Treatment of dog phobia in young people with autism and severe intellectual disabilities: an extended case series

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Treatment of dog phobia in young people with autism and severe intellectual disabilities: An extended case series

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Abstract

The psychological treatment of anxiety disorders in people with autism has usually been studied in populations with good speech and communication skills. For people with intellectual disability, research participants were mostly those with moderate intellectual disability, who were usually able to understand spoken language. Patients with limited communication skills (including those with comorbid autism and severe intellectual disability) have been little studied. This paper reports the outcomes of behavioral treatment of phobia of dogs (cynophobia) in 9 individuals with autism, severe intellectual disability and limited communication skills. We describe the methods and the results of the interventions with a view to making recommendations about interventions which might be used in more carefully controlled trials for populations with limited communication skills.

Introduction

Specific phobias are common in people with autism spectrum disorders (ASD). In a study of lifetime prevalence, Leyfer et al. (2006) [1] found that about half of children and young people with ASD were found to meet criteria for a specific phobia compared with less than 5% in the typically developing population. Dog phobias represent a common type of specific phobia, and because so many dogs are kept as pets, dogs are often encountered when shopping or taking part in leisure activities in the community. As a result, young people with ASD may display behaviors which place themselves at risk of injury (e.g. running across a busy road) and therefore impede their access to the wider community [2].

Interventions for simple phobias in the typically developing population began in the 1960s using behavioral approaches. Behavioral theory proposes that a phobia is maintained by avoidance, escape or safety seeking behaviors removing the source of fear. Theory suggests that treatment requires learning that unpleasant consequences do not result from remaining with or even approaching the feared stimulus. The learning can be through three pathways [3]: direct experience (systematic desensitization (SD), imaginal or real life exposure, flooding), vicarious by for instance observing the behavior of others (modelling) or informational (e.g. being told how to manage anxiety and remain with the feared object until fear subsides). Graded exposure uses a series of closer and closer approaches to the feared objects, often using the participants' reactions to determine the pace of progress, whereas exposure based treatments involve being close to the feared object until the anxiety reduces. For instance, Bandura and colleagues [4,5] found that modelling successively closer approach to dogs could reduce avoidance of dogs in typically developing children. Monroe and Ahr (1972) [6] demonstrated the utility of SD (i.e. graded exposure with relaxation training) by using audio recordings of a dog barking to reduce the dog phobia of a blind young adult. Exposure treatments are thought to work through the participant learning their anxiety will reduce even in the presence of a feared stimulus, thus requiring the participant to remain in the presence of feared object until fear reduces. A more complex approach is exemplified by Macdonald (1975) [7] who used imaginal exposure, pictures of dogs and methods to manage parental behaviors to successfully treat the severe dog phobia of an 11 year old boy. Kroll (1975) [8] used another behavioral technique (reciprocal inhibition) to reduce the dog phobia of a 22 year old typically developing female. Reciprocal inhibition uses the fact that some behaviors are incompatible with each other, which for Kroll's (1975) [8] participant was eating a highly preferred food in the presence of a dog which prevented escape from the feared animal. At the end of the intervention the participant was able to approach dogs without fear. In summary these papers demonstrate that a number of behavioral techniques including systematic desensitization (SD), modelling, imaginal exposure and reciprocal inhibition can be used to reduce phobic responses to dogs in adults and children.

During the 1980s the focus shifted to cognitive components in the context of manualised treatments (Cognitive Behavior Therapy (CBT) – see King, Ollendick, Murphy and Muris, 2000) [9] for a wide range of anxiety disorders particularly in young people. Initially these interventions used up to 20 hours of treatment in a group setting although they have now been reduced to around 6 hours of therapist contact time [10,11]. In parallel, Öst and his colleagues [12,13] demonstrated that the duration of treatment for specific phobia could be reduced to a single session of about three hours, which included consideration of the cognitions specific to a particular phobia (see

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Öst and Ollendick, 2017 [14] for a review of the literature). Typical cognitions that might need to be changed include the belief that dogs are dangerous and that they bite to kill. More recently CBT has begun to exploit the potential for new techniques such as virtual environment based [15,16]. A narrative review suggested that CBT, exposure, modeling and education appear to be the most effective interventions for anxiety disorders in young people. Relaxation seemed to be less effective (Table 2 in Higa-McMillan et al. 2016) [16].

