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BONDS BEYOND TIME: ARE THERE DIFFERENCES IN WELL-BEING, AUTONOMY,
AND BOND BETWEEN VISUALLY IMPAIRED INDIVIDUALS WITH GUIDE DOGS
VERSUS PET DOGS?

Nicole Yarmolkevich

55 Pages

Well-being is a broad umbrella term that encompasses an individual's appraisal of situations and events and their satisfaction with life (Diener, 1994). Research has shown that having a severe disability can negatively impact a person's sense of well-being. Specifically, research has shown that individuals with visual impairments have a lower well-being because they feel like they are not as independent, they have many obstacles in their way, and they feel as if they are a bother to everyone around them (Lopez-Gusticia & Cordoba, 2008). To combat these obstacles, people with visual impairments opt to get a guide dog to help increase their confidence and autonomy. Research has shown that the guide dog can help increase confidence, socialization with the public, and an increase in responsibility for self and the guide dog (Minor 2001; Sanders, 2000). A reason for this phenomenon could be due to the human animal bond. The bond is a strong relationship that humans have with animals, pets, in where the pet provides comfort and support to the owner. The present study aimed to understand the bond between guide dog and handler by using the previous literature described in the paper. Several measures of well-being, autonomy, and pet attachment were used. The results showed that individuals who had both a guide dog and pet dog had the most benefits (e.g., were most satisfied with life).

Additionally, results showed that having both a guide and pet dog had greater autonomy and stronger bonds with their dogs. This suggests benefits of both roles for dogs in owner's lives.

KEYWORDS: Well-being; Visually Impaired; Guide Dogs; Human Animal Bond; Autonomy

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A Thesis Submitted in Partial
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MASTER OF SCIENCE

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CHAPTER I: ABSTRACT

Well-being is a broad umbrella term that encompasses an individual's appraisal of situations and events and their satisfaction with life (Diener, 1994). Research has shown that having a severe disability can negatively impact a person's sense of well-being. Specifically, research has shown that individuals with visual impairments have a lower well-being because they feel like they are not as independent, they have many obstacles in their way, and they feel as if they are a bother to everyone around them (Lopez-Gusticia & Cordoba, 2008). To combat these obstacles, people with visual impairments opt to get a guide dog to help increase their confidence and autonomy. Research has shown that the guide dog can help increase confidence, socialization with the public, and an increase in responsibility for self and the guide dog (Minor 2001; Sanders, 2000). A reason for this phenomenon could be due to the human animal bond. The bond is a strong relationship that humans have with animals, pets, in where the pet provides comfort and support to the owner. The present study aimed to understand the bond between guide dog and handler by using the previous literature described in the paper. Several measures of well-being, autonomy, and pet attachment were used. The results showed that individuals who had both a guide dog and pet dog had the most benefits (e.g., were most satisfied with life). Additionally, results showed that having both a guide and pet dog had greater autonomy and stronger bonds with their dogs. This suggests benefits of both roles for dogs in owner's lives.

CHAPTER II: INTRODUCTION

Mental health, broadly defined, often refers to an individual's psychological state. Positive mental health, then, refers to a psychological state when the individual experiences a satisfactory level of emotional and behavioral states. One important aspect of this is an individual's sense of well-being. Well-being is a broad umbrella term that encompasses many different aspects of an individual's life, including such concepts as happiness, and general attitudes towards daily life. One definition suggests well-being "refers to diverse and interconnected dimensions of physical, mental, and social well-being that extend beyond the traditional definition of health. It includes choices and activities aimed at achieving physical vitality, mental alacrity, social satisfaction, a sense of accomplishment, and personal fulfillment." (Naci & Ioannidis, 2015, p. 122). However, examining the literature reveals that there is no one definition of well-being (Diener, 1994; Dodge, Daly, Huyton, & Sanders, 2012).

Recently, Cooke, Malchert, and Connor (2016) published an extensive review of 42 instruments that measure well-being. They identified four primary categories to measuring well-being. These categories included the hedonic, eudaimonic, quality of life, and wellness approaches (Cooke et al., 2016). The first approach is the hedonic approach. The hedonic approach focuses on happiness and pleasure. Inside this approach lies Ed Diener's model of subjective well-being. The model includes satisfaction with life, reducing negative affect, and increasing positive affect (Cooke et al., 2016). The second approach is the eudaimonic approach. This approach states that an individual is psychologically healthy when they are reaching their potential, functioning at an optimal level, or realizing their true nature (Cooke et al., 2016).

Third is the quality of life category. Compared to the hedonic and eudaimonic approaches, the quality approach is broader. This includes a person's psychological health,

physical health, and social life (Cooke et al., 2016). The last category is the wellness category. This approach is also broad in its definition. It includes a holistic lifestyle. More specifically, this includes a person's physical and psychological health, social life, spiritual life, and personality (Cooke et al., 2016).

These four categories have one major concept in common. All approaches focus on an individual's satisfaction with life and positive experiences. Cooke et al. (2016) discuss how the hedonic and eudaimonic approaches are used primarily in psychology and sociology, while on the other hand, the quality of life is used in medicine and the wellness approach is used in counseling. For the present study and literature review, the hedonic approach will be the focus, as Diener's approach appears most robust, most psychologically relevant to understanding well-being in the present study, and has the most robust measures of well-being.

Ed Diener's (1994) model of subjective well-being has received much attention in the past couple of decades, and indeed appears to be one of the guiding definitions for the literature. This model, then, serves as a good starting foundation for understanding well-being. Diener's model of well-being uses three hallmarks of well-being. The first hallmark is that well-being is subjective. This means that the appraisal of the situation is dependent on the individual, and that appraisal will change from person to person. For example, one person may think that receiving a B on an exam is great while another person may consider that same B as a form of failure. The way in which an individual appraises the situation can depend on the way they feel about it, which leads to the second hallmark of Ed Diener's model: That well-being includes both positive and negative affect (Bastian, Kuppens, De Roover, & Diener, 2014; Diener, 1994; Dodge et al., 2012), and it is the sum of these affects that form well-being. To have a higher subjective well-being, an individual should have an increase in positive affect and a decrease in negative affect

(Diener, 1994). Affect may include body postures such as facial expressions, physiological measures (such as heartrate, breathing, blood pressure (motivational aspects (including the drive to engage in certain goals or behaviors), behavioral aspects (the actions and consequences of those actions to an individual), and cognitive aspects (e.g., thoughts about oneself, one's environment and outcomes and experiences) (Diener, 1994). When these components are experienced in positive ways, the individual is more likely to have a higher subjective well-being. In contrast, appraising these components in a negative way, results in lower subjective well-being.

The third hallmark of Ed Diener's model of well-being is how satisfied the individual is with their life (Diener, 1994). This appraisal includes all domains of life and how the individual feels about each domain. These domains may include relationships, work, hobbies, and so on. Again, higher satisfaction with the various aspects is likely to result in higher subjective well-being. There are two different components of evaluating one's life (Diener, 1994). These are hedonic level and satisfaction with life. Hedonic level is a person's affect (e.g., feelings, emotions, mood, etc.) while satisfaction is an individual's cognitive processes such as thoughts and judgments (Diener, 1994). This relates to how an individual appraises a situation. If the appraising is positive, then the well-being is going to be more positive. But if the individual constantly appraises situations in a negative way, then the affect and thoughts are going to lower the person's well-being (Diener, 1994).

The way in which an individual appraises a situation can depend on many factors. First, genetics has a huge influence on a person and how they react (Diener, 1994). If a person is genetically predisposed to view life events with a negative effect, then they are generally going to think and feel negatively towards events. This is true for positive affect as well (Diener, 1994).

Second, through experiences, individuals may learn a positive or negative appraisal style. That is, through their own experiences or by observing others, individuals are reinforced for using positive or negative appraisals. Third, the type of experiences that predominate a person's life may affect well-being. Individuals who experience many positive versus many negative experiences will appraise their well-being quite differently than an individual who has more negative experiences. Of course, these three factors may interact, such that a person who tends genetically towards a negative affective appraisal style may learn to be more positive, and vice versa, and an individual who has a positive appraisal style may still decide that they have a poor sense of well-being if they have experienced mostly negative experiences in their life (Diener, 1994).

When taking into consideration all of the above information, it could be argued that people who experience greater negative events or experiences in their life are more likely to have a lowered sense of well-being, regardless of their appraisal style. One group in particular, individuals with disabilities, experience negative experiences that are long term and have greater life impact, and would be predicted to have a lower sense of well-being. This may be the result of several factors. First, many, individuals with disabilities, face discrimination on a daily basis (Berger, 2012). They are constantly denied access to services, opportunities for advancement, or accommodations for their disability for one reason or another. Second, evidence suggests that individuals with disabilities are more likely to be bullied, and or experience social exclusion in schools, the work place, or in the general public (Thurston, 2010). Third, if the disability is physical in nature, there are many barriers in the environment that make it difficult to get around on a daily basis (Berger, 2012). Barriers may include no wheelchair ramps, no elevators, a lack

of Braille labels, etc. As a result of all of this, life satisfaction and hedonic level may be more negative for many people with disabilities.

There do appear to be several factors for preventing or improving negative well-being in individuals with disabilities. For example, the amount of support from family and friends, available resources and services, the degree of positive experiences and shaping of positive behavioral and cognitive appraisals, and one's genetic predisposition may all influence the way an individual reacts to their environment. Given the complexity of factors that may affect well-being in individuals with disabilities, it is important to begin to identify specific experiences, support, and resources that improve well-being. One specific support service for individuals with vision impairments is that of a guide dog. Guide dogs have been used to provide improved accessibility, companionship and psychological support. However, there is little empirical evidence on how guide dogs affect well-being for those individuals with visual disabilities.

The present study explored how well-being may be increased when individuals with visual impairments have a guide dog. Specifically, the study investigated whether the guide dog influences perceived well-being and autonomy. To this, it is critical to understand visual disabilities and how guide dogs may potentially affect well-being.

Effects of Visual Disabilities on Well-being

As described in the preceding section, many individuals have a lower sense of well-being for one reason or another. In particular, research shows that individuals with visual impairments have a lower well-being compared to individuals without visual impairments (Lopez-Justicia & Cordoba, 2006; Marques-Brocksopp, 2011; Papadopoulos, Montgomery, & Chronopoulou, 2013; Roy & MacKay, 2002). Before getting into the research on well-being in people with visual

impairments, it is important to define what it means to have a visual disability. After the definition, the paper will continue to summarize the research that involves visual impairments.

Having a visual impairment means that the individual has trouble seeing even if they are wearing eye glasses or contact lenses (American Foundation for the Blind, 2015). The individual must have an acuity of 20/70 with corrected lenses to be considered visually impaired and 20/200 to be considered legally blind. Legally blind means that the individual has a significant amount of vision loss that requires benefits or accommodations (American Foundation for the Blind, 2015). According to the World Health Organization, 285 million people are considered to be visually impaired worldwide: 90 percent of visually impaired and blind individuals live in low income places (World Health Organization, 2016); 82% are older than age 50, and 80% of the individuals could have had the vision loss prevented (World Health Organization, 2016).

