their childhood – and the consistent animal contact afforded by pet ownership would arguably lead to more sustained long-term gains. While such interventions have reported largely positive results, there has been little investigation into the human–animal bond in the adult autistic population, which is essential to understand given the benefits of animal contact.

RESEARCH AIMS

The aim of the research was to explore and better inform understanding of companion animal attachment in the autistic adult population as compared to non-autistic people, and to investigate how pets make a difference in their autistic owners' lives.

RESEARCH METHODS

The study employed a mixed methods design to address these aims. Study 1 used a quantitative methodology (an online survey) to explore whether autistic people and non-autistic people differ in the rate of pet ownership, pet type and pet bond, and how the pet bond is linked to mental health. The online survey was completed by 326 people with a confirmed autism diagnosis (AU group) and 409 people who reported as non-autistic (NA group). Participants in the AU group were aged 18–63 with a mean age of 28.64 (SD=9.57) and included 176 males and 150 females. The NA group were aged 18–79 with a mean age of 33.91 (SD=13.05) and included 123 males and 286 females.

Recruitment took place via social media, autism websites and Prolific (Oxford, UK), an online research recruitment portal. Participants were asked to complete the following questionnaires in order:

- The Liebowitz Social Anxiety Scale – a 24-item scale measuring social anxiety related to fears and avoidance behaviours.
- The Satisfaction with Life Scale – a 5-item scale measuring individuals' satisfaction with life.
- The UCLA Loneliness Scale – a 20-item scale measuring perceived loneliness.
- The Multidimensional Scale of Perceived Social Support (MSPSS) – a 12-item scale that measures perceived social support.
- The Autism Quotient – a 50-item scale measuring autistic traits and behaviours. Pet owners only (265 AU and 374 NA) were asked to complete the following:
- The Lexington Attachment to Pets Scale (LAPS) – a 23-item scale used often to measure individuals' attachment to pets.
- The Critical Pet Rating – a 14-item scale that measures the degree to which individuals anthropomorphise their pets by having people rank human and non-human characteristics and how they apply to pets.

Pet owners were asked to indicate which type of pet they had thought about when completing the questionnaire, and these were grouped into dog, cat and other.

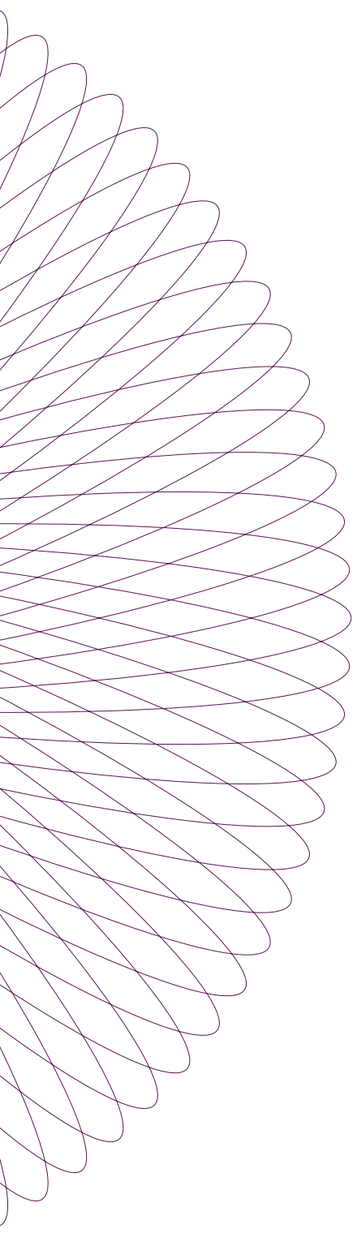
Study 2 employed a qualitative methodology (interviews) to investigate how pets make a difference in their autistic owners' lives and how the animal–human bond may complement autistic people's social needs. Participants were recruited from Study 1 and a total of 16 autistic adults (mean age 34.75; age range 18–63; 7 females, 7 males, 2 non-binary/other; 11 Caucasian British, 1 each of Caucasian Swedish, Canadian, Czech, 1 Asian and 1 Native American) participated in the semi-structured interviews. This study used an interpretative phenomenological analysis (IPA) framework that assumes that individuals are the experts in their own lives and aims to unravel the meanings behind individual experiences central to this study's purpose by establishing equality of voice between the researcher and participant.