The development of interventions for the phobias of people with intellectual disability (ID) has tended to lag behind that for typically developing people. Jackson and Hooper (1981) [17] used participant modelling to treat the dog phobia of someone with an intellectual disability. The hierarchy was based on that used by Bandura's group [4]. A further ten studies have used SD plus a variety of additional components such as video, [18-20], relaxation [21-23], modelling [21,22,24], reciprocal inhibition [25], psycho-education [24] and edible rewards [26]. The video recordings were used both to present videos of feared dogs [18,20] and to model coping reactions and approach to the dogs [18-20]. In most of these papers no particular changes to communication methods were described, although Dansey and Peshawaria (2009) [24] used visual methods to communicate with their participant. Seven of the studies also described the use of multiple dogs to ensure generalisation and six described sessions occurring in different places for the same reason. The amount of time used for the intervention programmes also varies widely from just over three hours over a two week period 17 to 21 hours over six months [18]. With the notable exception of Dansey and Peshawaria (2009) [24] cognitive components such as psycho-education and behavioral experiments were not used in these papers. A narrative review of interventions for young people with ASD, severe intellectual disability and specific phobias suggested that "graduated exposure to the feared stimulus coupled with reinforcement for approach behavior" 27]. In summary, participants with intellectual disability with dog phobia were largely treated with behavioral techniques especially graded exposure and relaxation.

In this paper we report on an extension of the methods used by Dansey and Peshawaria (2009) [24] to a group with more severe intellectual disabilities and greater impairment in communication skills. On the basis of the foregoing literature we proposed that a behavioral intervention consisting of graded exposure, relaxation techniques and rewards could be developed to reduce the dog phobia of individuals attending a residential school for people with autism and severe intellectual disabilities. The majority of the individuals have little or no speech and use a system of visual communication known as the Picture Exchange Communication System (PECS - Bondy and Frost, 1994) [28]. PECS is a system of augmentative and alternative communication (AAC) that is widely used for people with autism but has also been used with other groups experiencing communication difficulties. The method is designed to be used in a social context and involves behavioural techniques to develop exchange of PECS symbols for positive reinforcers. PECS symbols consist of pictures with words displayed on small pieces of card so that they are easily portable. Once correct responding has been established there is a clearly described process towards the final stage of PECS usage in which young people would be expected to comment on events. Practiced PECS users would be expected to carry a folder with them which contains all the symbols that they are able to use. A recent review identified that the use of PECS was not restricted to people with autism, but had also been used successfully in other multiple disabilities [29]. In our setting PECS symbols are used to provide information on the schedule of activities that young people are expected to follow. The aim of this paper is to describe personalized modifications that might be needed for individuals with autism and severe intellectual and communication disabilities. We hypothesized:

1. Graded exposure with modelling will prove to be an effective method of fear reduction for a non-verbal population
2. Intervention programs will require an increased total duration of sessions and hence an increased duration of the intervention relative to young people with typical development.

Methods

Participants

Twenty two consecutive referrals to the psychology department of a charity providing residential education and training for people with ASD and ID were screened (See Figure 1 for a modified Consort diagram). Two people were unable to take part:

one because he was known to be aggressive to animals, and; one because she left the placement before treatment could begin. 16 people have started treatment, and 4 are waiting for treatment due to lack of availability of trained dogs and their handlers. Of the 16 who have started, 9 have completed to the criterion of being able to encounter a dog without escaping or avoiding. Table 1 shows the number of sessions taken to reach criterion, the ages of the participants at the start of treatment, and their receptive and expressive communication skills.

Seven of the participants spoke although the level of speech was very limited and in one case was entirely echolalic. Four participants were able to understand simple verbal instructions of one task at a time, but of those three also required PECS symbols. Four could understand written schedule of one task at a time.