Many people with visual impairments also have other medical problems that add to their disability. Medical conditions include hearing loss, intellectual disabilities, cardiovascular problems, and neurological problems (American Foundation for the Blind, 2015). Often times the vision loss occurs as a result of a medical condition, but there are other times in which the vision loss is the only problem. It is important to know these details because it gives an understanding of why people with visual impairments might have a lower well-being. For example, it may be that the more medical problems that accompany the visual disability, the more likely the quality of life is lower for the individual effected.

Along with the medical problems that people with visual impairments might face, there are also many psychological problems that can arise. When an individual has a visual impairment, unlike sighted individuals, they may constantly worry about everyday activities. Some common worries might include transportation, daily living skills, reading documents and

labels, etc. Of course, there are many types of assistive technology that individuals can purchase to help with daily activities, but much of that technology is expensive, and not everyone has the opportunity to buy it. As a result, extra stress is put on the person, and stress can lower well-being.

In addition to physical barriers, people with visual impairments often face bullying in school and discrimination (Berger, 2012). Individuals may be taunted and teased because of their differences. Educational and employment discrimination, social discrimination and even ostracizing may occur by sighted individuals. The bullying and discrimination may be due to lack of understanding and assumptions regarding visual disabilities made by sighted people, fear, and disrespect. The result is both fewer social interactions, lower educational success and poorer employment advancement. These negative experiences may then lead to reinforcement of negative appraisal styles and poor sense of well-being. In addition, individuals with guide dogs experience different forms of discrimination. Guide dog handlers face discrimination when business owners refuse access to the individual and their dog because of lack of knowledge regarding Americans with Disabilities Act (ADA) access laws. Although the ADA does state that refusing a guide dog team into a public business is against the law, many business owners are unclear or uninformed about the law (ADA, 2017). Further, people may interrupt the dog while it is working, pester the individual about their dog and why they have it, or attend to the dog but not the person. The more the bullying and discrimination happen, the more of a toll it takes on the individual and their sense of well-being.

Again, not all individuals with visual impairments have overwhelming negative life experiences. Like any individual, the amount of difficulty an individual faces depends on many environmental factors such as family life, schooling, the support system, and specialized training

to help with mobility and orientation and daily living skills. Thus, it is important not to generalize the research findings to all individuals with visual impairments because life circumstances differ greatly from person to person. It is also important to remember that not all of the research is negative. For example, guide dogs have even been shown to provide positive social interactions with peers and even strangers (Minor, 2001).

While much less sparse than the research on sighted individuals, the literature on well-being in individuals with visual impairments shows the effects of both affective style and experience. (Lopez-Justicia & Cordoba, 2006; Papadopoulos et al., 2013; Roy & MacKay, 2000). A meta-analysis conducted by Pinquart and Pfeiffer (2011) showed that people with visual impairments did have a lower psychological well-being compared to people without visual impairments, but that it depended on the type of vision loss (e.g., congenital vs. acquired), amount of vision loss (e.g., partially blind vs. completely blind), and the amount of support (e.g., rehabilitation services vs. no services).

Lopez-Justicia and Cordoba, 2006 conducted a study in which they used the Tennessee Self-Concept scale to compare the self-concept of people with and without visual impairments. The scale contained five subscales, and the researchers found that participants with visual impairments had significantly lower scores on the family subscale compared to participants without visual impairments. Results showed that people with visual impairments felt that they were a burden to their families and felt they did not fit in because of their vision loss (Lopez-Justicia & Cordoba, 2006). Similarly, Papadopoulos et al. (2013) compared visually impaired and sighted individuals on self-esteem and locus of control. The results showed that adults with visual impairments had significantly lower scores on self-esteem compared to sighted individuals. There were no differences on locus of control.

Additionally, several studies show that people who acquire their visual impairment later in life, compared to both people who were born with the disability and people without visual impairments, have a lower sense of well-being (Berger, 2015; Nyman, Dibb, Victor, & Gosney, 2012; Thurston, 2010). Nyman and colleagues (2012) conducted a meta-analysis study in where they looked at many different qualitative studies to determine themes that would come up after vision loss. Themes included challenges in daily life, a sense of loss of independence, loss of prior hobbies, and social isolation. Results showed that losing one's vision later in life is difficult for many reasons. Participants reported an overwhelming sense of hopelessness after vision loss because they went from being able to drive and support themselves, to using public transportation and relying on others. Many people with visual impairments found it difficult to ask for help because they feel like they are a burden on others. As a result, they reported limiting the amount of interaction they have with friends, and only asking for help when it is of the utmost importance. This limits the person's ability to complete daily tasks and leisure activities (Berger, 2015; Nyman et al., 2012; Thurston, 2010).

In an attempt to remediate the negative consequences of visual impairments, many people with visual impairments choose to apply to receive a guide dog. These individuals hope that their autonomy will increase, as well as their sense of well-being. Anecdotal data shows that there are many benefits to working with a guide dog, including improvements in one's sense of well-being. However, there are surprisingly few studies which empirically investigate the effects of a guide dog on individuals with vision impairments, or any disability. Still, the little research that has been done shows promise that guide dogs help improve one's sense of autonomy and well-being. The following section will provide information and research on guide dogs and their effect on people with visual impairments.

Guide Dogs for the Visually Impaired

If vision loss prevents the individual from walking safely without assistance, individuals with visual impairments can choose from several mobility aids. A mobility aid is used to help the individual navigate through the environment effectively and safely. Typical mobility aids include a white cane, sighted guide, or a guide dog. A guide dog is a dog that has been explicitly and specially trained to assist an individual with a visual impairment to navigate the environment and to make sure that the person gets from point A to point B safely. This section will start with a detailed history of how guide dogs came about, then talk about the extensive overview of the guide dog's early life and training, followed by the tasks they perform, and concludes with the anecdotal data that exists on the positive effects of guide dogs.

History of the Guide Dog

During World War I, many veterans were blinded during battle, from outbreaks of diseases, and by non-combat accidents. The idea of using dogs as guide dogs appears to have originated from a German doctor who left his German shepherd with a patient for a few minutes, and on the return noticed that the dog was helping the veteran (Ostermeier, 2010). Before this point, German Shepherds were used as ambulances and messenger dogs (Ostermeier, 2010). But, after the discovery of the dog assisting the patient, the German doctor decided to start a guide dog school in Germany in 1916 (Ostermeier, 2010). From that point on, Germany was the first country to issue dogs to blinded veterans after the war ended. By 1927, it was estimated that there were 4,000 working guide dog teams in Germany (Ostermeier, 2010).

After one decade, word got around to the United States that Germany was using dogs to assist people with visual impairments. A young man, by the name of Moris Frank, traveled to Germany from the United States to receive his first guide dog, Buddy (Ostermeier, 2010). When

Moris Frank returned to the United States, he sought to start a guide dog school, too. In 1929, The Seeing Eye Inc. opened (Ostermeier, 2010). This created a chain reaction for the next 30 years in which a string of guide dog schools opened over the United States. Presently, there are at least 15 credible guide dog schools in the United States (National Association of Guide Dog Users, 2016). As of right now, it is estimated that there are 10,000 guide dog teams working together around the United States (Ostermeier, 2010).

Guide Dog Training

About 80% of all guide dogs are Labrador Retrievers. The remaining 20% of guide dogs are Golden Retrievers, German Shepherds, and Poodles (for individuals with allergies) (Guiding Eyes for the Blind, 2016), although the numbers of specific breeds vary from school to school. These types of breeds are chosen because of their intelligence, friendly nature, and their willingness to please their owners (Guiding Eyes for the Blind, 2016). Typically, guide dogs are bred in breeding centers to ensure temperament, prevent a variety of genetic disorders, and to help standardize size. Occasionally a rescue dog is used, but because of the complexity of the work, typically dogs from a breeding line are used for service with visual impairments. A guide dog usually works for 8 to 10 years, and if they contract diseases, that might shorten their ability to work and live. This is why it is important to breed out of certain genetic lines within a breed (Guiding Eyes for the Blind).

Guide dogs start their training as soon as they are born, with socialization occurring even when they are with their litter, while formal training begins at the age of eight weeks (Guiding Eyes for the Blind, 2016). They are placed into a home, called the puppy raising family, for the first year and a half. The puppy raisers constantly interact with the dog, teach them basic commands, expose them to all possible environments, and attend training classes. The dogs in

training are exposed to all situations so that they learn how to behave, and the puppy raisers help inoculate them against common fear situations, so that they are not afraid of environmental events such as loud noises, sudden movements, or people or other dogs, once it is time for them to guide an individual with a visual impairment (Guiding Eyes for the Blind, 2016). The dogs are also socialized constantly so that they are used to seeing many people around them. The goal of the first year and a half is to prepare the dog for the actual guide dog training.

Before beginning the specific training as a guide dog, a dog must pass the training exam (Guiding Eyes for the Blind, 2016). An instructor, from the guide dog school that the dog is going into has the dog perform the basic commands (e.g., sit, down, stay, heal, etc.).

Temperament and environmental tests are also conducted: The guide dog instructor watches how the dog handles large groups of people, how they react to certain environments, and assesses what their overall temperament might be (Guiding Eyes for the Blind, 2016). If the dog performs well on this test, they are taken into the guide dog school for guide dog training. If the dog does not pass, they are adopted into the puppy raising family to be a regular pet (Guiding Eyes for the Blind, 2016).

The dogs in guide dog training usually train for four to six months. During this time, they learn the harness commands (i.e., forward, wait, left, right, hop up, and how to locate doors, curbs, and stairs) and then are paired with their handler. Typically, the training occurs in several phases (Guiding Eyes for the Blind, 2016). In the first phase, the dog learns the basics mentioned above. They are also forming a bond with the trainer. This bond is important because it teaches the dog to trust their partner (Guiding Eyes for the blind, 2016). In the second phase, the trainer starts to take the dog outside into the neighborhood to teach them how to avoid obstacles and safely lead their person around obstacles. In the third phase, the trainer takes the dog into as

many environments as possible so that the dog can learn to use the skills they know in all situations. The trainer will also teach the dog how to avoid distractions such as food, people, and other animals (Guiding Eyes for the Blind, 2016).

The last phase, and the most important one, allows the trainer to introduce and practice intelligent disobedience. Intelligent disobedience is when the dog does not listen to commands because the team may be in danger if they were to proceed (Guiding Eyes for the Blind, 2016). For example, if the handler tells the dog to go forward and cross the intersection, and the dog sees a car heading their way, the dog will not go forward, but will go backwards, or jump in front of the handler to push them away. This is breaking the correct response to a command, but it is saving the life of the handler. Another example of this is seen when the handler tells the dog to go forward, but there are train tracks in front of them. The dog will not go forward, but instead they will turn right so that the dog is in between the tracks and the handler. Often times, through all of the training, the trainer will blind fold themselves to simulate working with a person with a visual disability. This way, the dog gets the experience of working with someone with a visual impairment before they are actually paired up (Guiding Eyes for the Blind, 2016).

Within that 4 to 6 months of training, the guide dog is trained to do many tasks for the handler. The guide dog makes sure to walk around obstacles, stop at all curbs before the street, walk up to doors if instructed, and to stop in front of steps. The guide dog can also avoid moving obstacles such as bicycles, cars, people, and shopping carts (Guiding Eyes for the Blind, 2016). It is often believed that the guide dog knows exactly where to take the handler. This, in fact, is not completely true. It is the job of the handler to know where to go, and they have to give directions to the guide dog. But after doing a route several times, the guide dog will pick up where to go.

