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MRes. Veterinary Science

Understanding why guide dogs fail to meet their predicted qualification outcomes

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2   Abstract

Guide dogs provide life changing mobility support and companionship for thousands of blind and partially sighted people. A proportion of dogs undertaking training to be guides will not enter work due to health or temperamental reasons.

This work was designed to investigate the issues associated with the training of guide dogs and the processes around matching them with a client to form a successful working partnership, by focussing on factors that made partnerships successful or resulted in a failure of the dog to qualify.

Study 1 was aimed at developing an understanding of Guide Dogs and highlighting areas where research would aid the organisation. It was clear that investigating a cohort of dogs that excelled within the training programme but were unsuccessful, and a further group of dogs who appeared to be mediocre throughout their training but formed a successful working partnership would provide a rich source of data.

Study 2 used in depth case studies of 10 dogs which were created in a blinded manner using records of the dog's behaviour, progress through training, and reports of matching of the dog with a client if the dog qualified. This study demonstrated that dogs which were predicted to be withdrawn but in fact qualified were matched well with their owner, and in some cases had received extra training input to resolve any behavioural issues. Whereas dogs that were predicted to qualify but were withdrawn from training, had either underlying unrecognised behavioural problems that became apparent after a specific event, or had underlying behavioural problems which were inaccurately thought to have been corrected. Notable within these groups was the use of the descriptive term 'confidence' to describe the reaction of the dog in specific circumstances.

Study 3 examined, using a mixed-methods approach, the use of descriptive terms to refer to 'confidence' within the reports of dogs, written by Guide Dogs staff. A 'confidence index' was developed and was measured in a matched group of 70 withdrawn and 70 qualified dogs. The

confidence index was numerically larger for qualified dogs than withdrawn dogs; however there was no statistical difference between the two groups.

The studies presented within this thesis used both qualitative and quantitative methods and focussed attention on: (1) consistent use of behavioural terminology (2) early identification of behavioural problems (3) appropriate training intervention, and (4) careful matching of the dog with the needs and ability of the client. The investigations involved looking at dog's behaviour and the bond between humans and animals from the perspective of those who know them best, their trainers and owners. The studies and their results all have the potential to improve the number of successful guide dog partnerships, and bridges the fields of research surrounding the human animal bond and the behaviour of dogs.

3   Introduction

Dogs were the first animal to be domesticated by humankind, and are often cited as being 'man's best friend' (Savolainen, 2007). They are the only member of the Canidae family to be considered as being domesticated (Clutton-Brock, 1995). Since their domestication thousands of years ago, dogs have not only been a companion for humans but have been put to work as sled dogs, police dogs, guards of property, sheep herders, retrievers of game and as assistance dogs for disabled people (Goddard and Beilharz, 1986; Coppinger and Schneider, 1995).

Evidence of assistance dogs exists from Roman times, and there are records of their use in Western Europe from the mid-13th Century (Fishman, 2003). Assistance dogs, including service dogs, hearing dogs and guide dogs, are now widely used around the world. Service dogs can help individuals who are not fully mobile to retrieve items and perform basic tasks for them, which can lead to the individual obtaining greater independence and enable them to participate in society (Matamoros and Seitz, 2008). Hearing dogs are utilised by individuals with hearing impairments and the dogs alert their owners to sounds which increases the person's safety and improves their social interactions (Matamoros and Seitz, 2008). Guide dogs, the most common of the assistance dogs, provide individuals who are blind or partially sighted with enhanced mobility (Goddard and Beilharz, 1984; Mizukoshi et al., 2008). As well as helping with day to day tasks, assistance dogs have also been found to increase people's confidence, provide companionship, lower stress and alter social interactions with other people (Sanders, 2000; Whitmarsh, 2005). The majority of organisations which provide assistance dogs to individuals are charities which receive no government funding and rely on donations from the public to be able to continue providing their services to those who require them.

Currently, the climate surrounding charities is a difficult one. Recent cases of certain charities 'harassing' members of the public for donations which were exposed in the media, has led to new legislation(Smith, 2015). The new regulations prevent charities from contacting individuals unless

they have 'opted in', and even if they have 'opted in' the communication from the charity can only last for a period of a year (personal communication). Although Guide Dogs were not one of the charities implicated in the scandal, the limited contact with potential donors is expected to have an economic impact, and they are estimating a loss of income pertaining to around £10million (personal communication). This major impact is in the face of the fact that the number of blind and visually impaired people is increasing each year, and predictions are that the numbers will continue to increase (Frick and Foster, 2003). Further to this, Whitmarsh (2005) reported that there is a discrepancy in the number of visually impaired people who own a guide dog, and the number who could potentially benefit from one. Guide Dogs as an organisation are aiming to deal with such problems by increasing their number of new Guide Dog partnerships to 1000 a year, up from a current number of 780. However, as the cost of training is approximately £35,000, this will be a challenge. Currently, a third of all dogs bred by the charity are removed from the training programme during their training which will have already cost the charity on average £20,100. There is clearly a need to improve training outcomes or remove unsuitable dogs earlier from the programme before they have too much of a financial impact.

This thesis contains three individual studies, which used both qualitative and quantitative methods. Ethical approval for the studies was granted by The School of Veterinary Medicine and Science at the University of Nottingham. The first study involved developing an understanding of Guide Dogs as an organisation and how they breed their dogs and train them to be aids for humans. The results from meetings with key members of staff are presented as a report. The second study arose due to the identification of an area which required research after the completion of Study 1. It was determined that it would be valuable to understand reasons as to why certain dogs did not reach their predicted outcome, and therefore case studies into individual animals were conducted. A review of the relevant literature puts the study into context and the results from the investigation are presented as case reports. Study 3 arose due to identification that the trait of 'confidence' may play a role in whether or not dogs qualify as guides. Similarly to Study 2, a review of the literature was conducted

before the study was performed and helps to put the study into context. The methodologies for

Studies 2 and 3 have been discussed separately after the presentation of their results. Finally an

overall discussion is presented which considers methodology, the results of all the studies, the need

for further research and recommendations which can be given to Guide Dogs to help increase the

number of dogs which qualify as guides.

4 Study 1: Development of an understanding of Guide Dogs

4.1 Aims

The aims of the study were as follows:

- To develop an understanding of Guide Dogs as an organisation

- To understand how dogs are assessed throughout their time within the organisation

- To understand how dogs are selected to be guides or to enter breeding programmes

- To highlight areas where research would aid the organisation in fulfilling their target of providing more guide dogs to the visually impaired community

4.2 Methods

A visit was undertaken to the National Breeding Centre (NBC), Leamington Spa, to discuss with key members of staff the processes in place within the organisation around the development of guide dogs from when they are born to when they retire from work. This allowed the context of the subsequent research to be fully understood which is important as dependent knowledge and experience are considered to be instrumental when conducting research activity within a particular area (Flyvbjerg, 2006). Discussions were also held around how dogs were selected based on their health and behaviour status to either continue through training, be withdrawn from the programme, or be used as breeding stock.

Monthly meetings were held at the School of Veterinary and Medicine (SVMS), University of Nottingham. This involved members of the Epidemiology of Guide Dog Health and Behaviour research group based at SVMS and members of staff involved in research from Guide Dogs. The purpose of the meetings was for the two groups to liaise about current research and how the aims of the two groups were to be fulfilled. Informal discussions were also held about the best ways to use the data provided by Guide Dogs to obtain the most amount of information from it, for example

explanation of acronyms used in free text reports, and to gain a deeper level of understanding about the organisation and their work as a whole.

4.3 Results

4.3.1 Guide Dogs

Guide Dogs was established in 1931 and the organisation now has four guide dog training schools, where approximately 1000 puppies are trained for work per year and as a result the UKhas the highest numberof guide dogs in the world (Arata et al., 2010). Guide Dogs aim to provide fully trained dogs to blind and partially sighted individuals to help increase their independence and mobility. It costs approximately £35,000 to train a guide dog which takes between 20 and 24 months, and £50,000 to fund the dog for the entirety of its life. The most commonly used breeds are the Labrador retriever, golden retriever, the German shepherd dog and their crosses, with the most successful breed being the golden retriever cross Labrador retriever. Flat coated retrievers, Border collies, poodles and their crosses are also used within the organisation.

4.3.2 The life of a guide dog

When a litter is born, they can either remain with the dam in the volunteer carer's home, or they can be housed at the NBC. This will depend on whether the birth is expected to be uncomplicated, the health of the mother and pups, and the experience and availability of the carer. From between six and eight weeks the pups will be removed from the dam. At this time the pups will have a health check from a veterinary surgeon, will receive their vaccinations and undergo puppy tests. These puppy tests are referred to as 'Puppy Profiling Assessment' and they allow Guide Dogs to place the pup with the right puppy walker in the right environment. The profiling of pups which uses colour coding can be seen in Table 1. Purple pups are removed from the Guide Dogs training programme and they may be rehomed or given to another assistance or service dog organisation. This is due to them being considered unsuitable for life as a guide dog. A pink pup is likely to require an

experienced handler and a more challenging environment, thus impacting on where they will be

placed.

Table 1: Classification scheme used by Guide Dogs to categories pups according to their personality at six-seven weeks of

age

Colour	Meaning
Purple	High introvert
Blue	Low introvert
Green	Low extrovert
Pink	High extrovert

NB: The 'Puppy Profiling Assessment' is described in Asher et al.'s publication (2013).

The pup will then enter the 'puppy walking' phase. Here they are placed with a volunteer who cares

for them and teaches them basic commands. The puppy walker's role is to expose the pup to many

different things and to keep them happy and relaxed. Pups which are marked as potential breeding

stock are monitored.'Puppy Walking Supervisors' are Guide Dogs staff who monitor the progress of

the pup and perform and record monthly assessments of the pup known as Canine Assessment

Summaries (CAS).

A key time in the 'puppy walking' period is seven months. Here pups receive health checks and their

records are examined to gain information about their temperament and progress. Guide pups at

walk are given health scores which are detailed in Table 2. After initial health assessments, dogs will

receive veterinary checks every six months.

Table 2: Health classification scores used by Guide Dogs to categorise pups according to their health status throughout puppy walking

Score	Meaning
H1	No history of health problems
H2	History of a health problem with a matching implication – can progress but may need to be matched carefully
H3	Dog is under current investigation for a health problem
H4	Dog is not suitable for guiding work due to a health condition (for example unmanageable atopic dermatitis)

NB: matching is the process of placing the most appropriate dog with the needs of the blind or partially sighted client.

Dogs within the organisation are health checked very frequently due to the need to identify any problems as soon as possible, to enable a rapid diagnosis and implementation of treatment, or withdrawal from the programme. Problems that can emerge at later ages include musculoskeletal problems, ophthalmic deficits and skin diseases. Atopic dermatitis is particularly challenging as it can be seasonal and therefore may only present itself after a considerable amount of time and money has been invested in the dog. An ophthalmic screen is performed on dogs at 14 months of age.

After 'puppy walking', if the pup is deemed suitable to continue training as a guide dog, it will enter 'early training' and live in a kennel environment. The dog will spend around 16 weeks in 'early training' under the care of a Guide Dog Trainer (GDT). Here the dog will learn the basics of how to guide, such as walking in a straight line, maintaining a calm and relaxed demeanour and having a reliable recall response. Within early training the GDT will complete the CAS reports each month.

After 'early training', the dog will progress to 'advanced training' for around ten weeks. Here they are under the care of a Guide Dog Mobility Instructor (GDMI), where the dog's decision making capabilities are developed and training continues and the dog progresses onto more advanced skills. Just as in the earlier stages, the dog is assessed using CAS, usually monthly.

There are four potential outcomes for a guide dog in training. The first is that the dog successfully qualifies and will therefore progress to being matched with a client. Different clients have different requirements from a dog and these must be considered when forming a partnership. The final four weeks of a guide dog's training is spent training the client and dog together, overseen by the GDMI, with the aim of getting the two individuals to work together as a single unit. The second potential result is that the dog is withdrawn from the training programme. These dogs are never in work and this result occurs in around one third of guide dogs which are bred each year.If a dog is unsuitable for work as a guide dog due to health reasons, it is usually rehomed, whereas if it has a temperamental issue it may also be rehomed, but is more likely to be reassigned a role as a buddy dog, or used by another assistance dog charity. Thirdly, a dog may be a high quality individual that will never enter work but is used for breeding. Finally a dog may be in work for a period of time but has to be removed from the partnership before three years has elapsed. In these cases the dogs are described as being 'prematurely retired' and they will be rehomed or reassigned as described above.

4.3.3 Breeding processes

The pups undergo a health check at seven months during the 'puppy walking' period to screen for any potential problems. Their litter mates are screened at the same time and it is around this time that reports are examined to ensure any hereditary diseases haven't been identified in their ancestors.

Selection of pups which will go into breeding is done by the Breeding Selection Supervisor at Guide Dogs who liaises with Senior Puppy Walking Supervisors. Pups are assessed for soundness, construction and how they move. An overall assessment is made of the pup's behaviour. At eight

months the pups are viewed by breeding staff and a report is created which will determine whether to continue placing the pup in the breeding scheme.

When the pup is between 11 and 12 months of age, further health assessments take place. Particular focus is placed on the hips, elbows, shoulders and eyes. Radiographs are taken for assessment with a particular need to identify any evidence of hip and elbow dysplasia. The British Veterinary Association (BVA) scoring schemes are used, but unofficially as the minimum age under the BVA that a dog can be assessed is 12 months, however potential guide dogs can be assessed younger than this. The same radiograph and scoring protocols are used and the radiographs are assessed by someone who sits on the official BVA panel. Both hips are scored, and the dog receives an overall score. The guidelines for whether a guide dog can be used for breeding are that the score should be better than the median for that breed. Using the median is slightly stricter than using the mean. In terms of elbow scoring, the dog must receive a score of '0, 0,' which means that both elbows are radiographically normal.

At around 12 months of age, the potential breeding stock dogs are relocated to the NBC to have their temperament assessed by the Character Assessment Tracker. This is an adult version of the Puppy Profiling where they experience a number of stimuli. They are objectively scored from one to seven, with four being the ideal score for a guide dog.

Certain breeds may have a predilection for a certain health condition and therefore will go through additional checks. For example, German shepherd dogs will be tested for von Willebrand disease. All dogs, if suitable, will then be accepted onto the breeding programme. Time is then given to see how their litter mates progress through training, in case problems which may affect the sibling in the breeding programme arise. At 18 months of age, the dog will be discussed at a breed review meeting to determine if any problems have arisen either with the dog itself or its relations, and only after this will breeding be considered.

Within Guide Dogs, there is a system in place to assign alerts to breeding animals for health and temperament problems as a way to monitor the breeding programme. Alerts are based on thresholds and there may be a need for six monthly or yearly reviews. The alert system is detailed in Table 3.

Table 3: Classification scheme of 'Alerts' used by Guide Dogs as a method to inform breeding decisions for an individual animal

Alert	Definition
A1	Soft alert – staff should be aware there is an issue because of a particular reason
A2	More prescriptive alert – there is a definite issue that staff should be aware of, for example if a dog is positive for Progressive Retinal Atrophy (PRA) the dog should only be mated to a dog which has tested clear
A3	Put on hold – postpone breeding programme for the animal as more time and information is required, for example, to see if progeny develop suspected problems

In terms of temperament, breed specific frameworks exist which are based upon the main reasons for that breed of dog being withdrawn. Thus, if a particular dog has a temperamental trait which raises concerns it is considered in light of what is to be expected for that breed. Normally a dog is reviewed annually when they are in the breeding programme. However, if anything of concern arises, then the review date will be brought forward.

Certain health conditions render a dog unacceptable for breeding. These include:

- Atopic dermatitis
- Elbow/hip dysplasia
- Epilepsy

- Multifocal retinal dysplasia

- Osteochondritis dissecans (OCD) of the shoulder, elbow or hock

- Primary seborrhoea – if the dog is exhibiting severe symptoms

- Posterior polar subcapsular cataract (PPSC)

- Tricuspid valve dysplasia

- Ventricular dysrhythmias

- Von Willebrands disease

Although they are unable to be used for breeding, the dog may be able to enter a training programme to work as a guide dog depending on the condition and the impact it has on the dog. There may be implications when matching such a dog with a client, as not every owner will have the capacity to be able to manage a dog with a certain condition.

Despite there being training and health programmes in place at Guide Dogs, discussions with key members of Guide Dogs staff and academics involved in research at the University of Nottingham revealed that research for this thesis should focus on improving behavioural testing of potential guide dogs, due to behaviour being the biggest reason for guide dogs being withdrawn from training (Audretsch, 2013). It was determined from past research surrounding guide dogs, that there were a group of dogs who had predicted outcomes and yet did not fulfil them (Harvey, 2014; Harvey et al., 2016). It was therefore decided that for this thesis, investigation of these dogs would be beneficial as improving detection of unsuitable dogs at a younger age would increase productivity as time and resources could be better spent on dogs which would be more likely to qualify.

5 Study 2: Case studies

5.1 Introduction

5.1.1 Behavioural testing

A variety of methods are available to assess the behaviour of dogs, both for those who will become pets and those who will be assistance dogs. There is a particular need for effective tests when determining behavioural traits in assistance dogs such as guide dogs. The most common reason for withdrawal of an assistance dog from a training programme is a behavioural issue(Goddard and Beilharz, 1983; Arata et al., 2010; Tomkins et al., 2011; Audretsch, 2013). This has a number of potential impacts; if a dog does not enjoy working it could be deemed a welfare issue (Mizukoshi et al., 2008), and removal of an unsuitable dog from the training programme due to predicted behaviour has significant implications for an organisation in terms of time, expertise and finances that have been invested in that dog(Harvey et al., 2016). This means that early identification of behavioural issues is important. Due to the impact that behavioural tests could have on a dog's life and the assistance dog organisation, tests used for working dogs need to be valid and reliable. Here, validity is defined as how accurately an instrument measures what it is meant to measure and how the results relate to real situations whilst reliability is defined as the repeatability and consistency of a measurement (Merriam, 1995).

Currently both qualitative and quantitative methods are usedto assess dog behaviour. Qualitative methods focus on asking humans who are familiar with the dog to answer questions related to the behaviour of the dog. Quantitative approaches use specific behavioural tests to allow direct observation of how the animal responds to certain situations. The use of questionnaires to assess behaviour is based on the premise that no-one knows the dog as well as those who live with it, and that if suitable questions are asked, appropriate information can be obtained from the owner or guardian of the animal (Hsu and Serpell, 2003).The Canine Research and Behaviour Questionnaire (C-BARQ) (Hsu and Serpell, 2003), the Dog-ADHD rating scale (Vas et al., 2007), the Monash Canine

Personality Questionnaire (Ley et al., 2009)and a questionnaire which primarily assesses distraction, sensitivity and docility (Arata et al., 2010) are examples of methods of qualitatively assessing behaviour using questionnaires. Such questionnaires require the individual to assign a subjective score to a description of the animal (Harvey, 2014).

The C-BARQ (Hsu and Serpell, 2003) was developed as a qualitative tool with the aim to standardise behavioural testing in the assistance dog industry. The purpose of the C-BARQ was to determine behavioural responses of the pet dog to common situations and stimuli that they are likely to encounter in their natural environment. Although the dogs used in the pilot study of the questionnaire were clients of a veterinary hospital, the most highly represented breeds were the Labrador retriever, golden retriever and German shepherd dog, which are also the most common dogs used for guiding.Duffy and Serpell (2012) tested the C-BARQ on assistance dogs from a number of guiding and service dog schools to determine its efficacy at predicting whether puppies would be successful in their training or not. It was concluded that there were differences in outcomes between the schools used in the study. The test was determined to be able to indicate which dogs were suitable for guiding work and which were not, but it was not recommended to be used as a sole criterion by which to make a decision as to whether a particular dog should be removed (Duffy and Serpell, 2012).

A quantitative approach to behaviour testing was employed by Wilsson and Sundgren (1997) with the objective of determining whether German shepherd dogs and Labrador retrievers would be suitable for a life in work. The dogs being tested were acclimatised to their surroundings and then the animals had to complete a number of test situations. Each dog then had ten characteristics subjectively assessed by the test leader. Results showed that there were significant differences between breeds and sexes for certain characteristics.However, the authors raised the point that their tests should be interpreted for an individual dog, in particular considering what is required of

them. This is an important point for all behavioural assessments, as what might be a desirable

characteristic in one dog or situation, may not be in another(Wilsson and Sundgren, 1997).

The Swedish Working Dog Association uses the Dog Mentality Assessment (DMA) as a standardised,

quantitative behavioural test (Strandberg et al., 2005). This test was found to be useful in terms of

predicting certain behavioural problems at a young age, as the results were validated by the C-BARQ

questionnaire undertaken 12-24 months after the DMA had been performed(Svartberg, 2005).

Svartberg (2005)also validated several C-BARQ factors and suggested that the questionnaire

waseffective as a tool to assess canine personality. The study is an example of how a qualitative test

and a quantitative test can be used to assess the same dog. They can validate each other's results,

but one may also highlight behaviour that the other does not.

In terms of assessment of dogs for guiding work there are different approaches, and each will have

its own strengths and weaknesses. One area of debate centres around the optimal location to

assess a dog. If the animal is tested during the 'puppy walking' phase, assessing within the home of

the puppy walker may appear intrusive(Hsu and Serpell, 2003). However, taking the dog out of the

home and placing it into an artificial environment may result in behaviour which is atypical and not

reflective of how it usually acts(Harvey, 2014; Rayment et al., 2015). It is also important to consider

that all behavioural tests rely on an individual person to make an assessment of a dog. Therefore

validation, reliability and repeatability of a test must be considered.

The approach that Guide Dogs currently employs to assess behaviour and personality traits is that of

the Canine Assessment Summaries (CAS), which were not developed with scientific principles in

mind. Theyuse a quantitative method where Guide Dog staff visit the puppy, on average once a

month, during 'puppy walking', 'early training' and 'advanced training'. They give the dog a score

from one to four for certain behavioural traits such as "Distraction – dog's focus on stimuli", with a

score of one stating that there is no issue and four indicating a dog should be withdrawn. This

subjective scoring is based on the staff's knowledge and experience of the dog. The dog also

receives an overall 'training grade' and a 'health grade'. As well as this quantitative assessment, the assessor also has the opportunity to fill out a 'free text' box where they can write an in depth assessment of the dog in their own words. There are no specific criteria for this and the assessor can write what they like. Currently, there are no studies that have described the reliability and validity of the CAS. The individual responsible for the dog's behaviour assessments is the Puppy Training Supervisor, however the supervisor and the dog may be unfamiliar to one another until a few meetings have elapsed.

New behavioural tests have been developed by the University of Nottingham and Guide Dogs, which aim to predict dogs that will not successfully qualifyas guide more accurately(Harvey, 2014; Harvey et al., 2016). If implemented, the hope is that these will lead to unsuitable dogs being removed from the training programme earlier, leading to economic savings for the charity, as well as moving the dog to an environment which fits their needs and behaviour better. Questionnaires have been designed to be completed by both the dog's Guide Dog supervisor and the dog's puppy walker, known as the 'Puppy Training Supervisor Questionnaire' (PTSQ) during puppy walking. When the dog is in early and advanced training a Guide Dog Trainer Questionnaire (GDTQ) is filled out by the guide dog trainer. The aim is to assess personality traits at five, eight and 12 months of age. These age points were selected based on analysis of 12 years' worth of CAS reports, which determined that behaviour was most stable at these times. It was therefore considered that the assessments of behaviour would be more reliable at these times compared to others, such as when the pup is still with its mother(Harvey, 2014). Further to the questionnaires, an ethogram based test battery known as the 'Mobile Puppy Test' was developed, which assessed the puppy's behaviour with a particular focus on behaviours related to dominance, obedience and sociability(Harvey, 2014; Harvey et al., 2016). After being subjected to the 'Mobile Puppy Test', dogs can be given a 'red flag' if they score below average for certain items, or a 'green flag' if they score better than average. A 'red flag' suggests that that dog is unlikely to qualify, and a 'green flag' suggests that the dog will qualify (Harvey, 2014).