Interviews were conducted via online communication platforms (e.g. Skype, WhatsApp) and were audio-recorded and transcribed. The interview protocol consisted of 45 questions (e.g. 'Can you tell me about a specific pet you have owned?', 'Can you describe any times when you might feel lonely?') and interviews lasted approximately 50 minutes – however, the IPA format allowed flexibility and encouraged participants to take the lead in telling their own stories.

RESEARCH FINDINGS

Results indicated that autistic adults were equally attached to their pets as non-autistic adults but were less likely to own them, even though pet ownership corresponded with better mental health outcomes for this population. Dogs were the most common pet for both autistic and non-autistic people; however, autistic adults were more likely to own cats and other pets than non-autistic adults. The type of pet owned did not affect quality of life or attachment for either group. Substituting pets for people also served as a compensatory mechanism for social contact in the autistic sample. This was found to stem from social avoidance and is a significant finding because it underscores the importance of pet ownership to autistic people and highlights the sustained social motivations in this population.

From the qualitative findings, four main themes emerged: Pets with Benefits, Pets As A Social Alternative, Pets As A Social Lubricant, and Barriers And Breakthroughs To Pet Ownership. Participants discussed the physical and mental health benefits of owning a pet – from the motivation to exercise and be more active to the calming interactions of stroking a pet's fur or having a non-judgemental companion to vent to.



They appreciated the lack of social rules surrounding interactions with their pet, and that they did not have to mask to appear more 'socially acceptable' in their presence. Pets also gave their owners the confidence to interact with non-autistic people in a variety of settings, and while it was acknowledged that there were circumstances that could prevent an autistic person from owning a pet (such as cost, time demands and mental state), all participants expressed motivation to overcome these issues.

IMPLICATIONS FOR PRACTICE (by the authors)

Autistic adult populations face greater mental health inequalities, which reduces well-being. They are perhaps the most in need of timely, cost-effective interventions that can be undertaken with some amount of independence, as they often report being overlooked in current healthcare systems. The results of the current study suggest that animal-based approaches to improving mental health outcomes in autistic adults would be a particularly effective intervention.

Reference

Atherton, G., Edisbury, E., Piovesan, A. and Cross, L., (2022). 'They ask no questions and pass no criticism': A mixed-methods study exploring pet ownership in autism. *Journal of Autism and Developmental Disorders*. https://doi.org/10.1007/s10803-022-05622-y.

'IT JUST OPENS UP THEIR WORLD': AUTISM, EMPATHY, AND THE THERAPEUTIC EFFECTS OF EQUINE INTERACTIONS

BACKGROUND

It has been frequently reported and recorded in research that there are many health benefits – physical, well-being, emotional support and resilience – from engaging with animals, and in this instance horses, for all of us, including autistic children and young people.
This creation and development of not only a physical but an emotional bond and understanding through therapeutic interaction between child and horse allowed the children to demonstrate their skill sets in terms of communication, intersubjectivity and empathy, thus adding to our knowledge and understanding of the autistic person and their innate, but sometimes unrecognised, competencies.

RESEARCH AIMS

This research aims to evaluate the interaction between horse and rider: have harmony and accord been created? And review the analysis of such interactions from the perspective of the individual rider, the parents and the staff members providing the service. The work aims to fathom if equine therapy is a valid and effective means of supporting autistic children and young people, with value outreaching the confines of the therapeutic environment.

The researchers reviewed three key areas:

1. Can equine therapy be successful in providing a social forum for autistic children and young people whereby they are engaged in an activity with another, in this particular example a horse, where the child is comfortable, at ease, motivated to participate, has taken ownership of the activity and the social interaction, to the extent where communication, in whatever way is accessible for the child, is easy and free-flowing.
2. Child communicates feelings of enjoyment, desire to participate, involvement.
3. Empathy to the interaction, the horse and those around.

RESEARCH METHODS

Researchers used ongoing formal interviews, alongside nine semi-structured interviews with the parents of autistic children and the equine therapy providers, and called upon the expertise of an experienced professional who observed the interactions between horse and rider. This expert reported that to ride effectively, the rider and horse must have subtle and instantaneous reactions and bodily movements with new movements being developed considering the motion and reflexes of the horse, thus, this interaction becomes intuitive with time and experience.

RESEARCH FINDINGS

A series of results were observed not only for the active participants, the children and the horses, but also valuable lessons for the observing adults:

- The interaction between rider and horse challenged many of the observers to understand what they were actually viewing. A child trying to control their feelings of being overwhelmed in a sensory-rich environment was not trying to distract the horse but was trying to manage their interaction so that they could enjoy the experience. The work clearly found that consideration must be given to the sensory environment to allow children to be fully immersed in the activity and thus amass the benefits.