The guide dog and the handler are a working team, and therefore, they must work together to get to a destination safely.

The specific training techniques differ from school to school. Almost all training schools use a form of positive reinforcement, such as clicker training. Initially, food reinforcement is used, but as the dog gains more and more skills, reinforcement shifts from primary rewards to social rewards (praise and pets). It is important to use positive reinforcement when training a guide dog, because this builds motivation to work for the trainer as opposed to working to avoid punishment. There is no standard of training, nor are there standard behaviors that guide dogs are required to learn, although organizations such as the Guide Dogs of America provide widely accepted criteria.

It is up to the individual with a visual disability to choose which school fits best for their learning style. The different schools will also differ in the amount of time the new handler and dog train on site, but usually the training lasts from a week to one month. Once the dog and handler graduate, they go back home and work together to improve on the skills that they learned in class. It often takes 6 months to 1 year for the team to develop a strong bond and to be considered a good working guide dog team. Handlers often teach new behaviors to their dogs during this team-building time period, including to target open seats, avoid trash cans, and anything else that the handler might need. It is this relationship-building time period that is most critical to building a good working team (Guiding Eyes for the Blind, 2016).

Research Investigating the Relationship between Humans and Guide Dogs

Anecdotal studies conducted on the effects of guide dogs on well-being of people with visual impairments show that when the individual obtains a guide dog, they start to report many personal, professional, and social changes. Wiggett-Barnard and Steel (2008) conducted a

qualitative study in where they interviewed six guide dog handlers in South America. The purpose of the study was to find out the common benefits of working with a guide dog. Once the interviews were completed, the researchers noticed eight themes that were reported by the participants. These themes also show up throughout other qualitative studies (Miner, 2001; Sanders, 2000).

The first theme was that guide dogs increase mobility (Wiggett-Barnard & Steel, 2008). Participants reported that working with a guide dog increased safety, efficiency, and speed (Miner, 2001; Wiggett-Barnard & Steel, 2008). Second, guide dogs provide companionship (Wiggett-Barnard & Steel, 2008). Many participants reported that it was nice not to have to travel alone. It gave them comfort to have someone with them at all times. The third theme was that guide dogs necessitated personal change (Wiggett-Barnard & Steel, 2008). When working with a guide dog, individuals reported that they learned to be assertive, confident, and independent, even though they were not that way before. These changes appeared to result from the new found freedom and the interactions with the public that were achieved through increased access with the dog.

The fourth theme is that guide dog handlers experience lifestyle changes (Wiggett-Barnard & Steel, 2008). Having a guide dog requires a lot of work to take care of it, and often times, the owner needs to change their lifestyle as a result. A fifth theme is that guide dogs are like a magnet (Wiggett-Barnard & Steel, 2008). Many people notice that while they are walking, the dog truly acts as a magnet by attracting and repelling the public. The sixth reported theme is that participants found that distractions were harmful for the guide dog team (Wiggett-Barnard & Steel, 2008). If a guide dog is distracted, both the owner and the dog can be seriously injured. Unfortunately, participants report that this happens frequently.

The seventh theme that was reported is that guide dog handlers face ignorance from the public frequently (Wiggett-Barnard & Steel, 2008). This often comes in the form of discrimination. Most, if not all, handlers have been denied access from public places due to lack of knowledge about guide dog laws. This means that handlers take on the role of educators. The final theme is that handlers have pride in their guides (Wiggett-Barnard & Steel, 2008). Participants report that they are constantly amazed at how fast their dogs learn routes and react to situations. As mentioned above, guide dogs come with a lot of responsibility, but at the end of the day, every handler is proud and thankful for everything that the dog does for them.

A second study, by Sanders (2000), also conducted qualitative research on the effects of guide dogs on the well-being of people with visual impairments. However, Sanders categorized his findings in a different way. His findings show that the identity of visually impaired individual's changes in several ways once they get a dog. First, the individual's personal identity changed. Individuals who, prior to being paired with a guide dog, were not assertive, had low confidence, and were not independent, showed increased assertiveness, confidence and independence after receiving their guide dog. Visually impaired individuals report feeling confident, and as a result, they were more willing to venture out and explore, as opposed to staying inside.

Second, the social identity was found to have changed as well (Sanders, 2000). Individuals reported that using the white cane makes them seem invisible. People jump out of the way (as to not get hit) and avoid interacting with the individual, so as not to interrupt or distract. This leaves a sense of loneliness for the individual with the visual disability. The cane, then, was perceived as a barrier, and individuals with visual impairments felt they did not get the chance to show their true self. When getting a guide dog, the handler reported that they were approached

more often (Sanders, 2000). The person no longer felt avoided, but instead reported feeling more like a celebrity. This had its positives and negatives. This leads to a third type of identity change, and that is that the person reported no longer feeling like an individual, but a team (Sanders, 2000). The handler reported feeling always remembered along with their dog, and if the dog was not around, the concern was about the dog and what happened to it. This can be frustrating because the handlers reported a sense of loss of their own identity (Sanders, 2000).

There are many changes that individuals report when they start working with a guide dog. Many of them are positive (e.g., increase in confidence and independence), but there are many negative changes as well (e.g., loss of identity and ignorance from the public) (Miner, 2001; Sanders, 2000; Wiggett-Barnard & Steel, 2008). But, these preliminary studies suggest that the positive aspects of a working guide dog team outweigh the negative aspects. However, there remains an unanswered but important question: Why does the guide dog have such a huge effect on the visually impaired individual? It is obvious by the above qualitative research that there is an effect, but what is it?

Attachment between Guide Dog and Handler

As explained above, guide dogs have a rigorous training regimen starting at about 8 weeks old. Every single month is planned out with activities, vet visits, and new things for the dog to learn. Throughout this process, the dog is introduced to many different individuals who come and go once their purpose is accomplished. The dog has a chance to build up an attachment bond with each individual, and there has been some research looking at the strength of the bond between the guide dog and their owner. Results of some of the research is summarized below.

Fallani, Previde, and Valsecchi (2006) conducted an experimental study in where they compared four groups of dogs in their attachment to their owners. The four groups included dogs

who were pets, guide dogs, dogs in training to be guide dogs, and dogs that were with their puppy raiser before guide dog training. All dogs that participated were put through a modified version of the Strange Situation Test that was created by Ainsworth. Results showed that pet dogs showed the most anxious behavior when their owner left (Fallani et al., 2006). Additionally, results indicated that guide dogs also showed anxious behavior when their handler was out of the room, but the behavior was much more subdued (Fallani et al., 2006). The researchers hypothesized that the subdued reactions was due to the fact that the guide dogs had training on how to control their behaviors and the pet dogs did not have this training (Fallani et al., 2006).

Valsecchi, Previde, Accorsi, and Fallani (2010) decided to conduct a follow up longitudinal study in where they had 17 guide dogs participate in another modified version of the Strange Situation Test. The researchers had the guide dogs go through the Strange Situation three times in their life. The first time was when they were with their puppy raisers, the second time was when they were in training with their trainers, and the third time was when they were one year into working with their visually impaired handler (Valsecchi et al., 2010). The results showed that at 11 months, with the puppy raiser, the dogs were more focused on the toys that were available for them to play with instead of the puppy raiser. At one year after working with their visually impaired handler, the dogs were more focused at trying to figure out where their handler went instead of the stranger or the toys. According to the researchers, this shows that the dogs exhibited strong attachment to their handlers (Valsecchi et al., 2010).

Research indicates that there is a difference in the size and quality of the bond between guide dogs and their handlers when compared to pet dogs and their owners (Fallani et al., 2006; McConnell et al., 2011; Minor, 2001; Valsecchi et al., 2010). That is, a working guide dog team appears to have a stronger and better quality bond than that between a pet and their owner. Just

what this bond is has been difficult to evaluate. Thus, the next section will discuss the human animal bond, and how this differs between pet owners and their pets and individuals with disabilities and their working guide dogs.

The Bond between Humans and their Animals

Our perception of animals and the role they play in our lives has changed dramatically over time. It started with us sharing the same ground as the animals. We hunted them for food, and killed them to stay alive. Over time, as we became a more agrarian society, it progressed to us living side by side with them, domesticating some animals for food, and others for working for us. The progression continued as we started to observe their behavior, worship them, use them for research purposes, and now, they are our pets. Indeed, a recent survey showed that 81 percent of Americans consider their dogs to be equal members of the family, while 77 percent admit to talking about their pups as if they are a human family member (Del Monte, 2011). We take care of them, protect them, and it turns out that they do the same to us. The bond that we have with animals is strong, and it is that bond that helps us daily.

History of Research on the Human-Animal Bond

The human-animal bond was not considered an academic concept until the early 1970s (Hines, 2003). The human-animal bond concept was first used by veterinarians (Hines, 2003) to describe the relationship between pet owners and their pets. By the 1980s, a select few universities started to offer courses in animal behavior and the relationship between humans and animals (Hines, 2003). As the 1970s and 1980s passed, more and more researchers took the risk of studying the human-animal bond, and a new research area investigating how animals might affect humans became more prevalent. (Hines, 2003). As a result of the early research, public interest in understanding the bond between humans and their pets increased, resulting in the

development of community programs, the introduction of therapy dogs into nursing homes, schools and hospitals, and dissemination of research in the news (Hines, 2003). This resulted in a further increase in community programs involving animals which continues to this day. One of the biggest areas of increase was the use of dogs specifically trained for people with a variety of disabilities including visual, mobility, hearing, and significant health illnesses (Hines, 2003). This represented an enormous increase in the use of service dogs, and broadened the use from primarily that as a guide dog for visual impairments to service dogs for many disabilities. Yet, the research investigating how dogs positively altered the lives of individuals with disabilities has lagged behind.

The human-animal bond is a strong connection between the human, who shows needs of emotional connectedness, friendship, and belonging, with an animal (Hart, 2010; Hines, 2003; Netting, Wilson, & New, 1987). Even as few as a couple decades ago dogs and cats simply lived on a farm or lurked outside, but today many more animals are living in houses and are considered close family (Hart, 2010; Delmonte, 2015). Today it is estimated that there are approximately 70 million pet or service dogs in the United States, with 37% of homes having a dog. The average number of dogs per home is 1.6 (American Veterinary Medical Association, 2012), confirming Hart's (2010) finding that if an individual or family has one pet, they are more than likely to have another one. Hart also found that families with children are more than likely to have a pet, although more than half of the couples and half of singles also have some kind of pet (Hart, 2010).

The Benefits of Pets

Throughout the decades, as the role of animals changed from food or work animals to companions, the value of these “pets” also changed. Pets are valued tremendously. In his book

Citizen Canine: Our Evolving Relationship with Cats and Dogs, David Grimm reports that 90% of dog owners considered their dog to be a part of the family, while 80% reported that they would risk their lives for their dog (Grimm, 2014). Grimm further reported that the pet industry is a \$55 billion per year industry. People spend vast amounts of money on pets, buy them the best toys, constantly give them treats, and try their best to make sure the pets live a happy and healthy life. Why? According to Grimm, pets benefit humans as much as humans benefit the pet.

