Understanding animal welfare in the UK and Cyprus: an investigation of individual

differences underlying the behavior and its relation to humane education in children

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Abstract


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The aim of this thesis was to create a new questionnaire measuring aspects of animal welfare that would address limitations in the literature and that could be used in the UK and Cyprus. Chapter 2 indicated that 57 items measuring aspects of animals abuse and attitudes towards animals, reduced to 13 items measuring negative and positive attitudes. This new scale was renamed the "Zalaf Animal Welfare Scale" and was used in all subsequent studies.

Chapter 3 sought to include individual differences in the examination of the ZAWS with sensational interests. Main findings indicated the ZAWS was predicted by high Agreeableness (A) and high Conscientiousness (C), being residents of Cyprus, being younger in age and being non-hunters. Chapter 4 extended the findings by including measures of delinquency and morality in the analysis. Here, the ZAWS was predicted by low delinquency, high A, high C, and being residents of Cyprus, supporting past findings and those found in Chapter 3.

The following chapter aimed to extend the previous findings to a sample of children around the Leicestershire area. The ZAWS was examined alongside knowledge of animals, treatment towards animals and personality. Knowledge of animals was a significant predictor of the ZAWS, and knowledge of animals was predicted by high scores on the ZAWS, being in Year 6, being female and being students of School 3. Treatment of animals and individual differences were not implicated in any of the analyses. The final chapter of this thesis employed an applied framework, utilising the ZAWS, knowledge of animals and treatment towards animals variables in the investigation of a humane education programme. This programme was successful in producing positive changes in the knowledge and attitudes of animals.

The research studies in this thesis have extended past research as outlined in chapter 1 by investigating animal welfare in a general population sample as opposed to an offender sample, which has been the preferred sample of previous studies of this kind. Furthermore, the simultaneous studies in the UK and Cyprus are the first of their kind to provide information regarding animal welfare in Cyprus while also providing comparison data for the UK. Finally, and most significantly the humane education programme is the first to be carried out and assessed in the UK and has important implications for future education strategies in the UK school system. Findings indicated routes for future studies to take in expanding these results. Limitations and discussions of the findings are expressed throughout the chapters and in Chapter 7.

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# Contents

5

List of Tables

Chapter 5

Chapter 6

List of Figures

List of Abbreviations

A = Agreeableness

AAS = Animal Attitude Scale

AGFI = Adjusted Goodness of Fit Index

C = Conscientiousness

CAAI = Childhood Cruelty to Animals Instrument

CADSS = Community, Autonomy and Divinity Short Scale

CFA = Confirmatory Factor Analysis

CFI = Comparative Fit Index

CTAQ = Children's Treatment of Animals Questionnaire

CVA = Cyprus Voice for Animals

Del Total Score = Delinquency Total Score

E = Extraversion

EFA = Exploratory factor analysis

ES = Emotional Stability

FFM = Five Factor Model

I = Intellect

IPIP = International Personality Item Pool

N = Neuroticism

O = Openness to experience

PAS = Pet Attitude Scale

RMSEA = Root Mean Square Error of Approximation

FMA = Fundamental moral attitudes

KAIS = Knowledge about Animal Issues Scale

KMO = Kaiser-Meyer-Olkin

Mor Total Score = Morality Total Score

P = Psychoticism

RSPCA = Royal Society for the Protection of Cruelty Against Animals

SRED = Self-Report Early Delinquency Instrument

SIQ = Sensational Interests Questionnaire

TIPI = Ten-Item Personality Inventory

TLI = Tucker Lewis Index

ZAWS = Zalaf Animal Welfare Scale

Chapter 1: A review of animal welfare research

In 2010, 160,000 animal cruelty complaints were investigated.  This is an increase of 20,000 complaints from 2009.  Of these complaints, 2,500 convictions were secured against people who abuse animals and 1.1 million phone calls were made to the 24 hour animal cruelty hotline operated by the Royal Society for the Protection of Cruelty Against Animals (RSPCA) (RSPCA, 2011). For pet-owning households in the UK, it is estimated that approximately 22% of the pets are dogs, and 18% are cats (Pet Food Manufacturers' Association, 2011). Pet ownership is greater in the USA, where approximately 39% of households own dogs, and 33% own cats (American Pet Products Manufacturers Association, 2011), and the three most common animal victims of abuse cases are dogs, cats and horses (Pet-Abuse.com, 2012). Most figures comprehensively outlining animal cruelty and prevalence rates are from the UK and USA. Figures from smaller countries and countries with larger rural populations are not readily available. This may be because cases of animal abuse are not adequately being recorded, or indeed the information is not accessible by the general population.

In the case of Cyprus, no official figures are available to the public regarding the extent of animal ownership. The only figures currently available come from a national study carried out by the Cyprus Voice for Animals (CVA), a local charity, where their newsletter informed members of the results from a study of just over 1,000 individuals. Approximately 86% of the sample reported owning an animal, with 69% of these individuals owning dogs and 32% owning cats (Cyprus Voice for Animals, 2011). These figures are a clear indication of the common presence of animals within the

Greek Cypriot society. Following the challenges faced as a result of the 1974 invasion by Turkish forces, and membership of the European Union in 2004, Cyprus rapidly developed into a prime tourist destination, with the tourism services sector employing approximately 73% of the labour force (Bureau of European and Eurasian Affairs, 2012). Despite recent economic difficulties, Cyprus maintains a reputation of being an international centre for business, maritime services, and tourism (Embassy of Cyprus, 2012). Seeing as Cyprus is still a rapidly developing country, it is understandable that governmental mechanisms dealing with animal ownership and protection are still being formulated and developed. It is hoped the review below will inform readers of the area as a whole, and the subsequent chapters will allow insights as to the current state of animal welfare in Cyprus.

## 1.1. Animal ownership

Owning a pet dog or cat is a process many individuals go through at some point in their lives. Pet ownership contributes to better stress control in adults (Siegel, Angulo, Detels, Wesch & Mullen, 1999) and in children can facilitate intellectual, motor and social development (Poresky, 1996). Man-animal companionship is of long standing. Archer (1997) reviewed three evolutionary theories examining why people keep cats and dogs as pets. He focused primarily on cats and dogs, as he argued that these are the most common types of animals owned as pets in western countries. He suggests certain individuals are better able to form stronger attachments to an animal rather than to another human; modern living conditions make owning a pet so much easier, particularly for urban populations; and that owning a pet can help promote emotional and physical well-being. He goes on to formulate a theory of his own whereby pet ownership is defined as a type of social parasitism (Archer, 1997). The

17

basis for the author's argument is that while pets are provided for by their owners, the pets themselves do not contribute in any material way to the well-being of their owner. From an evolutionary point of view, the pleasant and loving feelings derived from the animal cannot be considered evolutionary adaptive. On the other hand, the author fails to recognise that, from a behavioural viewpoint, the good feelings derived from showing kindness may act to reinforce that behaviour, and perhaps extend the kindness to humans. From an evolutionary viewpoint, there is also evidence that altruistic behaviours, developed in response to empathic emotions, are adaptive in terms of the benefits that can be gained by the individual (de Waal, 2008). In addition, a study of elderly individuals with chronic illness or disability has shown that owning a dog may actually increase the likelihood of being active (Rijken & Beek, 2011). Thus, dogs, and perhaps animals in general, may be instrumental in providing the motivation needed to remain fit and healthy, whether as a result of a dog's need to be walked twice a day, or due to the desire to be healthy so their dog is well looked after, thus fulfilling a type of evolutionary requirement. Whatever the reasons for keeping a pet, caring and providing shelter for an animal is common and the importance of investigating aspects of the bond between humans and animals is of psychological interest.

*1.2. Attitudes towards animals*

Grandin (1988) carried out an unconventional study looking at the behaviours and attitudes of slaughter plant and auction employees to animals. In the context of determining the level of abuse suffered by animals in such establishments, she identified three types of approaches, or attitudes, of the employees towards their work and the animals. The first approach was one by which the employees adopted a mechanical attitude and killed the animals efficiently and painlessly. The second

18

approach was characterised by sadism and the apparent enjoyment of killing and torturing the animals. The third approach took a cultural standpoint and involved the person making the act of killing a sacred ritual. This study highlights the different attitudes people have towards animals in culturally and institutionally acceptable settings. It is, for instance, acceptable to use farm animals in slaughter plants and auctions. In western society it is not acceptable that animals such as cats and dogs are used in the same manner. Countries such as China and Vietnam are known for serving cat and dog meat in restaurant, though calls have been made by western societies to ban eating such meat and the Chinese government is reputedly considering legislation against the selling of cat and dog meat (Chang, 2010; Moore, 2010). Secondly, and related to the first reason, this study underscores the importance of culture in determining what is acceptable and what is unacceptable in the treatment of animals. Finally, Grandin argues that animals need to be treated humanely, even if those animals are regarded as a product for human use (Merz-Perez & Heide, 2004).

Attitudes to animals are not consistent for every type of animal, nor over time. For instance, bear-baiting was a pastime activity in the United Kingdom until it was made illegal under the 1835 Cruelty to Animals Act (RSPCA, 2010). In Alaska, bear-baiting remains legal and has only been regulated since 1982 (Alaska Department of Fish and Game Wildlife Conservation, 2009). The moral values people place on animals (and their own attitudes to the animals) are significant only in terms of the relative weight of those values according to the situation (Cohen, Stassen & Brom, 2009). Cohen, Stassen and Brom (2009) argue that four elements produce the formation of people's attitudes towards animals. These are; the public's views of the hierarchy between man and animal; the perceived value of animals; the act of caring for animals

19

(whether this is due to an obligation to care for all animals, some animals, or no obligation at all to care for animals); and people's views of animal rights. Using the above elements, they developed a model of "fundamental moral attitudes" (FMA) towards animals, which they suggested were dynamic, diverse and can change over time. The basis for the development of FMAs towards animals is interesting and may provide new groundwork for investigating attitudes towards animals within the context of morality.

A preliminary study by Serpell (1996a) looking into the association between pet behaviour and owner attachment levels found a positive association between pet behaviour and the degree of owner attachment. The sample included owners of cats and dogs, and the authors found owners with weaker attachments to their dogs were less satisfied with most behaviours of their dogs compared to owners with stronger attachments. Cat owners with weaker attachments were found to be significantly less satisfied with the affection shown by their cats (Serpell, 1996a). These findings appear to support general expectations regarding the differences between the two species and the owners of these species. However, the direction of the relationships described above was not defined, and it may be that the animal's behaviour precedes the owner's attitudes or that the owner's attitude influences the animal's behaviour. Serpell's study is brief, and unfortunately the results and implications are not discussed fully. However, it may be used as a basis for future studies to work on.

In a psychodynamic approach to understanding the relationship between owners and their dogs, O'Farrell (1997) argued there are different types of owners, each type displaying their own characteristics. She proposes that the attitudes of owners are often inconsistent, and these inconsistencies may be best explained through the

psychodynamic process of projecting problematic aspects of their personality onto the dog's character. While O'Farrell's argument is plausible, there is no concrete scientific evidence for such a fact. In fact, there is no way to either prove or disprove this theory. This argument applies for all theories developed under the psychodynamic approach. Psychodynamic theories have thrived over the years due to the very fact that there is no way to scientifically investigate their concepts and thus come to a scientific conclusion as to their truth or inaccuracy. Any approach that is based solely on case studies, as is the psychodynamic approach, should be treated with caution. Nevertheless, many previous studies have used standard experimental methods, rather than purely theoretical models, to investigate attitudes towards animals. The studies reviewed below will favour experimentally based work over anecdotal reports.

Raupp (1999) sought to determine the nature of the relationship between childhood socialisation of pets and subsequent adult experiences. She found this relationship to be a positive one, but influenced by the gender of the individual. Specifically, males were more likely to have negative socialisation experiences with pets, more likely to abuse pets as adults, and more likely to form weaker attachments than females. Females, on the other hand, were more likely to hit or give away their pets. The author concluded that pet abuse can come about due to a lack of knowledge or understanding, and that the behaviour and attitudes of parents can influence the behaviours and attitudes of their children. A point of consideration about this study is that it comprised a sample of 160 university students. University students are not representative of the population as a whole. Besides being within a certain age group (usually 18-25), university students are highly educated and often from a higher socioeconomic class. It is often the case that people's life circumstances change

dramatically after their student years, and behaviours and attitudes may change in accordance with their experiences. Ideally, a sample of participants includes people with a wider age range and with more life experiences, from across a wider range of demographics. Moreover, the authors themselves recognise the fact that retrospective reports about childhood experience may not be accurate. The argument for bias in retrospective reports has been noted by many researchers (McPhedran, 2009; Tallichet & Hensley, 2009).

Attitudes of people towards animals can also influence the quality of a pet's life. Adamelli, Marinelli, Normando and Bono (2005) argue that variables such as culture, demographics and the characteristics of the animal have an effect on attitudes towards pets. Using four methods of data collection in an Italian sample, the authors found a great number of ways that the quality of life of cats may be influenced. Generally speaking, the relationship between a cat and its owner depended on the characteristics of both the cat and owner. However, features of the cats, such as their behaviour towards other cohabiting animals and their owner, were influenced more by the owner's characteristics than the cat's own characteristics. In other words, the age and gender of the owner, and number of children in the household appeared to influence the behaviour of the cat more than whether the cat had undergone a gonadectomy (as when cats are sterilised and become less territorial), or if it cohabited with other animals. This study supports Serpell's (1996a) general conclusion and, given the level of detail in the authors' analysis of the interaction between the cats' and owners' characteristics, is an improvement on the limitations previously mentioned. One limitation the study suffers from is that the small sample was primarily female. It is reasonable to conclude that a sample of 53 women and nine men cannot be generalised to the overall population of

Italy. A subsequent study looking at dogs by the same authors found the quality of life for a dog depended equally on the characteristics of both the owner and dog (Marinelli, Adamelli, Normando & Bono, 2007). An interesting suggestion for future research offered by these researchers is for species-specific tools to be developed when investigating animals, as the findings of the two studies above indicate that the behaviours of cats and dogs are influenced by different things. With the help of species-specific tools it may be possible to determine whether this finding applies to other species of animals.

Another study originating from Italy and incorporating data from dog and cat owners, investigated owners' perceptions of behavioural problems in their pets. The purpose of this qualitative study was to provide a basis for future quantitative studies. Results from the discussion groups they surveyed indicated that cat owners differed from dog owners in their perception of how to treat the behavioural problems of their pets. Cat owners found the idea of modifying the behaviour of their pet difficult or impractical (Notari & Gallicchio, 2008). This study indirectly links attitudes towards animals to animal abuse; cat owners who believe it is difficult to systematically modify a cat's behaviour may possibly resolve to treat the cat more harshly to discourage unwanted behaviour, thus turning to direct or indirect forms of abuse. Furthermore, these individuals may justify their behaviour by placing responsibility on the cat's assumed "stubbornness" or "refusal to learn". Adults provide similar justifications for forms of punishment for their children; for example, Gough and Reavey (1997) found adults justified their use of punishment by saying that it served an educational purpose in teaching the child what is right and wrong. Other justifications were to satisfy their

own goals, because they had been punished in the same way as children, and for the relief of their own needs.

Given the growing volume of literature into the attitudes that people hold towards animals, attempts have been made to produce measurements that examine these attitudes. The purpose of this review is not to provide an analysis of every measure on attitudes to animals available, but rather to examine a couple of the more widely used measures in hopes of justifying the development of a new scale. The first of these measures is the Animal Attitude Scale (AAS) developed by Herzog, Betchart and Pittman (1991) to assess individual differences in attitudes towards animals. The scale had a high internal consistency and measured themes such as attitudes towards the hunting of animals, the use of animals in scientific research, and peoples' tendency to help animals. The AAS has been used in research looking at personality and the treatment of animals (Mathews & Herzog, 1997), empathy and attitudes to animals (Daly & Morton, 2008; Daly & Morton, 2009; Taylor & Signal, 2005) and attitudes of individuals in the animal protection community (Signal & Taylor, 2006). However, the AAS does not differentiate between the categories that pets may fall under e.g. companion animals, pests, or animals used for a profitable gain (Taylor & Signal, 2009). Furthermore, the questionnaire does not identify types of animal abuse, or how the attitudes of animal abusers differ from non-abusers.