- The children learned many ways of interacting, firstly with the horse, including reading and reacting to body language, but then successfully transferring this skill to interacting with others. The horse appeared to give them the safety and security needed to perfect their skills before the child took them to the wider arena of other people.

- For many of the children, they experienced the understanding and relevance of prepositions while engaging in horse-riding – terms that may be difficult to teach in a classroom or family home.

- Many of the observers were surprised by the level of engagement from the children – they had taken ownership of the activity and were actively involved. The parents and staff had presumed that the children were not listening or assumed that they did not appear to be listening to the instructions and then the children demonstrated their attention skills by completing the action. This is key point to remember for all in the family home and the classroom as children may be attending to things in a manner that suits them and is new to us.

- The children also enjoyed the empowering opportunity to sit high in the saddle, control the movements of the horse, experience the sensation of freedom and see the world from a different viewpoint. For many children, this level of autonomy is a novel experience and can support well-being and raise levels of self-esteem.

- The children were also able to talk through their interaction.

- The horses seemed to understand the children too, and did not expect eye contact, which we know for some autistic children is painful, and thus didn't pressurise the autistic child. This could even be seen as a means of teaching bidirectional interaction, which the children can learn from and transfer to human-to-human conversations.

IMPLICATIONS FOR PRACTICE (by the authors)

- All those working with autistic children and young people must have a deeper understanding of what exactly autism is and challenge misunderstandings and erroneous information. We need to base our interactions on the observed and observable skill set of each individual child and not generalisations.

- The opportunities provided, the construction of the mutually respectful team, allowed the rider and horse to develop a relationship, but one where trust and empathy were at the forefront, thus dispelling the long-held myth that autistic individuals have difficulty taking the perspective of others and understanding another's viewpoint.

- This growing display of empathy was transferred confidently with communications between the rider and the others in the environment, 'Mind yourself, Violet. Toffee's going to run you over!' This also displayed an increase in spontaneous communication and interaction.

- Ensure the environment is sensorially constructed so as not to overwhelm or overstimulate the child or young person.

- We cannot presume or assume a child's level of engagement by their demeanour; we have to continue observing both with our eyes and ears to ascertain involvement. We can almost see the child's increasing levels of confidence, which can ultimately have a knock-on effect on well-being, opportunities for further social interaction and communication. We have a shared interest, which can be the basis for the opening of conversations, conversations to which the child has something to contribute, verbally or non-verbally.

- We are continually learning about what works with autistic children. Some strategies and therapeutic activities will work for some and not for others, but if we do not afford the child the opportunity, we will never know.

- Not all horses are suitable for this particular group of children, and thus experienced practitioners must be engaged to provide the service – those who clearly understand autism and can select the right horse for the right learner because the rider and horse must be attuned to each other.

Reference

Malcolm, R., Ecks, S. and Pickersgill, M., (2018). It just opens up their world: autism, empathy, and the therapeutic effects of equine interactions. *Anthropology and Medicine*. **25**(2), pp. 220–234.

CONCLUSION

Sometimes very simple and easily attainable changes can make a positive difference in our lives. Giving a young autistic person space to build a relationship with an animal or explore an interest in Lego may be a gateway to new learning, shared experience and immense fun. While research relating to both areas is still in its infancy and many studies are based on small sample sizes, there is a growing body of evidence to support the potential benefits of these practical and attainable adaptations. Further research incorporating more perspectives directly from the autistic community will help us to better understand the unique impact that pets and Lego play may have for some autistic young people and their families.

The interests of the young person need to be the heart of both Lego and animal-based supportive practices. Supporting the child's individual and unique ways of engaging with Lego or pets will encourage more enjoyment and development.

Key points extracted from the articles included within this bulletin are provided below, giving practical takeaways for autistic people, their family members and their allies.

Lego

Providing a mix of structure and free play can make the play more predictable and manageable, while also allowing room for creativity.

Having defined roles within group play can provide opportunity to engage with peers as the building teams work together to complete a shared goal.

While practical barriers like time pressure may make it difficult for family members to join their young person in Lego play, teaming up with other parents whose children share an interest in Lego may increase parents' feelings of support and offer extra opportunities for play.