There are many benefits to pets. Pets obviously have material value to humans (McConnell, Brown, Shoda, Stayton, & Martin, 2011; Wells, 2009). This means that pets can be used to scare away vermin, intruders, and provide protection (McConnell et al., 2011; Wells, 2009). It is the nature of things for dogs and cats to chase mice and rats from the home, and dogs are often the first ones to notice someone breaking into the home. Dogs provide a variety of services, from herding livestock to perimeter protection and guide dog use. Dogs may be used for scent detection for diabetes, cancer, and even for finding land mines (Kirk, 2013). Dogs can prevent loss of goods and services and may provide financial benefit for the individual. The material benefits are important, but there are also short term and long term effects on an individual's physical and psychological health.

Research shows that there are many short term effects of pets on an individual (McConnell et al., 2011; Wells, 2009). When a pet is present, data show that stress levels go down (Wells, 2009). Research has shown that blood pressure and heart rate go down when a person is stroking or petting a dog or cat, suggesting that pets may mitigate physiological effects of stress and anxiety (Wells, 2009). Use of Assisted Animal Therapy (AAT) has provided benefits for individuals ranging from heart failure patients (Cole et al., 2008) to autism

(Solomon, 2010) to dementia patients (Richereon & McCullough, 2002, McCabe, Baun and Speich, et al., 2002). Therapy dogs are used across mental health and hospital settings.

While little research has been conducted on how pet bonds affect humans, studies do suggest a wide variety of individual effects. For example, strong attachment to a pet was related to reduced obesity and increased probability of exercise (Stephens, Wilson, Goode, Neting, Olson & Byers, 2012). Childhood attachment to pets has been found to affect avoidance of meat in adulthood (Rothgerber & Mican, 2014), and individual differences in pet attachment are correlated with attachment anxiety and avoidance and thus contribute to expectations regarding emotional reactions of a pets' death (Zilcha-Manoa, Mikulincera, & Shaverb, 2011). These early studies do indicate that the bond with a pet has long term attachment effects.

There also appear to be a variety of long term effects of pets on an individual's health. Research shows that pet owners are more likely to have fewer doctor visits compared to non-pet owners (Wells, 2009). Pet owners are also less likely to die within a year of having a heart attack. Individuals who own pets are less likely to develop symptoms of depression after they are diagnosed with HIV (Wells, 2009). There are also studies and reports of dogs being able to detect epilepsy, cancer, and diabetes (Wells, 2009).

Along with the short term and long term effects on physical health, there are many therapeutic and psychological benefits of pets (Aydin, Krueger, Fischer, Hahn, Kastennuller, Frey, & Fischer, 2011; McConnell et al., 2011; Walsh, 2009; Wells, 2009, 2012). According to Walsh (2009), there are many therapeutic benefits to pets. First, pets can aid in helping with recovery, coping, and resilience. Pets can also help in keeping things calm and stable in stressful situations (Walsh, 2009). Additionally, pets are a source of comfort to individuals who have had a death in the family (Walsh, 2009).

The psychological effects are just as great as the therapeutic effects. According to research, pets can help reduce loneliness, rejection, and depression and increase self-esteem (Aydin et al., 2011; McConnell et al., 2011; Wells, 2009). Depression is an isolating disorder and it can cause loneliness in many individuals. Pets are a source of support, and they can help with reducing some of the loneliness, which can result in lessening of the depression. If an individual is facing rejection from peers, research shows that pets can buffer the individual from experiencing more severe levels of loneliness and rejection (Aydin et al., 2011; McConnell et al., 2011). Pets can also help individuals cope with divorce or loss (Wells, 2009). This is because pets are considered to be a huge support system for many people (Aydin et al., 2011; McConnell et al., 2011; Wells, 2009).

Additionally, pets can increase the amount of social interaction an individual experiences (McConnell et al., 2011; Wells, 2009). Dog owners, specifically, have to go out several times a day to walk their dogs. Since there are many people who consider themselves to be dog lovers, a dog owner is more likely than not to be approached during the outing. This facilitates conversation, and can even lead to friendship because of the shared interest in dogs. This is especially important for individuals who do not have close relationships or are feeling lonely (Wells, 2009).

Research also shows that pets play an important role in the family system (Walsh, 2009). Pets can be beneficial in stopping children from arguing with each other. This is because the pet can be used as a source of agreement and shared interest for the children (Walsh, 2009). Having a pet can also help with communication. Taking care of a pet is important for the pet to be healthy and happy. Figuring out walking and feeding schedules between individuals can help

make communication easier (Walsh, 2009). Research also shows that couples who have pets are happier with their relationship compared to couples who do not have a pet (Walsh, 2009).

As shown above, pets, and especially dogs, are a huge benefit to humans. . They promote short term and long term physical health, they improve psychological well-being, and they can be therapeutic in stressful situations. The bond that is formed is powerful, and research suggests that the bond promotes psychological and physical wellbeing in the human owners.

Bringing the literature on well-being, particularly for those individuals with visual disabilities, and the literature on the human animal bond together, an intriguing research question emerges: If guide dogs have a strong relationship with their owners, what is the bond, and how does this bond differ from the typical bond between pet owners and their pets? Like pets, guide dogs are also a huge source of support, but they provide many more benefits including autonomy, increased socialization and accessibility to resources. The present study seeks to ask and research this question to determine what are the actual effects and benefits of guide dogs to people with visual impairments.

Purpose and Hypotheses

Purpose

While writing the literature review for the present study, many important factors emerged regarding guide dogs and individuals with visual disabilities. It appears that there is a wealth of research on well-being and the human animal bond. There is also a large amount of literature regarding the sense of well-being reported by people with visual impairments. However, there are few studies which investigate how guide dogs improve the autonomy and well-being of individuals with visual impairments. This, then, is the purpose of the present study.

The current study measured the differences in autonomy and well-being in individuals with visual impairments who have a pet, guide dog, or no dogs at all. The survey also measured the bond between a guide dog and their handler and compared it to the bond that a pet dog has to their owner. To do this, the study used several measures of well-being, including scales examining Loneliness, Self-Esteem, Self-concept Clarity, Satisfaction with Life, Flourishing, and Positive and Negative Experiences. To measure bond differences, a pet attachment scale was used. Lastly, to measure autonomy, the visual functioning questionnaire was administered. All measures were combined into an online survey that was distributed to the visually impaired community.

Hypotheses

The study had three hypotheses.

1. It was hypothesized that individuals who have a pet dog or a guide dog will have a higher sense of well-being compared to individuals who do not have a dog at all. What this means is that individuals with guide dogs and pet dogs will score higher on the satisfaction with life, flourishing, and positive experiences, and score lower on the negative experiences, scales compared to individuals who have no dog at all. Additionally, individuals will score lower on the loneliness scale and higher on the self-esteem and self-concept clarity scales. This was hypothesized because literature indicates that individuals who have pets have a higher well-being compared to individuals who do not have a pet (McConnell et al., 2011; Wells, 2009).
2. It was hypothesized that individuals who have a guide dog are going to have a stronger bond to their dogs compared to individuals who just have a pet dog. There has been little research done on this matter, but the hypothesis is the result from the research that has been mentioned above. Data shows that pets have an overall effect on well-being, and the same

goes for guide dogs, therefore, we are hypothesizing that a guide dog will have a greater impact on well-being and independence because of all of the benefits that are associated with working with a guide dog (Fallani et al., 2006; Minor et al., 2001; Sanders, 2000; Valsecchi et al., 2010).

3. It was hypothesized that individuals with a guide dog will report greater autonomy compared to individuals who have a pet dog or individuals who do not have a dog at all. This was hypothesized because anecdotal research shows that individuals who are guide dog handlers report higher independence and autonomy compared to individuals who do not have a guide dog (Minor, 2001; Sanders, 2000)

CHAPTER III: METHODS

Participants

Eighty-five individuals completed the survey. Participants were recruited from listservs of organizations and Facebook groups serving individuals with visual impairments. An email was sent out to the listservs of the National Federation for the Blind and all of its divisions. Another email was sent out to Guiding Eyes for the Blind, a guide dog school that is located in Yorktown New York. And a post was published on several groups on Facebook for people with visual impairments. Some of the groups included (BLIND) Breaking Limits and Increasing National Diversity, Blind Pen Pals, Guide Dog Handlers Network, and Our GEB Guide Dog Talk About. Permission to post the link to the survey was obtained from the hosts/moderators of each group. The project was approved by the Illinois State University Institutional Review Board.

Of the 85 participants who completed the survey, 37 reported having a guide dog, 16 reported having a pet dog, 13 reported having both a pet dog and a guide dog, and 21 participants had no dog in their current household. Fifty-two participants were female, 30 were male, and 5 did not report their gender. The majority of the participants were 18 to 36 years old (42 participants) with 16 participants reporting they were 56 years or old. All participants had at least a high school diploma with 79 participants having some college. 44 participants were employed at least part time. These demographics, along with living status, length of ownership of their dog, and vision states, are reported in Table 1.

Design

The present study was a between-groups design. The independent variables were whether the person has a guide dog, pet dog, both, or no dog in their home. The dependent variables

included scale values of well-being, autonomy, and the bond with their dogs, as reported by the participants.

Measures

A number of measures were used to determine autonomy, sense of well-being, and bond with the guide dog or pet. All of these measures are published measures used in similar research. The measures included:

Loneliness

Participants completed a 3-item short loneliness scale (Hughes, 2004). Participants reported how often they feel lonely on a scale of 1 (*hardly ever*) to 3 (*often*). An example of an item is: “How often do you feel left out?” The sum of the participant’s scores were calculated, and the higher the score, the more the person is feeling the loneliness (Hughes, 2004).

Hughes (2011) conducted two studies comparing the Revised UCLA Scale and the 3-item Loneliness Scale to determine if the three-item scale was reliable and valid. The results showed that the three-item scale had an alpha correlation of .72 which is approaching a large effect.

Self-Esteem

Participants completed the Rosenberg 10-item self-esteem scale (Rosenberg, 1965). Participants rated their self-esteem on a Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). An example of an item is: “I am able to do things as well as most other people.” The scores were added together with five of the scores being reverse coded. Higher scores indicate a higher self-esteem (Rosenberg, 1965).

The Rosenberg (1965) self-esteem scale has been shown to have good reliability and validity. Studies show that the scale has a reliability of .77. Test-Retest reliability at two weeks

was shown to be .85 and .63 at six weeks (<http://www.statisticssolutions.com/rosenberg-self-esteem-scale-ses/>, Retrieved on: September 5, 2016).

Self-Concept Clarity

Participants completed a 12-item self-concept clarity scale (Campbell, Trapnell, Heine, Kats, Lavalley, & Lehman, 1996). The measure asks participants to rate the degree to which they have a clear self-concept on a Likert type scale. The scale ranges from 1 (*strongly disagree*) to 5 (*strongly agree*). 10 of the items were starred and were going to be reverse coded. An example of an item is: “In general, I have a clear sense of who I am and what I am.” Higher scores mean that the person is clearer on their self-concept, while lower scores indicate that the self-concept is unclear (Campbell et al., 1996).

The self-concept clarity scale has been shown to reliably measure the self-concept trait (Campbell et al., 1996). The scale has an internal consistency of .87. The scale is positively correlated with self-esteem and negatively correlated with neuroticism (Campbell et al., 1996).