5.1.2 Health

Although the main reason for withdrawal of Guide Dogs from work or training is related to their behaviour, health problems also have the potential to have a major impact on the working life of an assistance dog. The literature surrounding the health of guide dogs in particular is limited, however a number of studies exist which assess the incidence and prevalence of diseases in pet dog populations.

The most prevalent breeds used by Guide Dogs are golden retriever crosses (with Labrador retrievers or German shepherd dogs) (56%), Labrador retrievers (28%), golden retrievers (10%), German shepherd dogs (5%) and other breeds or crosses (1%), as reported by Guide Dogs in 2013(Guide Dogs, 2013). Using pure-bred dogs comes with the risk of the dogs having inherited disorders. Online databases exist to show which breeds are predisposed to certain diseases. Analysis of such databases was conducted by Asher et al., (2009) to determine which diseases the 50 most popular Kennel Club registered breeds were predisposed to. The German shepherd dog was found to be predisposed to the greatest number of inherited diseases and similarly had the greatest number of conformation-inherited linked diseases, which are defined as the dog having an inherited disorder which is worsened by a conformational trait. The study also identified that taller and heavier breeds are more at risk of cardiovascular and gastrointestinal disorders which are directly related to conformation, and integument and musculoskeletal problems which are exacerbated by a conformational trait. These findings clearly impact on Guide Dogs as the breeds that they use are classified as tall and heavy.

Another study looked at owner's perceptions of the cause of death of their dogs, by sending a questionnaire to over 3000 pet owners(Michell, 1999). Despite surveying the pet population, as opposed to guide dog owners in particular, the study revealed that certain breeds are over-represented in terms of reasons for early death compared to the general population. Golden retrievers, who are one of the most commonly used dogs by Guide Dogs, are over-represented in

terms of the number of deaths due to cancer (Michell, 1999). Despite being of relevance to Guide Dogs,it must be remembered that the population of guide dogs has the potential to be genotypically different from the pet dog population as Guide Dogs maintain their own breeding stock. Therefore, just because a disease is highly prevalent in one population of golden retrievers, it may not necessarily be so evident in another. However, it is still important to be aware of breed predilections for disease, as early recognition and consequent treatment can lead to a better quality and prolonged life. Furthermore, the studies highlighted were based in the UK and are therefore more applicable to Guide Dogs than other similar studies which have been conducted in the US (Bronson, 1982b), Germany (Eichelberg and Seine, 1996) and Japan (Hayashidani et al., 1988).

Michell (1999) also found that neutering female dogs leads to them living significantly longer than their entire counterparts. Although neutered males lived on average slightly longer than unneutered animals, this finding was not significant. This is a positive finding in terms of Guide Dogs as they routinely neuter all their animals which will not be used as breeding stock. A positive impact on longevity due to neutering of dogs in the UK was found by O'Neill et al (2012), and in the US by Bronson(Bronson, 1982a). As with any study looking at a certain variable on length of life, it is nearly impossible to isolate it from other factors. Therefore although evidence does exist to support neutering of dogs to prolong life, consideration must be placed on other factors including environmental as well as those within the genotype.

5.1.3 The link between health and behaviour

As well as considering health and behaviour as two separate causes for early withdrawal of guide dogs, health could also directly impact on the behaviour of a dog leading to undesirable characteristics. Musculoskeletal, ophthalmic and dermatological diseases pose a major challenge to Guide Dogs.Pruritus associated with atopic dermatitis is an example of adiseanse which can clearly impact on behaviour. Indeed, Hill et al., (2007) developed a 'behaviour-based scale' for owners to score the degree of pruritus present in their dogs. This scale included items such as:

"Prolonged episodes of itching occur when the dog is awake

Itching may occur at night or wake the dog up

Itching may also occur when the dog is eating, playing, exercising or being distracted"

Statements such as these, although not directly related to specific temperamental traits, suggest that pruritus can prevent the dog exhibiting normal behaviours such as playing. Failure to exhibit normal behaviour can be considered a welfare issue, based on the non-fulfilment of one of the five freedoms which explicitly states animals should have the "freedom to express normal behaviour" (Botreau et al., 2007). Further to this, under the five freedoms, animals should also have "freedom from pain, injury and disease"(Botreau et al., 2007).

Hip and elbow dysplasia are joint malformations due to growth disorders of the bone (Mäki et al., 2005). Both conditions are polygenic and multifactorial which makes them harder to eradicate (Collins et al., 2011).Although there is no literature which explicitly examines the changes in behaviour that dysplastic conditions can cause, it is known that the pain and lameness of both hip and elbow dysplasia impact on the working abilities of dogs (Townsend, 1973). Similarly to atopic dermatitis, it can be assumed that the clinical symptoms which the dog experiences will impact on the animal's ability to display normal behaviours.

5.1.4   Changes in behaviour

5.1.4.1   Development of behaviour

Scott and Marston (1950) defined four critical periods of development of social behaviour in dogs. The first is the neonatal to birth phase, lasting twoweeks. It is unlikely that what the puppy experiences here will impact majorly on its development, as the neonatal period is primarily devoted to obtaining nutrition (Scott, 1965),however there is some debate that certain stimuli could have an effect on development if experienced during this period(Serpell and Jagoe, 1995). The transition period is defined as being between when the puppy is two weeks and three weeks old. This period is where changes in feeding, locomotion and development of sight occur, and attachments with

individuals and the environment around them begins to develop. It is argued that the first change in behaviour occurs shortly after the pup's eyes open (Scott, 1965). Next is the primary socialisation period from three to 12 weeks of age. This period is where the neurosensory system is developed. This allows rapid development of social behaviour, and attachments with humans and other animals continue to develop. Advice for owners is that complex stimuli should be experienced by the puppy in this stage, as new stimuli introduced after this period are likely to lead to fearful behaviour. Scott and Marston(1950) defined the optimum socialisation period as being from six to eight weeks and so this is considered to be the acceptable time to remove the pup from the litter. This is particularly relevant for Guide Dogs, as it has been determined that if pups are removed from the kennel environment prior to 12 weeks of age, they are more likely to succeed as a guide dog (Pfaffenberger et al., 1976). The final period is the juvenile period which the pup is considered to be in until they reach sexual maturity between the age of five months and one year, dependent on breed and gender(Overall, 2013). This period is where learning appropriate behaviours from littermates, the mother and the owner continues, as well as where social behaviours are solidified.

There is speculation that the personality of animals can be influenced even before the animal is born, due to varying environmental conditions to which the dam is exposed(Smotherman and Robinson, 1988). This is an important consideration when assessing behaviour as personality, as it can be construed that innate temperament cannot be measured without considering the influence of the environment, both pre and post birth. One example of factors external to the individual animal, that may influence the development of behaviour, is the presence of siblings (Hudson et al., 2011).The ability to predict how a puppy's behaviour will develop before they leave the mother's nest is likely to be limited (Goddard and Beilharz, 1986), which could bring into question the validity of the 'Puppy Profiling' at between six and eight weeks and subsequent removal from training programmes which occurs in Guide Dogs. However, the 'Puppy Profiling' was determined as being able to predict future behaviours as shown by Asher et al. (Asher et al., 2013).

5.1.4.2 Human impact on behaviour and assessments

A perceived change in the behaviour of a dog could be a result of the dog not being assessed correctly in the first place. Indeed, studies into behaviour tests often find that scores vary between the individuals assessing the dogs (Goddard and Beilharz, 1983). To eliminate human error, Arata (2010) suggests that to make the best early predictions of qualification, reliable temperament assessments which contain objective measurements are required. In order to do this, it is necessary to identify the behavioural traits that do indeed have an impact on whether a guide dog will qualify or not. Arata also makes thepoint that there is a tendency for the validity of an assessment to be considered less seriously when performing a behavioural test; therefore there is a need for a careful evaluation to determine if the data from behaviour tests truly reflects the behaviour. This highlights a need for behavioural tests to be robust and have clearly defined protocols and definitions. There is also the optionof using a questionnaire and a behavioural test in conjunction with one another(Harvey, 2014). This allows one behavioural assessment to validate the other.

Evidence exists to suggest that dogs differ in the amount of attention they give to humans, with them giving preferential treatment to the owner (Mongillo et al., 2010). Within the current Guide Dogs behaviour assessment schemes, the assessments are recorded by a Puppy Training Supervisor. However this individual and the dog may be unfamiliar to one another until after a few meetings. Based on Mongillo's findings, the dog is likely to be more responsive to the puppy walker who is considered their owner.In contrast to this, Harvey(2014) found that a population of dogs spent 20% more time gazing at a stranger rather than their puppy walker, which affects the results of an assessment regarding 'attentiveness'. 'Attentiveness' is a trait which impacts on whether or not a dog is withdrawn from the Guide Dogs training programme. It is important to consider that in Harvey's study, the dog is being assessed in an interactive communicative task, whereas in Mongillo's study the dog is not asked to perform any tasks which could account for the discrepancies in results. Further to this, Mongillo's study was performed on pet dogs, rather than guide dogs. It is not clear fromGuide Dogs' records whether the supervisors base their assessments on the

interaction of the dog with themselves, the puppy walker or a combination (Harvey, 2014). Indeed, this is likely to differ between the different supervisors.

5.1.4.3 Environmental effects on behaviour

In the neonatal period it is considered that adverse environmental conditions can impact on the puppy's development(Scott, 1965). Scott also highlights that the environment is considered to have a large impact on the development of fear responses. It can therefore be argued that studies of behaviour in dogs in conditions such as laboratories cannot be generalised to the home environment (Scott, 1965; Harvey, 2014). Similarly if a dog is residing within a stressful environment it leads to assessment of behavioural tests being more of a challenge due to the dog being less likely to respond in a normal way to the stimuli which are presented (Weiss and Greenberg, 1997). Social isolation and restricted space, both features of a kennel environment, are known to lead to a stress response in dogs (Marston and Bennett, 2003). Thus, when conducting behavioural tests it is important to consider the environment which the animals have been exposed to and where the test is being conducted.

5.1.5 Reasons for differences in behaviour

5.1.5.1 Gender

It is widely accepted that behaviour in animals will differ dependent on their sex(Beach, 1975). Indeed, Hart and Hart (1985) determined that male dogs differed from females on ten out of thirteen traits. It was also found in a study by Wright and Nesselrote (1987) that significantly more intact males and neutered females were referred to behavioural specialists for aggression than their counterparts, although it is not clear whether other factors for this difference were fully considered.However, the study does still suggest that neutering has an impact on behaviour (Wright and Nesselrote, 1987). Their work also found that the mean age of referral for aggression problems was 3.4 years. However it is important to consider that the study only included pet dogs which were

referred for behavioural problems. There will have been much variation in the type of dog and their health and behaviour management by the different owners, such as the reasons why they chose to neuter their dogs or not, when the dogs were neutered, and how the dogs' interactions with other dogs were managed. The Wright and Nesselrote study does however some have relevance to Guide Dogs, as they routinely neuter all their dogs. Further to this, any dog which displays aggression will not continue through either the training or breeding programme. However, problems could arise if one considers the evidence that aggression only displays itself at a later age, when a guide dog is potentially in work. Indeed, Seksel et al., (1999) suggest that aggression in dogs is not seen until the dog reaches social maturity which is considered to be between 18 and 36 months (Overall, 2013). A positive impact of neutering on ability to work was found by Wilsson and Sundgren (1997), who noted that male Labrador retrievers, a breed commonly used by Guide Dogs, had problems co-operating with handlers. However, these problems disappeared when the dogs were castrated at less than one year of age (Wilsson and Sundgren, 1997), as is routinely done in the Guide Dogs organisation.

Behaviour of female dogs may mature slower than males in the juvenile period. There is evidence of this In Harvey's work (Harvey, 2014). An assessment at five months of age revealed that ten out of 70 variables which were tested showed significant differences in response between males and females. However, by eight months this number had decreased to five out of 70(Harvey, 2014). This could indicate that females take a longer period of time to develop the same responses as their male counterparts. From the literature, it is therefore evident that when assessing potential guide dogs suitability, the age, gender and neutering status of the animal should be considered as these factors could impact on their outcome.

5.1.5.2   Breed

As with gender, breed differences in behaviour are commonly reported. In general, the breeds selected for guiding are used because they are believed to be best suited to the job (personal

communication). However, even within these breeds, there will be variance in their behaviour and suitability to the role. Wilsson and Sundgren (1997) investigated differences in behavioural traits between German shepherd dogs and Labrador retrievers, both of which are used by Guide Dogs. The results showed that German shepherd dogs scored higher for 'sharpness' and 'defence drive', and Labrador retrievers scored higher for 'nerve stability'. Harvey (2014)determined from trait testing that Labrador retrievers were the least fearful of the breed, and Golden retrievers were the least distractible and excitable but were more anxious(Harvey, 2014). These differences in traits can be, in part, explained by what the breeds were initially bred for. It is pertinent to bear this in mind both when assessing dogs and also when matching them with clients, as different owners will have different requirements for their dog and its abilities and traits. The most successful type of dog that Guide Dogs use is the golden retriever cross Labrador retriever. Cross-breeding may therefore have a positive impact on how breed related traits are expressed.

5.1.6   Impact of poor behaviour and health and relinquishing dogs

Numerous studies have been conducted into the most common reasons for pet dogs to be relinquished to animal shelters. Patronek et al., (1996) determined that the most common reasons were due to owners not participating in dog obedience classes during their ownership, a lack of veterinary care, owning a sexually intact dog, inappropriate care expectations and dogs urinating/defecating inappropriately. The majority of these reasons are unlikely to be causes of premature retirement in guide dogs as veterinary care and obedience training are the responsibility of the charity, the dogs are trained to urinate and defecate on command, and all dogs entering work are routinely neutered. However, inappropriate expectations of their dog could be a factor in an owner opting to relinquish their guide dog. In contrast to Patronek's findings, other studies reveal the single most common cause of relinquishment of pet dogs to be behavioural problems (DiGiacomo et al., 1998; Tuber et al., 1999; Salman et al., 2000; Kim et al., 2010). This is directly comparable to the fact that the most common reason for withdrawal of guide dogs from their training programme is problem behaviours (Goddard and Beilharz, 1983; Arata et al., 2010;

Tomkins et al., 2011). After guide dogs qualify,the main reason for premature retirement is a behavioural problem (Audretsch, 2013).

Pet ownership is widely considered to be beneficial to both the physical and psychological health of their owners and families (Marston and Bennett, 2003). For guide dog owners specifically, benefits include improving independence and confidence and increased and altered social interaction (Whitmarsh, 2005).Although other mobility aids for people with impaired visions can help increase mobility, a guide dog has the special benefit of providing companionship.Users of assistance dogs reported that since having the animal, negative feelings related to depression, anxiety and loneliness have decreased, and their perceived self-esteem and safety increased(Friedmann and Son, 2009). The benefits of pet ownership, generally attributable to the human animal bond (Friedmann and Son, 2009), is a factor in why the relinquishment of dogs is so difficult. An investigation into relinquishment of pet dogs from the owner's perspective (DiGiacomo et al., 1998) found that the decision to give up pets was universally difficult. Interviews found that all the individuals and families involved in the research struggled with the decision to give up their pet. Although DiGiacomo's study highlights the difficulties associated with relinquishing pet dogs, there is no specific research looking at the impact of withdrawal of guide dogs from work on their owner. Friedmann and Son (2009) however, suggest that removal of an assistance dog from their owner, even for a short period of time, would have a negative impact on the owner's well-being.

Due to the clear benefits that having a guide dog can have on a visually impaired person, there is a need to avoid that dog being removed from the partnership. In terms of health, successful breeding programmes exist to work to eliminate the prevalence of diseases in the Guide Dogs stock. Further to this, there is evidence that conditions which manifest themselves more readily in service dogs (Helmink et al., 2003; Fraser et al., 2008) attract more research to work towards better management and eradication strategies. This is a contentious subject with Collins et al. (2010)arguing that dog welfare must be paramount, and available funding should be targeted at the

alleviation of the most suffering in the greatest number of animals. However there is undeniably a strong influence of other factors, such as financial gain or human health benefits, when funds are spent on research into diseases associated with certain dogbreeds.   Realistically, it would be impossible to ask an organisation such as Guide Dogs to direct their funding towards research into breed-linked conditions for breeds they do not use, and therefore will not benefit from. This argument aside, it is apparent from the literature surrounding pet dog relinquishment and statistics on withdrawal of guide dogs post-qualification, that the major cause of both is behavioural problems. As such, research into developing behavioural tests which accurately predict how a dog's personality and behaviour will develop would be beneficial to both service and pet dog populations.

5.1.7   Current research

New behavioural tests developed by the University of Nottingham and Guide Dogs have shown to have increased sensitivity and specificity for predicting whether guide dog puppies will qualify or not, however there are a number of dogs who do not fit this prediction(Harvey, 2014; Harvey et al., 2016).There is a need to investigate the dogs which do not fulfil their potential to try and maximise the number that do form successful working partnerships. Formulating explanations as to why dogs either qualified or were withdrawn could potentially lead to the development of strategies to ensure the highest possible number of dogs remain in guiding work. Minimising the number of dogs which are withdrawn from training or work would have a positive impact on both the organisation and the visually impaired community.

In order to develop explanations as to why certain dogs in training as guides did not reach their predicted outcome, deep analysis of the information available would be required. Quantitative methods employing statistical analysis would be unsuitable and would provide limited understanding as to the reasons behind why the animals qualified or they were withdrawn. Indeed, W. I. B. Beveridge was quoted by Flyvberg as saying that intense observation leads to more discoveries than statistical methods applied to large populations (Flyvbjerg, 2006). Flyvberg agreed with Beveridge and suggested that in order to understand complex issues, qualitative analysis in the

form of a case study methodology is necessary. Case studies involve investigating the subject, which could be an individual, group or organisation, in order to answer specific research questions (Gillham, 2000). In the case of this research, in order to understand the outcomes reached by certain dogs, the case study methodology can be applied to existing data to formulate explanations for these outcomes.

5.2 Aims

The aim of this study was to form explanations as to why individual dogs which are training to be guide dogs do not fulfil their predicted outcomes.

5.3 Hypotheses

Two hypotheses were investigated in this study:

It is postulated that dogs which are predicted to do well, but are subsequently withdrawn from the training programme, experience a traumatic event which leads to behavioural changes which renders them unsuitable for the guiding role.

It is postulated that dogs which are predicted to be withdrawn from the training programme but subsequently qualify do so because of effective matching with suitable clients.

5.4   Materials and methods

5.4.1   Case studies

A case study format was selected in order to develop an in depth understanding of individual dogs. The form of case study analysis was an explanation building method. The aim of such a method is to analyse the case study data by building an explanation about the case (Yin, 2014). Consent for the analysis of the reports came from Guide Dogs.

5.4.1.1   Selection of Sample

The sample of dogs to be analysed were selected from a group of dogs that had been closely monitored in a previous study (Harvey, 2014). The dogs had undergone behavioural tests as outlined in a study by Harvey et al. (2016) and had either been recorded as being above average due to their results and received at least one 'green flag' and were therefore predicted to qualify, or they had scored below average and received at least one 'red flag' meaning they were predicted to be withdrawn from the training programme. These predictions were based upon detailed examination of a 70 item validated questionnaire (Harvey, 2014).'Green-flagged dogs' had either been rehomed or were in work as a different type of service dog, for example as a 'buddy dog' for a child with special needs. The 'red-flagged dogs' had been paired with a client and were still in work.Out of the cohort of dogs, there were five which were classified as 'red-flagged dogs' and so these were selected for the study. There were 27 dogs which were classified as 'green-flagged dogs', and out of these, 18 dogs only received one 'green flag' and were removed from the sample. This left nine dogs and out of these, five dogs were selected at random by the researcher to analyse. The dogs selected for analysis were those with more than one 'green flag' which suggested they would be information rich, which would allow the researcher to learn a lot about the issues of importance to the research, that is, why these dogs did not fulfil their predicted outcomes (Patton, 1990). The researcher remained blind to the reasons as to why the dogs were predicted to have certain outcomes.

5.4.1.2 Research questions

- Why were the 'green-flagged dogs' withdrawn from training when they were predicted to qualify?

- Why did the 'red-flagged dogs' qualify as guides when they were predicted to fail?

- Why did problems arise in the first place?

- How did Guide Dogs overcome problems?

- How can the cases influence decision making by Guide Dogs in the future?

5.4.1.3 Canine Assessment Summary Analysis

Each dog had a number of free text reports associated with the Canine Assessment Summaries (CAS). The free text reports are filled in by members of Guide Dog staff at approximately one month intervals as the dog progresses through 'puppy walking', 'early training' and 'advanced training'. Reports were accessed by searching the dog's individual code within the Guide Dogs Interactive system (GDI-R).The number of reports differed per dog, and 'green-flagged dogs' inherently had less reports, as they were withdrawn before fulfilling the whole of 'advanced training'. This evidence was selected to be used for the case studies as it was completed by trainers and assessors who know the dog well. The free text data was qualitative and provided insight into the life of the dog, its behaviour and events which occurred throughout the training process. Thus it was determined that it would be a resource which would be helpful when formulating answers to the research questions.

Information pertaining to the dogs was copied from GDI-R into Microsoft Word. Each dog had an individual file containing their name, age, sex, breed, and their status within Guide Dogs. A table per dog was then constructed which contained all of their free text reports, the date and stage of training when the free text report was written and which items the dogs received negative quantitative scores for. The reports were repeatedly read to gain familiarity with the data.Key descriptors within the reports were coded (Table 4). Due to the researcher having limited experience in the field of guide dog behaviour, key behavioural traits were determined using the

quantitative scoring system within CAS. As analysis of the reports progressed, other traits which

were consistently mentioned, or which were considered to be of importance to the particular case,

were also coded. This coding allowed pertinent information to be highlighted and removal of

information not considered necessary to the development of the understanding of the case.

Individual reports were briefly analysed and the analysis included in the table. The reports and

individual analyses were repeatedly read and an overall analysis of the findings was conducted to

determine explanations as to why the dogs had not fulfilled their predicted outcomes. An example

of part of a dog's individual file is included in the Appendix.

Table 4: List of key descriptors identified within the free text of Canine Assessment Summaries of 10 dogs

Code
Willingness and responsiveness
Excitability
Obedience
Behaviour in varying environments
Behaviour when alone
Travel behaviour
Distraction
Anxiety
Confidence
Copraphagia
Interaction with people
Interaction with animals
Sensitivity
Health

5.4.1.4 *Analysis of matching and aftercare reports*

All reports present on GDI-R pertaining to matching of dogs to clients and aftercare were also downloaded. These reports were only available for 'red-flagged dogs', as 'green-flagged dogs' had been removed from the process previous to this stage. These reports were analysed to get an insight into how the dog and client were matched, whether or not it was a successful partnership, and why.

Information about the client and their needs was analysed. Particular focus was placed on what the client's needs were, and what they stated they wanted from a guide dog in terms of both physical and mental characteristics. As with the free text reports, repeated reading of the reports was undertaken to determine which aspects were important for the individual case. In the case of these reports it was not possible to formulate a list of discrete codes.Instead repeated reading of the reports allowed overall impressions to be gained as to the nature of the partnerships, and how problems, if there were any, were overcome.

5.4.1.5 *Comparison with tests*

All of the dogs used within the study had undergone the behavioural tests, as outlined in Harvey's study(Harvey, 2014) and based on the results of the test had received either a 'green flag' or a 'red flag' at some point in their training career. These dogs had also had 'puppy training supervisor questionnaires' (PTSQ) and 'guide dog trainer questionnaires' (GDTQ) completed about them by the member of Guide Dogs staff responsible for overseeing their training at certain points in their life(Harvey, 2014). For the 'red-flagged dogs' a profile was created by Dr. Naomi Harvey based on the results of the PTSQ (puppy walking) or GDTQ (early and advanced training) at the age which they received the 'red flag'.This was done so that the researcher could see the reasons why the dog may have received the 'red flag' and was therefore predicted to be withdrawn. For the 'green-flagged dogs' they had received multiple 'green flags', potentially at different ages, and therefore profiles were created from the results of the PTSQ when all of the dogs were five months of age, to see if

they had excelled at a young age before subsequently being withdrawn. Profiles were not made at the time of removal from the programme, as the withdrawal reports were available which highlighted reasons for the dogs not progressing to qualify.