The Pet Attitude Scale (PAS) (Templer, Salter, Dickey, Baldwin & Veleber, 1981) was developed to measure peoples' perceptions of their childhood companion animal, and was found reliable for use in measuring attitudes to animals, even more than 20 years after its development. Morovati, Steinberg, Taylor and Lee (2008) found high internal PAS consistency and reliability scores, and concluded that the

questionnaire remains useful for current research. The PAS has been used to study the relationship between attitudes of parents and their children to pets (Schenk, Templer, Peters & Schmidt, 1994), pet bonding and bereavement after the loss of a pet (Brown, Richards & Wilson, 1996; Planchon & Templer, 1996), and the relationship between childhood experiences of owning a pet and current attitudes towards animals (Miura, Bradshaw & Tanida, 2002).

The two scales described above have been rigorously tested for reliability and validity and there is no doubt as to their usefulness in examining attitudes towards animals and various other factors. However, both look exclusively at attitudes towards animals, and neither take into account how attitudes may influence behaviours. They do not take into account the positive and negative behaviours that animals are subjected to, nor the justification people offer for these behaviours. In the interest of reaching a well informed conclusion, it would be beneficial to create a new questionnaire that was able to capture information on these issues.

Understanding attitudes towards animals is the cornerstone to understanding how animals are treated and more importantly, why animals suffer abuse. The research presented above suggests animals are abused for personal enjoyment (e.g. bear-baiting), due to ignorance/ lack of knowledge, and the perceived difficulty of modifying an animal's behaviour. The reasons why people abuse animals shall be examined in more detail in the following sections.

*1.3. Function of abuse*

Few explanations have been provided for the function of animal abuse. Examining retrospective accounts of animal abuse in criminals and non-criminals,

25

Kellert and Felthous (1985) argued for nine motivations for childhood animal abuse. These are to; control an animal; to retaliate against an animal; to satisfy a predisposing prejudice against a specific species or breed; to satisfy or enhance one's own aggression through an animal; to shock people for amusement; to retaliate against another person; to displace hostility from a person to an animal; and finally, for nonspecific sadistic reasons. Through the development of their instrument measuring childhood cruelty to animals (CAAI), Ascione, Thompson and Black (1997) considered qualitative information regarding the motivations children have for their abusive behaviours. Their motivations included: curiosity and exploration; peer reinforcement; using abusive behaviours towards animals to increase one's own excitement levels; imitating abusive behaviours carried out by others; and using cruelty against animals as a way to harm one's self. Animal abuse may also be a manifestation of child conduct disorder (Dadds, Whiting & Hawes, 2006; Mellor et al., 2009; Miller, 2001). Arluke (2002), however, argues that some animal abuse in childhood occurs unintentionally, and reduces as part of the maturation process in which the child learns what is morally acceptable and unacceptable in the treatment of both humans and animals.

In a similar way adults may abuse animals in order to intimidate and control their partners, or affect revenge on another (Ascione, 1998; Faver & Strand, 2007), sometimes because of a lack of knowledge and understanding of animals (Raupp, 1999). People may also commit abusive acts against animals as an extreme emotional response, such as anger or for fun due to their dislike of the animal, or in an imitation of previously witnessed abusive acts (Hensley & Tallichet, 2005a; Hensley & Tallichet, 2008). It is worth noting, however, that people may abuse animals for various reasons

simultaneously, and that different people may have different reasons for carrying out the same act of abuse (Hensley & Tallichet, 2005a).

*1.4. Animal abuse and demographics*

Age has already been shown to be an important factor when investigating animal abuse. Research presented above indicated that people of all ages are capable of carrying out such acts. It may be that differences in the prevalence rates for animal abuse and differences between types of people who abuse animals are made evident through the examination of other demographical factors. By trivialising or marginalising other explanations for animal abuse, research may simply confirm the prevailing theory of the time (Piper & Myers, 2006). For instance, researchers may falsely focus on one area and thus amplify its significance, effectively ignoring all possible contributing factors to animal abuse.

Gender is also implicated as a predictor of animal abuse. Parents of boys report higher levels of animal abuse in their children than the parents of girls (Xu, Mellor & Wong, 2007). Schwartz, Fremouw, Schenk and Ragatz (2012) extended this insight into the gender profile of individuals who abuse animals. Female animal abusers scored significantly higher than female controls on their total criminal thinking scores, more closely resembling male animal abusers and controls. Approximately 83% of female animal abusers also reported being bullies or the victims of bullying, as compared to 33% of the female controls. The authors argue that further research into the gender differences of animal abusers is needed, as male and female abusers did not otherwise differ on the types of animals they abused and the form of violence they employed.

Baldry (2003) demonstrated that cultural differences may also influence animal abuse. Her study of animal abuse and inter-parental violence in Italian youths indicated that of those youths that had reported committing animal abuse, two thirds were boys and a third were girls. These rates are higher than those previously reported by other researchers, and the author argues that one reason for this may be because a different questionnaire had been used. On the other hand, this study could actually be demonstrating differences in cultures, as most previous research of this kind has been conducted in the USA. In a follow-up study of animal abuse among youths who may have been themselves victimised at home or at school, Baldry (2005) replicated the animal abuse rates found in her previous study. Again, these findings were justified by stating that perhaps the inclusion of minor acts of harm, or the younger ages of the children in the sample were responsible for the findings.

Lastly, differences in animal abuse may also be present due to factors such as geographic location (in large countries such as the US, people may differ according to where they are from; for example, people from the West may differ from people from the East, and people from the North may differ from people from the South), ethnicity, levels of education and income (Piper & Myers, 2006).

## 1.5. Animal abuse and interpersonal violence

Much of the research surrounding animal abuse concentrates on its co-occurrence with other violent behaviours. The section below shall concentrate on three aspects of this literature; those who argue that animal abuse leads to later violence in life; those who contradict this argument, stating that animal abuse does not necessarily lead to violence in adulthood; and finally those who state that animal abuse co-occurs with other violent tendencies.

Some believe childhood animal abuse leads to interpersonal violence in adults, and argue that research increasingly provides support for this correlation (Felthous, 1980; Kellert & Felthous, 1985; Merz-Perez, Heide & Silverman, 2001; Wright & Hensley, 2003). Merz-Perez, Heide and Silverman (2001) argue that such findings highlight the need for longitudinal studies using children in order to determine whether this is a true phenomenon. The reason for this suggestion is that the methods many researchers employ are not entirely ideal for the phenomenon they are investigating. Merz-Perez, Heide and Silverman (2001) carried out their study using offenders and asked them to retrospectively recall their experiences with animals. The results indicated that adult violent offenders were significantly more likely than adult non-violent offenders to commit acts of animal abuse as children. By noting the need for longitudinal studies, the authors tacitly recognise the limitations in their own method whereby asking people to retrospectively report on their experiences leads to false reports, false memories and confabulations. If you look at violent offenders and expect a violent past, it is likely you will find one.

In an attempt to improve on the methodological flaws of previous studies, Tallichet and Hensley (2004) explored the relationship between animal abuse and adult interpersonal violence, investigating recurrent acts of violence. They found an association between repeated acts of animal abuse in childhood and adolescence, and subsequent repeated acts of violence towards humans in adulthood. The authors improved on previous studies by examining recurrent acts of violence, as opposed to single incidences of violence. In a subsequent study by the same authors, it was argued that the most statistically significant factor in predicting interpersonal violence as adults was the abuse of animals "for fun" as youths (Hensley & Tallichet, 2008). Inmates who

had drowned or had sexual contact with animals during their youth or childhood were more likely to have carried out repeated acts of interpersonal violence as adults (Hensley & Tallichet, 2009). Through their subsequent studies the authors were able to support their previous claims and offer some insight as to what actually influences an individual's tendency for interpersonal violence. However, it must be noted that the statistical models for the last two studies accounted for only 11% and 10% respectively of the variance in interpersonal violence. This means that a very large percentage of interpersonal violence variance is not explained by an individual's history of animal abuse. Through further investigation, it could be that other factors are able to account for more of the interpersonal violence variance observed.

Others have not established a firm link between childhood animal abuse and later interpersonal violence (Arluke, Levin, Luke & Ascione, 1999; Langevin, 1983; Miller & Knutson, 1997; Prentky & Carter, 1984). Indeed, researchers who have not established a significant link often argue that animal abuse is simply one of the many antisocial behaviours such individuals may commit (Arluke, Levin, Luke & Ascione, 1999). In general, people exhibiting violent behaviour commonly have violent backgrounds which include the abuse of animals amongst other things (Miller, 2001), and so a history of animal abuse provides no differentiating value.

The third perspective is that animal abuse does not lead to later violence, but rather co-exists alongside other violent behaviours (Arluke, Levin, Luke & Ascione, 1999; Ascione, 1998; Ascione, Weber & Wood, 1997; Baldry, 2003; Baldry, 2005; DeGue & DiLillo, 2009; Deviney, Dickert & Lockwood, 1983; Gullone & Robertson, 2008; Simons, Wurtele & Durham, 2008; Volant, Johnson, Gullone & Coleman, 2008). Researchers who support this view have primarily conducted studies focused on

animal abuse within violent families. Ascione (1998) interviewed women seeking

shelter from abusive partners and found more than 70% of the women reported that

their partner had threatened and/ or actually harmed the family pet in their aggression.

In most reports (57%), actual harm to animals had taken place. By recruiting women

suffering from domestic abuse in domestic violence refuges compared to women from

other establishments such as hospitals and doctor's surgeries, a different result may be

found (McPhedran, 2009).This is because women at these centres have decided to act

on their situation and bring about a change in their life. For example, Siegel, Hill,

Henderson, Ernst and Boat (1999) questioned women bringing their children to a

paediatrician, and found that only two women of the 47 who had reported incidences of

domestic violence also reported cases of animal abuse. It may be that research

investigating animal abuse within the context of domestic violence is not representative

of the general population of people who have experienced domestic violence

(McPhedran, 2009). It is also possible that women in domestic violence shelters

exaggerate their partner's behaviours towards pets as a result of their anger and in their

attempts to regain the family home (Piper, 2003).

These kinds of findings highlight the need for studies with strong

methodological underpinnings as well as adequate sampling of populations to

determine the true nature and magnitude of animal abuse. In more general terms, it

appears that it is the broad context in which animal abuse occurs that contributes to the

development of this and other violent behaviours. By considering the situational

characteristics of antisocial behaviours, it may be possible to intervene more effectively

with animal abuse and interpersonal violence (McPhedran, 2009). Patterson-Kane and

Piper (2009) have argued that the limitations of previous research lead to exaggerations

in the severity of animal abuse incidents, exaggeration of the causal links, false beliefs that this behaviour is divided into normal and pathological rather than being on a continuum, and finally, the belief that these behaviours are a result of personality traits rather than situational factors.

In an attempt to measure animal abuse, several questionnaires have been developed. These include a parent-report questionnaire (Guymer, Mellor, Luk & Pearse, 2001); the Children and Animals Inventory developed using Ascione's (1993) cruelty parameters (Dadds et al., 2004); and an assessment for retrospective reports of animal abuse among incarcerated men (Merz-Perez & Heide, 2004). Certain challenges have been identified with the use of these assessment measures. First, regarding parent reports, parents may not always be aware of their child's behaviour. Second, the measures need to assess every aspect of animal abuse, including the physical, sexual, emotional abuse of animals and neglect, severity and frequency of such events. Third, retrospective reports may not be completely valid, depending on the amount of time that has passed since the abuse took place. Finally, it may be worth using measures of social desirability when investigating this topic in order to determine the reliability and validity of the reporting (Ascione & Shapiro, 2009).

*1.6. Humane education research*

Humane education programmes have been present for more than 30 years (see Spencer (1976)). Vockell and Hodal's (1980, p. 1) remark that "Humane education makes sense," characterises this area appropriately. The authors state that the goal of humane education is to make a change to children's attitudes while they are still young, so they can grow into responsible adults. As responsible adults they can then affect change in their own children, and members of their society. At the time of publication

of their article, Vockell and Hodal stated there had not been a single published article as to the efficiency of such programmes. Such studies have since been carried out consistently over the years, yet it is vital to examine the early studies of humane education in order to understand how this field has progressed and what more needs to be understood.

The programme utilised by Vockell and Hodal was known as "The Hammond Project", and was carried out by specially trained individuals. It consisted of one-off visits to the classroom, and covered areas such as feelings towards animals, how to take care of a pet, how to be a responsible pet owner, and identifying the needs of wild animals and endangered species. There were three conditions in the study; children in the intensive treatment heard a presentation, viewed posters and printed information, and received follow-up printed leaflets. Children in the light treatment received only the posters and printed information, and children in the control group did not receive any material or information. The evaluation of this programme was then carried out by a third party; an individual not involved in any of the procedures related to the programme. The researcher's expectations were that the most favourable attitudes would be expressed by the intensive group, followed to a lesser extent by the light group, with the control group expressing the least positive attitudes. Expectations regarding the control group were met. However, there were no significant differences between the experimental groups. Possible explanations for these findings are that the evaluation measure was not sensitive enough to changes that may have actually occurred, or the possibility of experimenter bias (Vockell & Hodal, 1980). The authors concluded that subsequent studies should use different programmes from the one employed here or abandon the single-visit programmes altogether. On the other hand, a

change in attitudes may not be dependent on the intensity of programme. Programmes of a lighter intensity may be of equal efficiency to intensive programmes in producing positive changes in attitudes towards animals.

Fitzgerald (1981) carried out a replication study of Vockell and Hodal's study but chose to extend the humane education lessons over a period of two months. This time the results were in favour of the hypotheses; the intensive treatment results were significantly higher than the other two experimental conditions. Fitzgerald's most significant conclusion was that humane groups need to identify a "common thread" of how and where humane education programmes should be targeted so that a programme can be developed that will be of use to all. Furthermore, children should be offered a well structured and focused humane education programme as opposed to being offered an unstructured session or even nothing.

Ascione (1992) further extended this work by carrying out a year-long humane education programme, assessing its impact and determining whether human-directed empathy was also influenced. The intervention employed here was based on the curriculum guidelines developed by the National Association for Humane and Environmental Education, which cover facets of human-animal relationships. There were no significant differences between control and experimental groups in younger children. In older children, however, humane attitudes were greater for the experimental group than the control group, barring fifth grade children. Ascione (1992) concludes that this study is one of many supporting the efficiency of such humane education programmes in positively altering children's attitudes towards animals.

Subsequent studies have established a connection between humane education programmes and an increase in positive feelings and behaviours towards animals (Ascione & Weber, 1996; Nicoll, Trifone & Samuels, 2008; Arbour, Signal & Taylor, 2009). Despite the similar results and conclusions, most of these studies have used different methods and materials. For instance, Thompson and Gullone (2003) chose to examine empathy levels and prosocial behaviour through humane education. Nicoll, Trifone and Samuels (2008) chose to use first grade children as participants and utilise the "We Love Animals!" materials for their humane education programme over a period of six lessons. Sprinkle (2008) investigated the effectiveness of an eleven-session animal-assisted programme ("Healing Species") in all fourth, fifth and sixth graders in changing empathy levels and fostering prosocial behaviours. These studies have used a wide range of methods and materials, yet all have reached similar, if not the same, conclusions: that humane education can produce positive results in the development of positive feelings, attitudes and behaviours towards animals.

Such studies have recently taken on a cross-cultural dimension with results being reported from countries around the world such as Mexico (Aguirre & Orihuela, 2010), Portugal (Fonseca et al, 2011), and Italy (Mariti et al, 2011). These studies have further supported the successful nature of humane education research.

Research spanning over 30 years is a clear indication that humane education programmes are almost entirely successful in their attempts to promote prosocial feelings towards animals. The fact that results have been consistent despite the various methods employed is a testament to that observation. However, with these differing methods come inherent limitations. These shall be covered in the next sections, and the impact of these limitations on the successfulness of these programmes will be reviewed.

35

*1.7. Limitations of past research into animal welfare*

A review of the existing literature into animal abuse clearly indicates that earlier studies offered insight into an undeveloped area, and provided the stepping stone for future research. However, this work has suffered from both practical and methodological flaws. Such flaws include using data from studies that have investigated animal abuse, but have failed to provide an adequate definition for animal abuse; using extreme and non-representative samples; problems with self-report reliability; using retrospective studies whereby a correlational relationship is established as opposed to a causal one; statistical fallacies; and being subjective towards the topic according to the authorial standpoint (e.g., legal, medical etc) (Piper, 2003).