Treatment components

Graded exposure: To determine a starting point for intervention, each participant was offered a variety of activities to identify which aspects of dogs were causing the fear responses. The materials approximate to a hierarchy starting with pictures of dogs, then manipulating those pictures as part of a jigsaw puzzle, teaching grooming using a toy dog, watching videos of dogs exposing them

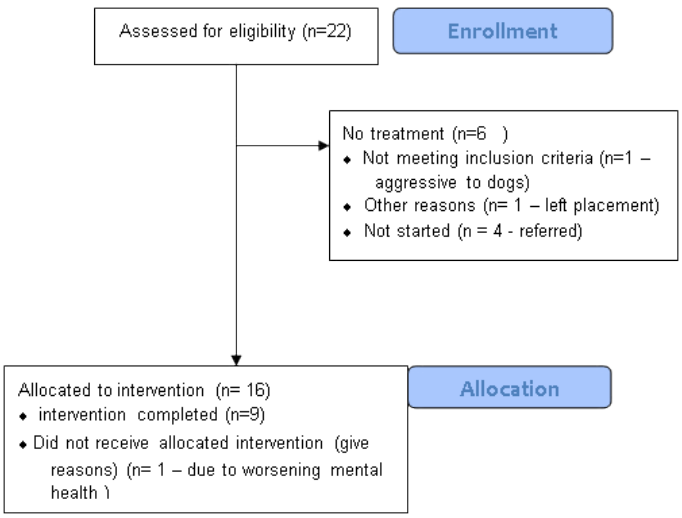

Figure 1. *Modified Consort Diagram* showing the number of participants and describing the outcomes of the referrals at August 2017

Table 1. Table of participants including communication skills

Participant	Number of Sessions	Age when treatment started	Receptive communication	Expressive communication	Communication in sessions
1	25	16:05		Multiple echolalic phrases from cartoon shows and nursery rhymes	Speech and PECS
2	46	14:07	3-4 words presented on iPad	3-4 words written	Written schedule
3	10	18:08	Verbal instruction + written instruction	PECS and speech at single word level	Written schedule
4	37	14:09	PECS	PECS	PECS
5	19	15:05	PECS	PECS	PECS
6	7	19:03	Two key word instructions	Three word phrases	Speech and PECS
7	7	15:09	Single key word requests	single words	Speech and PECS
8	23	15:09	4year 6month to 4 year 11 month range	3 years 6 months and 3 years 11 months	Speech
9	19	16:10	Three word level	Two word level and word finding difficulties	Written schedule
10	30	20:08	Single key word requests	Single words	Written schedule

to real dogs first through a window, then without a physical barrier. One person (Participant 8) even tore up printed pictures of dogs and discarded during the first session. All other participants could manipulate still images either watched videos at the start of the intervention or could watch a live dog through a window without showing signs of anxiety. The next stages involved successively closer approaches to the dog culminating in grooming tasks or putting the leash on the dog. Then the participants would be asked to accomplish longer and longer walks with the dog near the training location. The final steps on each participants hierarchy would include encountering both unfamiliar dogs and unexpectedly encountering a dog outside the area in which most graded exposure sessions took place.

Relaxation methods were not used since the participants were insufficiently compliant with relaxation protocols, therefore the intervention methods included graded exposure, modelling and rewards for successful task completion. Modelling was provided both by the dog handlers from Pets As Therapy and the staff of Priors Court School. The rewards were either activity based such as listening to a favoured music or appetitive rewards such as small cakes.

Alternative and augmentative communication: Over the past two decades a number of alternative and augmentative communication methods (AAC) have been trialled to help people with significant speech difficulties to communicate more effectively. AAC can be used either to supplement speech or to as an alternative to speech.

AAC includes manual signing methods [30], speech generating devices [31-33] and signifier exchange systems[1] such as PECS [28,34]. McLay et al. (2017) [35] have demonstrated that individuals may prefer one type of AAC over another, and although the organization does facilitate personal choice, all the individuals who were referred for treatment of dog phobia used the PECS system.