The profiles were created using z-scores. Z-scores allowed a dog's position on a particular trait to be displayed in comparison with the rest of the population (all the dogs at that age/stage of training).A score of 0 on the profile suggests that the dog was average for that particular trait, >0 is better than average and <0 is below average. The results of these profiles were then compared against what was found in the analysis of the CAS reports, with the aim of determining whether the different modes of assessing the dogs revealed similar things about the dog in question.

5.4.1.6   Cross case analysis

In order to make recommendations to Guide Dogs regarding possible improvements to their policies of assessment of dogs and creation of partnerships, evidence was required. Yin (2014) suggested that evidence from case studies is more powerful when multiple cases are used, and therefore cross case analysis was performed on the group of 'red-flagged dogs' and the group of 'green-flagged dogs' in order to generate overall conclusions as to why the dogs did not fulfil their predicted outcomes. This cross case analysis consisted of formulating tables which included what the author deemed to be the most important aspects of the individual dog's case, allowing the dogs in the subsets to be compared to one another, and conclusions drawn about whether there were common themes within the groups of 'red-flagged dogs' and 'green-flagged dogs'.

5.5   Results

5.5.1   Red-flagged dogs

'Red-flagged dogs' are defined as those which were subjected to behavioural tests (Harvey et al.,

2016) where they scored significantly below average for a certain trait or traits and therefore

received a 'red flag'. Due to receiving this 'red flag' they were predicted to be withdrawn from the

training programme, however they progressed to qualification and were still in work as a guide

when the study was conducted. For each dog all of their monthly training reports were analysed, as

was the information about the client with whom they were matched. Further reports about the dog

and the client as a partnership were also analysed.The information presented is a summary of the

findings in the form of a case study to highlight what were interpreted by the researcher to be the

important points as to why the dogs did not fulfil their predicted outcome.

5.5.2 Dog 1

Dog 1 was a female, medium sized yellow Labrador with a short coat and a moderate walking speed. Within the free text, the main themes that were identified were excitability and distraction. Excitability was reported directly using phrases such as "still excitable", and also indirectly via phrases including "jumping around young children". Although excitability was a constant theme which was brought up throughout Dog 1's training, by the end of these assessments it was reported that her excitable nature was "easily controlled". It is a similar situation with regards to Dog 1's distractibility. Events involving stimuli which led to Dog 1 being distracted were mentioned throughout the assessments, however by the final report it was stated that "bird distraction is evident, but easily controlled". Similarly, earlier on in the reports it was stated that Dog 1 had "minimal distractions which are easily controlled". Other reports about Dog 1's behaviour and personality include that she was obedient, could be left alone, wasgood in all environments and had good responses on buses. She was reported to have "some underlying mental sensitivities" and "requires clear boundaries and positive handling".

The matching criteria highlighted the need for a confident client to be matched with Dog 1. This was reported to be due to the need to be able to manage Dog 1 and give her clear boundaries in order to minimise her excitability, as the report stated that Dog 1 "can be excitable and occasionally cheeky but easily controlled, mainly vocally". Also referenced was a need for routines and environments with which Dog 1 was familiar. This was highlighted in the report when it stated "mental sensitivities evident so would not cope with a high unpredictable workload".

Dog 1 was matched with a client who still had some residual vision and went out independently, mostly to a city centre with which she was very familiar. She required Dog 1 to be able to use the train, bus and car and she had previous experience with dogs. She had two pet dogs, one of which was very excitable and one which barked a lot. The client had a moderate walking speed and was described by the assessor as having a good natural voice and "demonstrated great understanding of dog behaviour". Dog 1 would have had a variable workload in urban and suburban areas and would

rarely have been left alone. The client expressed a preference for a lighter, female dog and would have been happy to have a German shepherd dog cross, due to previously having had a German shepherd dog, however she was flexible.

Dog 1 was mixed with the client's pet dogs, and no issues were referenced. The client was described as having a sensible approach to her dogs. Dog 1 was then reported in assessments where she was working with the client, to lose her positivity and her distractibility and 'use of *nose*' increased. The client was described as being capable of controlling Dog 1's distractions. Dog 1 displayed some reluctance to travel in footwells, and again the client was reported to be able to handle this problem via positive reinforcement. 'Use of nose'which refers to the dog being distracted when walking, and distractions related to the client's pet dog were reported, and it was later mentioned that Dog 1 could be boisterous with other dogs. The client reported that she was very happy with Dog 1 and Dog 1 was described as having settled well into her new home and was reported to be very tolerant of the two pet dogs. Dog 1's 'use of *nose*' and dog distraction issues were reported again, but were reported to decrease as the client learnt to deal with the issues. It was reported that the client said that "[Dog 1] is great and that she saved her life by refusing to step off a kerb as a van flew past her".

Analysis of Dog 1's behavioural test (Figure 1) revealed that the dog received a 'red flag' at five months of age. The profile of the dog created from the 'Puppy Training Supervisor Questionnaire' (PTSQ) at the time of the receipt of the 'red flag'shows that Dog 1 scored below average for 'body sensitivity' and 'adaptability'. These traits are therefore likely to be reasons as to why Dog 1 received a 'red flag'.
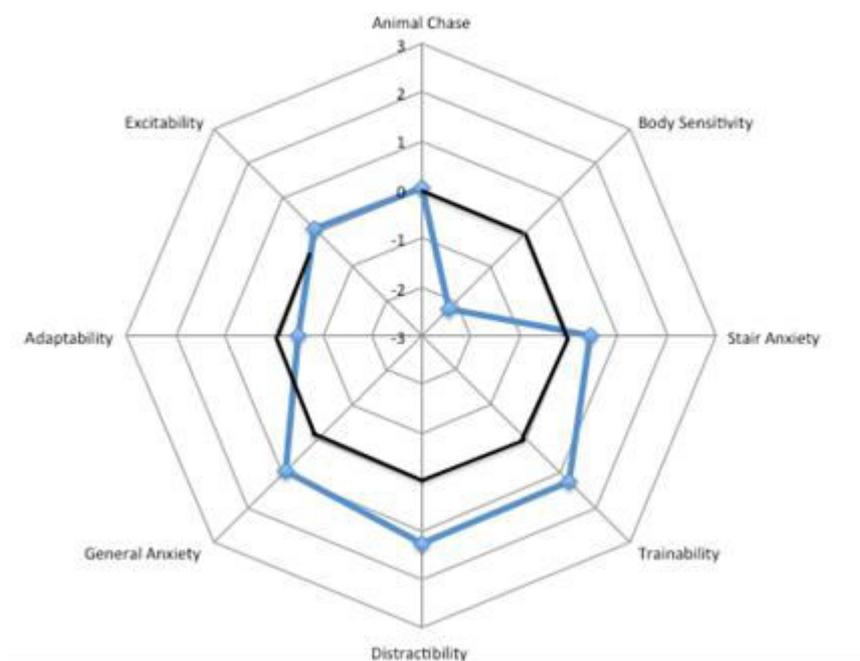
Figure 1: A star plot of Dog 1's 'Puppy Training Supervisor Questionnaire' scores from the five month assessment. The blue shape represents Dog 1's scores, in relation to the rest of the population, where their average is represented as the black shape. Any traits of Dog 1 which scored >0 are better than average, and any scores <0 are below average.

5.5.2.1.1 Interpretation

Based on the information from the CAS free text, it was interpreted that Dog 1's main behavioural issues were related to distractibility and excitability. Although there were references to these behaviours being able to be controlled, it was suggested that a confident client was required to manage Dog 1. It appeared that this was taken into consideration as Dog 1 was matched with a client who had past and present experience with dogs. Indeed, the client was described as being able to handle problems when they arose. The match appeared to be a success, based on comments from the client stating that she was happy with the dog and that Dog 1 saved her life.

The profile of Dog 1's Puppy Training Supervisor Questionnaire(PTSQ) scores from their five month assessment revealed that the dog scored poorly for 'body sensitivity' as the score was more than two standard deviations below the mean. Dog 1's results were near average for 'animal chase', 'excitability' and 'adaptability' and above average by one standard deviation for 'general anxiety', 'distractibility' and 'trainability'. 'Trainability' is defined as the "dogs' ability to respond to obedience

commands, learning ability and responsiveness to the handlers' voice during both training and play"
(Harvey, 2014).   This profile suggests that the dog received a 'red flag' for a trait related to 'body
sensitivity'. Interestingly the dog scored above average for 'distractibility'; however in the analysis
of the CAS free text, distractions were a problem of the dog. The other main issue highlighted from
the CAS was related to the excitable nature of the dog; however this trait was scored as being
average in the PTSQ.

5.5.3   Dog 2

Dog 2 was a female, yellow Golden retriever cross Labrador retriever. She was medium sized with a
short coat and had a moderate walking speed. Throughout all of her assessments, the main theme
that appeared which was related to her temperament was confidence. Throughout all aspects of
her training, her confidence was mentioned repeatedly. Her confidence was reported to fluctuate
over the course of time as is reflected by the phrases: "improved confidence", "much more
confident on free runs", "sudden dip in confidence", "lacks confidence", "under confident type",
"much more confident when greeting other dogs", "confidence has steadily improved" and
"confidence continues to grow – happy and motivated in busier [environments] for 20mins or so,
confidence can then start to grow".

It was repeatedly brought up within the free text that Dog 2 worked much effectively when her
walks were restricted to less than 20 minutes. This was shown when the reports stated that "if the
walk pushes on too long tail carriage and motivation will drop, 15-20mins walks are fine", "copes
well with busy traffic [environments] but anxiety can start to build up if exposed for too long",
"happy and motivated in busier environments for 20mins or so, confidence can then start to drop",
and "better in quiet environments and if not worked for >20minutes".

Another aspect of Dog 2's behaviour and temperament which was repeatedly brought up was that
she displayedsome anxious behaviour. She was reported to show submissive behaviour, however
this improved with age. Her sensitivities and anxiety were described as having the potential to

challenge a client. Dog 2 displayed excitable behaviour in'early training', however this was not reported whilst she was in a working environment, only socially. Dog 2 was said to have good obedience levels and could use all forms of transport.

The matching assessment for Dog 2 had limited information. She was described as being sound in all environments and it was stated that she could undertake a variable workload where routes varied in length. She was reported to be sound and confident on all modes of transport.

The potential client required Dog 2 to undertake short works with a light workload, in urban and suburban areas. The client required Dog 2 to be happy to work in all environments and the dog would havedaily contact with young children. The client had previous experience with dogs. A moderate walking speed was required of Dog 2. The client was reported to have developed some bad habits as she "lifts arm and drags dog a bit, pulls rather than uses voice to direct the dog." The client's voice was reported to be monotone and "moany" and the assessor stated that "care will be needed when matching not to overmatch". Dog 2 would have been potentially left for up to 1.5hours, five days a week. The client would ideally have liked a Labrador or Labrador cross, with a short coat, and only wanted a bitch. She would have liked the dog to be medium sized and good with young children. Also required were for the dog to have had good social behaviour, obedience, recall, minimal distractions and the dog needed to be able to travel using the car, bus and train. The client was described as being a "responsive nice lady" and that her "confidence has increased with having current dog with all its issues".

Within the matching assessment, Dog 2 was described as being sound and easily handled and had low distractibility. Dog 2 was determined to have an appropriate walking speed and was the right type of dog for the client's needs. A positive matching walk was undertaken where the client was assessed as having handled the dog well.

During the client and Dog 2's training sessions, two main issues arose. The first was related to 'dirty walks' which are defined as being a walk where the dog defecates or urinates inappropriately. However, the client didn't have a problem with this behaviour. Secondly, Dog 2 was reported to 'use hernose'when she encountered certain stimuli due to being distracted, but the client was happy to work on that behaviour. The client was eager to learn and was confident with Dog 2. This confidence was reflected in the report when it stated that "Client very happy with [Dog 2] and reported feeling more confident and looking forward to their future together" and "Client extremely happy with dog and dog has settled well into new routines". Dog 2 was reported in the final assessments to need control as she was prone to scavenging, and that she could be a little attention seeking and become overexcited on greeting which led to urination.

Analysis of Dog 2's behavioural test revealed that the dog received a red flag when they were eight months old. The profile created from the PTSQ at the time of the receipt of the 'red flag' shows that Dog 2 scored below average for 'general anxiety', 'trainability', 'stair anxiety' and 'adaptability'. These traits are therefore likely to be reasons as to why Dog 2 received a 'red flag'.
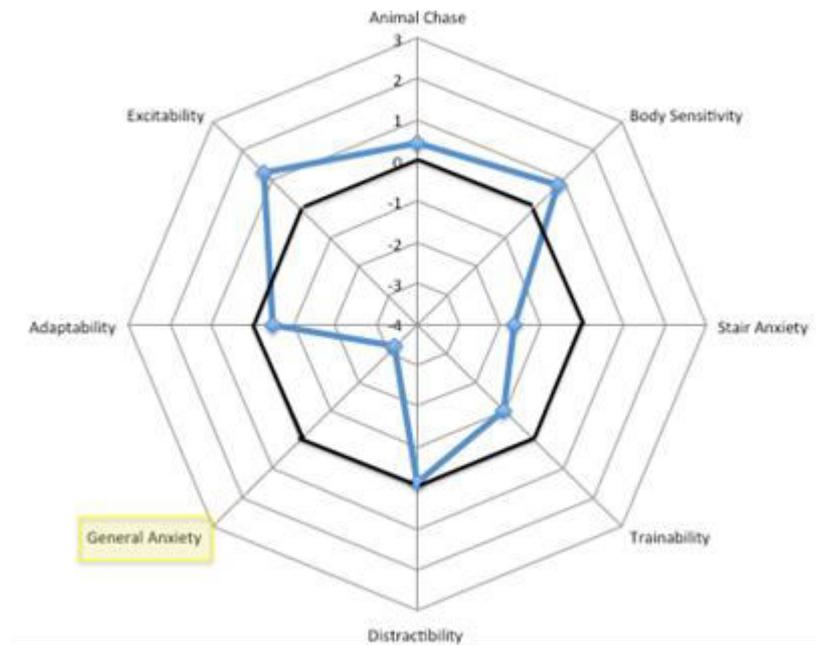
Figure 2A star plot of Dog 2's 'Puppy Training Supervisor Questionnaire' scores from the eight month assessment. The blue shape represents Dog 1's scores, in relation to the rest of the population, where their average is represented as the black shape. Any traits of Dog 2 which scored >0 are better than average, and any scores <0 are below average. The yellow box around 'general anxiety' highlights that the dog received a 'yellow flag' for that trait.

5.5.3.1.1 Interpretation

Analysis of Dog 2's PTSQ scores revealed that the dog scored better than average for 'excitability', 'animal chase' and 'body sensitivity', showing the dog had positive attributes at this stage. 'Distractibility' was scored as average. Below average scores were received for 'trainability', 'stair anxiety,''adaptability' and 'general anxiety'. For'general anxiety' the dog received a 'yellow flag' which gave them a greater than fifty per cent chance of withdrawal from the training programme. The dog's confidence was repeatedly brought up throughout the CAS assessments as was the dog's anxiety. However, around the time of the receipt of the 'red flag' at eight months, the CAS assessment free text reported that the dog's confidence was improved and "anxiety is now rarely seen". Overall, however, it is apparent from both the profile of the PTSQ and the CAS that confidence and anxiety were the main problem areas for Dog 2.

It is interesting that throughout the assessments it became clear that Dog 2 was better when worked for less than 20 minutes, however in the matching assessment it was stated that the dog was capable of working for 10 to 45 minutes. The client only required Dog 2 to undertake short walks with a light workload so this was a very good match based on the information in the free text, and was likely to have contributed to Dog 2's success. The client had previous experience of having a guide dog which was a factor which was likely to have been instrumental in the match's success as the client had dog handling skills which were likely to have been used to help Dog 2's confidence increase. The client was reported to be happy with Dog 2 which is suggestive of a successful match. Although Dog 2 still displayed some problem behaviour post-match such as urinating/defecating on walks and responding to distractions, the client was happy to either accept the behaviour or work on it respectively. Another client may not have been willing to do this, so it is likely that either the client really liked the dog leading to acceptance of the problems, or that due to past experiences the client felt she had the capacity to work on the issues, or a combination of both. Matching the client's requests in terms of attributes such as breed and size were likely to have contributed to her acceptance of behavioural issues. Also, due to having had a previous dog who was withdrawn it is possible that the client wished to put in work to lead to having a successful partnership and not have to have another dog withdrawn.

5.5.4 Dog 3

Dog 3 was a yellow, female Labrador retriever. She was medium sized with a short coat and had a slow to moderate walking speed. The main theme that was identified in thefree texts of her assessments was her distractibility and scavenging behaviour related to food, both on pavements and on public transport. This behaviour was referenced in multiple assessments, and was more prevalent in 'early' and 'advanced training' compared to 'puppy walking'. It was reported in 'early training' that Dog 3's "distractions [are] mainly vocally controlled", however methods of control relating to this behaviour were not referenced after this.

Another theme throughout Dog 3's assessments was that she took time to bond with new people. It was reported that Dog 3 "initially took time to bond with new handler and this affected motivation and willingness", however after a period of time and work with Dog 3 it was then stated that there was "improvement seen in motivation and bond and a nice standard of work can be achieved, with Dog 3 proving herself to be a capable, calm guide". Similarly in a later report it was reported that Dog 3's "bond with handler [is] much improved and this has seen a big improvement in Dog 3's motivation and willingness".

In 'early training' it was reported that Dog 3 "will slow and show caution in busier environments". By 'advanced training' it was then stated that Dog 3 "prefers destinations, busier environments and locating objectives with purpose to work". A potential match required Dog 3 to be able to urinate/defecate on the leash, and she was successfully trained to do this.

A potential client went out every day to a variety of locations; therefore a matched dog would have needed to be competent at working in urban and suburban environments. The client also used varying modes of transport. The client also used bilateral hearing aids. It was reported that the client would have preferred a dog with a quiet temperament and a steady pace and had a preference for a small female Labrador retriever or cross with a short coat. The client expressed a preference for a yellow dog, but would have considered a black dog. Ideal attributes of the dog for

the client werethat the dog should be calm, easy to control and mature. The client had no other pets; however Dog 3 would have had to come into contact with other dogs. There were children in the client's family from babies up to teenagers. The client had previous experience of owning a guide dog. It was stated by the assessor that the client was better at using a positive voice for encouragement, rather than a negative voice for correction. The client's negative voice and corrections were reported to lack effectiveness. Overall the assessor recommended that the client would be better suited to a quiet guide dog that required motivation.

In the matching information, Dog 3 was reported to take time to bond with new handlers. It was also stated that Dog 3 preferred destinations and purposeful routes. She was stated to have generally low distractibility which was controlled vocally and reports said that Dog 3 was determined to be a "bright little bitch". According to the assessor Dog 3 could sometimes show a stubborn side. Dog 3 was able to travel by car, train and bus and was good socially and had good recall. Dog 3 enjoyed toys and they were able to entertain themselves if this was required.

Throughout the matching assessments of Dog 3 and the client, Dog 3 was reported to take time to bond. However, after three more reports she was then described as having bonded with the client. Some distractibility was reported on transport which was controlled by voice and lead, and the assessor gave the client information about how best to control the distractions. Overall by the end of the assessments it was reported that "[Dog 3] has bonded well with [the client] and they are capable of producing a good standard of work".

Analysis of Dog 3's mobile puppy test score revealed that the dog received a red flag at eight months of age. The profile of the dog created from the PTSQ at the time of the receipt of the 'red flag' shows that Dog 3 did not score below average for any traits, and therefore no conclusions could be drawn about why the dog had received a 'red flag'. In this case it may have been a combination of having average scores across the traits which put the dog at risk of withdrawal.
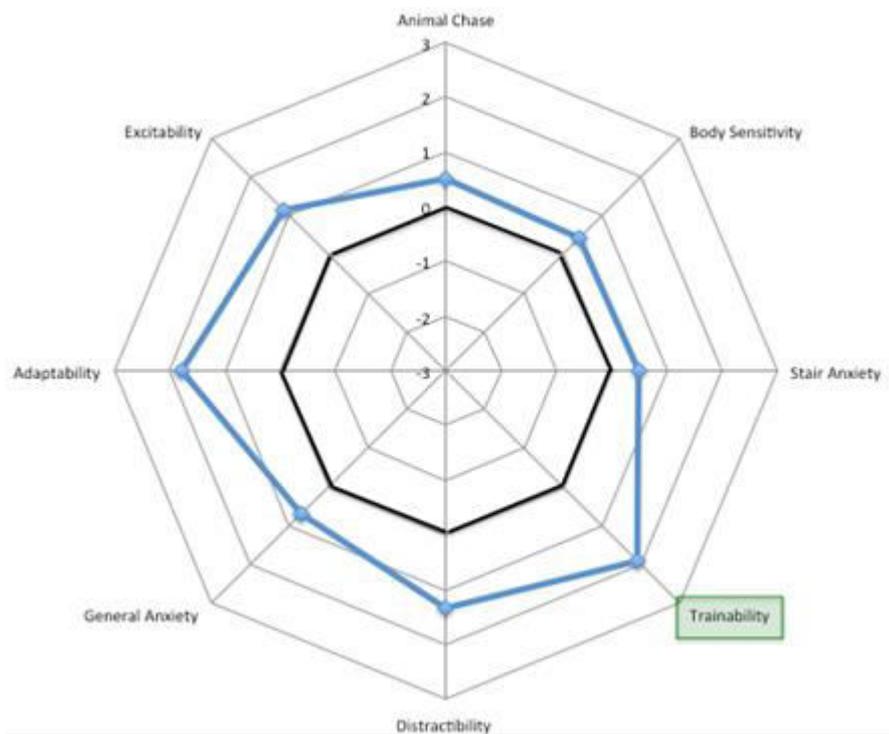
Figure 3A star plot of Dog 3's 'Puppy Training Supervisor Questionnaire' scores from the eight month assessment. The blue shape represents Dog 3's scores, in relation to the rest of the population, where their average is represented as the black shape. Any traits of Dog 3 which scored >0 are better than average, and any scores <0 are below average. The dog received a 'green flag' for trainability.

5.5.4.1.1 Interpretation

Dog 3's main issues were related to taking time to bond and distractibility. The dog was matched

with a client who had previous guide dog experience. It was therefore likely that the client was

equipped with the willingness and ability to put time into bonding and working with the dog to

ensure a successful outcome. Indeed, by the third report relating to training of the client and the

dog as a partnership it was reported that a bond had been formed. It was also reported that the dog

liked working in busier environments and having a purpose, this is something that the client could

offer to the dog as she would require the dog to undertake work in urban and suburban

environments involving variable routes. The assessor recommended that the client should be

matched with a dog that was calm and required motivation. Clearly this was taken into

consideration as Dog 3 was repeatedly referenced as "calm" in the free text and there was only one

reference to excitable behaviour where she was reported to have jumped up. Similarly, the

statement that Dog 3 "initially took time to bond with new handler and this affected motivation and

willingness" is suggestive that a client who was willing to motivate her would have been ideal. The

suggestion that the client was better at using a positive rather than negative voice adds evidence to

the idea that the client would have been a good motivator for Dog 3. Overall it is clear that a

successful match was made, in terms of physical attributes, work load and personalities. The

willingness of the client to put the work in to form a bond and her natural way of working with and

motivating the dog led to a good working partnership.