A significant flaw of previous research has been the lack of consensus regarding the definition of animal abuse. The lack of an appropriate definition could create confusion in the participants as to what was actually being measured; questions may arise regarding what is considered abusive and what is not. For example, in an earlier study into childhood cruelty to animals using a sample of criminal and noncriminal males, Kellert and Felthous (1985) outlined their own operational definition of animal cruelty as the "wilful infliction of harm, injury and intended pain on a nonhuman animal" (Kellert & Felthous, 1985, p. 195). To their credit, the researchers made it very clear to their readers that the behaviours they would be looking at in their study would follow this specific definition. Furthermore, the term "nonhuman animal" is broad enough so as to allow the application of this definition to all species of animals. On the other hand, this definition does not include neglect of an animal as a form of cruelty, nor does it specifically refer to emotional types of abuse.

Following the above study, Felthous and Kellert (1987) carried out a review of the literature where concern was expressed about the conflicting findings of studies up to that date. The authors argued that three reasons for this trend were the definition of the behaviours being studied, the methods employed by the researchers, and the varying thoroughness of the interviews. It cannot be assumed that if these studies had adequately defined animal cruelty, they would have necessarily found a positive association between animal cruelty and violence later in life. However, if an appropriate definition had been provided it could be that different results would have been obtained.

Ascione (1993) reviewed the literature into childhood animal cruelty and began by defining cruelty and identifying the issues that need further attention. An entire section was dedicated to defining cruelty to animals as "socially unacceptable behaviour that intentionally causes unnecessary pain, suffering or distress to and/or death of an animal" (Ascione, 1993, p. 228). This definition appears comprehensive in that it allows for the social context to be taken into account. As the author argues, this definition does not include behaviours resulting from animals receiving veterinary treatment, or in the production of livestock. However, readers should be mindful that animal abuse does take place in establishments of livestock management and production (see Grandin, 1988). Due to the age of this definition, and the ever-changing needs of our society, it may be necessary to revise Ascione's (1993) definition to include aspects of behaviours that are socially acceptable. His definition does not include activities such as hunting or research using animals, and differentiates between those behaviours that are intentionally carried out and those that are unintentional but may be perceived by the individual as cruel. However, Ascione (1993) does recognise

that passive behaviour, such as witnessing acts of cruelty but not attempting to stop them, and the pleasure experienced by witnessing acts of cruelty should not be overlooked. Bestiality is an area of animal abuse often overlooked, but may be considered cruel even when the animal is not physically harmed since consent is presumed impossible. Miller (2001) argues that of all the definitions, the definition provided by Ascione (1993) is the most clarifying. It is interesting to note that in the two decades that has passed since Ascione (1993) created his definition, it has been cited a number of times despite the caveats he himself noted.

Two other significant flaws in the animal abuse literature are the issue of self-reported reliability, and the often small and unrepresentative samples that many authors have chosen to use. To illustrate the point that there is some evidence for animal abuse in childhood leading to interpersonal violence in adulthood, many authors cite extreme cases that have ignited interest in the public through the sensationalised portrayal of the media. In the introduction to his report, Ascione (2001) refers to extreme cases of young offenders who progressed from animal abuse to the murder of their family and friends. Duncan and Miller (2002) cite the case of Albert DeSalvo who, following the abuse of cats and dogs as a youth went on to murder people. In their attempt to provide support for the theory that animal abuse in childhood leads to violence as an adult, Wright and Hensley (2003) present five case studies of serial murderers who had a history of animal abuse. (Indeed, many subsequent studies have cited the same case studies as mentioned in Wright and Hensley (2003); see Hensley & Tallichet (2008), Tallichet & Hensley (2004)).

Previous authors have typically used violent offenders as their sample and nonviolent offenders as a control group. Even amongst the studies that have used the

general public as a control, there are several considerations regarding this type of sampling method. First, conclusions arrived at from data using offenders cannot in any way be generalised to the wider population; members of the public have often committed criminal offences for which they have not been caught. Studies have indicated that self-report data on criminal behaviours are reliable and valid, and sometimes these self-reports yield different results from official records (Farrington, et al., 2003; Landry, Brochu & Bergeron, 2003).Such data can only be safely generalised to offender populations. Second, and related to the issue of self-reported reliability, one can never be sure about the truthfulness of the responses to questions of such a sensitive nature. It could be that control groups may not be willing to admit to hurting animals as it is seen to be culturally unacceptable. On the other hand, offender populations may be more willing to admit to hurting animals (even though they might not have), in order to preserve their aggressive and remorseless image.

In a study investigating physical punishment and exposure to animal cruelty, Miller and Knutson (1997) found that a prison sample displayed no association between the type of crime they had committed, and their reported animal cruelty acts. Furthermore, there were only minimal associations between animal cruelty acts and aversive childhood histories. In order to determine whether the high base rates of exposure to animal cruelty were unique to the offender sample, the authors carried out a follow up study on undergraduates. Overall, the findings indicated punitive childhood histories were linked to antisocial behaviours, but that exposure to animal cruelty was not related to antisocial behaviours or child maltreatment. The authors themselves recognise that university students are not representative of the general population. The difficulties in obtaining a sample from the general population are recognised. However,

it is still the opinion of this author that the above study would have benefited from a general population control group, as only then would it be possible to say that the results can be generalised to large numbers of people. The above study is an example of a plethora of research papers in this area that have used prison populations without an appropriate control group (Hensley & Tallichet, 2005a; Hensley & Tallichet, 2005b; Hensley & Tallichet, 2008;  Hensley & Tallichet, 2009; Hensley, Tallichet & Dutkiewicz, 2009; Merz-Perez, Heide & Silverman, 2001; Tallichet & Hensley, 2004; Tallichet & Hensley, 2005; Tallichet & Hensley, 2009).

Limitations within the field of humane education have also been noted. Ascione (1997) argued that studies that have not pre-tested attitudes towards animals (see Vockell & Hodal, 1980) before the implementation of a humane education programme run the risk of concluding that their intervention failed when in fact, if appropriate pre-test and post-test measurements had been taken, different conclusions may have been reached. Vockell and Hodal (1980) themselves argue that their own results may have been influenced by experimenter bias. Though, arguably attempts were made to control for such bias, it is possible that findings were influenced.

Another important limitation of past research into humane education has been the inconsistencies in employing a control group. Past studies have not always used control groups to compare with experimental groups (see Mariti, et al., (2011) and Sprinkle (2008)). Despite often positive results in favour of the hypotheses, it is not safe to conclude an intervention has been successful when there is no control group available to compare with the experimental group. Linked to this, convenience samples are often another problem with such studies. Daly and Suggs (2010) have argued that one of the limitations of their study was directly related to the lack of a convenience

sample. Restrictive gate-keeping was argued to be the reason why a limited number of participants were employed, as are low response rates in those allowed to participate. This limitation is not due to any fault of the researchers, but may have an effect on the results of a study. Suggestions as to how future research can build on the limitations of past research will be outlined in the next chapters.

*1.8. Conclusion*

In conclusion, research into animal abuse can further the research into overall levels of violence and it's inhibition by the formation of altruism and empathy in child- and adulthood. There is a need for new research in the placement of responsibility after acts of animal abuse have occurred. It is currently unclear if people who abuse animals assign responsibility for their actions to the animal in question, or to themselves; while abusers often blame the victim, the victim may inadvertently act provocatively and so invite aggression. For instance, a teething puppy may chew everything from a table to chairs, and nip at its owner's ankles and feet at every possible chance. By some, this may be seen as the initial stages of aggression. More representative research would benefit the various animal shelters and organisations for the protection of animals by providing a more concrete basis for their work. The previous literature has concentrated mostly in the USA and the UK. A new questionnaire comparing various aspects of animal abuse and animal welfare in the UK and extending this to Cyprus will be beneficial not only for the overall field, but also as an initial insight into the differences between these two countries.

Chapter 2: Development of a new measure of animal welfare

This first study seeks to operationalise animal welfare and examine how attitudes and behaviours relate to each other in a comparison between the UK and Cyprus.

*2.1. Attitudes to animals*

Further to what has been outlined previously, attitudes towards animals have been investigated alongside demographical factors, in the hope that individual differences influencing this construct differentiate over and above the arbitrary accidents of our demographics and surroundings. Gender differences have been a common focus of many researchers in their attempts to answer questions regarding differences in attitudes towards animals. A study in Norway found that when participants were questioned regarding their preferences for a wide range of animals, (including birds, squirrels, ducks, dogs, bats, mice and rats), females preferred popular and neutral species whereas males preferred the less popular animals (Bjerke & Østdahl, 2004). Gender differences are also manifest in investigations of grief following the loss of a pet; females often reported higher scores on measures of bonding and grief related to the loss of their animal companion (Brown, Richards, & Wilson, 1996; Planchon & Templer, 1996). This may be, however, a product of reporting practises particularly with the younger participants aged 12-17 years in Brown et al.'s study. The authors themselves also note limitations within the sample employed in this study; namely, that participants were recruited from one area, and do

not reflect the cultural diversity of the country in which this study was carried out (Brown et al., 1996).

Studies conducted more than twenty years ago have consistently argued that females report more positive attitudes to animals relative to males (Herzog, Betchart, & Pittman, 1991; Mathews & Herzog Jr., 1997). This trend has been reiterated in recent studies (Furnham, McManus, & Scott, 2003; Henry, 2009; Herzog, 2007), and extends to studies using children (Prokop, Kubiatko, & Fančovičová, 2008). Although limitations of such studies have been identified above, there can be little doubt as to females have more positive attitudes towards animals. It is hoped that the present research will clarify whether such differences are present in the current sample, and whether other demographical variables, such as age, are implicated once individual factors are also considered.

*2.2. Animal abuse and demographics*

Gender predicts the abuse of animals, as males commit more animal abuse than females (Flynn, 1999; Miller & Knutson, 1997). Raupp (1999) highlighted gender differences in the treatment of animals by stating that the relationships males have with pets are more vulnerable to damage during their childhood. A further interesting conclusion drawn from the above study is that the potential to mistreat pets can co-exist with a strong emotional attachment to the animal. The author does note, however, that asking adults to retrospectively report on their childhood may produce inaccurate results due to hindsight bias, and so the findings should be interpreted only as recollections of an adult. The co-occurrence of mistreatment and strong emotional binds is also evident in human relationships. Bond and Bond (2004) found that in their sample of 43 heterosexual couples recruited from couple and family therapy treatment

facilities due to dysfunctional relationships, females mostly displayed anxious attachment styles whereas males were mostly dismissive and secure. Their analyses showed that, along with poor problem solving and communication skills, couples who had this configuration of relationship attachment patterns were nine times more likely to experience violence in their relationship. Thus couples who are emotionally attached but experience other problems may still suffer from domestic violence.

Differences in socialisation between urban and rural areas have also been shown to differentiate pathways into animal abuse (Taylor & Signal, 2006). Prison inmates from a rural background learned to be cruel to animals by simply watching family members, whereas inmates from an urban background learned from watching both friends and family (Taylor & Signal, 2006). One possible reason for this finding is that relationships with family members are more important in less populated places, and similarly, people from urban places have more friends than those from rural places. Furthermore, rural inmates chose to abuse cats, whereas urban inmates chose dogs, cats and wild animals. Inmates who grew up in an urban background were four times more likely to commit animal abuse for amusement than inmates who had grown up in a rural setting. This may be because people from a rural background have more contact with animals and are taught to respect them, with the exception of cats perhaps as they are often considered independent beings with the ability to look after themselves (Hensley & Tallichet, 2005). However, as the sample consisted only of inmates and their self-reported data, it may be that the results here do not generalise to the general population.

Differences in animal abuse are influenced by factors including location, ethnicity, levels of education, and income (Vaughn et al., 2009). A recent study examining cultural differences in childhood animal abuse found younger Japanese,

Australian and Malaysian boys were more likely to be cruel to animals than younger

girls in each country (Mellor et al., 2009). This study supports the view that boys are

generally more inclined to commit animal abuse than girls, and also that age also

contributes to animal abuse; younger children had higher rates of animal abuse than

older children. The authors do not offer explanations as to why boys abuse animals

more than girls, although one might speculate that reasons for this difference include

boys being allowed more freedom than girls, girls are more successfully deterred from

bad behaviour through punishment than are boys, or that girls are more empathic than

boys (Litvack-Miller, McDougall & Romney, 1997; Menesini, Eslea, Smith, Genta,

Giannetti & Costabile, 1997). It seems that gender differences in acts of animal abuse

appear to disappear as children become older, perhaps due to boys conforming to social

expectations, or by their learning to express their aggression in other ways as they

mature.  The possibility remains that culture may not have a genuine influence on the

abuse of animals relative to other factors. Mellor et al.'s study indicated that countries

with differing legal, religious and social outlooks do not seem to be influenced by these

factors when one considers animal abuse committed by children. It would appear that

further research is needed to determine whether culture does indeed have an effect on

the abuse of animals. Harming animals is unarguably culturally ambiguous. What

constitutes animal abuse in one culture may not necessarily be considered abuse in

another culture (for instance, bear baiting remains legal in Alaska whereas this activity

was made illegal in the UK in 1835), and so differences between each culture and

society must not be ignored (Patterson-Kane & Piper, 2009).

*2.3. Animal abuse and interpersonal violence*

A number of researchers have found an association between animal abuse and more general interpersonal violence. In a study of domestic violence, Volant, Johnson, Gullone, and Coleman (2008) found a significantly higher rate of pet abuse and threats of pet abuse by aggressive partners compared to a control group. Furthermore, children from these violent families witnessed and committed significantly more acts of animal abuse than control groups. One theory to explain this phenomenon is that children abusing animals simply manifest a symptom of conduct disorder that will later in life manifest in further problems with interpersonal relationships leading to violence towards friends, family and/ or companion animals. Among children with diagnosed conduct disorder, their more hidden symptoms (such as sly animal or interpersonal cruelty) improved prediction of future antisocial personality disorder (Lahey, Loeber, Burke & Applegate, 2005). Alternatively, children who experiment with animal abuse may later regard this as an unfortunate and regrettable phase in their emotional, intellectual and social development (McPhedran, 2009). An increased understanding of antisocial behaviour and human unpleasantness is further gained by investigating these qualities beyond offender populations. Offender populations often produce confounded associations due to concurrent psychopathology and low IQ, while the latter qualities can be seen in non-offenders too (Egan, 2011). Research covering situational and individual characteristics of antisocial behaviours could also benefit the various animal shelters and organisations for the protection of animals by providing a more concrete basis for their work.

The previous literature on this topic has concentrated mostly on populations from the USA. This study presents a new questionnaire developed to assess animal welfare in the UK, cross-validated against Cyprus, so potentially providing generality

of application across two European countries.  Cyprus has been chosen for comparison with the UK regarding animal welfare for a number of reasons. Primarily and most significantly, only one study has previously examined personality in Cyprus, a construct that will feature greatly in the thesis. Furthermore, despite the differences in geography, size, population and culture, Cyprus and the UK share a common history. Britain had taken over the island from the Ottomans in 1878 and formally annexed Cyprus in 1914. Cyprus officially became a British colony, and only gained independence in 1960. To date, Britain maintains two military bases on the island (BBC News, 2011). As with other colonies of the British Empire, Cyprus retains characteristics of the British culture ranging from the road network to the legal system, and this includes an affection for animals, demonstrated by the high percentage of pet owners in both the UK and Cyprus; almost half of all the households in the UK (PFMA, 2011) and 86% of approximately 1,000 individuals in Cyprus (CVA, 2011) reported owning a pet. Studies such as the present one, and subsequent studies, may be able to expose similarities of the cultures as a result of their symbiosis, while at the same time highlighting their differences despite their common history.

<p style="text-align:center;">*2.4.* Method</p>

*2.4.1. Measures*

For the purpose of this study, a new pilot questionnaire investigating animal welfare was created. Following a review of the current literature into animal abuse and welfare, areas that were lacking information were identified. These areas were Attitudes towards animals; Active, Passive, Ambiguous Abuse; Function of abuse: To teach, For personal pleasure and gain, Control, Size of animal, and Neglect because of lack of time; Responsibility of actions: Responsibility on animals and Responsibility on

people. These areas were identified following the literature reviews in chapters 1 and 2 and were thought to be the most important areas a new measure of animal welfare should focus on. Cats, dogs, horses and donkeys were chosen for examination in the new measure and participants were instructed to focus their thinking on pets that were mammals as opposed to reptiles or fish. Reptiles and fish were not examined as different forms of care are involved with these types of pets. Furthermore, cats and dogs are the most common pets as cited in studies of animal ownership. Regarding horses and donkeys, it was believed that of non-domestic animals individuals would have the most contact with it would be horses for UK residents and donkeys for Cypriot residents. The United Kingdom has a long tradition of horse farming, horse racing, hunting using horses and horse riding as a sport or hobby. Cyprus, on the other hand, has a long history of using donkeys in manual labour. Other wild animals were not included in this questionnaire, or the thesis as a whole, as the topics within these research studies were directed more towards domestic animals. In addition, animal welfare for wild animals covers a wide range of topics not included here such as conservation, breeding, and research experimentation. These items were individually discussed and revised with the author's supervisor until they were conceptually satisfactory for pilot research. The newly developed questionnaire, along with demographic items, was given to a native Greek speaker to translate. The present author, who is a native Greek speaker, translated this Greek version back into English. There were no major differences between the two versions. Any differences that were present were discussed and resolved. If there were no exact matches in Greek for words or phrases, wording was used that conveyed the same meaning as in the English version.