Lego therapy appears to be enjoyable and beneficial for some autistic young people across settings. That means that Lego play structured by teachers and featuring a neurodiverse group of children may also be very positive for autistic young people. However, there can be scheduling and financial demands in organising regular structured play sessions.

Pets

For some autistic young people, the presence of a pet appears to broaden social opportunities, reduce anxiety, strengthen family connections and allow a strong bond to develop.

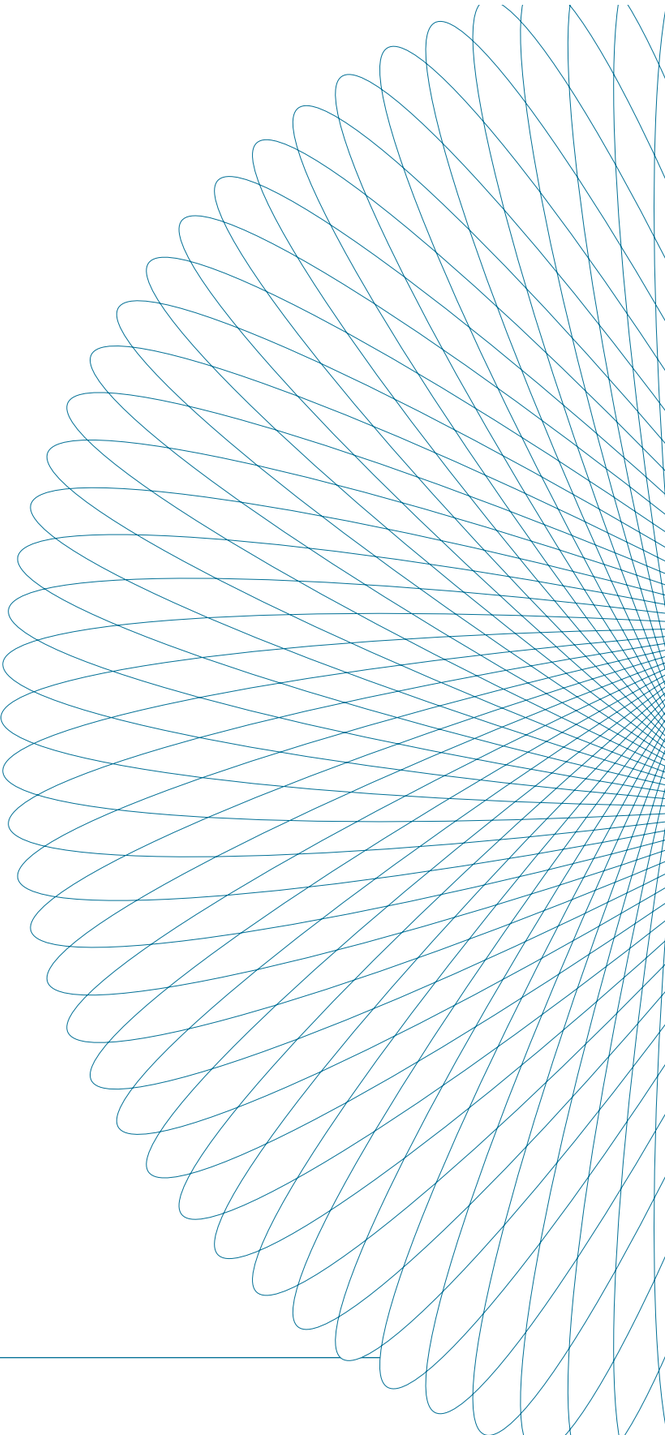
The presence of a pet, as well as the structure that they bring to daily life, can be very beneficial for the well-being of some community members. This may suggest that an increase in pet friendly facilities and events would allow autistic people to be more easily accompanied by their pets, which would increase their comfort and confidence.

Negative aspects of pet ownership need to be considered before committing to a pet, such as potential sensory difficulties, care responsibilities and pet health/behaviour challenges. Plans for extra support may need to be put in place.

It is important to do advance research to find a pet with a temperament and care needs that best match the requirements of the young person and their family.

Pets can bring benefits to the broader family, giving some parents an opportunity to bond and de-stress.

Families should expect that it can take time for new pets to settle and for a routine to be fully established. It may also take time for the young person to understand and develop a bond with the pet. The form that the bond takes may be unique to the child and their pet.



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.

Research Bulletin Feedback
Lego/Pets

CENTRE FOR AUTISM
MIDDLETOWN

The Centre's Research and Information Service welcomes any correspondence including suggestions for future bulletins to: research@middletownautism.com.

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