Satisfaction with Life Scale

Participants completed the 5-item Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). The SWLS measures an individual’s satisfaction with life. An example of an item is: “The conditions of my life are excellent.” Participants were asked to rate their satisfaction on a Likert scale that ranges from 1 (*strongly disagree*) to 7 (*strongly agree*). The higher the scores, the more satisfied the person is with their life (Diener et al., 1985).

According to Diener et al. (1985), The Satisfaction with Life Scale has favorable psychometric properties. The scale has been shown to moderately correlate (.57) with personality features which means that this scale can be used in clinical settings (Diener et al., 1985). The

Satisfaction with Life scale has been used in many other studies (Pavot, Diener, Colvin, & Sandvik, 1991; Pavot & Diener, 1993).

Flourishing Scale

Participants completed the 8-item Flourishing Scale (Diener et al., 2009). The Flourishing Scale is designed to measure the individual's perception of their success in relationships, self-esteem, purpose, and optimism. An example of an item is: "I am optimistic about my future." The participants rated their perception on a Likert scale that ranges from 1 (*strongly disagree*) to 7 (*strongly agree*). The scores were added at the end, and the higher the score, the more resources and strengths the person has (Diener et al., 2009).

Evidence shows that the Flourishing Scale is correlated with Ryff's Psychological Well-Being Scale and Deci and Ryan's Basic Needs Satisfaction in General Scale (Diener et al., 2009). The Flourishing Scale has also been shown to correlate with Ed Diener's Satisfaction with Life Scale (Diener et al., 2009). The Flourishing Scale has high reliability (.78) and convergent validity with similar scales (.73). Cronbach's Alpha is .87 (Diener et al., 2009).

Scale of Positive and Negative Experiences

Participants were asked to complete the 12-item Scale of Positive and Negative Experiences (Diener et al., 2009). The scale contains 6 positive feelings and 6 negative feelings, and the participants are asked to think back to the past four weeks and rate each feeling on the amount of times they experienced each particular feeling. Some of the feelings include: Positive, joyful, and afraid. The participant was asked to give each feeling a number ranging from 1 to 5 (Diener et al., 2009).

To score the Scale of Positive and Negative Experiences, the positive and negative feelings were divided into two groups. Then the scores of both groups were added up. The range

of scores is from 6 to 30. To calculate the affect balance, the negative experiences score was subtracted from the Positive experiences score. The scores here ranged from -24 to 24. The higher the score, the more the individual experiences positive feelings (Diener et al., 2009).

According to Diener et al., (2009), the SPANE is correlated with the Positive and Negative Affect Scale (PANAS). There is also evidence that the SPANE is correlated with the Satisfaction with Life Scale (Diener et al., 2009). The SPANE is also shown to have high reliability and convergent validity. The Cronbach's Alpha is .87 (Diener et al., 2009).

Visual Functioning Questionnaire

Participants were asked to complete the Visual Functioning Questionnaire that was created by the National Eye Institute (Mangion, Lee, Gutierrez, Spritzer, Berry, & Hays, 2001). The VFQ was created to measure how an individual's visual impairment effects their quality of life. For the present study, the VFQ was used as a measure of autonomy. The measure contains 25 original items, but there are also an additional 13 items that could be used as supplementary items. An example of an item is: "How much of the time do you worry about your eyesight?" Each question has a different set of answers, and the participant is asked to choose the best answer that fits their situation (Mangion et al., 2001).

The VFQ-25 contains 11 subscales with an additional item for overall health. The subscales are global vision rating (1 item), difficulty with near vision activities (3 items), difficulty with distance vision activities (3 items), limitations in social functioning due to vision (2 items), role limitations due to vision (2 items), dependency on others due to vision (3 items), mental health issues due to vision (4 items), driving difficulties (3 items), limitations with peripheral vision (1 item), limitations to color vision (1 item), and ocular pain (2 items). To calculate the scores, all answers for the particular subscale were averaged. The higher the scores

are, the more limiting the vision is. (See the VFQ-25 manual for more detailed scoring instructions) (Mangion et al., 2001).

The Visual Functioning Questionnaire was designed to measure the domains related to visual functioning and other health concerns (Mangion et al., 2001). The VFQ measures the effect visual disorders have on psychological and physical health and on the ability to accomplish daily tasks. The VFQ had an internal consistency reliability of .96 showing good reliability. The VFQ also showed good construct validity.

(www.ncbi.nlm.nih.gov/pubmed/19797233).

Pet Attachment

Participants filled out the 23-item Lexington Attachment to Pets Scale (LAPS) (Johnson, Garrity, & Stallones, 1992). The scale asked participants to think about their favorite pets and answer the following questions on a Likert type scale. An example of a question is: “I often talk to other people about my pet.” The scale ranges from 1 (*strongly agree*) to 4 (*strongly disagree*) and 5 (*don't know or don't want to answer*). The scores were added up, and lower scores indicate higher attachment to pets (Johnson et al., 1992).

Johnson et al. (1992) found three dimensions to their scale: 1) general attachment; 2) people substitution, and 3) animal rights/animal welfare, with the first two dimensions being appropriate for testing our hypotheses. Johnson et al. (1992) report good psychometric properties. This scale has been used for a wide variety of investigations, including to examine attachment to pets as a variable contributing to obesity and the probability of exercise (Stephens, Wilson, Goode, Neting, Olson & Byers, 2012), how childhood attachment to pets affected avoidance of meat in adulthood (Rothgerber & Mican, 2014), and individual differences in pet attachment are correlated with attachment anxiety and avoidance and thus contributed to

expectations regarding emotional reactions of a pets' death (Zilcha-Manoa, Mikulincera, & Shaverb, 2011).

Procedure

Written permission from the moderators of all targeted sites or Facebook pages were obtained prior to posting of the survey link. Once permission was obtained, a link to the survey was provided on the targeted Facebook groups, listservs and blog sites described above. Upon logging on to the survey, participants were asked to view a brief description of the research, a consent form outlining the nature of the study, and a note that participants must be 18 years or older was provided. Individuals were required to click on the boxes that indicate their age group (ensuring that they are at least 18 years of age) in order to begin the survey.

The survey asked basic demographic data: Age, gender, education level, type of disability (if any), current pets, and whether or not the individual currently has a guide dog. Participants were then asked to provide answers to the questionnaire measures described above. Once the participants completed their answers, they were provided with a debriefing statement, a contact for further information, and be able to click on a link allowing them to leave their email if they were interested in the results of the study. Their email address are stored separately from their answers, so as to maintain confidentiality. Participants were given the chance to stop the survey at any time if they chose to do so.

CHAPTER IV: RESULTS

The present study had three hypotheses. First, it was hypothesized that individuals who are visually impaired who have pet dogs or guide dogs will report higher perceived well-being compared to individuals without pet dogs or guide dogs. Second, it was hypothesized that individuals with guide dogs are going to have a stronger bond to their dogs compared to individuals with pet dogs. And third, it was hypothesized that individuals with guide dogs are going to be more autonomous compared to individuals without guide dogs.

A Multivariate Analysis of Variance (MANOVA) was conducted on the data set using the four groups (i.e., visually impaired individuals with guide dogs, individuals with pet dogs, individuals with both a pet and a guide dog, and individuals without a dog) as the independent variable. Demographic dependent variables are presented in Table 1. Dependent variables by which the hypotheses were tested included the Flourishing, Satisfaction with Life, Scale of Positive and Negative Affect, Rosenberg Self-Esteem, Loneliness, Lexington Pet Attachment, Self-Concept Clarity, and Visual Functioning Questionnaire scales. Results of the MANOVA showed significant differences across guide dog ownership status, $F(24,154.317) = 4.47$, $\lambda = 0.63$, $\eta^2 = 0.394$.

Individual ANOVAs were then conducted on each of the various psychological measures. Results yielded significant differences for whether the individual had a guide dog, pet dog, both, or neither on the Flourishing Scale, Satisfaction with Life Scale, Lexington Pet Attachment Scale, and the Visual Functioning Questionnaire. Results for all ANOVA's conducted on the data are shown in Table 2.

Post hoc analysis, using bonferroni corrections for multiple analyses, were conducted for the four scales that showed significant differences across guide dog ownership status. Results of

these are shown in Table 2. Individuals with a pet had higher flourishing scores than individuals without a pet ($p = .05$). Similarly, individuals who both had a pet dog or a guide dog had higher Satisfaction with Life scores than individuals with no dogs, $p = .04$ and $p = .05$, respectively. Individuals with a dog (guide dog, pet dog or both) had significantly higher scores on the Lexington Pet Attachment Scale ($p < .05$ for both). Scores on the Visual Functioning Questionnaire were found to be significantly higher for those who had either a pet dog versus those who had both a pet and a guide dog ($p < .05$).

Differences across guide dog ownership status are shown for The Flourishing Scale in Figure 1, Lexington Pet Attachment Scale in Figure 2, the Satisfaction with Life Scale in Figure 3, and the Visual Functioning Questionnaire in Figure 4.

CHAPTER V: DISCUSSION

Research investigations into the bond between a handler and a service dog is extremely sparse, particularly given the current rise in the use of service dogs for disabilities ranging from vision and other physical impairments, PTSD, and autism. Handlers generally report a strong positive relationship with their dog, but few studies have explicitly investigated this bond (Miner, 2001; Sanders, 2000). This was the focus of the present research. There were three hypotheses in the present study. First, it was hypothesized that individuals who are visually impaired who have pet dogs or guide dogs will report having higher perceived well-being compared to individuals without pet dogs or guide dogs. Second, it was hypothesized that individuals with guide dogs are going to have a stronger bond to their dogs compared to individuals with pet dogs. Third, it was hypothesized that individuals with guide dogs are going to have a higher autonomy compared to individuals with pet dogs, or no dogs at all. All three hypotheses were at least partially supported.

The first hypothesis, that individuals who are visually impaired who have pet dogs or guide dogs will report having higher well-being compared to individuals without pet dogs or guide dogs, received partial support after data analysis. Results of the analyses indicated that individuals with visual impairments who had both a guide dog and pet dog had significantly higher scores on two of the well-being measures: The Flourishing scale and the Satisfaction with Life scale. These scores were higher than those with just a guide dog alone, as well as individuals with just a pet dog or no pet or guide dog at all. This suggests that the individuals who owned both guide dogs and pet dogs perceived themselves to have higher satisfaction with their lives and perceived their lives to be more fulfilling compared to all other groups.

These results were both consistent and inconsistent with the hypothesis that individuals with guide dogs would have the greatest well-being compared to the remaining groups. Initially we assumed that having a guide dog would be more important than a pet dog. However, it appears that having a guide dog and a pet dog together provides higher scores on the Flourishing scale and the Satisfaction with Life scale. This suggests that the positive factors for both types of dogs in combination provides the strongest effect on positive life outcomes. That is, simply, that two dogs are better than one. It could be that the individual who has at least two dogs at home, one for company and one as a guide dog, gains the most companionship and guidance. It is possible that the individual could perceive different roles for each type of dog, with the pet dog providing companionship, while the guide dog is seen as a co-worker. Thus, having both types of dogs provides the most benefit. Research investigating the combined effects of having both a guide dog and a pet dog is, indeed, warranted to further investigate this effect.