5.5.5   Dog 4

Dog 4 was a black and tan, Golden retriever cross German shepherd dog. She was a medium sized

dog with long hair and had a moderate walking speed. Throughout Dog 4's assessments a number

of different themes were identified. The main ones were related to copraphagia, distractibility and

behaviour towards people she had not previously encountered. Copraphagia was mentioned

numerous times; sometimes the behaviour appeared to decrease but was then reported to increase

with no clear indication as to why. Copraphagia was mentioned across numerous reports and its

fluctuations were reflected when a report stated "[copraphagic behaviour] almost stopped since

change onto new diet" and then the next report stated that "[copraphagic behaviour] has returned

on the odd occasion at home and on free run". Distractibility was also reported to be a problematic

behavioural trait of Dog 4. By late 'early training' distractibility was reported to be controlled

vocally.

A temperamental trait which was reported multiple times in the free text of CAS reports is that Dog

4 hadunease around new people. Dog 4 reacted anxiously or by barking, but it was stated that once

she got to know the individual this problem is alleviated. In terms of her handling, Dog 4

wasreported to need to be handled in a "low key" and "easy going" manner. Dog 4 had some health problems. Management of her copraphagia involved a change of diet and use of Copro-nil[1], pineapple and crabapple supplements. Dog 4 also developed otitis externa which was treated using Malacetic wipes[2] and Eosotic drops[3].

During'advanced training', Dog 4 was reported to be anxious, and the theme of having issues with new people was brought up. With extensive positive reinforcement and time invested in Dog 4, the problem was reported to have been overcome. There was no mention of Dog 4's copraphagia in 'advanced training' so it could be assumed that the problem was overcome. Issues surrounding distractibility were alsoreported. Whilst working Dog 4 was described as being a very good guide, with high responsiveness and willingness and was reported as always being eager to please.

Dog 4's matching criteria stated that she would require an owner who would understand her, and who would be willing to continue her training around new people and children. She was also described to be better at undertaking work when it would be centred around familiar routes.

The client wasdescribed as requiring a dog which was able to undertake variable, but mostly quite light work. They required a dog which would be comfortable with working for variable periods of time. Dog 4 would have been required to use transport. The client had previously owned various dogs. The client had a moderate walking speed and the area Dog 4 would need to have worked in was reported to have been quite busy. Dog 4 would have occasionally needed to have been left alone and the client expressed a preference for an "unusual dog". The client was reported to be happy to give a new dog time and effort and they understood the challenges of having a dog.

In the matching assessments, Dog 4 was described as having a moderate speed. She was reported to be responsive and that she had had issues with children, adults and objects in the past, but that these issues deteriorated due to having spent a longer than usual time in training. It was reported

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[1] Copro-nil (Forum Animal Health) a taste modifier to discourage copraphagia
[2] Malacetic Otic Wipes (Dechra) antibacterial and antifungal wipes
[3] Eosotic drops (Virbac) antibiotic and steroid ear drops

that positive training had been done with children. Dog 4 was stated to be non-destructive when left alone and good at travelling.

During the reports pertaining to the client and dog being trained together distractibility was repeatedly mentioned, however the client was reported to be able to control this behaviour well. It was repeatedly stated that there was excellent work being undertaken by the partnership and that they were working well together which was shown by the statements "An excellent partnership with very high potential", "Guide dog owner has sensible approach with regards children – happy with how [Dog 4] is", and "[the client] is very happy with how [Dog 4] is working".

Analysis of Dog 4's behavioural test revealed that the dog received a 'red flag' when the dog was undertaking 'early training'. The profile of the dog created from the 'Guide Dog Trainer Questionnaire' (GDTQ) at the time of the receipt of the 'red flag' shows that Dog 4 scored below average for 'Training 1'. 'Training 1' is related to confidence in decision making, speed of learning, support needed to work and the dog's initiative.
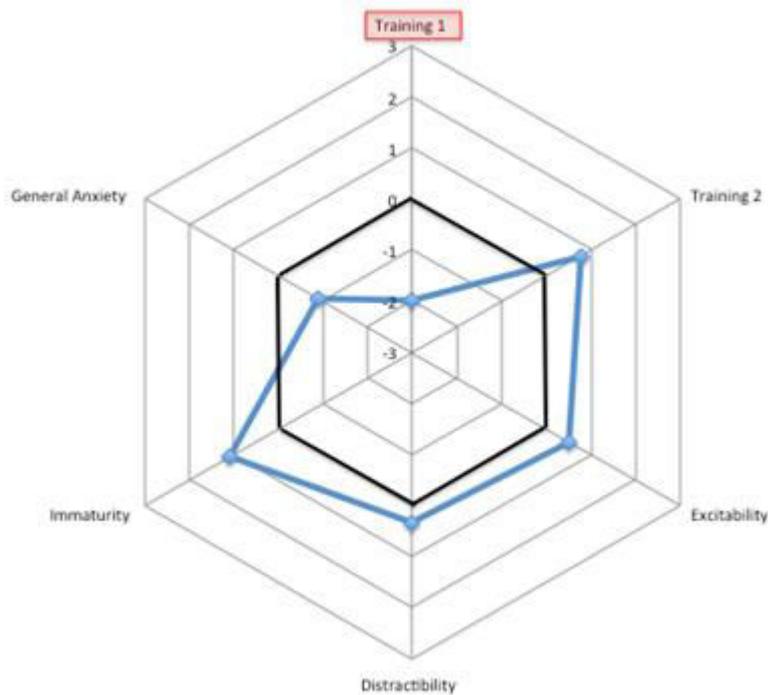
Figure 4A star plot of Dog 4's 'Guide Dog Trainer Questionnaire' scores from early training. The blue shape represents Dog 4's scores, in relation to the rest of the population, where their average is represented as the black shape. Any traits of Dog 4 which scored >0 are better than average, and any scores <0 are below average. The dog received a 'red flag' for 'Training 1'.

5.5.5.1.1

5.5.5.1.2 Interpretation

Dog 4 was reported to have a lot of positive attributes; however a major problem was that she had issues with new people, in particular children. Extensive work was put into Dog 4 to overcome these problems and they appeared to be successful, however for Dog 4 to do well in a partnership she required a client who would be willing to put time into continuing this work. Indeed, she was matched with a client who had extensive experience of dogs and it was explicitly stated that she would have been willing to put work into a dog. It appears that this was the case as no major problems were reported in subsequent assessments. The client had a specific request for an "unusual dog" and this was satisfied by the provision of a golden retriever cross German shepherd dog. Although Dog 4 had some issues with copraphagia throughout 'puppy walking' and 'early training', there was no mention of this after being matched with the client. If this was a behaviour

associated with the dog's anxiety then it is suggestive that the dog was comfortable in its new environment and company of the client. Overall the work done by the trainers with regards to Dog 4's issues with people and children, and the owner's willingness to continue this and acceptance that dogs could be challenge, meant that Dog 4 successfully qualified and formed a very good match with the client which was reflected by the positive comments by the assessor such as "[the client] is very happy with how [Dog 4] is working".

Dog 4 received her 'red flag' in her first 'early training' assessment for 'Training 1'. Dog 4 was also below average for 'general anxiety', but above average by up to one standard deviation for all other traits. The free text report for the first 'early training' report does highlight that Dog 4 had some issues relating to distractibility, and some stalking behaviour was reported as being observed towards dogs and birds. However it was also reported that good results were observed when rewards and commands were used, suggesting that the dog could be trained out of the problems. There was no direct mention of problems relating to training in the free text. Indeed, the dog was reported to have "good obedience".

5.5.6

5.5.7   Dog 5

Dog 5 was a yellow female Golden retriever cross Labrador retriever. She was a small bitch with short hair and had a slow to moderate walking pace. Throughout Dog 5's training assessments, the themes of distractibility and excitability repeatedly came up. Suggestions were made as to how to deal with these issues and distractibility was reported to be "reduced greatly" by the third 'early training' report. In 'early training' Dog 5 was described as lacking willingness and motivation and that she was a confident, dominant and challenging dog. There was no direct mention of these behavioural traits in 'puppy walking'. In 'advanced training', Dog 5 was reported to have a continued lack of motivation which was then stated to be due to anxiety issues. These issues were then improved with work by trainers which focussed on building up her confidence levels.

In the matching criteria it was stated that Dog 5 needed a client who would support her and build up her confidence, and who would be able to manage her distractibility. She was reported to be better suited to quieter environments. She was also reported as being able to cope with some town work.

The client required Dog 5 to be able to work in a local suburban area which the client knew well. The workload would mostly have been low, but variable.The client was often around children. They hadhad two previous guide dogs and one of these dogs was living with her who was described as being a "nice type". The client didn't want a dog which urinated/defecated on walks and her preferred walking speed was slow to moderate. The client had arthritis so required a dog which did not pull. The client wasnot a naturally assertive type. The assessor expressed that she would do better with supporting a sensitive dog. Dog 5 would have needed to be able to travel in the car regularly and the bus/tram occasionally. Dog 5 would never have been alone. The client and her husband undertook a lot of fundraising work and thus Dog 5 would have needed to be excellent socially. The client was happy to walk Dog 5 with her retired guide dog. The client stated that they would like a large dog that was not a German shepherd dog. The assessor recommended that a "calm easy handler [is] required for this gentle handler".

Dog 5's matching assessment stated that she had no ongoing health problems and was a well behaved dog which was easily handled. Socially, Dog 5 was reported to have a sensitive side and required supportive handling. When the client first met Dog 5 it was reported that "[the client] was really pleased with the walk and [Dog 5] also stayed overnight".

The assessments after initial matching stated that Dog 5 settled in well, but due to the client being a quiet, calm handler who can lack assertiveness, Dog 5 began to 'use her nose'. Dog and bird distractibility was also reported. These behaviours progressed throughout the assessments to the point where the client had a bad weekend with Dog 5's dog distractibility being very high and it continued to increase. Dog 5 was reported to pull strongly when loose dogs ran up to her. The client's confidence was reported to have taken a big knock so the assessor worked Dog 5,

introducing the 'gentle leader' which gives the handler greater control of the dog. The client was reported previously to not want to use the 'gentle leader'. After the implementation of the 'gentle leader', Dog 5 was described as still showing interest in some dogs but it wasreported that the client then had good control and there was no tugging which had the potential to cause problems with her arthritis. The client was then reported to have gained understanding of why it was necessary to keep Dog 5's behaviour under control, as the dog was very bright. The assessor reported that Dog 5 was a very different dog to the client's last guide dog. The client admitted that she personally had some bad dog handling habits. The assessor then reported that the client worked very hard and following introduction of the 'gentle leader' she developed good control and achieved a nice standard of work.

Dog distractibility was evident in a "VERY doggy town environment" and therefore there was the need for extra training from the assessor. The assessor then reported that the client "will work [Dog 5] well and with good family support should do well". Also, Dog 5 was described as being "well suited to…fundraising that [the client] does". In the subsequent assessments it was reported that there were some 'dirty walks' but the client was stated to be able to manage this, and these events decreased to the point of being rare by the end of the assessments. Dog distractibility also decreased throughout the reports. Overall the assessor reported that "recall [is] very good, [Dog 5 is a] lovely dog to run. Dog 5 is settling very nicely and [the client] is really gaining confidence with her", and "[The client] reports she is good and dog distraction is lower and very manageable. They are very pleased with her social behaviour, although she does still get a bit excitable if people approach her very enthusiastically".

Analysis of Dog 5's behavioural test revealed that the dog received a 'red flag' when the dog was undertaking 'early training'. The profile of the dog created from the GDTQ at the time of the receipt of the 'red flag' shows that Dog 5 scored below average for 'Training 1' and 'excitability' suggesting

that trainability as well as excitability were problem areas for the dog. These traits are therefore

likely to be reasons as to why Dog 5 received a 'red flag'.
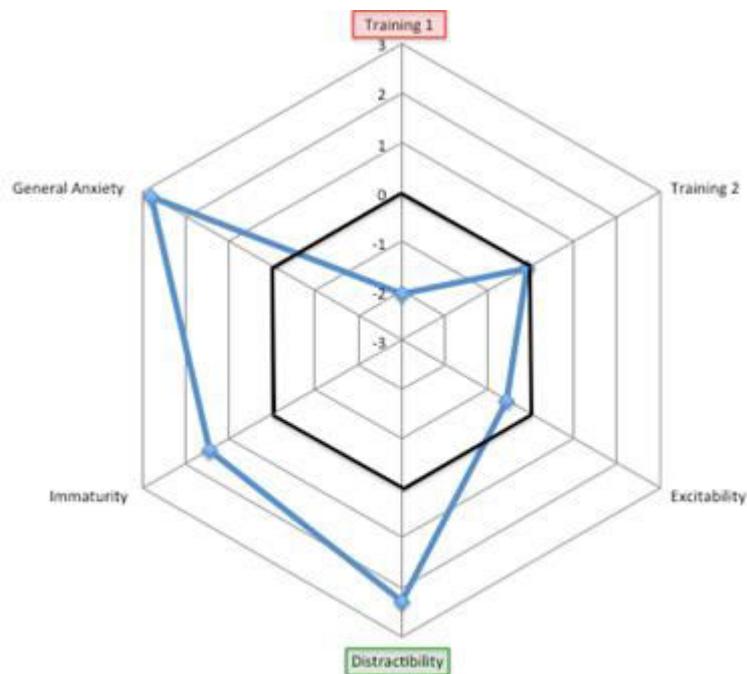
Figure 5A star plot of Dog 5's 'Guide Dog Trainer Questionnaire' scores from the 'early training' assessment. The blue

shape represents Dog 5's scores, in relation to the rest of the population, where their average is represented as the

black shape. Any traits of Dog 5 which scored >0 are better than average, and any scores <0 are below average. The dog

received a 'green flag' for distractibility and a 'red flag' for 'Training 1'.

5.5.7.1.1   Interpretation

Dog 5 was interesting as she started off being confident and excitable but then became anxious and

therefore needed a client who would encourage and motivate her and who was also able to manage

her distractibility. The client was described as being better at motivating than controlling and

therefore was likely to have suited Dog 5. The client was not a naturally assertive type however, and

this is perhaps why she struggled to cope with the distractibility behaviour which was displayed in

the post-qualification training stages. However, the trainer who was working with Dog 5 and the

client was able to work the dog and implement measures such as the use of a gentle leader to

control Dog 5's distractions. These methods were then passed on to the owner who then had more

positive experiences with Dog 5. Overall the match was successful in terms of finding a client who

was willing to motivate and use positive training with Dog 5. The client's previous experience with dogs was also likely to have had a positive impact on the successful outcome of the partnership. The success in managing the distractibility was likely to have been due to the trainer and their experience in the area, and them being willing to take extra time with Dog 5 and the client and work on the issues. By the end of the aftercare reports the comments regarding the working partnership were positive but suggestive that the training regarding distractibility and excitability still needs to continue.

Dog 5 received the 'red flag' in the first early training assessment for 'Training 1' implying the dog had low trainability, related to confidence in decision making, speed of learning, support needed to work and the dog's initiative . However, the dog was above average for 'general anxiety', 'distractibility' and 'immaturity' and received a 'green flag' for 'distractibility'. This is in direct conflict with the data in the CAS free text where distractibility is repeatedly reported in a negative manner. Indeed, in the first 'early training' report, it is stated that the dog has "high dog distraction".

5.5.8   Cross case analysis

Cross case analysis was performed across the five 'red-flagged dogs'. This was done in order to highlight the salient points for each dog, and to develop overall conclusions as to why the subset of dogs had gone on to work within a partnership, rather than be withdrawn from the training programme as the behavioural tests predicted. The information for each dog is presented in Table 5.

The cross case analysis revealed that all of the 'red-flagged' dogs had been matched with clients who had previous experience with dogs, and in some cases guide dogs. This suggests that the clients had prior knowledge of dog behaviour and had skills to manage problematic behaviour which may have been a factor in the dog progressing to qualification. Indeed, Guide Dogs purposefully put dogs which might have problematic behaviour with clients who do have experience (personal

communication). Many of the clients were reported as being willing to put the work in to develop the dog and help achieve a successful outcome which is also likely to be a factor in the success of the dog. In two of the cases (Dog 4 and Dog 5) it was reported that Guide Dogs staff intervened in the training of the dogs and implemented new training methods. This intervention and individualised approach is likely to have contributed to the dog's qualification.

An interesting finding when examining the dogs as a group, was that four out of the five dogs repeatedly had issues surrounding confidence referenced throughout their assessments. A lack of confidence was frequently referenced in Dog 2's reports. Dog 3 was reported to have reluctance around new people and busy environments, and it could be interpreted that this was due to a lack of confidence. Dog 4 also had a similar unease around new people and anxious behaviour was reported when in a new environment. Finally, Dog 5 had reportedly low confidence and high anxiety which was reported to have led to low motivation. This commonality between the dogs could be interpreted as being significant, that is, if a dog has low confidence it may lead to a prediction that the dog will be withdrawn. In contrast, low confidence may have been a factor in the dogs going on to qualify as guides.

Table 5: Five dogs identified by behavioural testing as being likely to be withdrawn from the Guide Dogs training programme had their records throughout training analysed. The table contains summaries of the pertinent points for each dog.

Dog	Negative behaviour referenced in the CAS free text	Issues related to matching with a client	Information about the client	Information about the dog and client after matching	Below average scores from PTSQ/GDTQ at time of 'red flag' receipt	Overall thoughts about the case
1	Excitability Distractibility Underlying mental sensitivities	Dog requires a confident client Dog requires routine	Had a good understanding of dog behaviour	Client was reported as having a sensible approach to dogs Client could control the dogs distractibility and their 'use of *nose*'	Body sensitivity	The dog was matched with a client who had previous experience with dogs and who was able to manage the dog's distractibility
2	Low confidence Dog was best when worked for less than 20 minutes Anxiety	None referenced	Needed a dog to undertake short walks with a light workload Has experience of dogs and guide dogs Would have liked: female, Labrador or Labrador cross with a short coat of medium size Their confidence grew after having a guide dog	Client was happy to work on issues of 'dirty walks' and 'use of *nose*' Clients confidence grew over the course of the reports	Trainability Stair anxiety Adaptability General anxiety	Both the dog and the owner had confidence issues The dog was matched with the owner's requests in terms of physical attributes Owner had a previous guide dog withdrawn which may have contributed to them wanting to ensure this match succeeded

3	Distractibility Scavenging Took time to bond with new people Liked busier environments	None referenced	Would have liked a dog with a quiet temperament Had previous guide dog experience Their positive voice was better and would have suited a quiet guide dog who required motivation Would have liked a small Labrador or Labrador cross with a yellow, short coat	Dog took time to bond but then did bond well with the client	None but only scored averagely across multiple criteria putting the dog at risk of withdrawal	The dog was repeatedly mentioned as being calm in the CAS which was what the client wanted Client was willing to put work towards ensuring the partnership was successful
4	Copraphagia Distractibility Unease around new people Anxiety	Needed a client who understood the dog and who was willing to continue training around children	Previous dog experience with a variety of breeds Had a preference for an 'unusual' dog Was happy to give a new dog time and appreciated that dogs can be a challenge	Client was described as being able to control distractions and was sensible with training around children	Trainability Anxiety	Extensive work was put into the dog before the dog was matched with a client, and the client was willing to continue the training
5	Distractibility	Needed a client who would support the dog and build up their confidence and manage distractibility The dog was suited to quieter	Needed a dog to work in a local, suburban area The dog would have had a low and variable workload They had had two previous guide dogs Client was reported to be	The dog started to 'use their nose' due to the client lacking assertiveness Distractibility increased Guide Dogs staff worked with the dog and the introduction of the gentle leader helped the client	Trainability Excitability	The dog started off as confidence and excitable but then become anxious so required motivating Training methods and input from staff helped resolve issues

| | | environments | better suited to a sensitive dog who required motivating | take back control and distractibility decreased

The client was happy to manage 'dirty walks' | | |
|---|---|---|---|---|---|---|

5.5.9 Green-flagged dogs

'Green-flagged dogs' are defined as those which were subjected to behavioural tests (Harvey et al., 2016) where they scored significantly above average for a certain trait or traits and therefore received a 'green flag'. Due to receiving this 'green flag' they were predicted to qualify as guides, however the dogs were withdrawn from the training programme prior to qualification. For each dog all of their monthly training reports were analysed. Also analysed was the dog's withdrawal report which gave reasons for their removal from the programme. The information presented is a summary of the findings in the form of a case study to highlight what were interpreted by the researcher to be the important points as to why the dogs did not fulfil their predicted outcome.

5.5.10 Dog 6

Dog 6 was a male Labrador retriever. Throughout the free text of the CAS reports, Dog 6 was consistently described in a positive manner. Dog 6 was reported to be good with humans, children and animals and wasoften reported as being eager to please and his obedience and willingness levels were said to be good. In the 'puppy walking' assessments, distractibility was reported to be "medium/low", and distractibility was not mentioned in the early training records. In the fifth and sixth 'puppy walking' reports, there were references to issues with confidence. In the fifth, it was stated that Dog 6 "showed slight drop in confidence" and "showed drop in confidence as out without [puppy walker]". In the sixth report it stated that Dog 6 had an "improved level of confidence" and "[puppy walker] has noted [Dog 6] will occasionally give mild cough when he lacks normal level of confidence, not seen today". In the first early training report, this confidence issue was again brought up directly when the free text says "does lack confidence" and "mild concern over adaptability and confidence" and indirectly when it is stated that Dog 6 "seeks a lot of eye contact and reassurance". In the second 'early training' assessment it was reported that Dog 6's "lack of confidence inhibits him from fulfilling his potential". Finally in Dog 6's last assessment, the third 'early training' report, it was reported that Dog 6 "does not have the required level of confidence to guide".

There were two major issues which were reported within Dog 6's assessments. In the second 'early training'report it was reported that Dog 6 was "frightened by a bumble bee in close proximity and was looking for it for the rest of the day". The second issue was that Dog 6, also in early training 2, was reported to have copraphagia due to a combination of diarrhoea and anxiety and the assessor states that they "have concerns regarding temperamental soundness". Previous to this, copraphagic behaviour was only mentioned once, when Dog 6 entered boarding kennels. No copraphagic behaviour was observed when Dog 6 was in puppy walking. By the third 'early training' report, the copraphagia was reported to be extreme, and the behaviour led to weight loss and bacterial

overgrowth. Dog 6 was removed from the training programme during 'early training', so there is no indication about the progression of this behaviour after this point.

In Dog 6's withdrawal report it was reported that the reasons for the dog being unsuccessful for guiding work were a lack of confidence and sensitivities. The copraphagia was described as being under control. It was reported that Dog 6 experiences some urine leakage, but was otherwise sound in terms of health.

Analysis of Dog 6's PTSQ results when the dog was five months of age revealed that the dog scored above average for all traits.
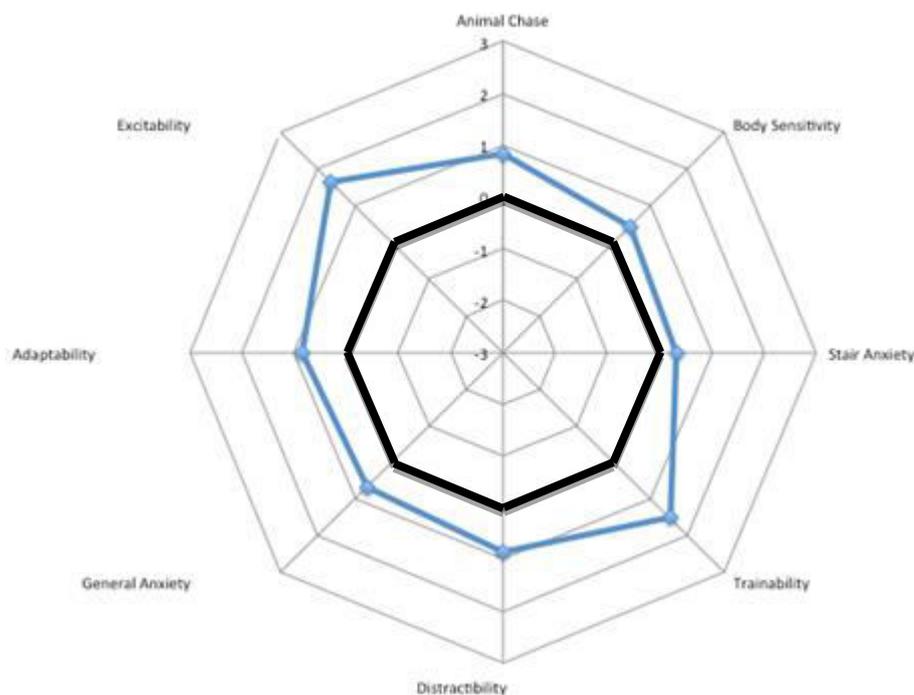
Figure 6: A star plot of Dog 6's 'Puppy Training Supervisor Questionnaire' scores from the five month assessment. The blue shape represents Dog 6's scores, in relation to the rest of the population. Any traits of Dog 6 which scored >0 are better than average, and any scores <0 are below average.