As a way of testing whether the items and format of this new measure were easy to comprehend, a small pilot study was conducted. The Greek questionnaire was given to seven native Greek speakers to complete and provide comments or feedback on any issues they found to be problematic. The English version was given to five native English speakers and again they were asked to provide comments or feedback. As a result of this small pilot, one question was removed as it did not add to the usefulness of the questionnaire. Nine questions were modified in both versions of the questionnaires. Demographic questions were modified and more questions were added.

The final version of the pilot questionnaire consisted of 57 items on a 5-point Likert scale with value poles ranging from one (completely disagree) to five (completely agree), and was made up of five sections. These *a priori* sections were conceptualised as "Attitudes to Animals", "Active, Passive, Ambiguous Abuse", "Function of Abuse", and "Responsibility of Actions" (item example: "Dogs behave well only when they fear their owner"). Items were randomly ordered in the final version of the questionnaire. The questionnaire also included 16 questions gathering demographic information such as age, area of residence, and previous and current details of animal ownership. Following the demographic questions, participants were asked to provide a unique reference name for themselves using the name of their current pet and primary school. This method allows for persons to have a unique identifier, so that if they participate in the future, their data can be compared across sessions. Participants were not obligated to leave a reference name, and were assured that it would not be possible to identify individuals through this reference name. Please see Table 2.1. for the original 57 items presented in their groups. When given to the participants to complete, the order of the 57 items was randomised.

Table 2.1. *List of 57 items in pilot questionnaire in order of group*

| | Completely disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Completely agree |
|---|---|---|---|---|---|
| **Attitudes towards animals** | | | | | |
| 1. It is no one's business what I do with my pet. | 1 | 2 | 3 | 4 | 5 |
| 2. Animals have feelings just like people. | 1 | 2 | 3 | 4 | 5 |
| 3. People who hurt animals on purpose should be punished. | 1 | 2 | 3 | 4 | 5 |
| 4. I get upset when I hear of cases of animal abuse. | 1 | 2 | 3 | 4 | 5 |
| 5. Animal abuse is exaggerated. | 1 | 2 | 3 | 4 | 5 |
| 6. Pets should be treated as part of the family. | 1 | 2 | 3 | 4 | 5 |
| 7. Animals do not | 1 | 2 | 3 | 4 | 5 |

feel fear like people do.

8. People can be comforted by animals.  1  2  3  4  5

9. Horses and donkeys do not feel as much pain as smaller animals.  1  2  3  4  5

10. Horses and donkeys are good only for manual labour.  1  2  3  4  5

11. Kicking horses and donkeys with the heel of a shoe does not cause them any pain.  1  2  3  4  5

12. Cats are smart animals and will run away if they don't like how they are being treated.  1  2  3  4  5

13. Cats belong in  1  2  3  4  5

the streets and not in people's homes.

| | | | | |
|---|---|---|---|---|
| 14. Cats should be given as much attention as they seek. | 1 | 2 | 3 | 4 | 5 |
| 15. Dogs are by their nature vicious animals and need to be under our control at all times. | 1 | 2 | 3 | 4 | 5 |
| 16. Dogs behave only when they fear their owner. | 1 | 2 | 3 | 4 | 5 |
| 17. Sometimes dogs bark to annoy you. | 1 | 2 | 3 | 4 | 5 |
| 18. Dogs cannot show their affection for their owners. | 1 | 2 | 3 | 4 | 5 |

**Active, passive, ambiguous abuse**

| | | | | |
|---|---|---|---|---|
| 19. Hunting is acceptable if you eat | 1 | 2 | 3 | 4 | 5 |

the animals you have
killed.

20. Hunting makes
people feel very
powerful over
animals.          1          2          3          4          5

21. There is no need
to hunt since meat
can be bought from
the supermarket.   1          2          3          4          5

22. Animals should
not be hunted for
sport.             1          2          3          4          5

23. It is a waste to
hunt and kill animals
which you do not
use.               1          2          3          4          5

24. Pets can take
care of themselves
and do not need
humans to provide
constant care.     1          2          3          4          5

25. A pet should not
be left alone for    1          2          3          4          5

more than a few
hours.

26. Animals need to
be kept in
comfortable
conditions, just like
people. 1 2 3 4 5

27. Pets can clean
themselves and do
not need people to
clean them. 1 2 3 4 5

28. A pet's living
area needs to be
cleaned daily. 1 2 3 4 5

29. Pets can find 1 2 3 4 5
ways to feed
themselves when
their owner is away.

30. Pets can find
ways to keep
themselves busy. 1 2 3 4 5

31. Pets do not need
exercise on a regular
basis. 1 2 3 4 5

**To teach**

| | | | | | |
|---|---|---|---|---|---|
| 32. Animals should be punished when they do something wrong to teach them not to do it again. | 1 | 2 | 3 | 4 | 5 |
| 33. Animals can only learn to do what people want through punishment of wrong actions. | 1 | 2 | 3 | 4 | 5 |
| 34. A dog will learn more from being hit than instructed. | 1 | 2 | 3 | 4 | 5 |
| 35. Animals can learn to do what people want by being given treats and praise. | 1 | 2 | 3 | 4 | 5 |
| 36. Punishing a cat after it has scratched the carpet will teach | 1 | 2 | 3 | 4 | 5 |

it to not do it again.

**For personal**

**pleasure and gain**

| | | | | | |
|---|---|---|---|---|---|
| 37. The owners of an animal can do whatever they like with it. | 1 | 2 | 3 | 4 | 5 |
| 38. What people call animal abuse is actually playing. | 1 | 2 | 3 | 4 | 5 |
| 39. Releasing your anger on a pet is helpful. | 1 | 2 | 3 | 4 | 5 |

**Control**

| | | | | | |
|---|---|---|---|---|---|
| 40. It is okay to use a whip on a horse or donkey when you think it is doing something wrong. | 1 | 2 | 3 | 4 | 5 |
| 41. If you want your dog to be brave, you need to toughen it | 1 | 2 | 3 | 4 | 5 |

up.

42. If you want your
dog to behave, you
have to show it who
is in charge.           1           2           3           4           5

**Size of animal**

43. The bigger an
animal is the more
vicious it is.          1           2           3           4           5

44. The bigger an
animal is the harsher
you should treat it.    1           2           3           4           5

**Neglect because of
lack of time**

45. People should
not make time in
their daily routine to
care for their pets.
                        1           2           3           4           5

46. Pets can take
care of themselves
when their owners
are too
busy.                   1           2           3           4           5

| **Responsibility of actions** | | | | | |
|---|---|---|---|---|---|
| **Responsibility on animals** | | | | | |
| 47. Most of the time animals attack people for no reason. | 1 | 2 | 3 | 4 | 5 |
| 48. Animals would not get hurt if they didn't provoke people. | 1 | 2 | 3 | 4 | 5 |
| 49. When I hear my neighbours shouting at their dog I know it's because the dog has done something wrong. | 1 | 2 | 3 | 4 | 5 |
| 50. Using a whip for horses and donkeys is the only way to make them do what people want. | 1 | 2 | 3 | 4 | 5 |
| **Responsibility on people** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 51. One of the reasons dogs bark is because they are frightened. | 1 | 2 | 3 | 4 | 5 |
| 52. Dogs bite people only when they feel threatened. | 1 | 2 | 3 | 4 | 5 |
| 53. If an animal attacks someone, it is because that person probably provoked the animal. | 1 | 2 | 3 | 4 | 5 |
| 54. People should treat the animals in their care with kindness. | 1 | 2 | 3 | 4 | 5 |
| 55. It is up to the pet's owner to make sure the animal is healthy and happy. | 1 | 2 | 3 | 4 | 5 |
| 56. It is not the owner's fault when a dog attacks another person. | 1 | 2 | 3 | 4 | 5 |

| 57. A friendly dog is the result of a good owner. | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|

### 2.4.2. Procedure

Both versions of the questionnaire were made available online through an online questionnaire tool (Surveymonkey.com); printed versions were also available. People either completed the online version or the paper version. Both versions were identical in their content, and attempts were made to make them as similar as possible in their formatting. People living in Cyprus completed only the Greek version and people living in the UK completed only the English version.

For the internet versions, the link was forwarded to friends and family and they were asked to forward it on themselves. The link was also emailed to social groups and through Facebook via friends and members of groups. For the paper version, friends and family were also recruited. Participants were also approached at local and university libraries, cafes, and recreational gathering areas both in Cyprus and the UK.

Both the internet and paper versions provided a consent form where participants were asked if they agreed to participate in the study, and these consent forms were identical in their content. Participants were informed that their data would remain anonymous and that they had the right to withdraw up until the time they submitted their questionnaire to the researchers. Once they had completed the questionnaire, participants were provided with a debriefing form outlining all the details of the study

and providing contact details for the researchers and organisations they could turn to for help or advice (e.g., RSPCA).

Refusal rates could not be recorded due to the nature of the data collection process. The only relevant information regarding refusal rates can be provided by questionnaires that were left incomplete. Of the 672 individuals who started the Greek version of the questionnaire (both printed and online), only those who had completed all items in the questionnaire (not including demographics) were included in the final analysis. This amounted to 526 individuals, which points to a refusal rate of about 8% for the Greek version. For the English version (again both printed and online), 427 individuals started the questionnaire but data for the analysis was based on 343 individuals. The refusal rate for the English version was thus also about 8%. Across both populations, a total of 749 internet questionnaires were attempted. However, 563 of these were used in the final sample due to incomplete data. Similarly, of the 350 paper questionnaires that were attempted across both populations, 346 were used in the final sample. These indicate refusal rates of 8% and 1% respectively when examining the form of the questionnaire. It may be that, in the case of the paper versions, seeing the researcher and knowing the researcher was physically present was enough to urge the participants to complete the questionnaire in full.

*2.4.3. Ethical issues*

Due to the sensitive nature of the topic being investigated, ethical issues surrounding this research were considered in detail. The consent form clearly stated the names of the researchers, and the details of participation in this study. Participants were made aware that their participation was voluntary and that they were free to remove their data at any point up until the questionnaire was submitted to the researcher either

in person or electronically, without any reason. On the debriefing form, participants were assured that their data was anonymous and contact information for the researchers was provided. Contact details were also provided for animal welfare organisations both in the UK and Cyprus, in case participants needed more information or felt affected by the issues raised in the questions.

### 2.4.4. Participants

### 2.4.4.1. Cypriot sample

The sample from Cyprus consisted of 151 males (29%) and 373 females (71%). Two participants did not disclose their gender. The age range was 13-66 years old ($M = 28.6$, $SD = 9.74$). Of these, 194 (37%) completed the paper version whereas 332 (63%) people completed the online version. Approximately 79% ($N = 417$) of the participants lived in urban areas, whereas about 15% ($N = 78$) lived in rural areas. About 6% of the sample ($N = 31$) did not report their area of residence. The minimum number of years spent in education was six and the maximum was 30 ($M = 15.29$, $SD = 3.24$). Eleven individuals reported 25 years or above in education. One of these individuals reported an age of 28 and 28 years in education and so their response for the years in education was cleared and allowed to remain as a missing value. It is not clear whether the remaining responses are true years in education or a false response to the question. These high levels of education are thus approached with caution. Forty one individuals did not report their level of education. The sample also consisted of 20 individuals (4%) who declared themselves as hunters compared to 491 individuals (93%) who were non-hunters. Fifteen people did not disclose this information. Nine people (2%) had previously been convicted of a crime compared to 447 people (85%) with no previous convictions. Seventy people refused to provide this information. Finally, the Cypriot

sample consisted of 476 people (90%) who either currently own an animal, or have previously owned an animal. Thirty-nine people (7%) did not currently own an animal and had never owned an animal; 11 people did not provide data on this question.

*2.4.4.2. British sample*

The UK sample comprised 103 males (30%) and 240 females (70%). The age range was 12-89 years old ($M = 30.65$, $SD = 13.61$). The paper version was completed by 152 (44%) people, whereas 191 (56%) people completed the online version. Approximately 76% ($N = 259$) of the participants lived in urban areas, whereas about 23% ($N = 80$) lived in rural areas. Four people did not report their area of residence. Participants had a minimum of seven years spent in education; the maximum was 28 ($M = 16.09$, $SD = 3.18$). One person did not disclose their level of education. As in the Cypriot sample above, five individuals reported an education level over 25 years. The responses were allowed to remain in the data; however, the authors remain cautious as to the influence on the analyses. The sample also had 17 people (5%) who participated in hunting compared to 324 (95%) who did not. Two people did not disclose this information. Six people (2%) had previously been convicted of a crime whereas 334 people (97%) had no previous convictions. Three people refused to provide this information. Finally, the British sample consisted of 283 people (83%) who either currently owned an animal, or had previously owned an animal. Fifty-nine people (17%) did not currently own or have ever owned an animal. One person did not provide this data.

An independent samples t-test indicated that UK residents ($M=30.65$, $SE=.74$) were significantly older than Cypriot residents ($M=28.60$, $SE=.43$; $t(567.41)=2.41$, $p<.05$). This difference represents a small effect size $r = .10$. UK residents ($M=16.09$,

*SE*=.17) were also significantly more educated than Cypriot residents (*M*=15.29, *SE*=.15; t(825)=3.509, *p*<.001). Again this represents a small effect size r = .12.

Chi-square tests indicated significantly more urban residents in Cyprus and the UK (χ(1)=8.056, *p*<.01; small effect size Cramer's V = -.098, *p*<.01), significantly more reported animal ownership than non-ownership in Cyprus and the UK (χ(1)=18.274, *p*<.001; small effect size Cramer's V = .146, *p*<.001), and significantly more Internet versions than paper version in both Cyprus and the UK (χ(1)=4.787, *p*<.05; small effect size Cramer's V = .074, *p*<.05). There were no associations between country of residence and gender (χ(1)=.147, *p*>.05), convictions (χ(1)=.046, *p*>.05), or hunting (χ(1)=.565, *p*>.05).

*2.4.4.3. Internet and paper version*

The sample for the Internet version of the questionnaire consisted of 191 (37%) UK residents and 332 (64%) Cypriot residents, (112 males (21%) and 411 females (79%)). The age range was 12-76 years old (*M* = 28.74, *SD* = 10.04). Approximately 82% (*N* =426) of the participants lived in urban areas, whereas about 19% (*N* = 97) lived in rural settings. The minimum number of years spent in education was six and the maximum 30 (*M* = 15.92, *SD* = 3.42). One person did not disclose their level of education. The sample also consisted of 12 people (2%) who participated in hunting compared to 511 people (98%) who did not. Nine people (2%) had previously been convicted of a crime, whereas 514 people (98%) had no previous convictions. Finally, the Internet sample consisted of 503 people (96%) who either currently owned an animal, or have previously owned an animal, as compared to 20 people (4%) who did not currently own an animal and had never owned an animal.

The sample for the paper version consisted of 152 (44%) UK residents and 194 (56%) Cypriot residents, and 142 males (41%) and 202 females (58%). Two participants did not report their gender. The age range was 13-89 years old ($M = 30.42$, $SD = 13.27$). Approximately 72% ($N = 250$) of the participants lived in urban areas, whereas about 18% ($N = 61$) lived in rural areas. Thirty-five people did not report their area of residence. The minimum number of years spent in education was eight and the maximum was 26 ($M = 15.10$, $SD = 2.84$). Forty-one people did not report their years of education. The sample consisted of 25 people (7%) who participated in hunting and 304 people (88%) who did not participate in hunting. Seventeen individuals did not report whether they participated in hunting. Six people (2%) had previously been convicted of a crime and 267 people (77%) had no previous convictions. Seventy-three individuals did not state whether or not they had convictions. Finally, the Internet sample consisted of 257 people (74%) who either currently owned an animal, or had previously owned an animal. Seventy-nine people (23%) did not currently own an animal and had never owned an animal. Ten individuals did not provide a response to this question.