Second, it was hypothesized that individuals with guide dogs would have a stronger bond to their dogs compared to individuals with pet dogs. Previous research conducted on the bond between guide dog and their handler suggested strong bonds, but the research reports are generally anecdotal (Minor, 2001; Sanders, 2000; Wiggett-Barnard & Steel, 2008). The hypothesis that individuals with a guide dog would have a strong bond with their guide dog was supported. However, the results showed that individuals who owned a guide dog or pet dog, or both, all reported strong bonds with their dogs. There were no differences between the guide dog group and pet dog group. Basically, the results showed that simply having a dog created a strong bond with that animal. This provides support for Hypothesis 1, further supporting the supposition that, indeed, strong beneficial bonds that are formed between a human and a dog, and that these bonds are very strong regardless of the role the dog plays in that individual's life. Again, further

research to investigate how this bond may impact life satisfaction and a sense of flourishing is needed.

Lastly, it was hypothesized that individuals with guide dogs would be more autonomous compared to individuals without guide dogs. To determine if this hypothesis was supported, the Visual Functioning Questionnaire was used. The results followed the pattern observed with hypotheses 1 and 2. Significantly higher visual functioning scores were found for individuals who had both a pet dog and a guide dog than those with no dog or only a guide dog. Again, this suggests that individuals with both types of dogs are more satisfied and are autonomous in their everyday lives.

Previous data shows that guide dog handlers report feeling an increase in their well-being and autonomy after working with their guide dog (Lopez-Justicia & Cordoba, 2006; Minor, 2001; Papadopoulos et al., 2013; Roy & MacKay, 2000; Sanders, 2000; Wiggett-Barnard & Steel, 2008). Prior research has also shown that there are differences in confidence and self-esteem between people with visual impairments and people without visual impairments (Lopez-Justicia & Cordoba, 2006; Papadopoulos et al., 2013; Roy & MacKay, 2000). Interestingly, the present results yielded no significant differences between the groups for self-esteem. A trend was found between individuals with both a guide dog and pet dog compared to the other three groups on both the satisfaction to life and flourishing scales, and these trends followed the pattern observed for the flourishing, bonding and visual functioning scales.

The present study had several limitations. First, the sample size was smaller than expected. Although exhausted efforts were made, including posting on Facebook groups and email listservs, only 87 participants completed the survey. This number could have limited the ability to yield significant results on the other measures.

A second problem may have been the demographics of the sample set. The obtained sample itself may represent a ceiling effect. The sample consisted of a highly educated group of individuals with visual impairments. Most respondents had at least some college, with the majority having completed at least an associate's degree. This is in contrast with the literature on individuals with visual disabilities: The average level of education for an individual with visual disabilities is high school graduation, while the present sample consisted of individuals with at least some college experience. Similarly, nearly 50% of respondents in the current sample were employed. This is in sharp contrast to the employment data on individuals with visual impairments, which suggests most individuals with visual impairments are not employed. Given the level of education and employment status, it would not be surprising that the level of reported self-esteem and autonomy was quite high. This may have created a ceiling effect for finding differences among the groups with and without a pet or guide dog. A wider distribution of educational level and employment levels may have yielded different results.

A third problem found with this investigation was the use of the Visual Functioning Questionnaire. This measure was used as a measure for visual functioning and autonomy. Because the questionnaire is a combination of factors that impact an individual's visual functioning and independence, this could have interfered with accurate measurements of an individual's true autonomy. This is limited the ability to determine differences in autonomy between groups.

A fourth issue with the present investigation was the use of multiple scales that measured well-being. A more parsimonious sampling of well-being using fewer instruments might have improved the length of the survey and increased participation.

The last limitation that was found in the study involved the Lexington attachment to pets scale. When reviewing the measure in more detail, it was concluded that the scale did not take into account the different roles dogs can fulfill in a human's life. Many individuals used the scale to answer for their guide dogs and pet dogs, but there was no option for a friend's dog or etc. Thus, individuals who did not have either a guide dog or pet dog could not answer appropriately and confusion could have occurred in answering the items. Future studies will have to determine and seek out a more reliable measure or construct a new pet attachment scale that will take into account the different roles.

The present results suggest a need for future studies examining the relationship between handler and guide dog as well as handlers and their pet dog. Several hypotheses may be developed from the present results that future research might examine: First, it could be that the relationship between a handler and their guide dog is professional, therefore, an additional pet dog is desired for a different type of relationship. Second, how do dogs increase an individual's autonomy? This hypothesis could be pursued from several perspectives: Is it that guide dogs increase autonomy, or is it that individuals believe they are not autonomous because they need the guidance from a dog? Examining the nature of the relationship between guide dogs versus pet dogs would help clarify how handlers view their pet dog, and may guide training programs to better fit a dog to a handler.

The current results add to the literature regarding the relationship between a handler and a guide dog. The results indicate that this relationship is beneficial but complex. Given the enormous increase in the use of service dogs for many disabilities, understanding this relationship, and particularly this bond between handler and dog, is critical. There is no doubt that the bond appears to be positive, but understanding how this bond impacts factors such as

flourishing, life satisfaction, self-esteem and autonomy is important for developing successful and satisfactory programs. Finally, the present investigation supports the finding that animals, specifically dogs in this instance, are a valuable part of society. There is no doubt about that.

REFERENCES

- American Veterinary Medical Association. (2012) U.S. pet ownership and demographics sourcebook, 1st edn. American Veterinary Medical Association, Schaumburg
- Aydin, N., Krueger, J. I., Fischer, J., Hahn, D., Kastenmuller, A., Frey, D., & Fischer, P. (2011). Man's best friend: How the presence of a dog reduces mental distress after social exclusion. *Journal of Experimental Social Psychology*, 48, 446-449. DOI: 10.1016/j.jesp.2011.09.011.
- American Foundation for the Blind, (2016). Statistical snapshots from the american foundation for the blind. Retrieved from : www.afb.org/info/blindness-statistics.2.
- Americans with Disabilities Act, (2017). Service Animals. Retrieved From : https://www.ada.gov./service_animals_2010htm.
- Bastian, B., Kuppens, P., De Roover, K., & Diener, Ed. (2014). Is valuing positive emotion associated with life satisfaction? *American Psychological Association*, 14, 1528-3542. DOI: 10.1037/a0036466.
- Berger, S. (2012). Is my world getting smaller?: The challenges of living with vision loss. *Journal of Visual Impairment and Blindness*, 5-16.
- Cole, K.M., Gawlinski, A., Steers, N., & Kotlerman, J., (2008). Animal-Assisted Therapy in Patients Hospitalized With Heart Failure. *American Journal of Critical Care*, 17, 373-376.
- Cooke, P. J., Melchert, T. P., & Connor, K. (2016). Measuring well-being: A review of instruments. *The Counseling Psychologist*, 44, 730-757.

Del Monte Foods- Milo's Pet Parent Survey. (2011). Retrieved from:

<http://investors.delmonte.com/releasedetail.cfm?releaseid=662559>. Accessed on Oct. 14, 2014.

Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social Indicators Research, 31, 103-157*.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment, 49, 71-75*

Diener, E., & Scollon, C., (2014). The what, why, when, and how of teaching the science of subjective well-being. *Society for the Teaching of Psychology, 41, 175-183*. DOI: 10.1177/0098628314530346.

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2009). New measures of well-being: Flourishing and positive and negative feelings. *Social Indicators Research, 39, 247-266*.

Dodge, R., Daly, A., Huyton, J., & Sanders, L., (2012). The challenges of defining wellbeing. *International Journal of Wellbeing, 2, 222-235*. DOI: 10.5502/ijw.v2i3.4.

Campbell, J. D., Trapnell, P. D., Heine, S. J., Katz, I. M., Lavallee, L. F., & Lehman, D. R. (1996). Self-concept clarity: Measurement, personality correlates, and cultural boundaries. *Journal of Personality and Social Psychology, 70, 141-156*.

Fallani, G., Previde, E. P., & Valsecchi, P (2006). Do disruptive early attachments affect relationship between guide dogs and blind owners. *Applied Animal Behavior Science, 100, 241-257*. DOI: 10.1016/j.applanim.2005.12.005.

Grimm, David (2014). *Citizen Canine: Our Evolving Relationship with Cats and Dogs*. PublicAffairs, New York, NY.

- Guiding Eyes for the Blind. (2016). *Guide dog training*. Retrieved from: www.guidingeyes.org.
- Gwizdala, M., (2016). *Guide dog training programs*. Retrieved from:
<http://nagdu.org/programs.html>
- Hines, L. M., (2003). Historical perspectives on the human animal bond. *American Behavioral Scientist*, 47(1), 7-15. DOI: 10.1177/0002764230255206.
- Hughes, M. E. (2004). Short scale for measuring loneliness in large surveys. *Research on Aging*, 26(6), 655-672. DOI: 10.1177/0164027504268574.
- Johnson, Timothy P.; Garrity, Thomas F.; Stallones, Lorann. Psychometric evaluation of the Lexington Attachment to Pets Scale (LAPS). *Anthrozoos*, 5(3) 1992:160-75.
- Kirk, R. W. (2013). In dogs we trust? Intersubjectivity response-able relations and the making of mine detector dogs. *Journal of the History of the Behavioral Sciences*, 50(1), 1-30. DOI: 10.1002/jhbs.
- Lopez-Justicia, M. D., & Cordoba, I. N. (2006). The self-concept of Spanish Young Adults with Retinitis Pigmentosa. *Journal of Visual Impairment and Blindness* 100(6), 366-370.
- Mangion, C. M., Lee, P. P., Gutierrez, P. R., Spritzer, K., Berry, S., & Hays, R. D., (2001). Development of the 25-item national eye institute visual function questionnaire (VFQ-25). *Archives of Ophthalmology*, 119, 1050-1058.
- Marques-Brocksopp, L., (2011). The broad reach of the wellbine debate: Emotional wellbeing and vision loss. *Journal of Visual Impairment*, 30, 50-55. 10.1177/0264619611428244.
- McCabe, B.W., Baun, M.M., Speich, D., et al. (2002). Resident dogs in the Alzheimer's special care unit. *Western Journal of Nursing Research*, 24, 684-696

- McConnell, A., Brown, C., Shoda, T., Stayton, L., & Martin, C. (2011). Friends with benefits: On the positive consequences of pet ownership. *Journal of Personality and Social Psychology, 101*(6), 1239-1252. DOI: 10.1037/a0024506.
- Miner, R. J. (2001). The experience with and using a dog guide. *RE:View: Rehabilitation For Blindness and Visual Impairment, 32*(4), 183-190
- Naci. H. & Ioannidis, J.P.A. (2015). Evaluation of Wellness Determinants and Interventions by Citizen Scientists. *Journal of the American Medical Association, 314*, 121. DOI:10.1001/jama.2015.6160.
- Nyman, S. R., Dibb, B., Victor, C. R., & Gosney, M. A., (2012). Emotional well-being and adjustment to vision loss in later life: A meta-analysis of qualitative studies. *Disability & Rehabilitation, 34*, 971-981. DOI: 10.3109/09638288.2011.626487.
- Ostermeier, M., (2010). History of guide dog use by veterans. *Military Medicine, 175*, 587-593.
- Papadopoulos, K., Montgomery, A. J., & Chronopoulou, E. (2013). The impact of visual impairments on self-esteem and locus of control. *Research in Developmental Disabilities, 34*, 4565-4570. DOI: 10.1016/j.ridd.2013.09.036.
- Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment, 5*, 164-172.
- Pavot, W. G., Diener, E., Colvin, C. R., & Sandvik, E., (1991). Further validation of the satisfaction with life scale: Evidence for the cross-method convergence of well-being measures. *Journal of Personality Assessment, 57*, 149-161.
- Pinquart, M., & Pfeiffer, J. P. (2011). Psychological well-being in visually impaired and unimpaired individuals. *The British Journal of Visual Impairment, 29*, 27-45. DOI: 10.1177/0264619610389572.