5.5.10.1.1 Interpretation

After analysis of the free text reports from 'puppy walking' and 'early training' it was clear that Dog 6 had a lot of positive attributes. Clearly the main issue that the dog had was related to confidence, as

this was mentioned negatively multiple times, from the fifth 'puppy walking' report to the third 'early training' report. It was also given as a definitive reason as to why Dog 6 was withdrawn from training as it was stated in the withdrawal report that the "Decision has been made to withdraw from training due to a low confidence" and that Dog 6 "really lacks the confidence required to learn the guiding role". It was unclear as to why the dog suddenly developed a lack of confidence, as this was not mentioned previous to the fifth 'puppy walking' report. However, the confidence issues appear to get worse after the 'bumblebee incident', where Dog 6 became frightened by its presence and was anxious and looking for it the rest of the day. Similarly when the dog went into kennels for 'early training', it developed copraphagia and it was stated in the free text that this was due to anxiety. One interpretation is that the dog had underlying confidence and sensitivity issues and these became more pronounced after being put into a strange environment with other dogs and being frightened by the bumblebee. This potentially led to a development of low confidence leading the dog to be unsuitable for the guiding role. However, due to the dogs many other positive attributes, Dog 6 was able to be trained and placed in a role as a buddy dog.

Analysis of the PTSQ scores at five months revealed that the dog scored above average in all areas. This is consistent with the free text. No problems were highlighted around the five month mark, apart from some mention of distractions. Indeed, it was only after this time when problems surrounding confidence begin to appear and the dog really went downhill at the time of the second early training report. This report was a year after the five month assessment and therefore it is comprehensible that the results from the PTSQ at five months do not match the dog's traits when the dog was withdrawn and just previous to this.

5.5.11 Dog 7

Dog 7 was a female Labrador retriever. In early 'puppy walking' Dog 7 had no majorly identifiable

negative attributes. It was mentioned in the first and second puppy walking reports that the dog

could be excitable but in both cases it was reported that this was only on initial greeting of humans.

The dog was reported to settle down after displaying the excitable behaviour. From the fourth

'puppy walking' report onwards distractibility was mentioned, however this behaviour was always

reported to be controllable, either by firm handling or vocally and by the early training reports the

distraction behaviour was reported to be "minimal". Around the time of the fifth 'puppy walking'

report, the assessments began to report that Dog 7 had sensitivities. Initially, Dog 7 was just

described as having an "underlying sensitivity". In the first early training report the assessment

stated that there were "some mental sensitivities evident" and in the second 'early training'

assessment it was reported that Dog 7's "potential [is] currently marred by significant body

[sensitivity]" and again mental sensitivity was reported.

Throughout the assessments Dog 7 was described as having many positive attributes. She was

reported from early on in the reports to be "very good with [puppy walker's] grandchildren", and

was described as being confident, relaxed, willing, responsive, obedient, socially good and an

affectionate type. In the fifth'puppy walking' assessment it was reported that Dog 7 was bullied by

another guide dog puppy.

In the withdrawal report, many of Dog 7's positive attributes were mentioned, such as being

affectionate around people, being responsive and willing, having minimal distractions, and being

sound in all environments and transport. However, it was also reported that Dog 7 developed issues

relating the use of the harness and handle. These items were reported to have a negative effect on

her and the report stated that Dog 7 smacked her lips, walked left of centre and into the road and

became inhibited when wearing the harness. The reason for withdrawal was stated to be "high

body sensitivity" and the assessor stated that they "cannot see [Dog 7] coping with the guiding responsibilities of the role".

Analysis of Dog 7's behaviour test revealed that the dog received a 'red flag' at 5 months for 'excitability'.
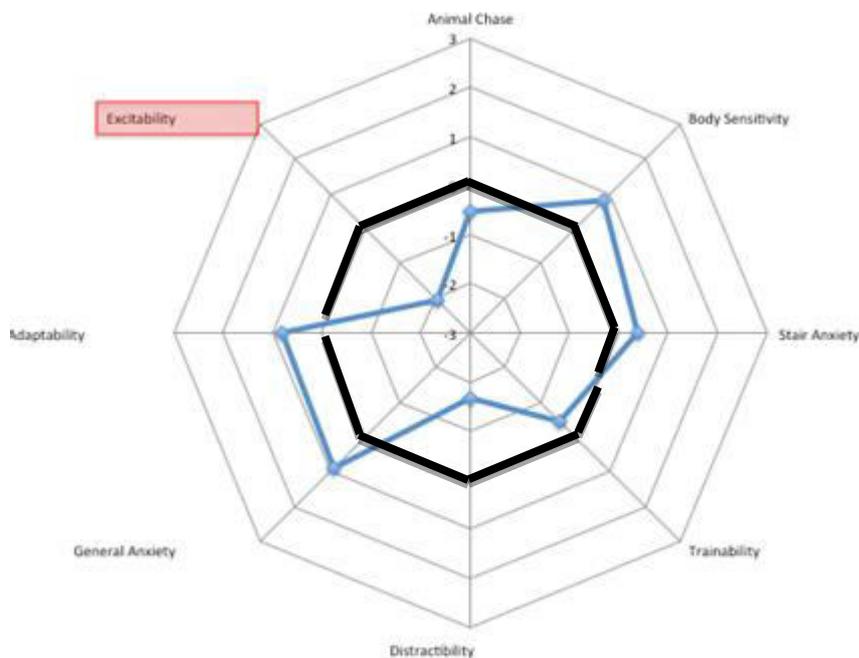
Figure 7:A star plot of Dog 7's 'Puppy Training Supervisor Questionnaire' scores from the five month assessment. The blue shape represents Dog 7's scores, in relation to the rest of the population. Any traits of Dog 7 which scored >0 are better than average, and any scores <0 are below average.

5.5.11.1.1 Interpretation

Dog 7 clearly had many positive attributes which were evidenced in the free text of the assessments from puppy walking, early training and the withdrawal report. The main reason for Dog 7's withdrawal from the training programme was her sensitivities which developed around the time of the fifth 'puppy walking' report. The fifth 'puppy walking' report was also where Dog 7 was reported to be bullied by another puppy. It was interpreted that the negative experience of being bullied lead to the development of sensitivities. These sensitivities appear to start off as minor mental problems

but Dog 7 then progressed to have high body sensitivity to the point where the dog was unable to work in the harness, which is a necessity to be able to work as a guide dog.

Dog 7 was likely to have received a 'red flag' at the five month assessment for 'excitability' based on the results of the PTSQ. This is consistent with the CAS free text report around the same time which reported that the dog displayed excitable behaviour in puppy walking, particularly relating to jumping up behaviour which was displayed when the dog greeted visitors. However, after the end of 'puppy walking' there were no further references to excitable behaviour. The dog also received below average scores for 'animal chase', 'distractibility' and 'trainability'. As the dog was withdrawn for sensitivity issues it could be assumed that as the dog received a higher than average score for this trait at five months, something happened after this date to cause the sensitivities. This is hypothesised to be the experience of being bullied.

5.5.12 Dog 8

Dog 8 was a female golden retriever cross Labrador retriever. Dog 8 was described as having many positive attributes such as being "generally well-behaved socially", "willing and responsive", "friendly", "quiet overnight", and having "good obedience". From puppy walking Dog 8 had a number of issues mostly related to excitability, copraphagia and distractibility. However, the assessor gave the puppy walker advice regarding the issues and they were reported to be well overcome. For example, in the first 'puppy walking' assessment it was reported that "On first visit pup gave a submissive greeting initially to [puppy walking supervisor] but pup now gives the usual excited greeting, advised to ignore pup until her all four paws are on the floor. Slight puppy mouthing, advised on stopping interaction as soon as teeth touch skin".However, by the fourth 'puppy walking' assessment it was then reported that the "pup [is] no longer jumping up and greetings are more settled", and from then on there were no more reports of the dog jumping up.

Dog 8 was first reported to be copraphagic in the first 'puppy walking' assessment. By the second 'puppy walking' report the pup was still displaying this behaviour and the assessor suggested that adding pineapple to the dog's food could help alleviate the problem. In the third 'puppy walking' assessment, it was reported that adding the pineapple did not work, however the copraphagic behaviour was determined to be decreasing. The assessor advised that the puppy walker should train the dog to come and touch them for a treat after she has defecated. In the fourth 'puppy walking' assessment the behaviour was again reported to have improved. However, in the fifth 'puppy walking' assessment, the behaviour was reported to have returned. The report stated that "Although pup is not interested in other dogs faeces when [free running] she has been interested in the remains of hers after [puppy walker] has picked up, advised to get pup to sit and wait whilst [puppy walker] picking up and then distract pup away". In the sixth 'puppy walking' report, again, the pup was described as being copraphagic, in particular when the dog was residing in boarding kennels. By the seventh 'puppy walking' report the behaviour was not reported. In 'early training' the copraphagia fluctuated as it did in puppy walking. It was reported most frequently when the dog

was in kennels, and as a result of this the decision was madeto board the dog out at evenings and weekends with a handler, so that Dog 8 was not in the kennel environment.

However, in the first early training assessment, when Dog 8 enteredthe kennels it was reported that the dog was "stressed in kennels". By the third early training assessment the dog was described as being "quite an anxious girl who puts a lot of pressure on herself to get things right" and she was reported to have sensitivities and confidence related issues. By advanced training she was reported to have "low confidence which causes lack of decision making" and her spending routine had deteriorated and she spent on free runs and "afternoon walks with no indication". The only information giving in the withdrawal report was that Dog 8 was "extremely copraphagic and could not be placed with a service user". Thus, the primary reason given for withdrawal was copraphagia.

The results of Dog 8's PTSQ showed that they scored below average for 'animal chase', 'stair anxiety', 'trainability', 'distractibility' and 'adaptability'.
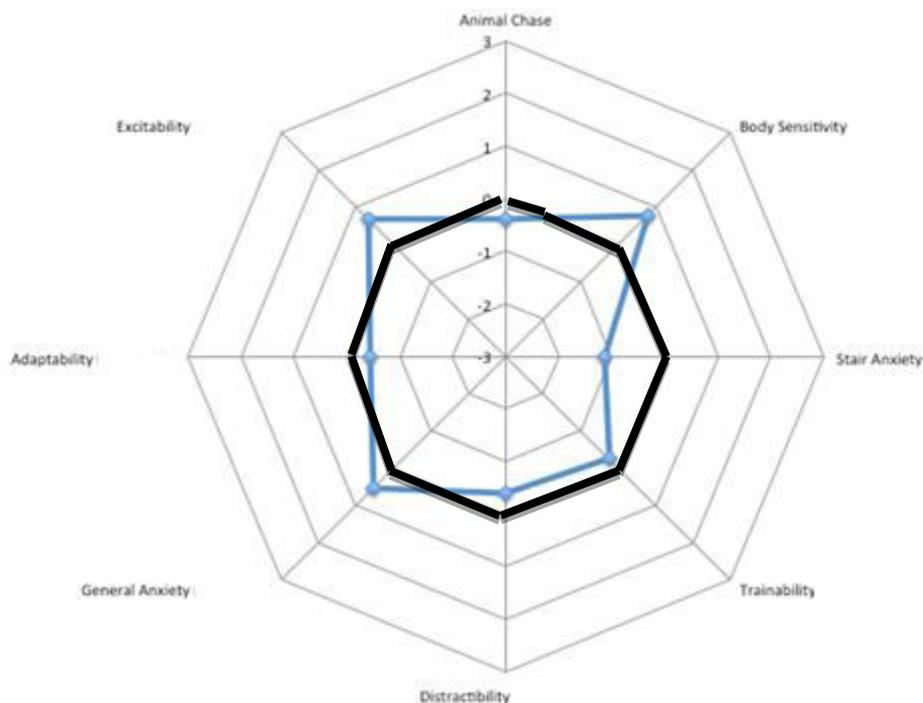
Figure 8: A star plot of Dog 8's 'Puppy Training Supervisor Questionnaire' scores from the five month assessment. The blue shape represents Dog 8's scores, in relation to the rest of the population. Any traits of Dog 8 which scored >0 are better than average, and any scores <0 are below average.

5.5.12.1.1 Interpretation

The main issue that Dog 8 had throughout their training period was the displays of copraphagic behaviour. Despite the assessor giving suggestions as to how this behaviour could be resolved, these only appeared to work for short periods of time, and although the dog appeared to have stopped the behaviour, it then became worse whilst the dog was residing in kennels. This pattern of behaviour is suggestive that the behaviour was never fully resolved and that it was merely prevented by the puppy walker, for example by clearing away the faeces so quickly that the dog did not have a chance to eat it. In the kennels when the copraphagia was reported to have returned, Dog 8 was described as being anxious and stressed. This is one possibility for the cause of her copraphagia. However, there were no previous references to the dog having anxiety issues when she was copraphagic in puppy walking, but the anxiety may have been missed.

The five month assessment showed that the dog had below average scores for 'stair anxiety', 'trainability', 'distractibility', 'animal chase' and 'adaptability'. The interesting result is the one relating to 'adaptability' as changes in the dogs routine appear to have led to anxiety which manifested itself as copraphagia. This lack of adaptability may have therefore been apparent from five months. However there was no evidence of this in the CAS free text, with the dog being reported to be "Quiet overnight and good when left for up to 3 [hours]". Although the dog scored above average for 'general anxiety', it scored below average for 'stair anxiety' which is suggestive that the dog had the potential to develop behaviours related to anxiety from a young age.

5.5.13 Dog 9

Dog 9 was a male, yellow, golden retriever cross Labrador retriever. Dog 9 was reported to be a good dog. He had good obedience levels, was confident and willing, good in all environments and on transport, was good socially and he was reported to "love children" and he "met a lot and [was] excellent with them". The main issue Dog 9 had throughout the assessments was related to distractibility. Distractibility was mentioned in a negative sense in all assessments bar the last one which was the second 'advanced training' report. In some assessments, for example the second 'puppy walking' report, distractibility was mentioned both directly: "can be distracted by people", and indirectly "some opportunistic scavenging/interest in litter on floor". Over time, the behaviour appeared to be improving with focussed training and changes in handling and management such as using a firmer attitude and changing the free run area so that Dog 9 could not scavenge dead birds. However, in the first 'advanced training' assessment, distractibility was reported to have increased.

Dog 9 had two health related problems reported in the assessments. Both of these were mentioned during the 'advanced training' reports. In the first 'advanced training' report it was stated that Dog 9 was licking and sucking his hind feet. This could have been a behavioural issue and a manifestation of separation anxiety, or it could have been due to a skin condition. In the second 'advanced training' assessment it was reported that Dog 9 had seen a skin specialist regarding the issue as "staining [of the dog's fur] had become worse". There was no direct mention of a link between the licking and sucking and staining but a cause and effect relationship was assumed. Health reports stated that the diagnosis was Malassezia Dermatitis. Dog 9 also had a gastroenteritis leading to a two kilogram weight loss which was reported in the second 'advanced training' assessment.

In 'advanced training' Dog 9's behaviour and temperament appeared to change. Of particular note was the statement in the first 'advanced training' report that Dog 9 had "two changes of handler…although adapted to these changes [Dog 9] is aloof and a lack of connection with handler is reflected in his work tasks". Previous to this report he was never reported to be aloof. In the

second 'advanced training' report it was stated that "his general demeanour has…changed in that he [is] quite 'flat' and disinterested. This is most noticeable in harness where motivation is low in spite of destinations…he has stopped and refused the forward". This type of behaviour related to willingness and responsiveness was not reported previous to the second 'advanced training' assessment. Indeed, prior to 'advanced training' he was described as either being "willing" or "responsive" in every single assessment.

No withdrawal records were provided due to Dog 9 being withdrawn from guide dog training but being placed instead into the Buddy Dog scheme. The reasons for this were reported to be low motivation and low willingness and avoidance of the harness.

The results of the PTSQ for Dog 9 at five months revealed that they scored below average for 'excitability', 'adaptability', 'general anxiety', 'distractibility', 'trainability', and 'body sensitivity'.
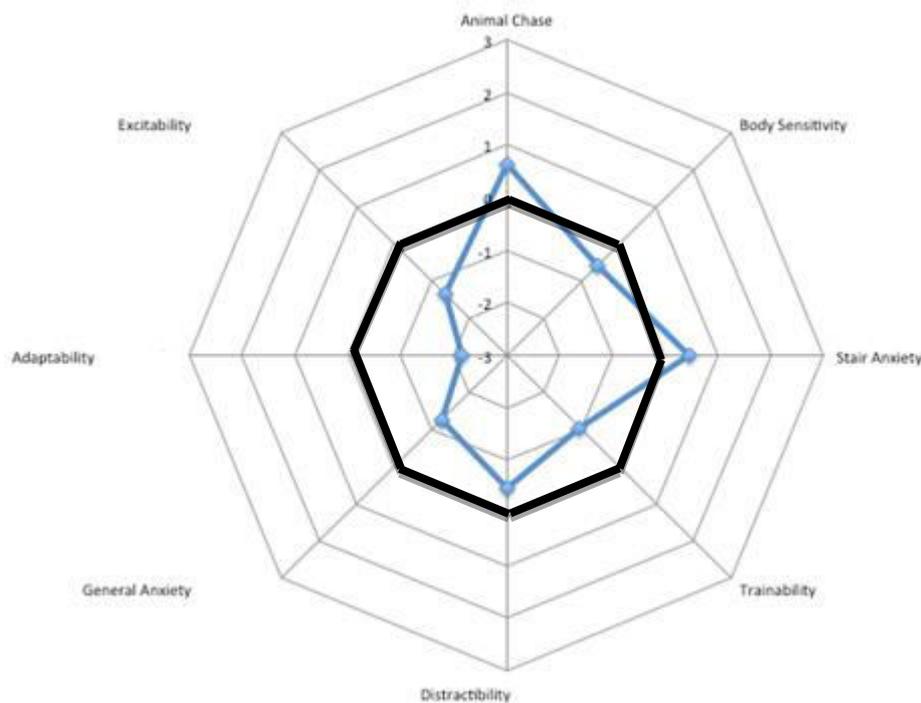

Figure 9: A star plot of Dog 9's 'Puppy Training Supervisor Questionnaire' scores from the five month assessment. The blue shape represents Dog 9's scores, in relation to the rest of the population. Any traits of Dog 9 which scored >0 are better than average, and any scores <0 are below average.

5.5.13.1.1 Interpretation

It appeared as though Dog 9 had a sudden change in personality and temperament when he reached the advanced stage of his training. Two possible reasons for this were identified. The first is that the change in behaviours could have been related to his health problems. It was reported that Dog 9 may have been chewing his feet due to separation anxiety. However, there are no previous reports of him having any issues when being left, and in the fifth 'puppy walking' assessment he was reported to be "fine when left". Previous to this there were two other references to him being fine when left alone or overnight. However, it was also mentioned around the time of the chewing of the feet that Dog 9 was having some issues related to his new handlers so this may have been the cause of the behaviour. Indeed, *Malassezia pachydermatitis* is a commensal organism which can colonise the skin when conditions become favourable. Therefore it is likely that Dog 9 was chewing at himself due to stress from a change in handler and being left alone and this resulted in establishment of infection due to broken skin. There is also the possibility that dog 9 could have had an underlying condition which caused a *Malassezia pachydermatitis* infection, however there are no mentions of any in the health records. Underlying causes would include allergic skin disease, endocrine disorders, ectoparasite infestations, seborrheic skin disease, an immunodeficiency and breed related susceptibility.

Overall the health problems which were reported are likely to have impacted on Dog 9 and his temperament. His willingness and motivation may have decreased due to pain, pruritis and discomfort. If the skin condition was present on his back then this could explain the reason as to why he displayed reluctance to wear the harness. The second possible explanation for his change in temperament is that he may have just objected to the new handlers with which he came into contact with in 'advanced training', leading to a decrease in his motivation and willingness when they requested work from him. However, no changes in behaviour were noted when he moved from 'puppy walking' into 'early training' which would have also involved a change in handlers.

Considering all factors the most likely conclusion is that he developed some issues with the new handlers which led to stress related behaviour and separation anxiety which then led to his skin conditions which caused the changes in his behaviour.

Dog 9 scored dramatically below average for 'adaptability' at the five month PTSQ assessment which adds evidence to the theory that the dog struggled to adapt to his new handlers which led to stress related behaviour and separation anxiety. Similarly, Dog 9 also scored below average for 'general anxiety' which adds weight to the theory that changes to the dog's routine caused him to become anxious which led to the development of skin conditions. 'Body sensitivity' was also scored as being below average. It was assumed that problems with the harness were related to the skin condition, however it could be that the dog had body sensitivities independent of the health conditions. There was no evidence in the free text either way as there are no free text reports from around the fivemonth period. However there were no mentions of skin problems at four or seven months so it could be assumed that the condition was not yet evident.

5.5.14

5.5.15 Dog 10

Dog 10 wasa female, black and tan German shepherd dog. She was a dog with a number of issues which were mentioned throughout her assessments. Her main issue appeared to be related to the fact that her behaviour changed when she was presented with people and environments which she was not familiar with. The first mention of this behaviour was as early as the second 'puppy walking' assessment. The free text explicitly stated thatDog 10 was "not happy to be handled by stranger and struggled" and "not happy to walk with [puppy walking supervisor] if [puppy walker] there". This was suggestive that Dog 10 had a strong bond with the puppy walker and therefore did not wish to be with others if the puppy walker was present. This behaviour continued and as a result of her dislike of strangers she was assessed at a training centre. Here, the report states that there was no aggression when examined by a stranger but she did recoil into submission and urinated small amounts. In 'early training', the overall impression regarding her interaction with humans was that

she was "good socially". However, there was a reference to her issues in the fourth 'early training' report when a warning was given by the statement "Will take time to adapt to new handler and boarder when moving on to advanced training". There was no mention of her issues during her first and second 'advanced training' assessments, which was surprising as it was stated in the last early training assessment that there would be a change of handler. However, by the third 'advanced training' assessment her issues appeared to have resurfaced as the report stated "when walked with new handler – no bond".

Dog 10 also had issues reported which were associated with copraphagia. Copraphagia was first observed in the early 'puppy walking' assessments when Dog 10 also had a gastrointestinal illness. However both the illness and copraphagia were reported as being improved at the subsequent visit so an assumption was made that the behaviour and health issue were related. There were then no further mentions of the copraphagia until the first 'early training' assessment when Dog 10 went into kennels. This behaviour was reduced via management strategies including putting her into an end kennel which was covered overnight, and in a quiet office in the day. The measures were presumably implemented with the aim of reducingher stress levels. By the third 'early training' report, however, it was again reported that there had been "a few instances of [copraphagia] …which is stress related and seen if there has been a change in routine". In the fourth 'early training' report there was no evidence of copraphagic behaviour however it was stated that Dog 10 was anxious in her kennel environment. After this Dog 10 was boarded out and therefore not in a kennel environment and no more copraphagia was reported in the free text after this change in living environment.