An independent samples t-test found no significant age differences between those who completed the paper version ($M=30.42$, $SE=.71$) and those who completed the internet version ($M=28.74$, $SE=.44$; $t(598.84)=2.01$, $p=.05$). Those who completed the internet version ($M=15.92$, $SE=.15$) were significantly more educated than those who completed the paper version ($M=15.10$, $SE=.16$; $t(825)=-3.52$, $p<.001$). This difference presented as a small effect size r=.12.

Chi-square tests also indicated significantly more females in both the Internet and paper versions ($\chi(1)=39.530$, $p<.001$; small effect size Cramer's V = .214, $p<.001$),

significantly more reported animal ownership than non-ownership in both versions ($\chi$(1)=77.764, p<.001; small effect size Cramer's V = .301, *p*<.001), and significantly less hunters in both versions ($\chi$(1)=13.679, p<.001; small effect size Cramer's V=.127, *p*<.001). There were no significant associations between the version completed, area of residence ($\chi$(1)=0.145, *p*>.05) and convictions ($\chi$(1)=.221, *p*>.05).

## *2.5.* Results

### *2.5.1. Exploratory Factor Analysis*

The factor structure of the original 57 items was explored through exploratory factor analysis (EFA) using a maximum likelihood extraction method. Maximum likelihood was chosen over other methods as it allows for generalisations to be made from the sample to the general population. Seeing as the purpose of this analysis was to create a questionnaire to be used for the general population, maximum likelihood seemed the most appropriate method for factor analysis. Varimax, an orthogonal rotation method, was chosen for the analysis of the factors as it was desirable to minimise the complexity of the components seeing as this was an entirely new measure of animal welfare with sub-topics that had never been previously combined. Varimax, as opposed to Oblimin which is an oblique rotation method, maximises the variance of loadings. This results in high factor loadings being made higher, and low factor loadings being made lower leading to an easily interpretable output. Furthermore, seeing as this was still an exploratory analysis it was not known whether the sub-components of the scale would correlate and so necessitate an analysis using an oblique rotation.

Using participants in the combined UK and Cyprus sample who had completed the Internet version of the questionnaire produced a sample of 523 participants in the analysis. This method was used as it allowed the pooling of the sample from both countries, to retain a large number of participants for the EFA, and reserve an additional number of participants from the paper version for the subsequent confirmatory factor analysis, which could operate as a cross-validation of the model. The initial EFA had a ratio of nine participants per item, which is an appropriate ratio while taking into account that the sample is also large (greater than 300) (Tabachnick & Fidell, 2007). The Kaiser-Meyer-Olkin (KMO) measure was examined to determine whether factors are really present in the correlation matrix or whether there are chance correlations between variables. The KMO in this analysis was .868, which was greater than the recommended value of .60 (Tabachnick & Fidell, 2007). Bartlett's test of sphericity $\chi^2$ (1596) = 8270.223, $p < .001$ indicated relationships between the variables are significant.

After rotation, 13 factors were identified with eigenvalues greater than one. In order to ease interpretation of the factor structure and determine the appropriate number of factors to retain, a parallel analysis was performed. Parallel analysis is argued to be more accurate than observing the scree plot or Kaiser's mineigen greater than 1 criterion for determining how many factors to retain (Hayton, Allen & Scarpello, 2004). The parallel analysis indicated that factors with an eigenvalue of greater than 1.72 should be retained, so the factor structure was re-analysed using this criterion. Five factors had eigenvalues over the specified criterion of 1.72; however, an examination of the scree plot revealed a slight inflexion between the second and third factor.

Furthermore, the last three factors accounted for less than 5% of the variance each, and so it was decided to proceed with a two-factor solution.

After deleting the 41 items that did not load more than .40 on any factors, and those items that constituted factors three to five, the factor structure was again explored specifying a two-factor solution. The analysis indicated two items that did not load highly (above .40) on any factor, so were removed and the structure re- analysed. Reliability analysis of the second factor indicated that Cronbach's α would increase from .255 to .658 if one item ("Hunting is acceptable if you eat the animals you have killed") was deleted. This item was removed, and the factor structure was reanalysed. It was found that the final two factors accounted for 34% of the total variance. All 13 items had factor loadings of .419 or greater. Four of the items clustered on the second component were part of the conceptualised "Attitudes to animals" category. Three items from across the two components were from the "Active, passive, ambiguous abuse" category, and the remaining items from the "Function of abuse" category. Although the items in the pilot questionnaire were conceptualised in specific groups, it would appear that they reduced to two broad concepts. Table 2.2 shows the factor loadings of each item after rotation. The items that cluster on the first component represent negative attitudes towards animals and the items that cluster on the second component represent positive attitudes towards animals. The Negative Attitudes factor includes eight items relating to the harsh ways animals can be treated and negative beliefs about animals. The Positive Attitudes factor includes five items relating to positive beliefs about animals. Higher scores on the Negative Attitudes subscale indicate more negative feelings towards animals. Higher scores on the Positive

Attitudes subscale indicate more positive feelings towards animals. The final scale was named to the "Zalaf Animal Welfare Scale" (ZAWS). This final scale is in Appendix B.

Table 2.3. also shows factor loadings of items loading highly on two sub-components following an oblique rotation. This analysis was carried out simply for informative purposes and the analysis below will proceed with the items in Table 2.2. The items loading on component 1 following the oblique rotation are almost identical to those of the negative attitudes component of the ZAWS. The second component has items related to the care of animals. Although these items are not the same as those in the positive attitudes component of the ZAWS, they seem to be reflecting a similar underlying concept despite reflecting negative beliefs as opposed to positive beliefs.

Table 2.2. *Summary of exploratory factor analysis results for the animal welfare questionnaire (N = 523)*

| | Rotated Factor Loadings | |
|---|---|---|
| Item | Negative attitudes | Positive Attitudes |
| The bigger an animal is the harsher you should treat it. | **.81** | -.12 |
| The bigger an animal is the more vicious it is. | **.72** | -.09 |
| Releasing your anger on a pet is helpful. | **.57** | -.18 |
| The owners of an animal can do whatever they like with it. | **.55** | -.16 |
| A dog will learn more from being hit than instructed. | **.47** | -.28 |
| What people call animal abuse is actually playing. | **.43** | -.17 |
| Dogs cannot show their affection for their owners. | **.42** | -.09 |
| Dogs behave only when they fear their owner. | **.42** | -.19 |
| Pets should be treated as part of the family. | -.33 | **.66** |
| Animals have feelings just like people. | -.11 | **.55** |
| Animals need to be kept in comfortable conditions, just like people. | -.28 | **.51** |
| A pet's living area needs to be cleaned daily. | -.09 | **.48** |
| There is no need to hunt since meat can be bought from the supermarket. | -.06 | **.44** |
| Eigenvalues | 2.77 | 1.65 |
| % of variance | 21.27 | 12.70 |
| α | .79 | .66 |

Table 2.3. *Summary of exploratory factor analysis results for the animal welfare questionnaire using oblimin rotation (N = 523)*

| | Rotated Factor Loadings | |
| --- | --- | --- |
| Item | Component 1 | Component 2 |
| The bigger an animal is the harsher you should treat it. | **.88** | -.08 |
| The bigger an animal is the more vicious it is. | **.70** | .04 |
| Releasing your anger on a pet is helpful. | **.60** | .01 |
| The owners of an animal can do whatever they like with it. | **.47** | .21 |
| Pets should be treated as part of the family. | **-.46** | .02 |
| Dogs cannot show their affection for their owners. | **.42** | -.03 |
| Pets can take care of themselves and do not need humans to provide constant care. | .02 | **.74** |
| Pets can take care of themselves when their owners are too busy. | -.00 | **.72** |
| Pets can find ways to feed themselves when their owner is away. | .12 | **.54** |
| Pets can clean themselves and do not need people to clean them. | -.01 | **.51** |
| Pets can find ways to keep themselves busy. | -.06 | **.49** |
| Eigenvalues | 2.98 | 1.24 |
| % of variance | 27.08 | 11.23 |
| α | .75 | .74 |

## 2.5.2. Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was conducted on the 13 items of the final

EFA model. Using AMOS for SPSS (Arbuckle & Wothke, 2003), the CFA was carried

out using maximum likelihood. The hypothesised model is presented in Figure 2.1

where circles represent latent variables and rectangles represent measured variables.

The absence of a line connecting variables means that there is no hypothesised direct

effect. Following reconsideration of the two factor model derived from the EFA, a

single factor model was tested. This model consisted of a single positive attitudes factor

made up of the positive attitudes factor and reversed negative attitudes factor found in

the EFA. The entire sample was used, which consisted of 523 participants who had

conducted the internet version and 346 participants who had completed the paper

version. This resulted in a total sample of 869 participants that were included in the

CFA analysis. A minimum sample size of 100 and ratio of five participants to number

of items were met (Worthington & Whittaker, 2006). There were no missing data.

Figure 2.1 represents the hypothesised model and the relationships between the

variables, with only significant pathways included. The pathways have standardised

coefficients beside them. All covariances were added based on correlations between the

items, and covariances are significant at $p<.001$. Due to the length of the some of the

questions, only the question numbers have been included on the model. Please see the

notes below the figure for the question names.
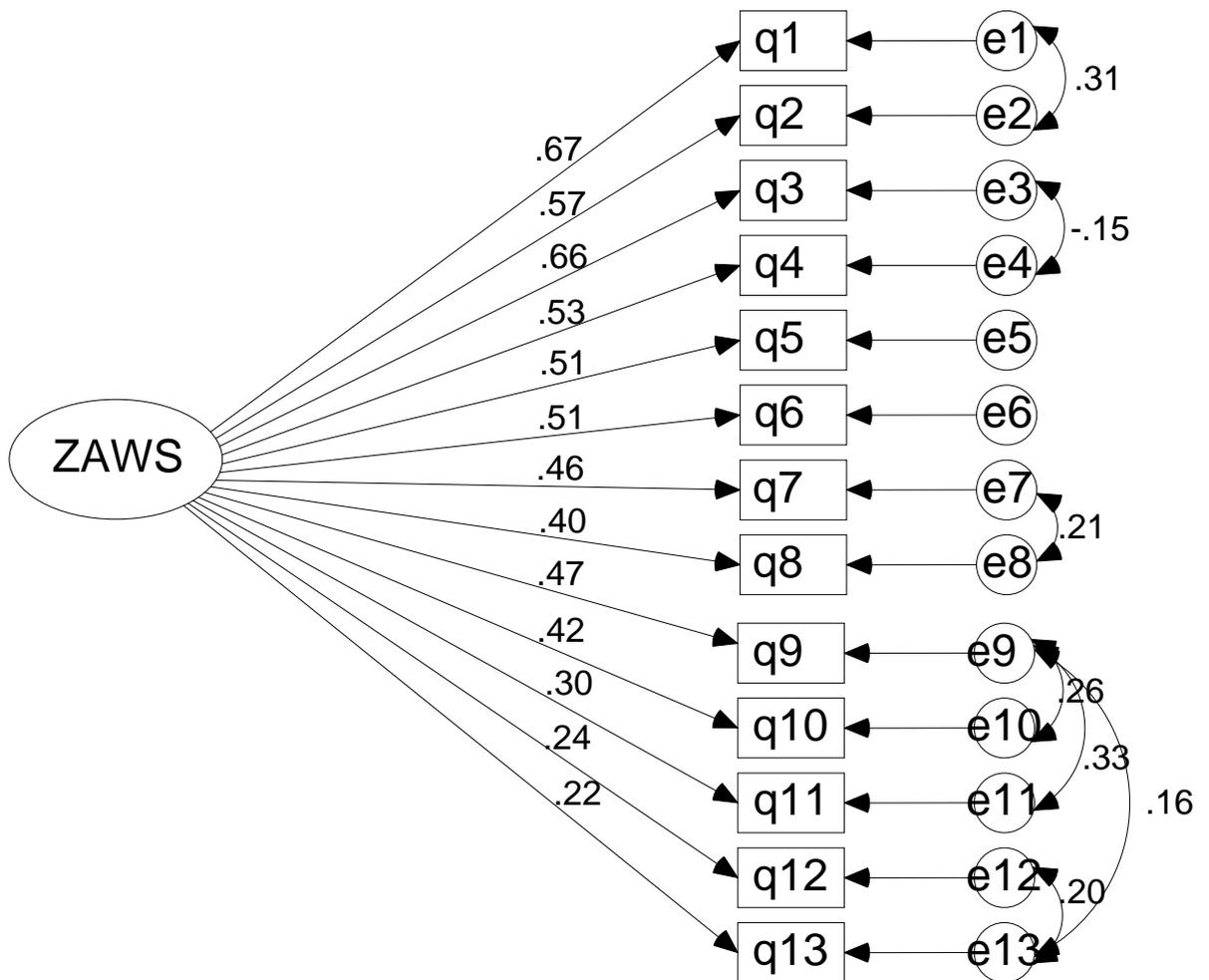
Fig. 2.1. Structural equation model showing the factor structure of the attitudes towards animal scale.

Note: q1 'The bigger an animal is the harsher you should treat it'; q2 'The bigger an animal is the more vicious it is'; q3 'A dog will learn more from being hit than instructed'; q4 'Releasing your anger on a pet is helpful'; q5 'The owners of an animal can do whatever they like with it'; q6 'What people call animal abuse is actually playing'; q7 'Dogs behave only when they fear their owner'; q8 'Dogs cannot show their affection for their owners'; q9 'Pets should be treated as part of the family'; q10 'Animals need to be kept in comfortable conditions, just like people'; q11 'Animals have feelings just like people'; q12 'A pet's living area needs to be cleaned daily'; q13 'There is no need to hunt since meat can be bought from the supermarket'.

Five fit indices were calculated to test the fit of the model. These were the chi-square, which tests the overall fit of the model; the Adjusted Goodness of Fit Index

(AGFI), which measures the amount of variance and covariance while taking into account the degrees of freedom; the Root Mean Square Error of Approximation (RMSEA), which takes into account the error of approximation in a population; and finally the CFI (Comparative Fit Index), which compares the hypothesised model to the independent model. For all subsequent analyses in this thesis, a combination of these fit indices will be reported along with the TLI (Tucker Lewis Index), which serves a similar function to the CFI.

Bentler and Bonett (1980) argue that the chi-square test should be non-significant and fit indices should be greater than .95, or in the case of the RMSEA, at or less than .05 (Hu & Bentler, 1999). This model showed relatively good fit to the data. The chi-square test was $\chi^2 = 214.218$, df= 58, $p<.001$. CMIN was calculated at 3.69 indicating a good model fit relative to the large sample size. The following indices were: AGFI = .940; RMSEA = .056; CFI = .932. All indexes, apart from the chi-square test, indicate that the model fits relatively well to the data. As argued by Bentler and Bonett (1980), most models with large sample sizes would have to be rejected due to the influence of the sample size on this test. Therefore, it may be that the chi-square significance of this model is due to the sample size and not the adequacy of the model to fit the data.

### 2.5.3. CFA of ZAWS in the Cypriot sample

As a further measure of reliability, CFA was carried out for each country separately.  As above, this model showed relatively good fit to the data. The chi-square test was $\chi^2 = 111.669$, df= 59, $p<.001$. CMIN was calculated at 1.89 indicating a good model fit relative to the large sample size. The following indices were: AGFI = .952;

74

RMSEA = .041; CFI = .938. Figure 2.2 indicates the CFA in the Cypriot population.