- Richeson, N.E., & McCullough, W.T. (2002). An evidence-based animal assisted therapy protocol and flow sheet for the geriatric recreational therapy practice. *American Journal of Recreational Therapy, 1*, 25-31.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton
- Rothgerber, H. & Mican, F. (2014). Childhood pet ownership, attachment to pets, and subsequent meat avoidance. The mediating role of empathy toward animals. *Appetite, 79*, 11-17. DOI: 10.1016/j.appet.2014.03.032
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 37*(6), 1069-1081.
- Sanders, C. R. (2000). The impact of guide dogs on the identity of people with visual impairments. *Anthrozoos, 13*(3), 131-139.
- Solomon, O. (2010). What a Dog Can Do: Children with Autism and Therapy Dogs in Social Interaction. *ETHOS, 38*, 143–166, ISSN 0091-2131; online ISSN 1548-1352.
- Stephens, M.B., Wilson, C.C., Goodie, J.L., Netting, E.F., Olsen, C.H.. & Byers, C.G. (2012). Health Perceptions and Levels of Attachment: Owners and Pets Exercising Together. *Journal of the American Board of Family Medicine, 25*, 923-926.
- Thurston, M. (2010). An inquiry into the emotional impact of sight loss and the counseling experiences and needs of blind and partially sighted people. *Counseling and Psychotherapy Research, 10*, 3-12. DOI: 10.1080/14733140903492139.
- Valsecchi, P., Previde, E. P., Accorsi, A., P., & Fallani, G. (2010). Developing an attachment bond in guide dogs. *Applied Animal Behavior Science, 125*, 43-50. DOI: 10.1016/j.applanim.2009.12.012.

- Walsh, F., (2009). Human animal bonds II: The role of pets in family systems and family therapy. *Family Process*, 48(4), 482-499.
- Wiggett-Barnard, C., & Steel, H. (2008). The experience of owning a guide dog. *Disability and Rehabilitation*, 30(4), 1014-1026. DOI: 10.1080/09638280701466517.
- Wells, D., (2009). The effects of animals on human health and well-being. *Journal of Social Issues*, 65(3), 523-543.
- Wells, D. (2011). The value of pets for human health. *The Psychologist*, 24(3), 172-176.
- Zilcha-Manoa, S., Mikulincera, M., & Shaverb, P.R. (2011). An attachment perspective on human–pet relationships: Conceptualization and assessment of pet attachment orientations. *Journal of Research in Personality*, 45, 345-357.
- World Health Organization (2016). Visual impairment and blindness. Retrieved from: www.who.int/medicacentre/factsheets/fs282/en/.

APPENDIX A: DEMOGRAPHIC DATA

Table 1

Frequency and Percentage of Sample for Demographic Dependent Variables.

Dependent Variable	Frequency	Percentage
Dog Ownership		
Guide dog	37	43
Pet Dog	16	18
Both Guide Dog and Pet dog	13	15
No Dog	21	24
Total	87	
Age		
18-25 years	28	32
36-30 years	14	16
31-35 years	4	5
36-40 years	6	7
41-45 years	5	6
46-50 years	7	8
51-55 years	7	8
56 years or older	16	18
Total	87	
Gender		
Male	30	36
Female	52	62
Other/No Response	5	6
Total	87	
Level of Education		
Less than high school	0	0
High School	6	7
Some college	16	19
Trade school	6	7
Associates degree	8	9
Bachelor's degree	24	28

(Table Continues)

Dependent Variable	Frequency	Percentage
Master's degree	18	21
Professional degree	2	2
Doctorate	5	6
Total	85	
Employment		
Full Time	26	32
Part Time	18	22
Not Employed	37	46
Total	81	
Living situation		
Alone	18	21
Roommate	15	18
Spouse or Significant Other	33	39
Family	19	22
Other	0	0
Total	85	
Degree of Vision Loss		
20/30 to 20/60	4	5
20/70 to 20/160	3	4
20/170 to 20/400	8	9
20/500 to 20/1000	16	19
<1000	10	12
No light perception	44	52
Total	85	
Length of time with Service Dog		
Less than 6 months	6	1
6 months to 1 year	4	17
1 year to 3 years	19	31
3 years to 5 years	9	15
More than 5 years	22	36
Total	61	

APPENDIX B: MULTIVARIATE ANALYSIS OF VARIANCES BETWEEN ALL
DEPENDENT VARIABLES

Table 2

Means (and Standard Deviations in Parentheses) of Dependent Variables Among the Four Groups

Dependent Variable	Guide Dog Only	Pet Only	Guide Dog and Pet	Neither	<i>F</i>
Flourish	48.27 (7.69)	51.5 (3.34)	51.5 (2.82)	44.47 (10.16)	5.17**
SCC	36.28 (7.22)	38.5 (6.57)	40.0 (4.93)	37.6 (7.98)	0.50
Loneliness	5.17 (1.63)	5.50 (1.64)	3.75 (.89)	5.2 (2.11)	3.23*
Bonding	39.34 (5.20)	39.5 (5.34)	38.75 (4.80)	30.87 (1.55)	121.66***
Satisfaction with Life	23.38 (7.75)	25.1 (5.76)	28.38 (2.13)	20.13 (9.73)	3.36*
Self Esteem	31.83 (4.92)	32.5 (4.11)	36.13 (2.95)	30.93 (6.99)	2.71
SPANNA	9.59 (6.57)	8.87 (4.16)	15.0 (4.04)	9.47 (9.93)	2.37

* $p < .05$; ** $p < .01$; *** $p < .001$.

APPENDIX C: SIGNIFICANT RESULTS BETWEEN ALL GROUPS ON THE
FLOURISHING SCALE

Flourishing

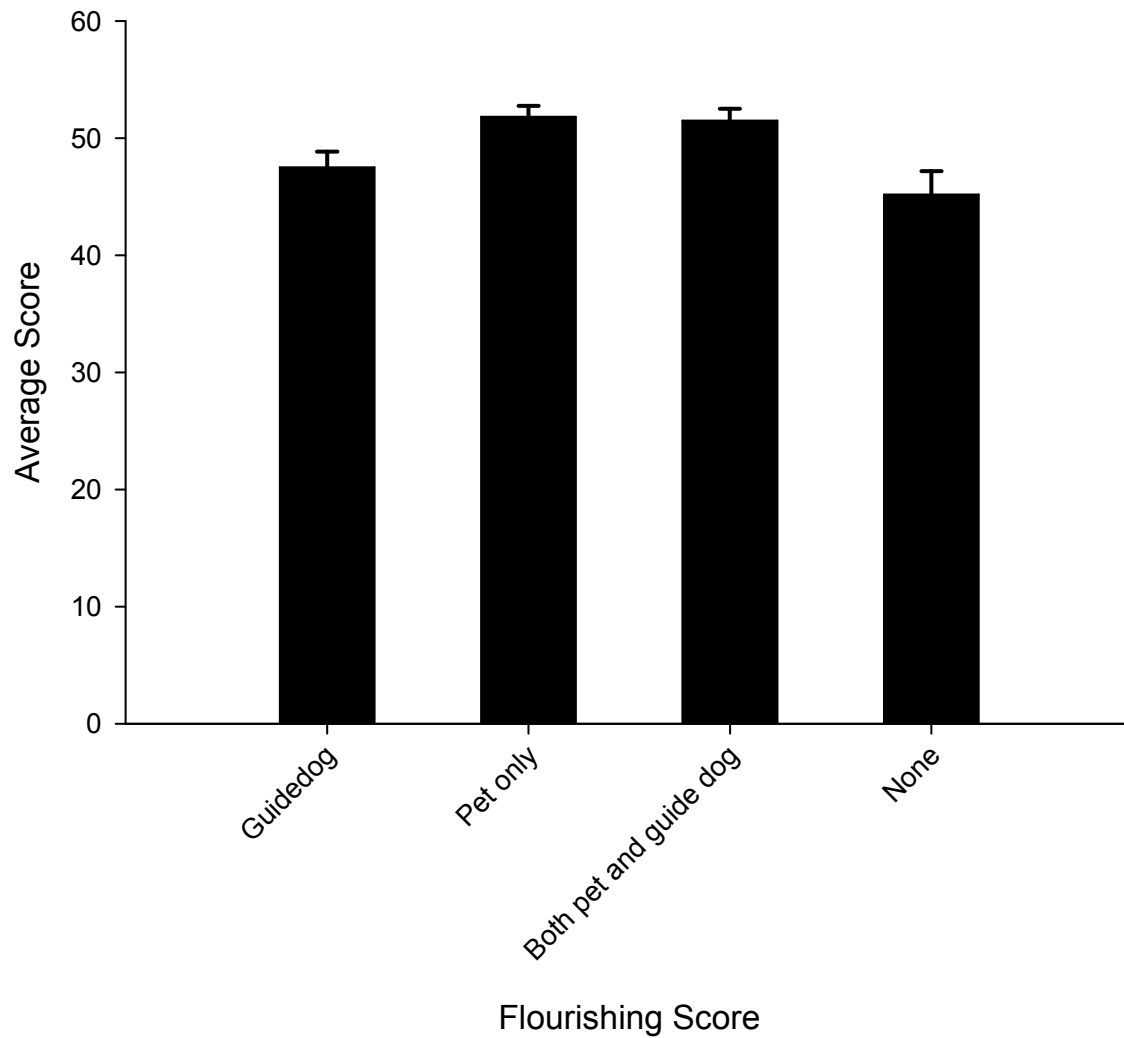


Figure 1. Flourishing Score by Group.