Dog 10 was also a dog who had high distractibility. This behaviour was mentioned in the majority of assessments. There was some evidence that the behaviour could be controlled vocally and by use of high collar work. By the second 'advanced training' assessment, Dog 10's distractibility was reported to be low, however in 'advanced training' it was then stated that werehigh levels of distractibility

when Dog 10 was exposed to cats and dogs. Bullying behaviour by Dog 10 was mentioned from the fourth 'early training' report onwards. It was mentioned directly: "bullying attitude seen on free run with other dogs at training centre", and indirectly: "Free run continues to be a bit rough and has bowled over dogs belonging to members of the public" in all assessments from the fourth 'early training' report up to the third 'advanced training' assessment which was Dog 10's last report.

Despite a number of negative behaviours, Dog 10 was also reported to have some positive attributes. She had good obedience and reported as wanting to please, the reports also stated that she travelled well and was good in a number of environments. She was reported to do better in a working capacity when there were consistent routines. However, these positive attributes were mentioned much more frequently in the puppy walking assessments. After this, the main positive attribute mentioned repeatedly was her willingness, but the focus shifted to reporting more negative behaviours.

Dog 10 had two potential matches declined. There were a number of reasons for this which were related to her not being positive enough, destructive behaviour, separation anxiety, bullying behaviour and a heart murmur. It was explained to one client that the destructive behaviour had not been observed before. Similarly, a number of reasons for removing Dog 10 from the guide dog programme were given in the withdrawal report. The report stated that Dog 10 "was highlighted as a dog that lacked adaptability and despite efforts to overcome this [Dog 10] has displayed destructive behaviour, spending issues, copraphagia and distractive behaviours whilst free running. [Dog 10] was turned down by two clients and the boarder returned her on Christmas Eve due to destructive behaviours. An attempt to match a third time was unsuccessful due to spending in the home and destructive behaviours". Overall the reasons for withdrawal were stated to be low confidence and adaptability, other unacceptable post qualification habits and destructive social behaviour.

Results of the five month PTSQ assessment revealed that Dog 10 scored below average for 'distractibility' and 'excitability'.
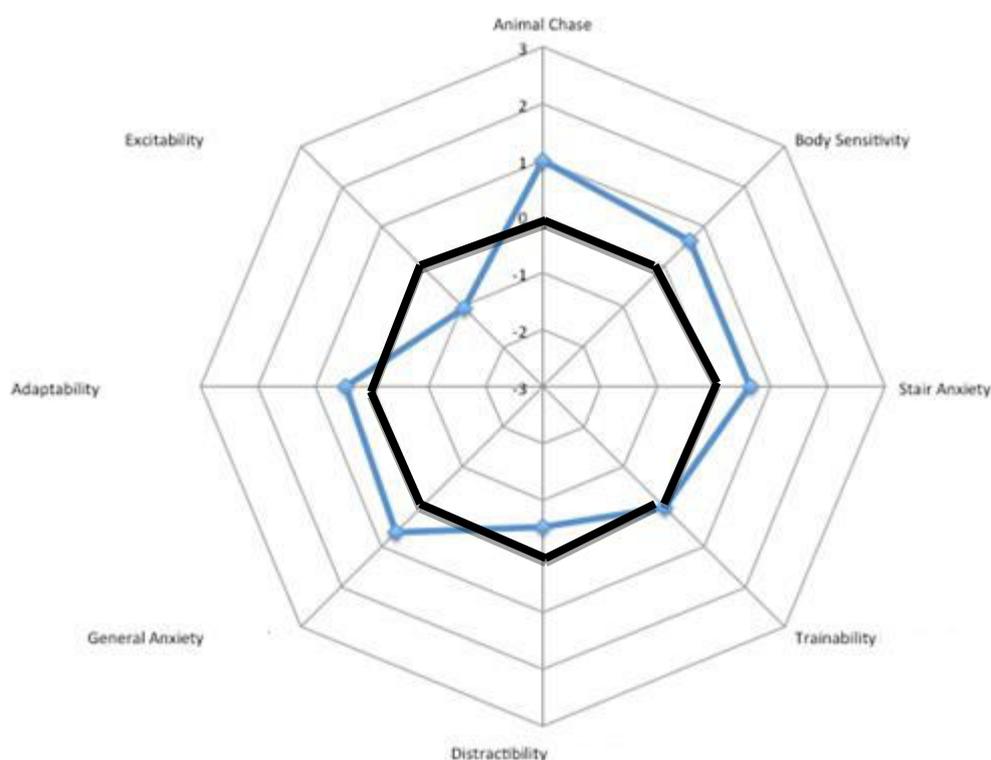
Figure 10: A star plot of Dog 10's 'Puppy Training Supervisor Questionnaire' scores from the five month assessment. The blue shape represents Dog 10's scores, in relation to the rest of the population. Any traits of Dog 10 which scored >0 are better than average, and any scores <0 are below average.

5.5.15.1.1 Interpretation

Dog 10 was clearly a dog with multiple issues, as highlighted throughout the free text in all assessments, in the withdrawal report and in particular in the third 'advanced training' report when details were given regarding why attempts to match Dog 10 with clients failed. As was mentioned in the free text related to the third 'advanced training' assessment, a single problem which was highlighted may have been manageable by a client, however the combination of all of them would have been a lot for a client to take on. Indeed, even a boarder who presumably had a lot of experience with dogs, had to return her. Dog 10's bullying behaviour towards other dogs on free runs was a big source of concern and not only could be a major problem for the client to contend with but could possibly have implications for Guide Dogs in terms of public perception of the charity.

Throughout the assessments, Dog 10 was reported to have issues with new people. One possible reason for her negative behaviours when matched with clients was that she may not have had sufficient time to bond with the client and was therefore disobedient and portrayed her worse side, as when she had a bond with a handler she was reported to be a lovely dog who was willing and obedient. This was clear from her puppy walking reports which were much more positive than those from early and advanced training. It was likely that this was due to her having had the time to form a strong bond with the puppy walker. There was no evidence about how long Dog 10 spent with each of the potential matches to determine if this could have been a factor in her rejection.

5.5.16 Cross case analysis

Cross case analysis was performed across the five 'green-flagged dogs'. This was done in order to highlight the salient points for each dog, and to develop overall conclusions as to why the subset of dogs had gone on to be withdrawn from the training programme, despite having been predicted to go on to qualify as a guide dog. The summary of the cases is presented in Table 7.

In the cases of Dog 6 and Dog 7 events were reported that appeared to lead to changes in behaviour. For Dog 6 it was the event of being frightened by a bumblebee and for Dog 7 it was being bullied by another guide dog puppy. In both cases it may have been a coincidence that the undesirable behaviours developed after the event. However, for Dog 7 there were no reference to sensitivities before the event, and this therefore led to the interpretation that the bullying did lead to the development of sensitivities. It may, however, have been that they were just not referenced before the event. In the case of Dog 6 and the bumblebee, the dog's confidence did appear to have decreased after the event and the dog also became anxious. The event was linked to the change in behaviour due to the timing and due to the fact that the assessor who completed the report felt the event worthy of reporting. It was therefore likely to have impacted on the dog.

In the cases of the 'green-flagged dogs', it was clear that whilst having positive attributes, they all had negative behaviour which was referenced within the free text of CAS, however there was no

evidence of the dogs undergoing extra, focussed, training to resolve the issues. Indeed, some of the behaviours, in particular copraphagia, were prevented rather than being eradicated. This meant that when the dog entered a new environment, the behaviour emerged once again. It therefore appears that some of the negative behaviours had been overlooked, perhaps because they were considered to be excellent in other aspects of their training and so it was automatically assumed that the dogs would qualify without the need for extra input from Guide Dogs staff.

As with the 'red-flagged dogs', confidence levels, including references to anxiety and sensitivities were frequently referenced. Indeed, low confidence was the reason given for the withdrawal of Dog 6 from the programme.

Table 6: Summary of important points for dogs 6-10

Dog	Negative behaviour referenced in CAS free text	Problems identified	Reason for the dog's withdrawal	Results of the PTSQ assessment at five months	Overall thoughts
6	Confidence	The dog was frightened by a bumblebee Copraphagia related to diarrhoea and anxiety	Lack of confidence Sensitivities	Above average for all	Confidence decreased after bumblebee The dog was copraphagic and anxious in kennels Likely to have had underlying confidence issues as evidenced in the CAS free text
7	Slight distractibility Excitable behaviour Sensitivities	The dog was bullied by another guide dog puppy	Issues with harness Sensitivities Couldn't cope with guiding role	Excitability poor	Sensitivities developed after being bullied
8	Excitability Copraphagia Distractibility	The dog became anxious and stressed in the kennel environment Copraphagia was prevented in puppy walking and then became out of control in kennel environment	Copraphagia	Poor for stair anxiety, trainability, distractibility, animal chase, adaptability	No mention of anxious behaviour previous to kennelling Lack of adaptability seen in the five month PTSQ assessment but not CAS Dog couldn't cope with change in routine and previous copraphagic behaviour appeared to manifest itself as a result
9	Distractibility	Health problems related to the gastrointestinal system and skin	Avoidance of harness and low motivation and willingness	Very bad adaptability General anxiety Body sensitivity	Changes in the dogs routine and handler → anxiety → skin chewing → health issue Problems with adaptability and anxiety seen at five month PTSQ assessment

| 10 | Behaviour changed when with new people and in newenvironments

Copraphagia

Distraction

Bullying behaviour | Multiple problems | Low confidence and adaptability

Destructive social behaviour | Below average for excitability and

distractibility | Multiple issues – the dog was rejected by two possible matches

Not sure how dog got as far as it did!

Especially due to bullying behaviour by the dog, high distractibility and copraphagia |

5.6 Discussion

In Study 2, dogs that were predicted to fail but that did qualify ('red-flagged dogs') and those that were predicted to qualify but failed ('green-flagged dogs') were examined both as distinct groups, and also as individuals.

Considering the broad findings for the two groups, the present study demonstrated that the main reason that 'red-flagged dogs' ended up being successful as working guide dogs was that firstly they were matched well with clients who had previous experience with dogs and guide dogs and were willing to put time and effort into creating a successful partnership. Another important factor was that in certain cases, Guide Dogs staff worked closely with the dog and the client after qualification to help resolve any issues. An important example of this was the implementation of the use of a 'gentle leader' by the GDMI which helped the client take back control of the dog. In respect of the 'green-flagged dogs', the study highlighted that the dogs had underlying behavioural problems, which had been documented prior to qualification, but that were either prevented rather than being resolved (as in the case of copraphagia), or the behavioural problem was not thought to be significant until a certain event exacerbated the issue.

In order to perform this investigation, a case study methodology was used. This allowed an in depth analysis to be conducted which was deemed appropriate due to the vast amount of data which was available pertaining to each individual dog and client. The overall aim of the study was to formulate explanations as to why the dogs had not fulfilled their predicted outcome and thus all information available needed to be analysed to ensure that no pertinent reasons were missed. The dogs which were analysed were those which were at the extreme ends of the spectrum after being subjected to behavioural tests. That is, they had either (1) received a 'red flag' which immediately implied they had a behavioural trait suggesting they were unsuitable for work, or (2) they received multiple 'green flags' (as receiving one 'green flag' leads to a prediction that the dog will qualify, these dogs

were predicted to do extremely well and were therefore considered especially atypical when they were withdrawn from the programme).

The justification for using the case study methodology and the samples selected for the study follows comment from Flyvberg (2006) who argued that when there is a need to extract the greatest amount of information to answer a question, the average cases are unlikely to be the richest in data. Thus, in order to develop explanations for the phenomenon, in this case dogs not reaching their expected outcome, extreme cases are more likely to yield the most information.

An explanation building format was used to build the case studies. This was due to the need to provide reasons for why the dogs had not fulfilled their expected outcomes in order to develop recommendations for how to deal with similar dogs in the future. Based on this, when developing the case studies the data was analysed in a chronological order as recommended by Yin (2014). Use of a chronological method is appropriate as when analysing a case in order to determine a cause for the outcome, the events leading to the important factors must occur linearly over time. Indeed, Yin (2014) stated that one would have to question a causal proposition if this cause occurred after the particular event which is of note. A potential problem with a chronological method is that disproportionate evidence could be placed upon early events, and not enough focus placed on later events (Yin, 2014). In order to avoid this in the present study, each individual report was analysed separately. After this, all the reports from a particular phase of a puppy's training life, that is 'puppy walking', 'early training', 'advanced training' and for the 'red-flagged dogs' only post qualification reports, were analysed as a whole. Finally the whole case was then put together as a continuous case study and the data reanalysed. This ensured that no important causal factors which may have occurred later in the puppy's life were missed or given less weight than those which were identified early on in the training period.

Due to the method employed for the reading of the data, which involved categorising phrases and words by aspects of behaviour, there was an opportunity to use quantitative methods(Eisenhardt,

1989; Gerring, 2006; Braun and Clarke, 2013)to determine the frequency of references to particular traits. However, the decision was made not to do so based on the argument that when undertaking case study research, it is more important to determine the "deeper causes behind a given problem and its consequences than to describe the symptoms of the problem and how frequently they occur" (Flyvbjerg, 2006). Indeed, in the cases of the 'green-flagged dogs' it was often a single reference to an event which was important for the understanding of the case, rather than multiple references to a particular behavioural trait.

After the initial analysis of the individual cases, cross case analysis was performed(Yin, 2014). As previously stated there is a need to consider each case individually, and an argument exists that the value of individual cases is lost when attempting to summarise by grouping cases together for analysis (Flyvbjerg, 2006). In contrast to this stance, Yin (2014) argued that the findings of case studies will be more robust if multiple case studies are formulated and analysed. One of the main aims of the research was to formulate recommendations for Guide Dogs about how best to approach dogs who receive flags. In a real life situation, the organisation would be unable to perform the in depth analysis which was done in Study 1 for every dog which received a flag suggesting their removal or that they are extremely likely to qualify. Therefore, it would be more useful for Guide Dogs to have overall guidance about what to do for dogs who receive one flag or the other in order for them to maximise the number of dogs who go on to work successfully. Thus, overall conclusions for each group were required to be formulated in order to maximise the usefulness of the results, which provided the rationale for performing cross case analysis. Indeed, as many of the cases for the two sets of dogs had similar explanations for why the dogs did not fulfil their outcomes, the evidence for implementing strategies when dogs are flagged is increased.

A finding which was particularly of note was the frequency with which 'confidence' of guide dogs was referenced, both in personal communications with Guide Dogs staff and other academics involved in research, and in the CAS free text. Further to this, it is also a behavioural term in CAS

which requires a quantitative score to be assigned to it for each CAS assessment. The exact statement which requires a score being: "Confidence in a variety of environments". There was not a huge difference in how confidence was reported between the two sets of dogs, however the fact that it was referenced so frequently suggested that it was an important factor in a dog's training which is worthy of reporting. Indeed, these dogs differed from the norm in the fact that they were predicted one outcome but achieved another, so their confidence levels may not have reflected the wider guide dog population.In order to investigate this finding in more detail, a hypothesis was formulated,which stated thatdogs with higher confidence levels were more likely to qualify than those with lower levels. This, therefore, led to the development of a second study investigating whether or not confidence was indeed a predictive indicator of qualification of guide dogs.

6 Study 3: Confidence

6.1 Introduction

Confidence is defined in the Oxford English Dictionary as "The feeling or belief that one can have faith in or rely on someone or something", with self-confidence having the definition of "A feeling of trust in one's abilities, qualities and judgments". However, within literature related to human psychology, no single definition of what confidence actually encompasses exists. Indeed, work exists which has divided self-confidence into different categories. Locander and Herman (1979), when discussing confidence in a consumer context, divided confidence into generalised self-confidence and specific self-confidence. Generalised self-confidence is considered to be a personality variable, and is related to how the individual perceives themselves in terms of how capable, significant, successful and worthy they are(Locander and Hermann, 1979). Specific self-confidence, in contrast, relates to having confidence in making a choice in an individual situation and is determined to be a factor in preventing anxiety surrounding such a situation. Although generalised and specific self-confidence have an impact on one another, they are still considered to be different entities(Locander and Hermann, 1979).Confidence within sport is another area where multiple definitions of confidence exist(Vealey, 1986; Bull et al., 2005; Beattie et al., 2011). For example, Bull et al. (2005) defined resilient self-confidence and robust self-confidence. They considered robust self-confidence to be an ability to overcome self-doubts, and resilient self-confidence to be a type of confidence which is difficult to undermine.

Based on the fact that multiple definitions have been proposed, it can be inferred that just as it is hard to define, it is also hard to measure. However, attempts have been made to quantitatively assess levels of confidence in sports people using models such as the Trait Robustness of Self-Confidence Inventory, which consists of 12 items and the athlete self-assesses how they much they agree or disagree with the statements on a Likert-type scale (Beattie et al., 2011). This model, however, only assessed how self-confident the individual felt after an event where it would be

expected that self-confidence would diminish, therefore it could be considered a measure of specific self-confidence as opposed to general self-confidence. An attempt to measure general self-confidence was formulated as the Trait Sport-Confidence Inventory (TSCI)(Vealey, 1986). The TSCI assesses how confident an athlete generally feels and requires the participants to compare their own self-confidence to the most confident athlete that they know.

Although the field of human psychology can reveal a lot about the complexity of a personality trait such as confidence, it is important to bear in mind that there will be fundamental differences between assessing such a characteristic in a dog compared with a human. Behavioural patterns in dogs have been known to have been interpreted using humans as a model, without descriptions particular to the animal being formulated (Murphy, 1998) yet, in studies relating to animal behaviour it is deemed wrong to anthropomorphise (Horowitz and Bekoff, 2007). However, literature around self-confidence in the dog is extremely limited. Only one paper was found to assess confidence in particular and the study was performed on an extremely limited set of dogs – German Shepherd Dogs used for breeding in Switzerland. Further to the limitation of their sample, their definitions of confidence were confused with the term "self-confidence" used to describe "self-confidence" and later concluding that "self-confidence" and "nerve stability" are intrinsically related (Ruefenacht et al., 2002).

In Study 2 confidence was an extremely prevalent theme which was evident in the free text reports of red and green flagged dogs that did not perform as expected.The literature surrounding the trait, however, is limited and confused. There is therefore, arguably, a need to clarify what exactly self-confidence in the dog is, how it is measured and whether or not it is a prognostic indicator of how a dog will perform as a guide dog.

6.2   Aims

A study was performed in order to develop an understanding of what confidence is within the context of Guide Dogs, and to determine whether or not a dog's confidence level is a prognostic indicator for qualification of dogs.

6.3   Hypotheses

It is hypothesised that dog's confidence levels impact on their likelihood to qualify as guide dogs. It is predicted that dogs with higher confidence levels are more likely to qualify than dogs with low confidence.

6.4   Materials and methods

To investigate the hypothesis that dogs with low confidence are more likely to be withdrawn than dogs which are confident, 140 dog's free text reports were analysed. The sample of 140 dogs included 70 dogs that were withdrawn pre-qualification and 70 dogs that went on to qualify. The two subsets were matched in terms of sex and breed, so that there was the same number of dogs in each subset (see Table 8, page 89)

Comparative Keyword Analysis (CKA) was used as a method of determining the frequency with which assessors used words pertaining to the idea of confidence(Silverman, 2011). This method allowed a joint quantitative and qualitative analysis of the data to be performed.

Initially only words such as 'confident' and 'lacks confidence' were coded, the former as a positive reference and the latter as a negative. However, as analysis progressed through the reports it was realised that there were many other phrases which related to confidence that did not directly include the words 'confident' or 'confidence', such as references to anxious behaviour and sensitivity and boldness. It was also determined that search functions could not be used to search all the data for phrases due to the unpredictability of phrases used to talk about confidence, discussion relating to the confidence of humans such as the puppy walker, and spelling mistakes that were rife throughout the data. Thus, all records were analysed manually, whichalso allowed detection of synonyms. Table 7 lists the words or phrases which were coded using the CKA method.

Table 7: List of phrases identified within the free text of 140 dog's as being related to behavioural trait 'confidence'

Positive confidence	Negative confidence
Confident	Hangs back
Outgoing	Some sensitivity
No sensitivities	Sensitive type
Confidently	Underlying sensitivities
Self-confident	Anxiety
Minimal anxiety	Under confident
Good level of confidence	Lack of confidence
Not anxious	Little cautious
Bold	Less confident
	Reluctant to…
	A worrier
	Not so confident
	Not outgoing
	Not the boldest
	Submissive
	Anxious
	Needs to gain confidence
	Mental sensitivities

For each individual dog, each individual CAS report was determined to either be positive, negative or neutral in terms of the dog's confidence. For example, if a dog had a reference to a good level of confidence it received a score of 1 for positivity. If it received a negative remark related to confidence it received a score of 1 for negativity. If it had both positive and negative remarks it received a 1 for both positivity and negativity, thus making it 'neutral'. The percentage of positive

and negative reports for each dog was then calculated, and the percentage of negative reports was taken away from the percentage of positive reports to result in an overall 'confidence index' for that individual dog. The results were split into whether the dogs were qualified or withdrawn. An independent samples two-tailed T test was performed on the confidence indexes of each group of dogs, using IBM SPSS Statistics, Version 22.0.

6.5   Results

140 dogs met the criteria to be included in the study. 70 of the dogs were withdrawn from training and 70 were qualified guide dogs. The dogs were matched in terms of breed and sex, and the distribution of dogs is shown in Table8.

Table 8: A table showing the numbers of different types of dogs in terms of breed and sex, whose records were analysed for Study 3. The numbers of each dog type used were the same for both the qualified and the withdrawn sets of dogs.

	German shepherd dog	Golden retriever	Golden retriever x German shepherd dog	Golden retriever x Labrador retriever	Labrador retriever	Labrador retriever x golden retriever
Male	5	5	5	5	5	10
Female	5	5	5	5	5	10

The average 'confidence index' for the qualified dogs was 22.13 (range = -60 → 100)

The average 'confidence index' for the withdrawn dogs was 10.43 (range = -100 → 100)

There was not a significant difference between the scores for qualified dogs (M = 10.4, SD = 51.1) and withdrawn dogs (M = 22.1, SD = 40.4); t (131) = -1.502, p = 0.135.

Although there is a clear numerical difference between the 'confidence index' of qualified and withdrawn dogs, there was no significant difference between the two groups. This suggests that merely using comparative keyword analysis to examine the free text reports of dogs in terms of confidence is not able to differentiate dogs that qualify from those that are withdrawn. However, the fact that there is a difference numerically suggests that there is some difference in reported confidence levels between qualified and withdrawn dogs, with dogs that qualified having a higher 'confidence index' than those who were withdrawn. Analysis of reported confidence within the free text reports within CAS could therefore potentially be used alongside another behavioural test when looking to see if dogs are likely to qualify or be withdrawn.

6.6 Discussion

The purpose of Study 3 was to analyse the pre-existing data within the Guide Dogs interactive database to determine whether reported confidence levels within the free text was predictive for whether dogs would qualify as guides or not. The method used was comparative keyword analysis which could be implemented quickly and easily and enabled the research question to be answered. The dogs to be used were matched in terms of breed and sex and split into outcome based groups. Overall there were 70 withdrawn dogs and 70 qualified dogs which were analysed. The results showed that there was a numerical difference between the average 'confidence index' of the qualified dogs and the withdrawn dogs; however there was no statistical difference between the groups. The fact that the dogs in the qualified set had higher reported confidence levels compared to the withdrawn dogs suggests that the confidence levels of a dog may have an impact on whether they will qualify or not. However, analysis of free text to determine levels of confidence shouldn't be used alone to make a decision about how successful a dog will be.

In order to determine whether reported confidence within free text could be predictive for whether dogs will qualify as guides, a mixed methods approach in the form of comparative keyword analysis (CKA) was employed. The method uses both qualitative and quantitative analysis and is developed from the discipline of corpus linguistics(Charteris-Black, 2012). Conventionally, the text which requires analysis is compared with a reference text (Charteris-Black, 2012), such as the British National Corpus (Seale et al., 2006). However, in a study by Seale et al. (2006) no reference text was used and instead two relevant texts for the study were compared against each other. This was also the approach used in Study 3, as one text containing reports from withdrawn dogs was compared with another which contained reports from qualified dogs. In Seale et al's study, after the development of the list of keywords, qualitative analysis was performed. However, in Study

3,quantitative methods were used to determine whether the frequency of confidence related words was statistically different between the two groups (Charteris-Black, 2012).