Item numbers refer to the same questions as in Figure 1 and have not been added here.
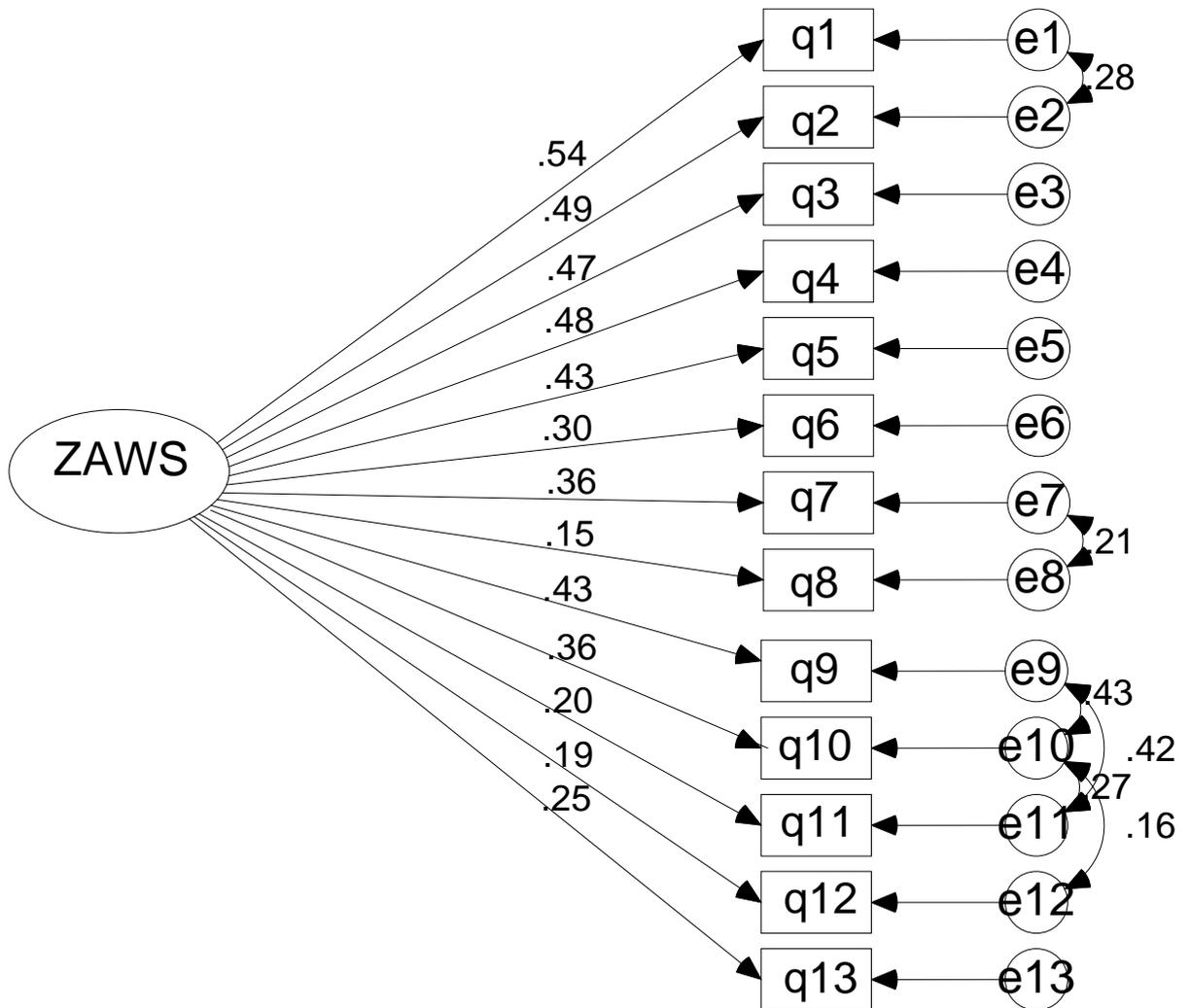


Fig. 2.2. Structural equation model showing the factor structure of the ZAWS in the Cypriot sample.

## 2.5.4. CFA of ZAWS in the UK sample

This model showed less fit to the data than the two models above, but is still at acceptable levels. The chi-square test was $\chi^2 = 169.655$, df= 60, $p<.001$; CMIN=2.83. The following indices were: AGFI = .889; RMSEA = .073; CFI = .917.
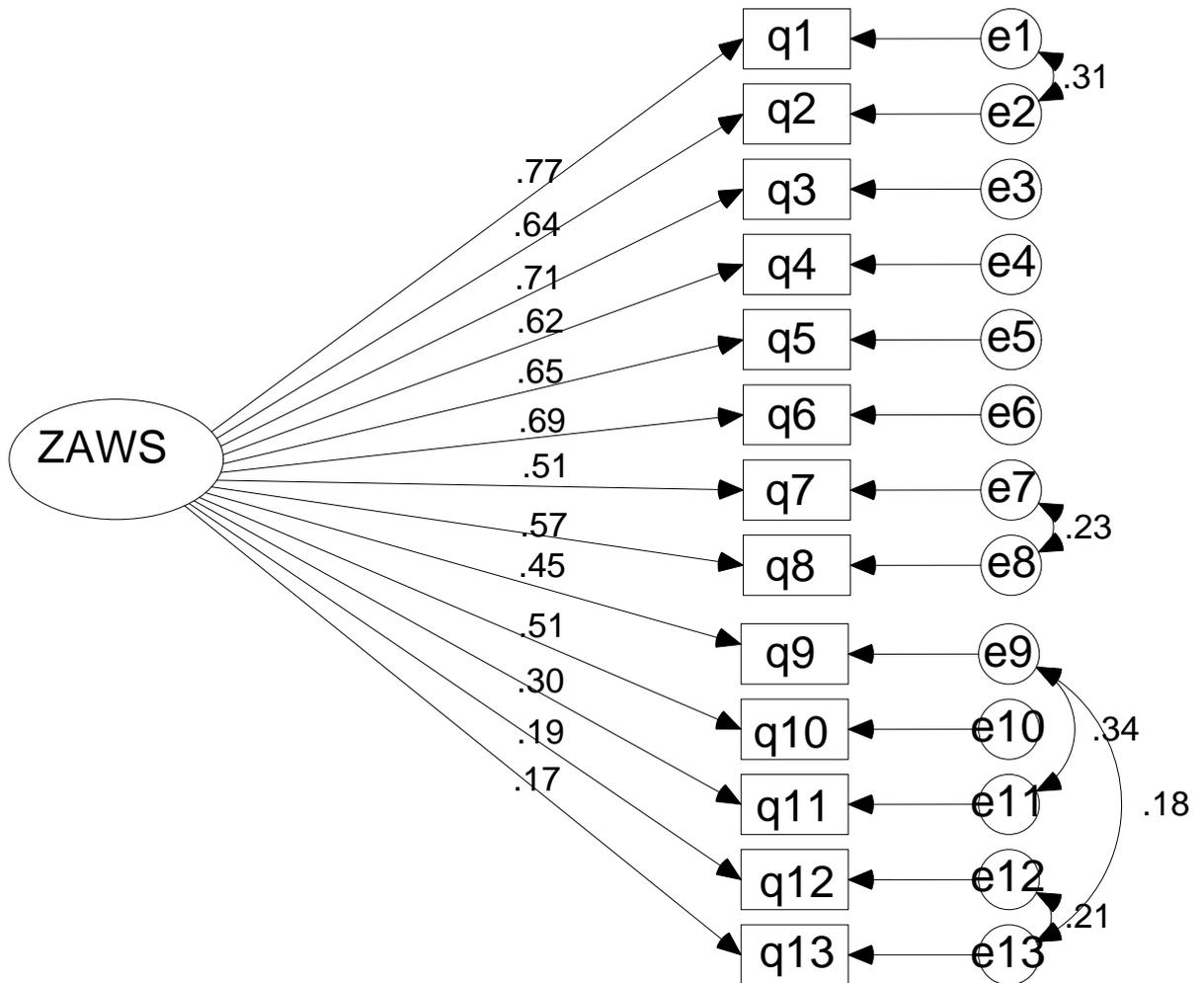
Fig. 2.3. Structural equation model showing the factor structure of the ZAWS in the UK sample.

*2.5.5. Differences between demographics and attitudes towards animals*

An analysis was carried out on the combined data from Cyprus and the UK in order to determine whether any differences are present in attitudes between the demographical groups. This was carried out simply as an initial exploratory analysis. The combined data set that was used in the CFA of the ZAWS was also used for this analysis. The demographical information used for this analysis was age, gender, education, area (urban and rural), country of residence and the form of the

questionnaire (internet and paper). Covariances were included between the variables based on correlations. A few missing values were present for some demographical information constructs. These were retained, but accounted for in Amos through the use of the means and intercepts estimation option. Due to the lack of clear hypotheses regarding the direction of the relationships, and the purely investigative nature of this final analysis in Amos, only relationships with significance values of below .001 were allowed to remain in the model.

Positive attitudes to animals as measured by the ZAWS were entered as an observed outcome variable. Age, gender, education, area, country and form were entered as observed predictor variables. However, age, education and area were then removed from the model, as they did not provide a significant contribution to the model's adequacy.

The model indicated that females (coded 1 for males and 2 for females), people living in Cyprus (coded 1 for UK and 2 for Cyprus) and those who completed the internet form of the questionnaire (coded 1 for paper and 2 for internet), on average, have more positive attitudes towards animals. Please see figure 2.4 below for beta coefficient values of each path.
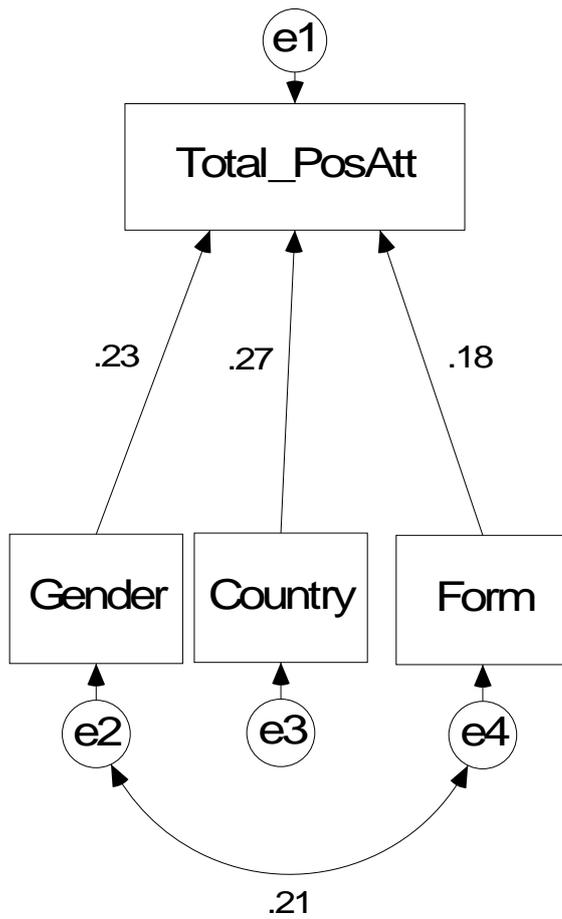
Fig. 2.4. Path analysis showing the relationships between demographic variables and positive attitudes towards animals.

This model showed good fit to the data. The chi-square test was $\chi^2 = 4.808$, $p>.05$. The following indices were: RMSEA = .040; CFI = .987. All indices indicate that the model fits well to the data.

## *2.6.* Discussion

The purpose of this study was to create a new measure of animal welfare for the populations of Cyprus and the UK. EFA and CFA were conducted to develop and assess the factor structure of the new scale. This analysis indicated that the ZAWS

measured two aspects of attitudes towards animals; Positive attitudes and Negative attitudes. The Negative attitudes subscale was subsequently reversed, producing a single Positive attitudes to animals subscale. Analyses indicated good reliabilities for the measure and the fit indices from the CFA indicated that a single factor solution fits the data well. Subsequent analyses indicated that females, people living in Cyprus and those who completed the internet form of the questionnaire, on average, have more positive attitudes towards animals.

Education was not a significant influence on the ZAWS. It may not have been a significant variable in the model because of the phrasing of the question. As seen above, there were inconsistencies with the responses of this question. Participants may have misinterpreted the question and so responded in various ways. As a solution to this problem, the question was rephrased for use in future studies using the ZAWS so as to provide participants with options they can choose, rather than leaving the question open-ended. In terms of age, it may be simply be that there are no age differences in attitudes towards animals in this sample, perhaps because of breadth of sampling compared to other studies of this kind.

These results indirectly support previous work that shows gender differences in the treatment of animals favouring women (Flynn, 1999; Miller & Knutson, 1997; Raupp, 1999). Previous research has indicated that males tend to abuse animals more than females. Our results indirectly support this conclusion and suggest that if women have more positive attitudes towards animals than men, then it follows that their treatment towards animals may be better. Previous studies have not offered concrete justifications for the gender differences in the treatment of animals, but to re-iterate a point made previously, this gender difference may come about due to the fact that boys

are allowed more freedom than girls, girls are more successfully deterred from bad behaviour through punishment than are boys or increased levels of empathy in girls. Alternatively, it may be that males and females (regardless of age) do not differ in the way they treat or consider animals but rather differ in the way they report their actions and thoughts. Females may feel more embarrassment about reporting negative thoughts or bad behaviour towards animals and so it would appear that males express more negative attitudes and abuse animals more often when behaviourally this is not the case. Reasons for the gender differences in attitudes towards animals are not within the scope of the current study but this is an area that could be examined in future work.

People living in Cyprus have more positive attitudes towards animals, which indirectly supports the conclusion by Hensley & Tallichet (2005a). Cyprus is a smaller country than the UK, more rural, and developed far later than the UK so it may be that people in Cyprus generally have had more contact with animals and so have better attitudes. As argued in an earlier section, people in rural areas may have more positive attitudes towards animals because they have had more contact with them, and were taught to respect them (Hensley & Tallichet, 2005a). Specific differences between Cyprus and the UK in terms of attitudes towards animals are another interesting area to focus on for future research. It is hoped that the present study has provided the foundation for such research by providing a new measure that can be used effectively in both countries.

In terms of the positive attitudes shown by those who completed the internet version of the questionnaire, no theory-based justification can be provided. Looking at the demographics of the sample that completed the internet version, there were mostly people from urban areas, and a far larger percentage of people were from Cyprus relative to the UK. Conversely in the sample of individuals who completed the paper

version, there were more people from urban areas and from the UK, rather than rural areas and Cyprus. It may be this difference between the two samples that completed the paper and internet version of the ZAWS that is the deciding factor; the sample that completed the internet version consisted mostly of Cypriot residents and so on average displayed more positive attitudes.

A limiting factor of the study was the method of data collection; opportunistic sampling. The advantages of this method are that, since there are no restrictions on the sample being obtained, a large number of people can be recruited in a relatively smaller timeframe. However, by allowing this type of sampling, it follows that some groups may not be fully represented. For example, in this sample there is an over-representation of females and people in younger age groups. Furthermore, using an opportunistic sampling method in an Internet-based study means that younger people will have more opportunity to complete the questionnaire. Furthermore, individuals who do not have internet access typically have lower socioeconomic statuses and so are under-represented in the sample. An attempt was made to control for the effects of an internet-based study by collecting data using paper questionnaires. This method was successful in terms of recruiting people from older age groups. However, using paper questionnaires is also time-consuming and costly, and so not as appropriate for studies under time and money constraints. Using paper questionnaires alongside internet-based data collection is successful when time and money are not a serious factor to consider. Using these two methods of data collection in conjunction are highly recommended when time and money are adequately accounted for.

Linked to the above, the representativeness of the sample in terms of the distribution of demographic groups was a limiting factor of this study. As shown from the data above, there was an uneven distribution of age groups and both genders were

81

not represented equally. The unrepresentativeness of the sample is not believed to have been detrimental to carrying out this study, as data analysis indicated a reliable model for the ZAWS and successful analyses of differences among demographical variables. Choosing a sample that is representative of the entire population under question is important, however, and something that must be taken into account for future studies.

Future research could incorporate the 13-item unidimensional ZAWS alongside an observation of the behaviours people show when interacting with animals. This research would examine attitudes people have towards animals and then how these attitudes influence the way they treat animals in their care or animals they come into contact with. Such research would inform on issues of responsibility towards animals and their wellbeing. Furthermore, on a theoretical level, research into attitudes and behaviours towards animals will lead to a greater understanding as to why people act the way that they do.

Future research could also compare attitudes of the general public towards animals with attitudes of those individuals who have been convicted of animal abuse. It should be noted that convictions rates for animal abuse are quite low (almost 2,500 convictions to protect animals in 2010 (RSPCA, 2011) vs. 1.30 million offenders in 2011 in the UK (Ministry of Justice, 2012), and so the samples of the general public and those convicted of animal abuse may not be comparable. On the other hand, research could compare the general public and offenders convicted of any crime. It could be that people with violent tendencies (whether it is towards committing property crimes or crimes against the person) differ in their overall attitudes towards animals as compared to the general public.