APPENDIX D: SIGNIFICANT RESULTS BETWEEN ALL GROUPS ON THE
SATISFACTION WITH LIFE SCALE

Strength of Bond with Dog

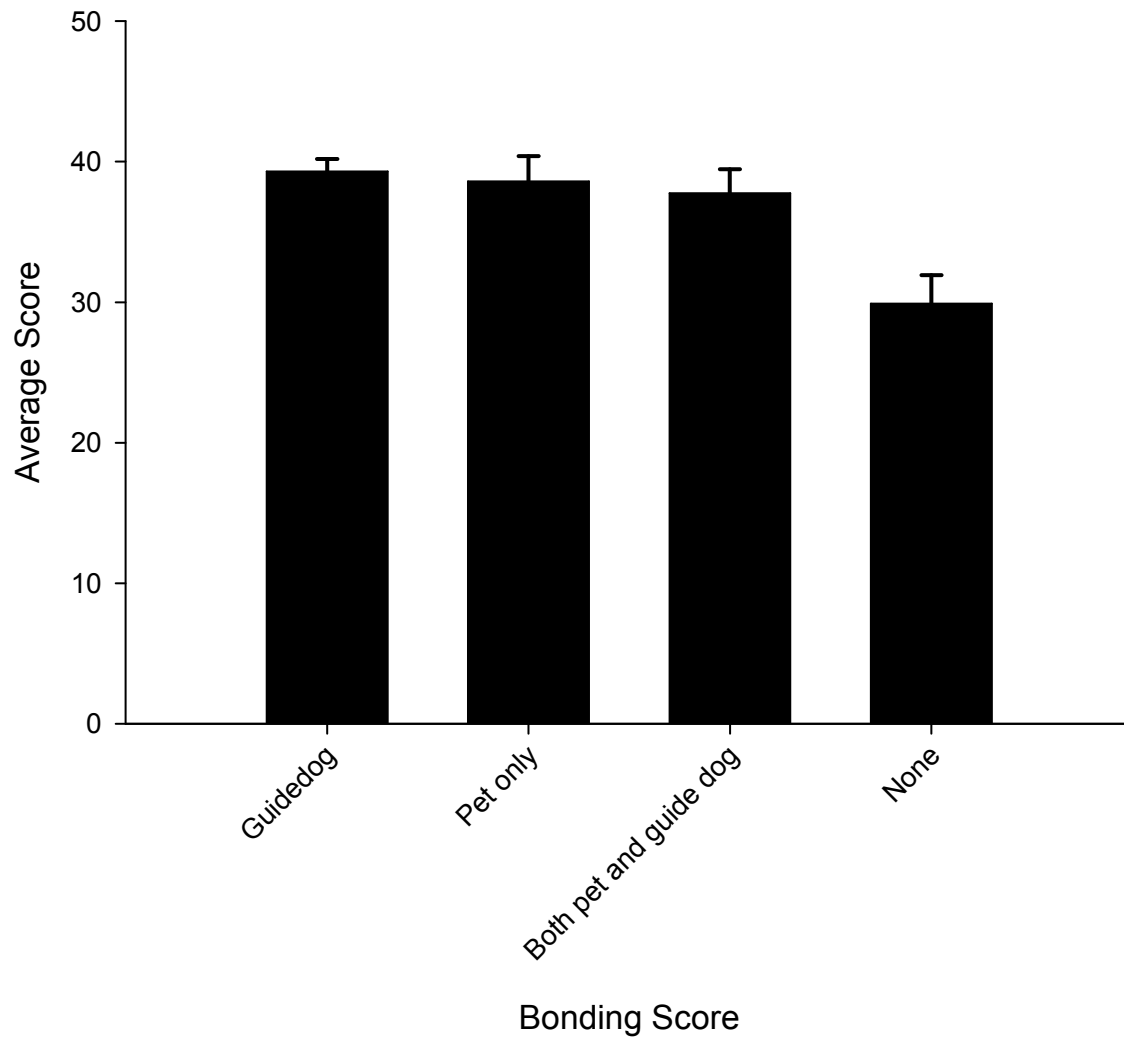


Figure 2. Strength of Bond with Dog Score by Group.

APPENDIX E: SIGNIFICANT RESULTS BETWEEN ALL GROUPS ON THE LEXINGTON
ATTACHMENT TO PETS SCALE

Satisfaction with Life

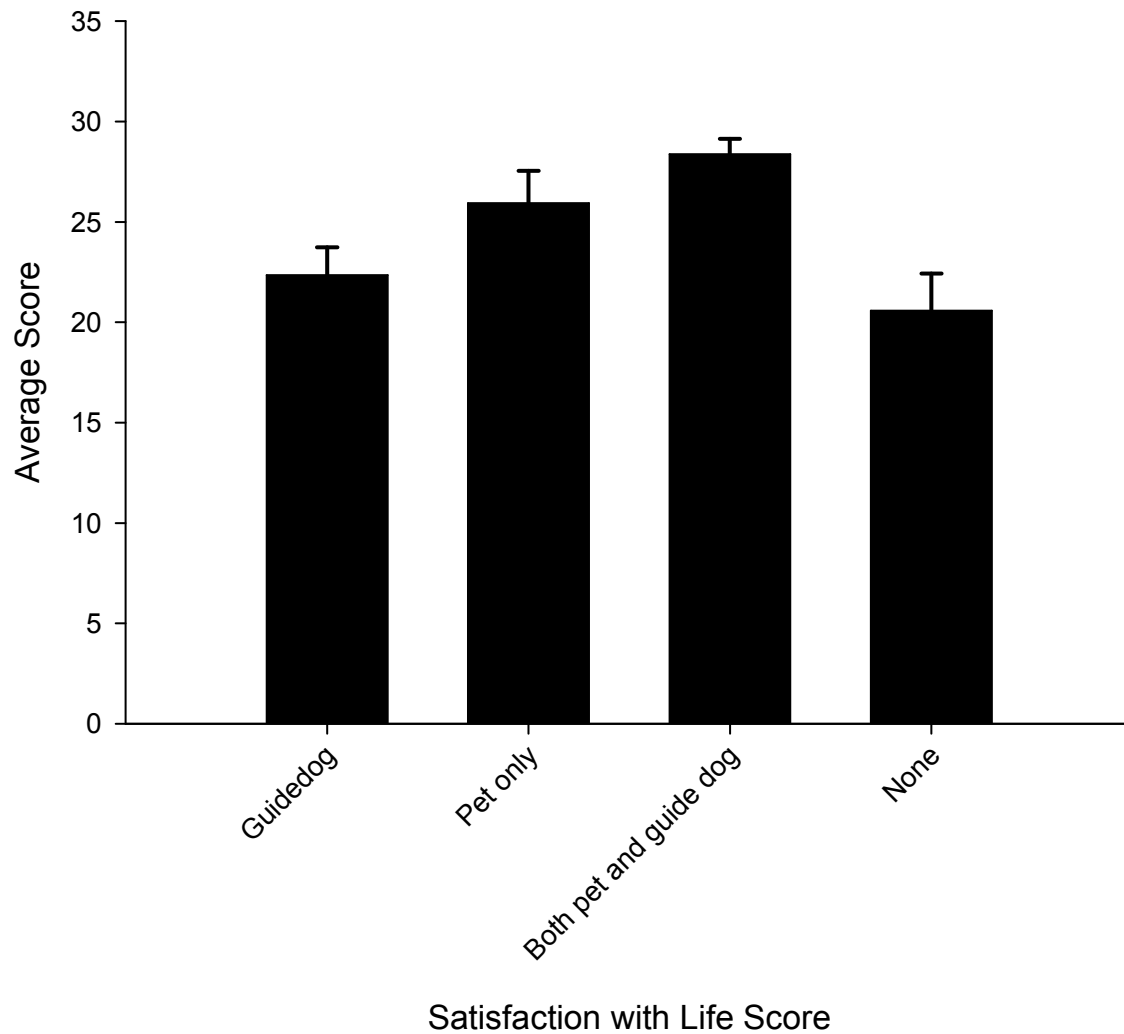


Figure 3. Satisfaction with Life Score by Group.

APPENDIX F: SIGNIFICANT RESULTS BETWEEN ALL GROUPS ON THE VISUAL
FUNCTIONING QUESTIONNAIRE

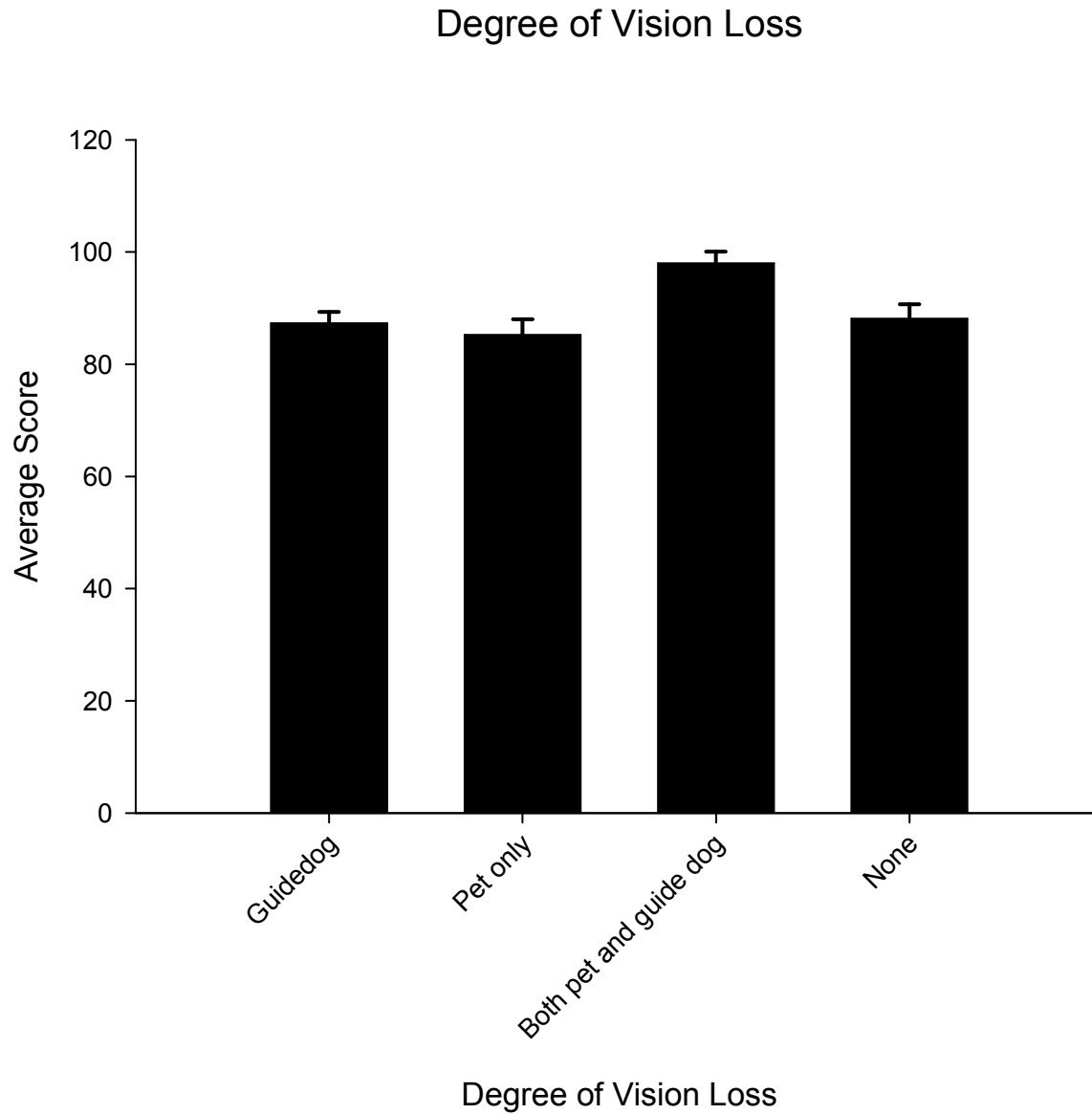


Figure 4. Degree of Vision Loss Score by Group.