In Study 3 the qualitative analysis was conducted prior to the quantitative analysis. Initially only phrases which contained the word 'confident' and its suffixes were coded. However, during the analysis it was determined that other words were used by the authors of the reports to reference the dog's confidence levels, such as 'anxious'. Charteris-Black (2012) suggests that this choosing of keywords requires a qualitative judgment which is determined by the meanings that the words have in the context of the texts being examined and should be related to the purpose of the analysis. This was therefore the approach which was taken. In other contexts, the words which were coded as being related to confidence may not be considered to be related, however repeated reading of the data allowed decisions to be made that when the authors of the reports referred to a dog in a certain way, they were making a point about the dog's confidence. The need to code words which were not initially considered by the researcher validates the use of CKA as the methodology. Instead of CKA, content analysis could have been employed where the categories are fully defined prior to the analysis. CKA provided a more flexible, and in the end more thorough, approach to identification of keywords related to the research question (Silverman, 2011).

As with any form of qualitative analysis, when using CKA there is a risk that the researcher's preferences will introduce subjectivity and bias into the results. The use of CKA in Study 3 was very specific, as it was used to answer a particular research question. Thus, the risk of subjectivity was limited. However, the reading of the text led to different phrases being coded which weren't initially intended. Another researcher may not have read the text and drawn the same conclusions about other words and phrases which should be included in the analysis.

As the text was being analysed to answer a particular question of whether confidence is predictive for qualification, the method of CKA was beneficial compared with conventional qualitative thematic analysis, as only words specific to the research question needed to be coded and subsequently

quantified. The benefit of CKA is that it is much more economical and replicable than other qualitative methods (Seale et al., 2006), which should have minimised the subjectivity of the method. Indeed, Seale et al. (2006) defend their use of methodology by arguing that initially the views of the researcher do not impact on the identification of the keywords, as they are selected purely based on their frequency. They also state that the method allows identification of related words such as superlatives which may be missed in conventional thematic analysis.

7   Overall Discussion

This work investigated issues associated with the training of guide dogs and the matching of them to clients. In particular, focus was placed on identification of factors that made partnerships between the dog and the client successful, or those that result in failure of a dog to qualify leading to the absence of a potential partnership. The approach taken in the study was to investigate in detail a cohort of dogs that excelled within the training programme but were unsuccessful, and a further group of dogs who appeared to be of mediocre performance in training but formed a successful working partnership post-qualification with a blind or partially sighted person.

The research project was very successful and provided a unique insight into some of the factors that appear important when establishing a successful guide dog partnership. It was clear that the two overriding factors contributing to a success or failure were: (1) the early identification of undesirable behaviours of the dogs in training and (2) the appropriateness of the match between the dog and the client. With respect to identification of undesirable behaviours, this work identified a need to ensure the definition and use of clear phrases and words to describe traits of the dog's behaviour and characteristics, and for these to be monitored from an early age. In terms of the appropriateness of the match, it was clear that important aspects of the client's circumstances and their history with regards to dog ownership needed to be combined when planning the match between the dog and the potential client.

The methods used within the studies were unusual within the fields of the human animal bond and the behaviour of dogs. The use of both qualitative and quantitative methods allowed a different perspective to be taken which enabled the development of a detailed insight into the unique relationship between dog and owner. It is plausible that the methodology could have a broader application in other fields, such as the human animal bond between pet dogs and their owners, and investigations into why dogs are relinquished to shelters and why some are successfully adopted yet others are not.

7.1.1 Research methods

The investigation was performed as three studies with the first providing the research with the knowledge to conduct the subsequent ones. Study 2used qualitative methods in order to develop explanatory case studies. Study 3 used a mixed-methods approach utilising both qualitative and quantitative methods, in the form of comparative keyword analysis, to determine whether use of confidence in reports is predictive for whether a dog will qualify as a guide. A qualitative approach to the research dominated the studies as it was determined that in order to develop an understanding of the reasons for guide dog success or withdrawal, the pre-existing data required in depth analysis of the words used to describe the dogs behaviour, the clients, and events throughout the training process. The data available was in the form of written reports and therefore a case study methodology for Study 2 was determined to be able to reveal the most amount of information so that the research questions could be answered.

Qualitative research can be simply defined as the use of words as data which are then analysed (Braun and Clarke, 2013). Qualitative research has historically been considered to be a much more subjective approach, compared to quantitative methods (Westmarland, 2001), however this can be a positive thing and qualitative research often places value on subjectivity, personal involvement and partiality (Braun and Clarke, 2013).Typically, qualitative research is used as a method of understanding components of human's lives, in terms of how they behave, the emotions which they are feeling and how their experiences relate to these (Strauss and Corbin, 1990). The data used to perform qualitative research can come from a multitude of sources such as interviews, observations, documents or video recordings (Strauss and Corbin, 1990).

The author of this thesis came from a background of English Literature and Veterinary Medicine and Science, both at degree level, and had minimal training and knowledge surrounding behaviour and Guide Dogs when beginning the research. This led to the development of the first study which centred on formation of an understanding of the organisation, and the issues that they were

facing.Due to the author's clinical background, a possible bias was identified in terms of a risk of excessive weight being placed on health reasons for the development of problems, as opposed to behavioural or environmental reasons. To minimise this potential bias, throughout the research discussions about the methodology and results were held with teams of academics and Guide Dogs staff to ensure that there was agreement about the conclusions being drawn. This approach meant that subjectivity was still an element of the research, however the results and analysis were validated by individuals with different experiences and knowledge. Some of the individuals had a background purely in behaviour, and others such as the Guide Dogs staff, had knowledge of both behaviour and health.

7.1.2   Why the research was unique

As far as the author is aware, no research has previously been undertaken which examines the behavioural and progression reports of guide dogs throughout their training to develop explanations as to why they did or did not qualify. Instead, previous research into success of dogs as guides has focussed on the development of tools such as questionnaires and behavioural tests to determine whether individual traits and responses to stimuli and situations are prognostic for success or not. The Canine Behavioural Assessment and Research Questionnaire (C-BARQ) was initially developed by Hsu and Serpell (2003) using pet dogs and then applied to dogs going through training to be guides by Duffy and Serpell (2012). Similarly to the work in this research, the dogs in the Duffy and Serpell study were categorised into two groups, namely 'successful' and 'released' relating to groups used in the studies in this thesis which were 'qualified' and 'withdrawn' respectively. In Duffy and Serpell's studythe two group's questionnaire results were then examined to determine whether certain traits were predictive for success or not. Similarly, Arata (2010) administered a questionnaire to guardians of dogs going through training and compared the results between qualified and withdrawn dogs. Other research surrounding behaviour in dogs has involved investigating whether there is heritability of behavioural traits within service dog populations (Strandberg et al., 2005; Takeuchi et al., 2009).

All the research highlighted surrounding service dogs and in particular guide dogs, had the overall aim of attempting to predict whether dogs would be successful in their role at as early an age as possible, whether that is by looking at genetics in order to develop breeding programmes, or implementing behavioural tests when the puppies are young. These approaches are beneficial, however they all use large populations of dogs and quantitative methods to determine which traits in dogs are predictive for success. The results from those studies have produced overall conclusions about which traits are desirable for a dog to have if they are to enter work, however these results relate to population level data and preliminary work for this theses demonstrated that there are individual dogs which do not fit the population trend. The hypotheses of Study 2 centred around the thought that there would be explanatory factors which result in the failure of predictions made by behavioural tests as outlined in the study by Harvey et al. (2016). The aim of Study 2 was to identify the factors with the hope of potentially developing better predictors of success in a guide dog training and matching programme. Thus, to investigate the hypotheses, the two studies were devised to investigate dogs that reached an outcome which was different to those predicted by the behavioural tests as developed by Harvey (Harvey, 2014)and the conventional behavioural assessments conducted by the Guide Dogs organisation (CAS).

Study 2 investigated the selected dogs using qualitative methods to attempt to determine what it was that led to their success or failure which was different to the outcome predicted by behavioural tests (Harvey et al., 2016). The study utilised ten dogs, five of which were 'red-flagged dogs' and were therefore predicted to be withdrawn from the training programme, and five 'green-flagged dogs' which were predicted to qualify. The case study approach taken in the study had the benefits of closely examining, retrospectively, dogs to deduce reasons for their outcomes. Although not on the same large scale as other research projects involving guide dogs, the aim was that by detailed examination of individuals the conclusions drawn would be valid and could potentially improve the productivity of Guide Dogs and enable approaches to be taken which can lead to more successful partnerships being created.

Based upon the preliminary results of Study 2, the third study was devised. It was proposed that a key feature of failure on behalf of the dog was related to a criterion termed 'confidence'. In order to investigate the hypothesis that dogs with a lower level of 'confidence' are less likely to qualify Study 3 was developed which used both qualitative and quantitative methods.When considering Strauss and Corbin's criteria for qualitative research (Strauss and Corbin, 1990), as previously referenced, the data used in Studies 2 and 3 could be considered as being documents. However, the analysis was not focussed on the human emotions or their personal experiences which is usually the main focus of qualitative research. Instead what the people had recorded about the animal's behaviour was analysed. Qualitative research in the context of animal behaviour usually takes the form of observing the animal and using rating scale to record behaviour over long periods of time, by people who have experience and knowledge of the animals being recorded (Wemelsfelder, 2007). Thus, Study 3was unique in its methodology as no rating scales or direct observations were used, but instead the assessor's interpretations of the behaviour and experiences of the animal were analysed. This approach was useful as it allowed the research question to be answered directly.

The studies performed within this thesis were developed in order to make the best use of the data available. Study 1 and Study 2 can be considered to have not followed the exacting rules of qualitative research, however their strengths lay in the fact that they allowed the use of pre-existing, real life data to be analysed to formulate conclusions. This approach also meant that the studies can be replicated by Guide Dogs staff if they wish to understand reasons behind dogs failures or success that were not included in the original study, without having to create new data.

7.1.3   Subjectivity and bias within the data

Use of qualitative methods is known to introduce elements of subjectivity and bias due to the individual researcher and their own preconceptions and knowledge(Westmarland, 2001; Braun and Clarke, 2013). Within Study 1 and Study 2 another element of bias and subjectivity will have been inherently present within the records which were used for analysis. Within the Guide Dogs

organisation, each dog is assigned their own assessor or assessors throughout different periods of their training career. They will have an assessor known as a Puppy Training Supervisor (PTS)who visits them throughout the puppy walking phase, and will be trained by aGuide Dog Trainer (GDT) in early training and a Guide Dog Mobility Instructor (GDMI) during the advanced training phases. The PTS, GDT and GDMI are the individuals who create the records for the dogs. Due to each dog having their own individual assessor and trainer, the reports will be inherently subjective. Each individual who assesses the dog may notice different things about the animal and place different levels of importance on certain events and behaviours which may lead to them being reported or not. Although the assessors and trainers are trained in how to do their jobs, there is no clear guidance around what is expected of them when it comes to filling in the free text box when completing the Canine Assessment Summaries (CAS). On the form it simply states: 'Overall summary'. Indeed, discussion with Guide Dogs staff also highlighted that there are different interpretations of how the quantitative assessment, as well as the free text section, should be filled in (personal communication). Some assessors keep their definitions of the different scores the same, from the first assessment to the last, whereas some assessors change them dependent on the age of the dog. This confusion in how to complete the assessments may have led to differences which then affected the results of Study 2. In particular, when a dog is first assessed by one person, and then another, there may appear to be a change in behaviour when actually it is due to the assessor's bias. Such a bias could have affected how they choose to report the behaviours which they are observing, and which behaviours they felt were important enough to report.

When considering the reports as a whole, the subjectivity of the assessors can also be viewed as being beneficial. Wemelsfelder (2007) suggested that as long as the assessors had knowledge and experience of the species and or individual being assessed, the caretaker or owner of the animal is best placed to make such assessments. They go on to suggest that qualitative judgements are not detrimental to science as long as the methodology used to make such judgements is formal and robust. If the criteria of the assessor having experience and sound methodology being used are

fulfilled then the judgments which are made about the animal can be a way of discovering new information about the animal, which more objective, quantitative assessments may not reveal. In the context of the Guide Dogs CAS system, those who are completing the assessments know the dog best, especially after the 'puppy walking' phase, and it is therefore prudent to value their subjectivity and how they report the dog. A behavioural trait or event may be relevant in one dog, but not another. When making qualitative judgments, the assessor not only records behaviour over time, but they will also end up with clear impressions about the individual animal (Wemelsfelder, 2007). Thus, the assessor has, over time, processed, accumulated filtered and integrated information (Feaver et al., 1986), and perhaps without realising, has made judgments which have the potential to be much more valuable than quantitative information about the behaviour of an animal.

7.1.4 Sample sizes

In Study 2 a case study approach was taken to examine in detail five dogs that received 'red flags' but progressed to make a successful working partnership, and five dogs that received multiple 'green flags' but failed to progress to a working partnership. Whilst this is a small sample size the data gathered was rich and included detailed and complex accounts of the dog and in the cases of the 'red-flagged dog' the client, throughout their training periods. Therefore, the sample size used in Study 2 fitted within an acceptable sample size as discussed by Braun and Clarke (2013). The use of this sample size also allowed cross case analysis to be performed which was valuable in terms of validating the recommendations as to how Guide Dogs can approach similar cases in the future.

In Study 3 alarger number of dogs were used for the analysis of reports in terms of confidence. A group of 70 qualified dogs was compared with a group of 70 withdrawn dogs. The dogs within the two groups had been matched in terms of breed and sex. These reports were analysed in order to statistically examine the frequency of reports referencing the confidence of the particular dog, either positively or negatively. In order to prove or disprove the hypothesis that a confident dog is

more likely to qualify than a less confident one, and to increase the validity of the findings, a large number of dogs needed to be analysed.

7.1.5   Red-flagged dogs

The dogs termed 'red-flagged dogs' were identified in work by Harvey et al. (2016) which involved development of a test battery to predict whether puppies will go on to qualify as guide dogs, or be withdrawn. The 'red-flagged dogs' were termed as such because, based on the results of the behavioural tests, they had a high chance of being withdrawn from the programme. The dogs which were selected for Study 2 were those which despite their predicted withdrawal, went on to become part of a successful partnership with a client of Guide Dogs. The aim of Study 2 was to attempt to formulate explanations using a case study methodology as to why these dogs did not fulfil their predicted outcome.

Interpretation of the individual case studies, and the cross case analysis of all five dogs, suggested that there were some important factors involved in the dogs going on to qualify as guides. Firstly, if behaviours and events of importance to the individual dog are recorded, it means that other members of staff can address the problems. This shows a need for language to be used which is universal within the Guide Dogs organisation, and that can be interpreted in the same way by all members of staff. Further to this, the behaviours displayed by the dog should be recorded accurately as soon as possible, to enable interventions to occur if necessary using an individualistic approach to the training of the dog. Secondly, there appeared to be an important need for the dog to be matched with a suitable client.

Although the results were interpreted by examination of the two groups of dogs to reach the overall conclusions, the results also suggest that there is a need to see each dog and client as individuals. The cohort of dogs used in this study showed that even when dogs are predicted to fail, this may not be the case. Although Guide Dogs takes an individual approach to its training of dogs by the assignment of staff to small groups of dogs going through puppy walking and early and advanced

training, there may be some cases where more detailed focus on an individual is required to rescue a dog who is at danger of failing. For example, Dog 5 was experiencing increased distractibility during the 'advanced training' stage. This was particularly problematic as the client paired with Dog 5 had arthritis and the dog tugging due to distractions was difficult for the client to control. Intervention by the GDMI led to the introduction of a 'gentle leader', which is a form of head collar, when Dog 5 was working. After this introduction of the 'gentle leader' the client was able to regain control and a good standard of work was then achieved by the partnership. This intervention showed that consideration of a dog's behaviour and the client's individual circumstances can lead to a resolution which prevents the behaviour from becoming unmanageable. As the problem was identified early on, the dog was able to continue in work.   Although a completely personalised approach for every dog may be impossible for Guide Dogs to implement, the use of the flagging system as devised by Harvey et al. (2016) can highlight dogs which may require more frequent assessments which could involve reviewing how the training is progressing, a plan to go forwards and evaluation of whether what is currently being done is working for that individual dog and client

The interpretation of the results of the 'red-flagged dogs' was that the dogs went on to qualify within a partnership because they had been matched well, in particular with owners who had had previous experience with dogs and guide dogs. This interpretation suggests that the matching process is extremely important for the success of the partnership. All of the 'red-flagged dogs' were concluded to have been extremely well matched with clients. In these cases, the client's preferences in terms of physical attributes of the dogs were met. This is likely to have impacted on their relationship with the dog and made them more likely to have wanted to put in work and effort to achieve a good partnership. Further to this, all of the clients had previous experience with guide dogs and/or pet dogs. They were therefore much more likely to be equipped with good animal handling skills and an understanding of dog behaviour and characteristics, and thus more likely to be able to deal with slightly more complex animals compared to clients who had no experience with dogs.This result is similar to a finding by Patronek (1996)who found that individuals who

relinquished dogs to shelters were much less well informed about dogs and their behaviour than those who kept their dogs. These results suggest a clear need for people obtaining a dog to be educated in the needs of the animal and a basic understanding of behaviour. This could come from the Guide Dogs staff, or in the case of pet dogs, veterinary surgeons. Indeed, Marston and Bennett (2003)suggest that counselling of potential owners may reduce the levels of relinquishment, and the focus should be on assisting adopters to make appropriate selections. Further to this, research into reasons for dogs being returned back to animal shelters after having been adopted, found that one reason for the animals being returnedwas due to a poor match between the new owner and the dog (van der Borg et al., 1991). Similarly, one of the main reasons for dogs being relinquished to shelters in the first place is due to a poor match between the dog and owner, for example an old couple being overwhelmed by a young puppy (DiGiacomo et al., 1998). Although the van der Borg and DiGiacomo studies focussed on abandoned animals and this study looked at guide dogs, when considered together they highlight the need for assessments to be carried out when pairing animals with humans to maximise the possibility of a positive and sustained partnership.

7.1.6   Green-flagged dogs

The dogs termed 'green-flagged dogs' were identified in work by Harvey et al. (2016), similarly to the 'red-flagged dogs'. The 'green-flagged dogs' were those which were predicted, based on the results of the behavioural tests, to qualify as guide dogs. However, these dogs were selected for analysis within Study 2 because they went on to be withdrawn from the training programme prior to qualification and they were either rehomed or reassigned a role within the organisation as a 'buddy dog'.

When considering the 'green-flagged dogs' as a group, the results were interpreted as showing that these dogs either had underlying behavioural problems which become unmanageable after a change in their environment or a particular event, or the dogs were displaying certain problematic behaviours which were managed rather than cured. Analysis of this subset of dogs suggested that

many of the problems which led to withdrawal of the dogs were referenced early on in the dogs training career, however they may not have been identified and acted upon as would have been necessary if they were to qualify.

Throughout the CAS reports from a young age, Dog 6 was reported as having confidence issues, anxiety and sensitivities. However, the dog had many excellent attributes. The data was interpreted as suggesting that after being scared by a bumblebee the dog's problems relating to confidence became much more apparent. Indeed, the reason listed for the cause of the dog's withdrawal was "Lack of confidence". The references to confidence early on in the assessments could potentially have raised awareness that the dog had particular issues which required work. There was no evidence of any focussed training around this issue, although it may just not have been recorded. The bumblebee incident and the decreased confidence may have been a coincidence, however the important point from the case is that the confidence issues were referenced before the event and thus if they had been dealt with via focussed training methods, the decreased confidence may not have occurred. A similar situation was seen with Dog 7, where sensitivities were reported in CAS but they worsened after being bullied by another puppy. Dog 8's copraphagia was identified at a young age and fluctuated throughout the dog's training. A lack of adaptability was identified in the five month puppy test, and when the dog went into kennels which was a change in environment, the copraphagia which had been managed rather than cured, became a serious problem which was cited as the reason for withdrawal from training. At Dog 9's five month puppy test, adaptability was flagged as being very poor. When the dog reached the advanced stages of training, this lack of adaptability appeared to lead to anxiety issues which resulted in health issues which then appeared to result in a lack of willingness to work. Dog 10 was a dog which had a multitude of problems, and a single explanation for the dog's failure could not be determined.

7.1.7 Recommendations from the case studies

The interpretation of the case studies of the'green-flagged dogs' suggest a real need to evaluate the animals from a young age, and if possible implement strategies and training programmes to try and resolve the issues. The interpretation of the case studies of the 'red-flagged dogs' show that with extra input from trainers and willingness of clients, problem dogs can be rescued and enter a successful partnership. The 'green-flagged dogs' had issues which were identified at a young age, either in CAS or from results of behavioural tests (Harvey et al., 2016). This suggests that although the free text section in CAS is very subjective, important information about the dogs was contained within it. This adds evidence to the argument by Wemelsfelder (2007) and Feaver et al. (1986) that the subjectivity within qualitative assessments of animals are worthwhile. If the free text had not been available, the problem behaviours may not have been reported. However, they were reported but no action in light of them was recorded. Thus, this highlights the clear need for free text to be clearly examined by other members of staff who are working with the dog. There would also be the potential for those filling out the assessments to flag certain issues which they believe to be important. Therefore, use of a flagging system such as the one related to the behavioural tests conducted by Harvey et al. (2016) could be used in conjunction with CAS so that dogs with potential problems can be examined in more detail to try and implement strategies to lead them to qualify as guides.

7.1.8 Recommendation for the need for clear definitions

The analysis of the reports in Study 3 determined that words and phrases related to the trait termed 'confidence' were abundant. However, just as in the literature surrounding the term 'self-confidence' in humans, there appeared to be no clear definition of the term when used to describe guide dogs. Evidence for the lack of clarity of the term comes from the deduction that many synonyms for the word 'confidence' exist, with individual dogs' confidence levels being described using different terminology dependent on who the assessor was. This also validates the suggestion previously mentioned that the system used to assess dogs currently contains a lot of subjectivity due

to differences between assessors and their reporting style. The results from Study 3 showed that there was a difference in the reported levels of confidence within the free text, with dogs who went on to qualify having a higher average 'confidence index' than the dogs who were withdrawn. However these results were not significant. This result suggests that anecdotal evidence from Guide Dogs staff that more confident dogs are more likely to qualify may be true. However, just looking at keywords related to confidence within the free text is not a good enough method for determining whether or not a dog will qualify.

In order to determine whether reported confidence within free text is predictive of whether a dog will qualify there needs to be an audit of the use of terminology in the Guide Dogs corpus. Evidence suggests that there is no clear definition of the term in general, and nor is there a definition of confidence when used in the context of Guide Dogs. Thus, if one could be developed and the assessors informed of the definition, the results when reports are reanalysed may be different to the results when there is confusion surrounding the term and the language used alongside it.

The discussion arising from Study 2 and its results need not be limited to the one character trait termed 'confidence'. When analysing the reports of the ten dogs for Study 2, there were many phrases which were repeated throughout all the assessments as though they were part of the accepted Guide Dogs lexicon. For example, "willing and responsive dogs" appeared in multiple reports. However, discussions with Guide Dogs staff again determined that this appeared to just be a stock phrase that assessors use, with no clear definition attached to it (personal communication). Phrases such as this may mean different things to different people and can lead to misinterpretation of the reports. This is a weakness of both Study 2 and Study 3, as there is no way of determining what exactly the assessors meant when they used certain terminology, and it was all open to the interpretation of the author. Development of definitions of commonly used words and phrases used when reporting dog's behaviour and their progress through training would improve future research

which examined such reports, and also make the reports more meaningful when staff are examining them to make decisions about a dog's training and their future within the Guide Dogs organisation.