In conclusion, this study is the first to provide data on animal welfare issues in Cyprus, and also the first to provide a comparison between the UK and Cyprus in

regards to animal welfare issues. The study validates a new measure for the assessment of attitudes in relation to demographics. This study can also provide valuable information to the general public wanting to increase their own knowledge and understanding about how animals should be treated, and how they are treated in reality. Overall, research comparing countries such as this can aid in understanding the universal and culture-specific underpinnings of various constructs. In this case, such research will increase our understanding about whether the treatment of animals follows a universal pattern or is specific to the culture under question.

Chapter 3: Measuring attitudes to animal welfare: a comparison of Cyprus and the UK on the relationships between attitudes towards animals, personality and sensational interests

This review provides a brief introduction into the areas of attitudes towards animals, personality and sensational interests. Any gaps in the literature will be outlined and attempts to address these gaps will be made in the following sections of the report.

*3.1. Attitudes towards animals*

Research has found personality traits of butchers and professional hunters do not differ from matched males from the general population (Voracek et al., 2010). This is salient because it calls for more research on gender differences seeing as the sample here was all male, and a more in depth analysis of the personalities of people within these professions or who follow such activities. Findings such as Voracek's may ultimately assist in reducing some of the stereotypes that exist for people in these professions, or those who hunt as a hobby. Research into attitudes towards animals has also shown individuals who appear to be tender-minded, artistic, intuitive and unconventional have more positive attitudes towards animals, as does, perennially, gender (Matthews & Herzog, 1997). Austin, Deary, Edwards-Jones, and Arey (2005) further demonstrated that increased levels of Agreeableness (A) and Conscientiousness (C) were associated with more knowledge of, and positive attitudes towards animal welfare. Studies into attitudes towards animals have been covered in previous sections. The following sections of this chapter seek to present the literature on personality and

sensational interests, and any possible links these constructs may have with attitudes towards animals.

*3.2. Personality*

Research into personality traits has flourished since some of the initial research advanced by Gordon Allport, Raymond Cattell in the US and Hans Eysenck in the UK (Cervone & Pervin, 2008). These researchers were influential in highlighting the complexity and yet uniqueness of the individual's personality. One early study of what became known as the five factor model (FFM) of personality was carried out by Tupes and Christal (1961). The authors employed eight samples of participants ranging from men receiving military training to male and female undergraduate and graduate students. The aim was to determine the factor structure of personality traits across a wide range of participants and raters. Results consistently indicated five factors throughout all groups and samples; raters and length of acquaintanceship had no effect on the factor structure. These five factors were labelled Surgency, A, Dependability, Emotional Stability (ES) and Culture. Norman (1963) followed up this study with the aim of using factor analytic techniques and rotation procedures to determine whether the five factor solution found by Tupes and Christal could also be found in their own studies. Norman asked male college students in the USA to rate their peers on each of the five factors (Extraversion (E) or Surgency, A, C, ES and Culture) previously identified. Norman (1963) found that a five factor model clearly emerged in all participant groups. One point of caution when discussing the FFM refers to the names the factors have been given. There is a converging consensus regarding the FFM/ Big Five structure of personality, the main areas of difference being in terminology; both have E, C, and A, but whereas the FFM uses the term Neuroticism (N), the Big Five

85

model reverses the scoring and refers to ES; both systems have an Openness to experience (O) construct, but the Big Five model reconstrues this as Intellect (I). The factors consist of the same traits despite the alternative names, and so the names of the dimensions shall be used depending on those being used by the authors being quoted.

McCrae and Costa (1983) successfully showed that N, E and O could be demonstrated through principal components analysis using both self-reports and ratings by others. This study was the first to use the newly developed NEO Inventory and NEO Rating form as constructed by the authors. This marked the beginning of more than two decades of research using the NEO Inventory, and subsequent revisions, to investigate personality traits.

Goldberg (1990) carried out three studies in which he analysed previously researched trait adjectives, and then subsequently improved and reanalysed these adjectives. The distinction between Goldberg's approach and McCrae and Costa's is that the first is lexical and the second is based on behavioural self-reports. Findings indicated the presence of the big five structure across a large and comprehensive set of trait adjectives, and across both self and peer recommendations. Perhaps most importantly, Goldberg provided another set of Big Five markers for use in future studies. In a subsequent study, Goldberg (1992) successfully developed a new additional set of Big Five markers that could replace those developed by Norman (1963). Furthermore, these new markers could potentially be used as an alternative to scales such as the NEO Inventory.

As a result of his research and the limitations he believes are inherent within instruments such as the MMPI-2 RF and NEO PI-R whose items are copyrighted, Goldberg (1999) outlined the need for a taxonomic framework that could organise the

86

personality traits into usable measures; the need for a common format for items that can also be translated faithfully into other languages; and finally a way for researchers to find these items easily, add new items when necessary and find the properties of these items. Thus, the International Personality Item Pool was developed (Goldberg, 2001). The IPIP project and associated website has flourished since its development and now includes more than 2000 items with translations of some of the items into over 25 languages. The hope behind developing this website and this form of personality research is that all researchers may have access to information with the ultimate goal of advancing this area further and faster than it has before (Goldberg et al., 2006).

Present day research has shown that the five factors remain reliable, valid and generally stable throughout adulthood across cultures (McRae et al, 1999; McCrae & Terracciano, 2005b). Subsequent studies have continued to support the use of a five factor model for the structure of personality (McCrae & Costa, 1987; McCrae & Costa, 1997; McCrae, Zonderman, Costa, Bond & Paunonen, 1996; Tsaousis, 1998). The stability of the FFM has been established and so the following section shall examine how personality constructs interact with demographical variables.

A study by Gow, Whiteman, Pattie, and Deary (2005) in the UK using the IPIP found that women had higher A scores, and lower scores on ES and I compared with men. Furthermore, significant age differences indicated that E was higher in early adulthood (up to 30 years old), A was lower in the early adulthood group than the other age groups, C was highest in the late adulthood group (over 65 years old), ES was higher in the late adulthood group and finally I was lower in late adulthood.

One substantial study examining differences in personality across many countries looked specifically at gender differences using the NEO PI-R in 26 cultures

including places as disparate as France, South Africa, India and Peru. The structure of personality was essentially stable across these cultures, and the main finding was that gender differences were more present in European and American cultures with an individualistic basis, but not so pronounced in collectivist cultures (Costa, Terracciano, & McCrae, 2001). In addition to women's universal greater A, the authors also noted that generally, women were found to be higher on certain facets of N and E. The authors argue that although these findings are modest in magnitude, they conform to gender stereotypes.

In another study, employing a sample of over 27,000 people, Allik and McCrae (2004) showed how cultures clustered together based on their similarity. Overall, it was found countries that best clustered dispositionally were countries that were also geographically closer. For example, France and Italy clustered together, as did Russia and Japan, and Canada and the USA. People from European and American cultures were more outgoing and open to new experience, whereas people from Asian and African cultures were more introverted and traditional. However, it is not clear whether differences in personality are real, or merely a result of differences in self-report. For example, E and O may be more valued in western cultures and so expressed more. On the other hand, cooperation and tradition may be more valued in non-western cultures. Secondly, it is not clear how people evaluate themselves in relation to others who are similar to themselves. Thirdly, the origins of these personality differences are still not clear (Allik & McCrae, 2004). Across studies examining 50 and 51 cultures respectively, gender and age differences were repeatedly found. Women expressed higher scores on all five factors, and especially N and A. Similarly, C was found to increase with age, and certain facets of E and O were found to decline with age

(McCrae & Terracciano, 2005a). Also, Southern and Eastern Europeans exhibited higher levels of N and lower levels of C than Northern Europeans (McCrae & Terracciano, 2005a).

Exploratory and confirmatory factor analyses failed to find a conventional FFM of personality in Cyprus as measured by the English version of the NEO-FFI (Panayiotou, Kokkinos, & Spanoudis, 2004). In a private conversation with the primary author of this paper, the unpublished follow-up to their original study and its results were outlined. The authors modified various translations and re-ran the analyses. Their subsequent factor analysis and modelling resulted in a good fit for the items on their expected factors. (Personal communication, August 18, 2011).

*3.3. Emergence of research into Sensational Interests*

Sensational interests may be defined as interests that are violent and/or unusual. These types of interests are often sensationalised in the media, attracting a great deal of attention. Perhaps the first academic author to bring this area to the forefront was Brittain (1970). In his article, he provides a lengthy description of the characteristics he argues to be commonly found in sadistic murderers, but does note that these characteristics are merely a guide and do not reflect all sadistic murderers. Among the characteristics argued to be present in sadistic murderers are feelings of isolation and solitary pursuits; a rich and active fantasy life; spiritualism; an interest in weapons, guns and knives; and an interest in Nazis and Nazism. These characteristics are by no means the complete account of a sadistic murderer as provided by Brittain (1970) but are examples more relevant to the body of work that follows.

Developing notions from clinical forensic psychiatry, Egan et al. (1999) developed a Sensational Interests Questionnaire (SIQ) comprising five factors representing an interest in militarism and violent-occultism (and three dimensions - intellectual recreation, occult credulousness, and wholesome activities - reflecting factors from filler items). Comparisons of forensic patients with control groups showed that forensic patients expressed an interest in militarism and violent-occult topics more willingly than the control groups. Overall, higher scores on total sensational interests, the militarism and violent-occult subscales were significantly related to lower A and C. High scores on the militaristic subscale are associated with antisocial personality disorders in mentally disordered offenders (Egan et al, 2003). Egan et al. (1999) argue that although the SIQ may not account for severe cases of sexual crimes and serial murders in itself, it can help in the examination of sensational interests in large scale studies of the population to help separate the mechanisms by which these interests may be harmless in some people, but potentially malignant in others.

Thus despite the sensationalisation of interests in offender populations, it would be wise to consider the prevalence of sensational interests in the general public. It is likely that a significant portion of the general population also display interests that may be labelled as sensational, and yet never engage in risky or criminal behaviours sufficient to harm others. In recent research, sensational interests were not alone sufficient to lead to the expression of physical aggression. In fact, physical aggression was predicted mostly by lower levels of A, followed by interest in militaristic topics and the presence of narcissistic sustaining fantasies (Egan & Campbell, 2009). On the other hand, "individuals with pathological individualism and polarised interests in hedonism and power" (Egan, 2003, pp. 135) may express themselves in more

unconventional and problematic ways. Moreover, higher sensational interests may reflect aggressive bravado of the kind indexed by constructs such as 'mating effort' (Weiss, Egan & Figueredo, 2004).

The SIQ dimension of Militarism is characterised by interests in items such as guns and shooting, survivalism and fishing. No research has been found implicating sensational interests in attitudes and treatment towards animals, though SIQ Militarism would seem a candidate construct reflecting crueller ways of approaching other living creatures, whether human or animal (Egan & Campbell, 2009).

For the purpose of this study, the relationship between personality, sensational interests and attitudes towards animals was examined, along with the differences between these relationships for persons from Cyprus and the UK. We expected to find that the personality structure of individuals will follow a five factor solution in both the UK and Cyprus. We expected previously observed gender and age effects for all personality constructs. We predicted women would have higher levels of ES, A, E and O. Also, increased age would be associated with higher levels of C, lower levels of E, lower levels of I, higher levels of A and higher levels of ES. It was also expected that positive attitudes towards animals will be related to A and C. We also expected to find sensational interests predicted by lower A and C, higher E and lower age. Furthermore, it was expected that hunters would report higher levels of sensation interests as defined by the militarism scale, and past research would lead us to expect similar personality structures between hunters and non-hunters. The next hypothesis considered the relationship between attitudes towards animals, sensational interests and personality, and proposed that the greater presence of self-reported sensational interests will improve prediction of animal welfare attitudes from personality data. The magnitude of

the differences between the UK and Cyprus in terms of the expression of attitudes towards animals, sensational interests and personality remains unclear. No data exists for Cyprus regarding animal welfare issues, and the present researcher sought to provide an initial glimpse into the nature of these relationships.

## *3.4.* Method

### *3.4.1. Measures*

#### *3.4.1.1. The Zalaf Animal Welfare Scale (ZAWS)*

The ZAWS was developed in the previous chapter and it asks participants to report their feelings on items related to attitudes towards animals. This measure consists of 13 items loading onto two subscales; Negative Attitudes and Positive Attitudes. Responses range from strongly disagree (1) to strongly agree (5). The ZAWS is reliable and valid for use in Cyprus and the UK. English and Greek versions of the ZAWS were created during its development and both versions were used in the present study.

#### *3.4.1.2. The Sensational Interests Questionnaire (SIQ) (Egan et al., 1999)*

The SIQ asks participants to rate how interested they are on various topics, ranging from general interest topics to the highly sensationalist. This measure has 28 items that load on to five subscales. Responses range from extreme disinterest (1) to great interest (5). The scale is reliable and valid. For the purpose of this study, the SIQ was translated into Greek by the present author. The SIQ consists of single word items or short phrases so it was not necessary to provide a back-translation as there is little chance for ambiguity in the translation of single words as opposed to the translation of

full sentences. The militarism subscale is most predictive of aggressive behaviour, so was the only SIQ dimension used here. The subscales of violent-occult, intellectual interests, paranormal credulousness and wholesome activities were not expected to be related to aspects of animal welfare as researched here, and so they were not included in the analysis. Furthermore, the structural equation model planned for the variables in this study would have been made increasingly complex by the inclusion of variables that are not of primary interest.

*3.4.1.3. The IPIP Big Five factor markers (Goldberg, 2001)*

This study used the 50-item measure of personality, which is composed of 10 items for each of the "Big Five" personality constructs (Goldberg, 2001). Participants are asked to rate the items on how well they describe themselves and responses range from very inaccurate (1) to very accurate (5). For each of the items, "I" was added to the start of the phrase to make it easier for participants to read and relate to their own self-report.

The Greek version of the 50 IPIP Big Five markers was used (Vakola, Tsaousis, & Georgiades, 2006). Unfortunately details of the measure's alpha reliabilities and factor structure are unavailable but research has suggested that it is appropriate for use (Tsaousis & Georgiades, 2009). However, this current study provides the necessary reliability information. All questionnaires used in this study are in Appendix B.

*3.4.2. Procedure*

All data was gathered on-line using crowdsourcing, a new method for enlisting the help of an entire network of people to help with a problem (Brabham, 2008), in this case, the completion of an online survey. Both English and Greek versions of all three

questionnaires were made available online through an online questionnaire tool. The Greek and English versions were identical in their content, and attempts were made to make them as similar as possible in their formatting. People living in Cyprus completed only the Greek versions and people living in the UK completed only the English version. The links were forwarded to friends and family and they were asked to forward it on themselves. The link was also emailed to social groups and through Facebook.

Refusal rates could not be recorded due to the nature of the data collection process, and can only be provided by questionnaires left incomplete. Participants were included in the analysis if they completed all three questionnaires. In the UK, 490 individuals started the survey but data for the analysis was based on 364 individuals, pointing to a refusal rate of about 26%. Demographical data is available for only 61 of these 126 people. Their ages range from 11-80 years old ($M$=29.4, $SD$=14.6). The sample consisted of 28 males and 33 females. In Cyprus, 338 individuals began the survey but data for the analysis was based on 254 individuals, which points to a refusal rate of about 25%. Demographical data is available for only 49 of these 84 people. Their ages range from 13-49 years old ($M$=26.3, $SD$=8.1). The sample consisted of nine males and 40 females.

The refusal rates observed in the UK and Cyprus samples are relatively low and may simply reflect the influence of the length of the survey as a whole. The survey consisted of a total of 91 items, and may have been too long for some people. Indeed, it may have been that people with little interest in this topic were not as motivated to complete the entire survey.

*3.4.3. Ethical issues*

Ethical issues were considered in detail and precautions taken to ensure that the participants would not be placed under any unnecessary stress whilst contributing to this study. All gave informed consent and participants were reminded that their participation was voluntary and they were free to remove their data at any point up until the questionnaire was submitted to the researcher. On completion of the study, all were provided with contact details for the researchers and other relevant organisations if they required additional information. On the debriefing form, participants were assured that their data was anonymous and contact information for the researchers was provided. Contact details were also provided for animal welfare organisations both in the UK and Cyprus, in case participants needed more information or felt affected by the issues raised in the questions.

*3.4.4. Participants*

For the purposes of data analysis, the UK and Cypriot samples were combined. However, the demographics of each sample are presented below.

*3.4.4.1. British sample*

The British sample consisted of 109 males (30%) and 255 females (70%). The age range was 12-79 years old ($M = 32.2$ $SD = 13$). About 11.5% ($N = 42$) completed up to secondary school, 26.9% ($N = 98$) up to college, 28.3% ($N = 103$) up to undergraduate and 33.2% ($N = 121$) were postgraduate educated. The sample also consisted of 104 people (28.6%) who participated in hunting and 258 people (70.9%) who did not participate in hunting. Two people did not disclose this information.