Visual schedules: A visual schedule is usually a set of pictures representing activities that the person with language difficulties will be asked to take part in. They can be presented vertically (starting from the top) or left to right. In the education of people with autism and Intellectual Disability they are often presented as pictures which are placed on a column in such a way that they can be taken off once completed. Visual schedules can be used in variety of ways to communicate a series of activities or the steps of a specific activity [36]. This organization uses both pictures and printed words in the visual schedules depending on the young person's skill levels (Similar to PECS). A recent review concluded that the use of visual schedules would be beneficial for (a) teaching on-task, on-schedule, and independent transitions; (b) to improve speed of compliance and percentage of correct responses, and (c) decrease the prompts needed for transitions.

[1] In the signifier exchange systems in use in Britain the object exchanged can be a miniature of the real object, a line drawing, a photograph, a colour picture or the printed word.

Results

Participants took between 7 and 46 sessions to reach the criterion of successful treatment defined as lack of avoidance and escape behavior. One participant has subsequently relapsed after about twelve months and restarted the intervention. Thus, of the 9 people who completed a course of treatment to criterion 8 remained able to encounter dogs without sudden fearful responses. The majority of communication with the participants was in visual rather spoken form, although one used speech alone. It is noteworthy that there were five participants who used written instructions from the therapist, although in one case this was supplemented by spoken instructions.

Conclusions

Our study shows that the treatment of animal phobias in people with little or no spoken language is possible using graded exposure and assisted communication methods. Assisted communication methods prepare the participant for the stages that they will experience in each session. Access to favored activities as a reward for task attempts and completion was used as a means of rewarding attempting or completing tasks. Both the starting level of the intervention and the progress of the individuals were very variable. There were no clear indicators to identify why this might be so. A priori, behavioral theory does not clearly specify individual differences in rates of learning, although if the development of the phobia was known one might be able to identify types of learning experience that led to shorter or longer therapy durations and suggest the initial stage of the hierarchy for the intervention.

Systematic desensitization has been used successfully as the main component of interventions for the fears of people with learning disabilities for three decades. It has usually graded exposure combined with explicit training in relaxation, although this study suggests that relaxation is not a necessary component of the intervention. Unusually this study used visual communication methods to augment speech to explain to the participants what was going to happen and what was expected of them. Thus for people with phobias and poor to no speech, visual methods of communication should be investigated in future research, indeed this study is the largest known case series so far published using AAC to assist behavioural interventions. For other groups with limited speech e.g people who have cerebro-vascular injuries, the use of a wider variety of AAC methods might be expected.

For instance, there may be individuals who can type and use speech-generating computers to represent their views. Equally there is no indication here of limitations to the technology, thus one might expect infants and preschool children who are unable to access cognitions to benefit.

A number of issues remain to be discussed and understood further in the course of developing more sophisticated research protocols. First the measures used (usually distance from the dog) should be refined to include other characteristics such as the size of the dog, whether the dog is moving or not, whether it is barking or not, and whether the dog is on a leash or not. It is not clear how these different aspects of the feared object can be consolidated in to a single hierarchy. For instance it is not clear how a barking dog compares to a dog off the leash in terms of perceived danger and hence how they would compare on a single linear hierarchy which has been used in the past (often distance from dog). A single simple metric of avoidance behavior needs to be developed, which might be a carer rated scale of dog phobia. Second, the endpoint of therapy might also need to be considered further, so that instead of one endpoint as used here, participants living in different settings might have alternative endpoints. For instance someone living in a rural area might expect to meet dogs in many open spaces, but someone living in a high population density urban area might have to manage being in an elevator with a dog. Third, the components of the intervention warrant further research. As noted previously however, reciprocal inhibition might be an alternative, such that the graded exposure could be planned to occur alongside engagement alongside a highly favoured activity.

Finally, the design of the trial should be reconsidered. A case series cannot provide data on whether the intervention is better than an alternative active intervention for the treatment of dog phobia. Since populations with ID and ASD and little speech are likely to be extremely heterogeneous both in initial presentation and response to treatment, careful consideration should be given to using single case experimental designs. It appears possible that using a multiple baseline design with participants allocated to randomly varied baseline durations might offer valuable insights for developing interventions for this group. Information from single case experimental designs is likely to be useful for other populations with limited communication skills whose activities are limited by simple phobias such as phobia of dogs or injections. For instance, a recent review of anxiety disorders following traumatic brain injuries in young people identified an increase in anxiety disorders including specific phobias [37] following the injury.

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