7.1.9   Recommendations for improvement of CAS

In order to make the existing CAS system more effective, two recommendations to Guide Dogs can be made. The first is that there should be clear guidelines about what the free text is for. What is included in this area is variable and differs between assessors. Although subjectivity can be a positive attribute of the data, there is a need for methodology to be followed when completing the free text to minimise bias as much as possible and to ensure it is being used for the same purpose between assessors. If the purpose for, and methods of, completion are the same then reports can be viewed by other individuals and compared, and analysis can be conducted on the information. Secondly, when using phrases in the free text to describe the behaviour and temperament of the dog, there should be clear definitions for such terms. If both recommendations were implemented together, it is hypothesised that the reports would be much more valuable when used to assess dogs.

7.1.10   Summary of recommendations

1. Clear definitions for commonly used words and phrases used to refer to dog's behaviour and their progress should be developed

2. After dogs have been subjected to behavioural tests and flagged as being at risk of withdrawal, these dogs should be closely monitored to determine if there is a need for interventions and a more individualistic approach to their training taken in order to improve their chances of qualification

3. When using CAS, problem behaviours should be identified as at young an age as possible so that these dogs can receive extra training to try and resolve the problem

4. The matching process should be rigorous and tailored to the partnership as much as possible, taking into consideration the dog's behaviour and the client's history and current circumstances

7.1.11 Further work

Despite the studies providing results which led to a greater understanding of some of the reasons for success or failure of guide dogs, further work can be done, both on the subjects in this research, and beyond. In terms of the case studies which were developed, there is a potential for interviews to be conducted with the Guide Dogs staff, such as trainers, who were involved with the dogs, the clients whom the 'red-flagged dogs' were matched with, and the individuals to whom the green dogs were rehomed. There would also be the potential to get such individuals to review the case studies. Although the main focus of the research is around the dogs themselves, those who know the dogs best – their owners and their trainers – may have a different perspective on the dog's health and behaviour and reasons why they have developed in such a way. These individuals therefore have the potential to either validate or challenge the findings of the case studies and their input would increase the construct validity of the report (Yin, 2014). An integration of another source of evidence, that is interview data, would further strengthen the case studies produced and the methodology which was used (Gillham, 2000). Further to this, work which follows up the 'red-flagged dogs' would be interesting in terms of highlighting whether the dogs continued in a successful partnership, or whether their problem behaviours which were identified at the young age re-emerged leading to problems and eventual withdrawal from work.

Evidence from both this study and others (van der Borg et al., 1991; DiGiacomo et al., 1998) suggest that for a partnership between a dog and a human to be successful, the pair must be matched well. Work could be done to develop a personality assessment tool for humans in order to determine what type of dog, in terms of character, would be best suited for them. Although work of this type

would be a significant undertaking, the results could be extremely significant, both in terms of guide

dogs and the wider population including other service dogs and the pet dog population. Study 2

showed that when a good match is formed, the results can be extremely positive. Such work could

minimise the number of guide dogs who are withdrawn from work after entering a partnership, and

also reduce the number of dogs who end up being relinquished to shelters. Relinquishment of pets

and guide dogs has been shown to have detrimental effects both for the human (DiGiacomo et al.,

1998; Friedmann and Son, 2009) and animal (Weiss and Greenberg, 1997) and therefore minimising

this would be extremely beneficial.

7.1.12 Conclusion

The work in this thesis was undertaken in partnership with Guide Dogs and the University of

Nottingham, with the overall aim of developing ways of improving existing protocols related to the

training and assessment of dogs so that more will go on to qualify as guides. The case studies show

that each dog and their client are individuals with their own stories. However, overall clear themes

were identified. The cases of the 'red-flagged dogs' showed how important matching a dog well

with a client is. They also showed how much impact an individualised approach to training can have

on a dog. In some cases, intervention by trained Guide Dogs staff led to a dog qualifying which may

otherwise have been withdrawn. In the cases of the 'green-flagged dogs', problem behaviours were

often mentioned but not acted upon, suggesting a need for staff to highlight issues as soon as

possible, so that if possible, they can be resolved. The study investigating confidence levels in the

dogs suggested qualified dogs do have higher reported confidence levels compared to withdrawn

dogs, however the results were not significantly different. Further work could be done in this area after formulating clear definitions of words which are used to describe confidence. Indeed, many of the phrases used in the current Guide Dogs assessment system require defining to make the reporting of dog's behaviour and progression more consistent and of greater value. Overall, the results suggest that the current assessment system is valuable and contains a lot of information about dogs which can be used in conjunction with behavioural tests to enable decisions about an individual dog's training and progression to be made.

8 Bibliography

ARATA, S., MOMOZAWA, Y., TAKEUCHI, Y. & MORI, Y. 2010. Important Behavioral Traits for Predicting Guide Dog Qualification. *Journal of Veterinary Medical Science,* 72, 539-545.

ASHER, L., BLYTHE, S., ROBERTS, R., TOOTHILL, L., CRAIGON, P. J., EVANS, K. M., GREEN, M. J. & ENGLAND, G. C. W. 2013. A standardized behavior test for potential guide dog puppies: Methods and association with subsequent success in guide dog training. *Journal of Veterinary Behavior: Clinical Applications and Research,* 8, 431-438.

ASHER, L., DIESEL, G., SUMMERS, J. F., MCGREEVY, P. D. & COLLINS, L. M. 2009. Inherited defects in pedigree dogs. Part 1: Disorders related to breed standards. *The Veterinary Journal,* 182, 402-411.

AUDRETSCH, H. 2013. *Premature Retirement in Guide Dogs: Behavioural Reasons for Withdrawal.* MSc, University of Edinburgh.

BEACH, F. A. 1975. Hormonal modification of sexually dimorphic behavior. *Psychoneuroendocrinology,* 1, 3-23.

BEATTIE, S., HARDY, L., SAVAGE, J., WOODMAN, T. & CALLOW, N. 2011. Development and validation of a trait measure of robustness of self-confidence. *Psychology of Sport and Exercise,* 12, 184-191.

BOTREAU, R., VEISSIER, I., BUTTERWORTH, A., BRACKE, M. & KEELING, L. 2007. Definition of criteria for overall assessment of animal welfare. *ANIMAL WELFARE-POTTERS BAR THEN WHEATHAMPSTEAD-,* 16, 225.

BRAUN, V. & CLARKE, V. 2013. *Successful Qualitative Research : a practical guide for beginners,* London, SAGE Publications Ltd.

BRONSON, R. 1982a. Variation in age at death of dogs of different sexes and breeds. *American journal of veterinary research,* 43, 2057-2059.

BRONSON, R. T. 1982b. Variation in age at death of dogs of different sexes and breeds. *American journal of veterinary research,* 43, 2057-2059.

BULL, S. J., SHAMBROOK, C. J., JAMES, W. & BROOKS, J. E. 2005. Towards an understanding of mental toughness in elite English cricketers. *Journal of Applied Sport Psychology,* 17, 209-227.

CHARTERIS-BLACK, J. 2012. Comparative Keyword Analysis and Leadership Communication: Tony Blair - A Study of Rhetorical Style. *In:* HELMS, L. (ed.) *Comparative Political Leadership.* 1st ed. London: Palgrave Macmillan UK.

CLUTTON-BROCK, J. 1995. Origins of the dog: domestication and early history. *In:* SERPELL, J. (ed.) *The Domestic Dog: Its Evolution, Behaviour and Interactions with People.* 1st ed. Cambridge: Cambridge University Press.

COLLINS, L., ASHER, L., SUMMERS, J., DIESEL, G. & MCGREEVY, P. 2010. Welfare epidemiology as a tool to assess the welfare impact of inherited defects on the pedigree dog population. *Animal welfare (South Mimms, England),* 67-75.

COLLINS, L. M., ASHER, L., SUMMERS, J. & MCGREEVY, P. 2011. Getting priorities straight: Risk assessment and decision-making in the improvement of inherited disorders in pedigree dogs. *The Veterinary Journal,* 189, 147-154.

COPPINGER, R. & SCHNEIDER, R. 1995. Evolution of working dogs. *In:* SERPELL, J. (ed.) *The Domestic Dog: Its Evolution, Behaviour and Interactions with People.* 1st ed. Cambridge: Cambridge University Press.

DIGIACOMO, N., ARLUKE, A. & PATRONEK, G. 1998. Surrendering pets to shelters: The relinquisher's perspective. *Anthrozoös,* 11, 41-51.

DOGS, G. 2013. *http://www.guidedogs.org.uk/media/6990141/key-messages-our-breeds.pdf*[Online]. [Accessed 10/02/2016.

DUFFY, D. L. & SERPELL, J. A. 2012. Predictive validity of a method for evaluating temperament in young guide and service dogs. *Applied Animal Behaviour Science,* 138, 99-109.

EICHELBERG, H. & SEINE, R. 1996. [Life expectancy and cause of death in dogs. I. The situation in mixed breeds and various dog breeds]. *Berliner und Munchener tierarztliche Wochenschrift,* 109, 292-303.

EISENHARDT, K. M. 1989. Building theories from case study research. *Academy of management review,* 14, 532-550.

FEAVER, J., MENDL, M. & BATESON, P. 1986. A method for rating the individual distinctiveness of domestic cats. *Animal Behaviour,* 34, 1016-1025.

FISHMAN, G. A. 2003. When your eyes have a wet nose: the evolution of the use of guide dogs and establishing the seeing eye. *Survey of ophthalmology,* 48, 452-458.

FLYVBJERG, B. 2006. Five misunderstandings about case-study research. *Qualitative inquiry,* 12, 219-245.

FRASER, M., MCNEIL, P. & GIRLING, S. 2008. Prediction of future development of canine atopic dermatitis based on examination of clinical history. *Journal of Small Animal Practice,* 49, 128-132.

FRICK, K. D. & FOSTER, A. 2003. The magnitude and cost of global blindness: an increasing problem that can be alleviated. *American Journal of Ophthalmology,* 135, 471-476.

FRIEDMANN, E. & SON, H. 2009. The Human–Companion Animal Bond: How Humans Benefit. *Veterinary Clinics of North America: Small Animal Practice,* 39, 293-326.

GERRING, J. 2006. *Case study research: principles and practices*, Cambridge University Press.

GILLHAM, B. 2000. *Case study research methods*, Bloomsbury Publishing.

GODDARD, M. & BEILHARZ, R. 1984. A factor analysis of fearfulness in potential guide dogs. *Applied Animal Behaviour Science,* 12, 253-265.

GODDARD, M. E. & BEILHARZ, R. G. 1983. Genetics of traits which determine the suitability of dogs as guide-dogs for the blind. *Applied Animal Ethology,* 9, 299-315.

GODDARD, M. E. & BEILHARZ, R. G. 1986. Early prediction of adult behaviour in potential guide dogs. *Applied Animal Behaviour Science,* 15, 247-260.

HART, B. L. & HART, L. A. 1985. Selecting pet dogs on the basis of cluster analysis of breed behavior profiles and gender. *Journal of the American Veterinary Medical Association,* 186, 1181-1185.

HARVEY, N. 2014. *Development and evaluation of methods for determining personality in juvenile guide dogs.* Ph.D, University of Nottingham.

HARVEY, N. D., CRAIGON, P. J., SOMMERVILLE, R., MCMILLAN, C., GREEN, M., ENGLAND, G. C. W. & ASHER, L. 2016. Test-retest reliability and predictive validity of a juvenile guide dog behavior test. *Journal of Veterinary Behavior: Clinical Applications and Research,* 11, 65-76.

HAYASHIDANI, H., OMI, Y., OGAWA, M. & FUKUTOMI, K. 1988. Epidemiological Studies on the Expectation of Life for Dogs Computed from Animal Cemetery Records. *The Japanese Journal of Veterinary Science,* 50, 1003-1008.

HELMINK, S., SHANKS, R. & LEIGHTON, E. 2003. Investigation of breeding strategies to increase the probability that German shepherd dog and Labrador retriever dog guides would attain optimum size. *Journal of animal science,* 81, 2950-2958.

HILL, P., LAU, P. & RYBNICEK, J. 2007. Development of an owner-assessed scale to measure the severity of pruritus in dogs. *Veterinary dermatology,* 18, 301-308.

HOROWITZ, A. C. & BEKOFF, M. 2007. Naturalizing anthropomorphism: behavioral prompts to our humanizing of animals. *Anthrozoös,* 20, 23-35.

HSU, Y. & SERPELL, J. A. 2003. Development and validation of a questionnaire for measuring behavior and temperament traits in pet dogs. *Journal of the American Veterinary Medical Association,* 223, 1293-1300.

HUDSON, R., BAUTISTA, A., REYES-MEZA, V., MONTOR, J. M. & RÖDEL, H. G. 2011. The effect of siblings on early development: A potential contributor to personality differences in mammals. *Developmental Psychobiology,* 53, 564-574.

KIM, Y.-M., KIM, S.-A., LEE, S.-M., CHOI, Y.-J., KIM, B.-J. & SHIN, N.-S. 2010. Canine behavioral problems and their effect on relinquishment of the Jindo dog. *Journal of veterinary science,* 11, 345-350.

LEY, J. M., BENNETT, P. C. & COLEMAN, G. J. 2009. A refinement and validation of the Monash Canine Personality Questionnaire (MCPQ). *Applied Animal Behaviour Science,* 116, 220-227.

LOCANDER, W. B. & HERMANN, P. W. 1979. The Effect of Self-Confidence and Anxiety on Information Seeking in Consumer Risk Reduction. *Journal of Marketing Research (JMR),* 16, 268-274.

MÄKI, K., LIINAMO, A., GROEN, A., BIJMA, P. & OJALA, M. 2005. The effect of breeding schemes on the genetic response of canine hip dysplasia, elbow dysplasia, behaviour traits and appearance. *Animal Welfare,* 14, 117-124.

MARSTON, L. C. & BENNETT, P. C. 2003. Reforging the bond—towards successful canine adoption. *Applied Animal Behaviour Science,* 83, 227-245.

MATAMOROS, R. & SEITZ, L. L. 2008. Effects of assistance dogs on persons with mobility or hearing impairments: A pilot study. *Journal of rehabilitation research and development,* 45, 489.

MERRIAM, S. 1995. What Can You Tell From An N ofl?: Issues of validity and reliability in qualitative research. *PAACE Journal of Lifelong Learning,* 4, 50-60.

MICHELL, A. R. 1999. Longevity of British breeds of dog and its relationships with sex, size, cardiovascular variables and disease. *The Veterinary record,* 145, 625-629.

MIZUKOSHI, M., KONDO, M. & NAKAMURA, T. 2008. Evaluation of the potential suitability of guide dog candidates by continuous observation during training. *Journal of Veterinary Behavior: Clinical Applications and Research,* 3, 193-198.

MONGILLO, P., BONO, G., REGOLIN, L. & MARINELLI, L. 2010. Selective attention to humans in companion dogs, Canis familiaris. *Animal Behaviour,* 80, 1057-1063.

MURPHY, J. A. 1998. Describing categories of temperament in potential guide dogs for the blind. *Applied Animal Behaviour Science,* 58, 163-178.

O'NEILL, D., CHURCH, D., MCGREEVY, P., THOMSON, P. & BRODBELT, D. 2012. Longevity of UK Dog Breeds. *Neoplasia,* 775, 16.39.

OVERALL, K. 2013. *Manual of clinical behavioral medicine for dogs and cats*, Elsevier Health Sciences.

PATRONEK, G. J., GLICKMAN, L. T., BECK, A. M., MCCABE, G. P. & ECKER, C. 1996. Risk factors for relinquishment of dogs to an animal shelter. *Journal of the American Veterinary Medical Association,* 209, 572-581.

PATTON, M. Q. 1990. *Qualitative evaluation and research methods*, SAGE Publications, inc.

PFAFFENBERGER, C. J., SCOTT, J., FULLER, J., GINSBURG, B. & BIEFELT, S. 1976. *Guide dogs for the blind: their selection, development, and training*, Elsevier Scientific Publishing Company.

RAYMENT, D. J., DE GROEF, B., PETERS, R. A. & MARSTON, L. C. 2015. Applied personality assessment in domestic dogs: Limitations and caveats. *Applied Animal Behaviour Science,* 163, 1-18.

RUEFENACHT, S., GEBHARDT-HENRICH, S., MIYAKE, T. & GAILLARD, C. 2002. A behaviour test on German Shepherd dogs: heritability of seven different traits. *Applied Animal Behaviour Science,* 79, 113-132.

SALMAN, M. D., HUTCHISON, J., RUCH-GALLIE, R., KOGAN, L., NEW JR, J. C., KASS, P. H. & SCARLETT, J. M. 2000. Behavioral reasons for relinquishment of dogs and cats to 12 shelters. *Journal of Applied Animal Welfare Science,* 3, 93-106.

SANDERS, C. R. 2000. The impact of guide dogs on the identity of people with visual impairments. *Anthrozoös,* 13, 131-139.

SAVOLAINEN, P. 2007. Domestication of dogs. *The Behavioural Biology of Dogs*, 21.

SCOTT, J. & MARSTON, M.-V. 1950. Critical periods affecting the development of normal and mal-adjustive social behavior of puppies. *The Pedagogical Seminary and Journal of Genetic Psychology,* 77, 25-60.

SCOTT, J. P. 1965. *Genetics and the Social Behavior of the Dog*, University of Chicago Press.

SEALE, C., ZIEBLAND, S. & CHARTERIS-BLACK, J. 2006. Gender, cancer experience and internet use: a comparative keyword analysis of interviews and online cancer support groups. *Social science & medicine,* 62, 2577-2590.

SEKSEL, K., MAZURSKI, E. J. & TAYLOR, A. 1999. Puppy socialisation programs: short and long term behavioural effects. *Applied Animal Behaviour Science,* 62, 335-349.

SERPELL, J. & JAGOE, J. 1995. Early experience and the development of behaviour. *The Domestic Dog: its evolution, behaviour and interactions with people. Cambridge University Press, Cambridge*, 79-102.

SILVERMAN, D. 2011. Comparative Keyword Analysis (CKA). *Interpreting Qualitative Data.* 4th ed. London: SAGE Publications Ltd.

SMITH, D. 2015. *http://www.theguardian.com/voluntary-sector-network/2016/feb/03/the-charities-act-what-you-need-to-know*[Online]. Available: http://www.theguardian.com/voluntary-sector-network/2016/feb/03/the-charities-act-what-you-need-to-know [Accessed 09/05/2016.

SMOTHERMAN, W. P. & ROBINSON, S. R. 1988. The Uterus as Environment. *Developmental psychobiology and behavioral ecology.* Springer.

STRANDBERG, E., JACOBSSON, J. & SAETRE, P. 2005. Direct genetic, maternal and litter effects on behaviour in German shepherd dogs in Sweden. *Livestock Production Science,* 93, 33-42.

STRAUSS, A. L. & CORBIN, J. M. 1990. *Basics of qualitative research*, Sage Newbury Park, CA.

SVARTBERG, K. 2005. A comparison of behaviour in test and in everyday life: evidence of three consistent boldness-related personality traits in dogs. *Applied Animal Behaviour Science,* 91, 103-128.

TAKEUCHI, Y., HASHIZUME, C., ARATA, S., INOUE-MURAYAMA, M., MAKI, T., HART, B. L. & MORI, Y. 2009. An approach to canine behavioural genetics employing guide dogs for the blind. *Anim Genet,* 40, 217-24.

TOMKINS, L. M., THOMSON, P. C. & MCGREEVY, P. D. 2011. Behavioral and physiological predictors of guide dog success. *Journal of Veterinary Behavior: Clinical Applications and Research,* 6, 178-187.

TOWNSEND, L. R. 1973. Hip dysplasia in canine military candidates. Collection of abstracts, Symposium of Canine Hip Dysplasia *J. Am. Vet. Med. Assoc.,* 8, 664.

TUBER, D. S., MILLER, D. D., CARIS, K. A., HALTER, R., LINDEN, F. & HENNESSY, M. B. 1999. Dogs in animal shelters: problems, suggestions, and needed expertise. *Psychological Science,* 10, 379-386.

VAN DER BORG, J. A. M., NETTO, W. J. & PLANTA, D. J. U. 1991. Behavioural testing of dogs in animal shelters to predict problem behaviour. *Applied Animal Behaviour Science,* 32, 237-251.

VAS, J., TOPÁL, J., PÉCH, É. & MIKLÓSI, Á. 2007. Measuring attention deficit and activity in dogs: A new application and validation of a human ADHD questionnaire. *Applied Animal Behaviour Science,* 103, 105-117.

VEALEY, R. S. 1986. Conceptualization of sport-confidence and competitive orientation: Preliminary investigation and instrument development. *Journal of sport psychology,* 8.

WEISS, E. & GREENBERG, G. 1997. Service dog selection tests: Effectiveness for dogs from animal shelters. *Applied Animal Behaviour Science,* 53, 297-308.

WEMELSFELDER, F. 2007. How animals communicate quality of life: the qualitative assessment of behaviour. *ANIMAL WELFARE-POTTERS BAR THEN WHEATHAMPSTEAD-,* 16, 25.

WESTMARLAND, N. The quantitative/qualitative debate and feminist research: A subjective view of objectivity. Forum Qualitative Sozialforschung/Forum: Qualitative Social Research, 2001.

WHITMARSH, L. 2005. The benefits of guide dog ownership. *Visual impairment research,* 7, 27-42.

WILSSON, E. & SUNDGREN, P.-E. 1997. The use of a behaviour test for the selection of dogs for service and breeding, I: Method of testing and evaluating test results in the adult dog, demands on different kinds of service dogs, sex and breed differences. *Applied Animal Behaviour Science,* 53, 279-295.

WRIGHT, J. C. & NESSELROTE, M. S. 1987. Classification of behavior problems in dogs: Distributions of age, breed, sex and reproductive status. *Applied Animal Behaviour Science,* 19, 169-178.

YIN, R. K. 2014. *Case Study Research : design and methods,* London, SAGE Publications Ltd.

9

10 Appendix

CAS free text	Stage, date and score	CAS scores 3 and 4	Analysis
Improved confidence, sensitive type but degree of willfulness. Clean and dry in house. Fair spending routine [1st poo: after b.fast, 2nd: gen within hour of 1st, sometimes 3rd: 4pm'ish]. Mostly clean on walks but 2nd spend can be tricky. Friendly pup, U on greeting has stopped. Gen well behaved and settled about the house. Stealing is no longer a problem. Settling better with PW in cafes, etc. Puppy jacket has been intro - no problems. Has coped well with recent eye treatment, KC Vac. Well behaved in garden. Recall - good, now much more confident on free runs in all areas. Remains very submissive with other dogs but copes and is fine once initial greeting is over. Travelling well - car/bus/train. Good improvement on training walks. Confidence has increased, anxiety is now rarely seen. Can drop back now and then which appears to be a sudden dip in confidence - ahead 70 to 80 percent of the time. Can show a degree of willfulness, esp with PW, but this has lowered. Less noise aware and coping well in all environs, mostly happy and relaxed. Dist levels mod/low and easily controlled. Nicely responsive. Obedience improving - will test PW.	PW6 21/08/12 T2 H1	Working situations Confidence in variety of environments: 3: occasionally confident in some areas	Confidence is clearly the main issue with the dog, as highlighted in the free text and the scores. Overall described as having an improved level of confidence, suggesting that in previous assessments it was low. However the dog still had a sudden dip in confidence. The overall impression is that the dog has improved from when it has previously been assessed. Clear improvement from PW5 in terms of number of 3s the dog received
Anxious type, lacks confidence. Will challenge more limited handler. Clean and dry o/night. Occ accident in the house during the day. Spending routine as noted in previous report. Walks have mostly been clean. Very friendly pup – can often U on greeting some adults. Mouthing, j/up and gen	PW4 20/06/12 T2 H1	Working situations Anxiety towards training and working: 3: Displays occasional, high anxiety Attentiveness to handler, tasks: 4: seldom focusses on	Anxiety and confidence. Reference to the necessity to be matched well by saying 'will challenge more limited handler' i.e. one with experience would be a better match.