*3.4.4.2. Cypriot sample*

The Cypriot sample consisted of 60 males (23.6%) and 194 females (76.4%). The age range was 14-61 years old ($M = 27.6$, $SD = 8.3$). Only 0.4% ($N = 1$) of the sample completed an education of up to primary school, 13% ($N = 33$) completed up to secondary school, 16.1% ($N = 41$) up to college, 36.2% ($N = 92$) up to undergraduate and 34.3% ($N = 87$) postgraduate. The sample had 6 people (2.4%) who participated in hunting compared to 248 people (97.6%) who did not.

An independent samples t-test indicated that UK residents ($M=32.19$, $SE=.68$) were significantly older than Cypriot residents ($M=27.61$, $SE=.52$; t(610.940)=5.35, $p<.001$). This difference represents a small effect size r = .21.

Chi-square tests indicated significantly more non-hunters in Cyprus and the UK ($\chi(1)=70.239$, $p<=.001$; medium effect size Cramer's V = .337, $p<.001$) and significant differences in education levels ($\chi(4)=12.447$, $p<.05$; small effect size Cramer's V = .142, $p<.05$). Standardized residuals, when observed for larger contingency tables, indicated significant differences only between up to college level education with fewer Cypriots than UK residents reporting such an education level. There were no significant associations between country of residence and gender ($\chi(1)=3.010$, $p>.05$).

*3.5.* Results

For the purpose of demonstrating the appropriateness of the measures used for the populations, exploratory factory analyses were carried out and their results will be presented very briefly below.

*3.5.1. CFA for the ZAWS*

CFA indicated that the ZAWS was a univariate scale, and that the model fit-statistics were all satisfactory ($\chi^2 = 201.504$, df=58, $p<.001$; CMIN=3.47, CFI = 0.908,

RMSEA = 0.063, AGFI=.922). All covariances are significant at p<.001. This shows
the ZAWS is appropriate for use in this study. Item numbers in Figure 3.1 correspond
to those in Figure 2.1.
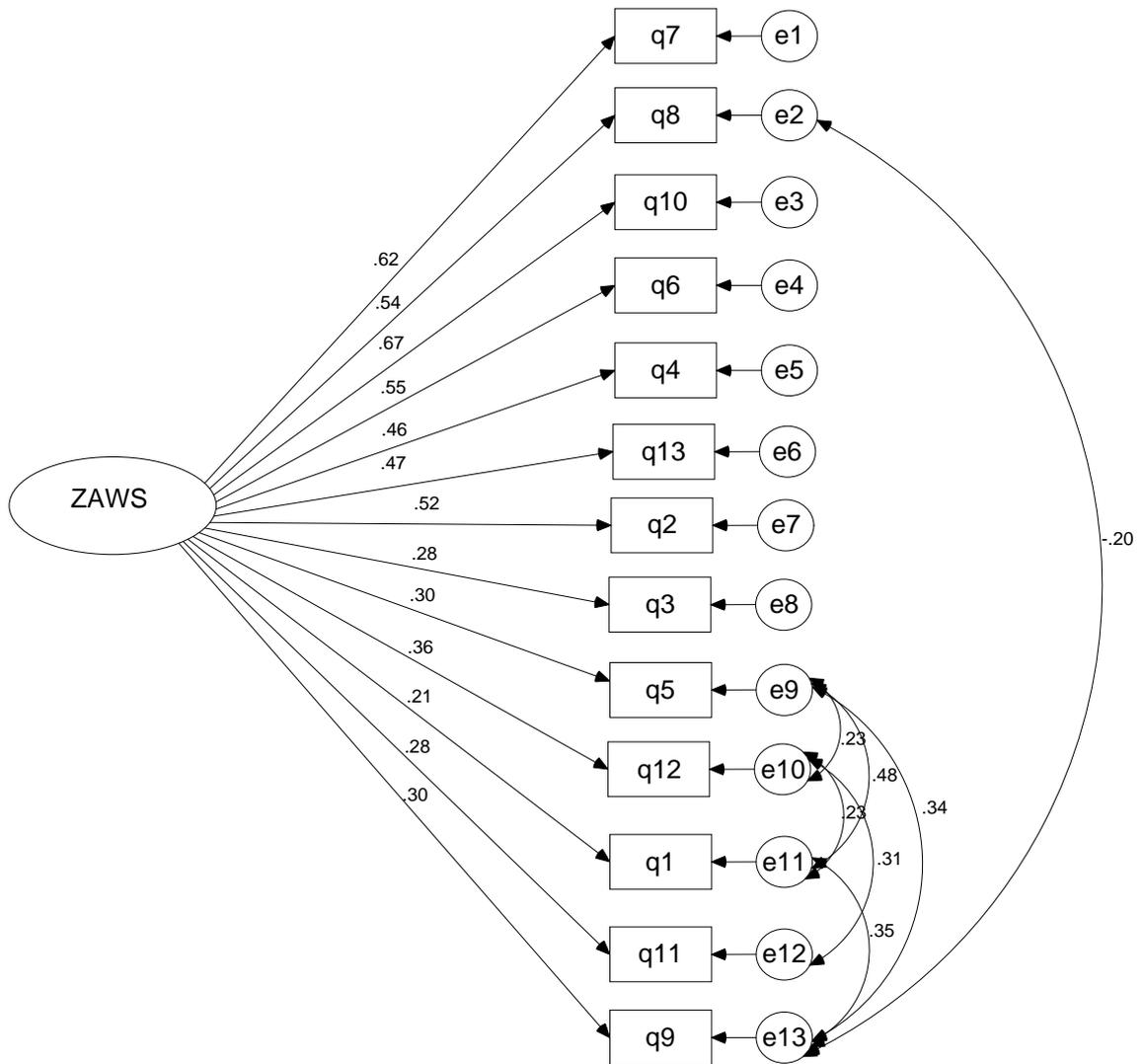


*Fig. 3.1.* Structural equation model showing standardised regression coefficients for the items in the
ZAWS.

*3.5.2. Exploratory Factor Analysis for the SIQ and IPIP Big Five factor markers*

To check on the integrity of the SIQ and IPIP the same procedure was employed for both measures. An EFA was carried out for the combined samples, which produced very similar structures to those developed by the original authors. For the SIQ, a principal components analysis with varimax rotation requesting five factors was carried out. The IPIP Big Five factor markers were also subject to a principal components analysis with varimax rotation requesting five factors. Scores from the items making up these subscales were added to produce the variables included in the subsequent model. Tables 3.1 and 3.2 below provide information on the factor loadings for the SIQ and IPIP scales. Only two items ("I make people feel at ease" and "I pay attention to details") of the IPIP had split loadings that would be of concern. It was decided to retain the structure of the IPIP as identified by EFA, and add these items to the factor they loaded most highly on.

Table 3.1. *Summary exploratory factor analysis for the SIQ (N=618)*

|  | Rotated Factor Loadings |
| --- | --- |
| Item | Militarism |
| Guns and Shooting | .72 |
| Mercenaries and the SAS | .70 |
| The armed forces | .69 |
| Crossbows, knives and swords | .65 |
| Martial arts | .60 |
| Fishing | .55 |
| Survivalism | .53 |
| Body-building | .50 |
| Motorbikes | .49 |
| Sporting activities | .47 |
| Eigenvalues | 3.90 |
| % of variance | 13.92 |
| α | .81 |

Table 3.2. *Summary exploratory factor analysis for the IPIP Big Five markers (N=618)*

|  | Rotated factor loadings | | | | |
| --- | --- | --- | --- | --- | --- |
| Item | Extraversion | Emotional Stability | Conscientiousness | Intellect | Agreeableness |
| I keep in the background. | **.73** | .13 | .02 | -.01 | .10 |
| I talk to a lot of different people at parties. | **.72** | .12 | .03 | .15 | .09 |
| I don't mind being the centre | **.69** | -.02 | -.02 | .17 | -.07 |

of attention.

| | | | | | |
|---|---|---|---|---|---|
| I don't talk a lot. | **.68** | -.02 | -.02 | .03 | .11 |
| I am the life of the party. | **.68** | .03 | .10 | .14 | -.07 |
| I don't like to draw attention to myself. | **.65** | .01 | -.01 | .01 | -.05 |
| I start conversations. | **.64** | .07 | .07 | .21 | .17 |
| I feel comfortable around people. | **.63** | .30 | .06 | .07 | .16 |
| I have little to say. | **.59** | .04 | .12 | .23 | .16 |
| I am quiet around strangers. | **.57** | .13 | .01 | -.00 | -.01 |
| I make people feel at ease. | **.41** | .07 | .08 | .14 | .31 |
| I get upset easily. | .07 | **.73** | .03 | .01 | -.10 |
| I get irritated easily. | -.08 | **.72** | .07 | -.03 | .18 |
| I get stressed out easily. | .14 | **.714** | -.07 | .04 | -.09 |
| I have frequent mood swings. | -.02 | **.71** | .23 | .02 | .01 |
| I often feel blue. | .17 | **.70** | .14 | -.03 | -.01 |
| I change my mood a lot. | .03 | **.67** | .23 | .00 | .05 |
| I worry about things. | .08 | **.66** | -.10 | -.09 | -.19 |
| I am easily disturbed. | .03 | **.58** | .02 | .04 | .08 |
| I am relaxed most of the time. | .10 | **.57** | -.19 | .03 | -.03 |

| | | | | | |
|---|---|---|---|---|---|
| I seldom feel blue. | .15 | **.52** | .03 | -.03 | -.05 |
| I like order. | .00 | -.18 | **.72** | .04 | -.05 |
| I often forget to put things back in their proper place. | .02 | .11 | **.67** | -.11 | .15 |
| I leave my belongings around. | .03 | .08 | **.67** | -.10 | -.02 |
| I follow a schedule. | .08 | -.08 | **.66** | .06 | .02 |
| I am always prepared. | .06 | .04 | **.63** | .17 | -.05 |
| I get chores done right away. | .01 | .08 | **.61** | .03 | .11 |
| I make a mess of things. | .02 | .31 | **.60** | -.08 | .15 |
| I am exacting in my work. | .07 | -.04 | **.54** | .27 | .18 |
| I shirk my duties. | .07 | .16 | **.47** | .07 | .23 |
| I am full of ideas. | .24 | -.05 | .10 | **.67** | .06 |
| I use difficult words | .13 | -.05 | .01 | **.67** | -.22 |
| I have excellent ideas. | .25 | .04 | .06 | **.66** | -.05 |
| I have a rich vocabulary. | .10 | -.04 | .18 | **.64** | -.09 |
| I have a vivid imagination. | .05 | -.20 | -.02 | **.61** | .10 |
| I do not have a good imagination. | .15 | .01 | -.07 | **.60** | .10 |
| I am not interested in abstract ideas. | .02 | .04 | -.12 | **.53** | .09 |
| I am quick to understand things. | .02 | .14 | .14 | **.52** | .04 |
| I have difficulty understanding abstract ideas. | .11 | .19 | -.11 | **.51** | .08 |
| I spend time reflecting on | -.07 | -.12 | .14 | **.39** | .12 |

| | | | | | |
|---|---|---|---|---|---|
| things. | | | | | |
| I pay attention to details. | .01 | -.02 | .38 | **.39** | .02 |
| I sympathize with others' feelings. | .00 | -.15 | -.03 | .07 | **.72** |
| I feel others' emotions. | .11 | -.10 | .07 | .10 | **.68** |
| I am not really interested in others. | .29 | .08 | .05 | .03 | **.64** |
| I am not interested in other people's problems. | .10 | -.07 | .05 | .04 | **.64** |
| I take time out for others. | .05 | .04 | .08 | .12 | **.61** |
| I am interested in people. | .21 | .05 | .03 | .11 | **.62** |
| I have a soft heart. | -.12 | -.17 | .05 | .02 | **.57** |
| I insult people. | -.14 | .18 | .13 | -.11 | **.48** |
| I feel little concern for others. | .06 | .03 | .06 | -.08 | **.46** |
| Eigenvalues | 5.00 | 4.93 | 4.00 | 3.99 | 3.89 |
| % of variance | 10.01 | 9.86 | 8.00 | 7.97 | 7.77 |
| α | .86 | .86 | .73 | .80 | .79 |

### 3.5.3. Descriptive statistics

Table 3.3 presents descriptive statistics for all the variables included in the analysis. Means, standard deviations and Cronbach's alpha reliabilities are presented for each component of the scales. All subscales were highly reliable and appropriate for use in the subsequent analyses.

Table 3.3. *Descriptive statistics for all variables (N = 618)*

|  | Mean | Std. Deviation | Reliability |
|---|---|---|---|
| Extraversion | 36.37 | 8.38 | 0.86 |
| Emotional Stability | 29.93 | 8.06 | 0.86 |
| Conscientiousness | 31.23 | 6.62 | 0.73 |
| Intellect/ Imagination | 42.90 | 6.37 | 0.80 |
| Agreeableness | 37.18 | 5.38 | 0.79 |
| Militarism | 27.53 | 7.85 | 0.81 |
| Positive Attitudes | 59.65 | 5.42 | 0.74 |

*3.5.4. Correlations between the variables entered into the model*

Table 3.4 shows the Pearson's correlations conducted on the variables that were entered into the model. Positive attitudes towards animals were positively related to C, A, I and negatively related to ES and militarism. Country of residence was positively associated with positive attitudes, hunting, and A, but negatively associated to age, ES and militarism. Age was positively related to E and ES, and negatively related to militarism. Gender was related positively to positive attitudes, hunting, and A. On the other hand, gender was negatively related to ES and militarism. Hunting presented a positive relationship with positive attitudes and A, and a negative relationship with E, ES and militarism. E was positively related to all other personality variables. ES was positively related to C and militarism. Conscientiousness was positively related to A and I, whereas A was positively associated with I and negatively associated with militarism.

Table 3.4. *Correlations between variables entered into the model*

| | Age | Gender | Hunting | Positive Attitudes | Extraversion | Emotional Stability | Conscientiousness | Agreeableness | Intellect/ Imagination | Militarism |
|---|---|---|---|---|---|---|---|---|---|---|
| Country | -0.20** | 0.07 | 0.34** | 0.40** | 0.03 | -0.16** | 0.07 | 0.17** | -0.06 | -0.09** |
| Age | | -0.07 | 0.01 | 0.08 | 0.08* | 0.14** | 0.08 | -0.02 | 0.04 | -0.23** |
| Gender | | | 0.25** | 0.31** | -0.01 | -0.15** | 0.01 | 0.34** | -0.07 | -0.28** |
| Hunting | | | | 0.40** | -0.12** | -0.19** | -0.01 | 0.22** | 0.02 | -0.50** |
| Positive Attitudes | | | | | 0.05 | -0.09* | 0.20** | 0.34** | 0.09* | -0.32** |
| Extraversion | | | | | | 0.21** | 0.13** | 0.21** | 0.31** | 0.07 |
| Emotional Stability | | | | | | | 0.14** | -0.01 | -0.01 | 0.17** |
| Conscientiousness | | | | | | | | 0.20** | 0.15** | -0.03 |
| Agreeableness | | | | | | | | | 0.10* | -0.17** |
| Intellect/ Imagination | | | | | | | | | | -0.04 |

**p<.001, *p.05

*3.5.5. Latent path analysis of relationships between the ZAWS, SIQ, Big Five markers and demographics*

To use the data most comprehensively and conservatively, a path analysis was calculated. Pathways were added from all variables of the model to the ZAWS Positive Attitudes to Animals variable, as these were the relationships we wanted to focus on. Subsequently, variables were linked with pathways based on the hypotheses derived from previous research. Where no previous research was present, zero-order correlations were observed and pathways were inserted based on these. Covariances were added based on correlations between the variables. Since there is no data to inform us on the relationships these variables have with the two countries, pathways were added from the country variable based on observed correlations. This analysis was carried out using Amos for SPSS (Arbuckle & Wothke 2003). The combined sample of UK and Cypriot participants were used in the analysis (N = 618). A minimum sample size requirement of 100 participants to carry out SEM was thus met six-fold (Worthington & Whittaker 2006). Figure 3.2 presents the relationships between the variables and only significant pathways are included. We sought to produce a more conservative model due to the lack of previous research in this area. All standardised regression coefficients reported are statistically significant at p<.001 or below.
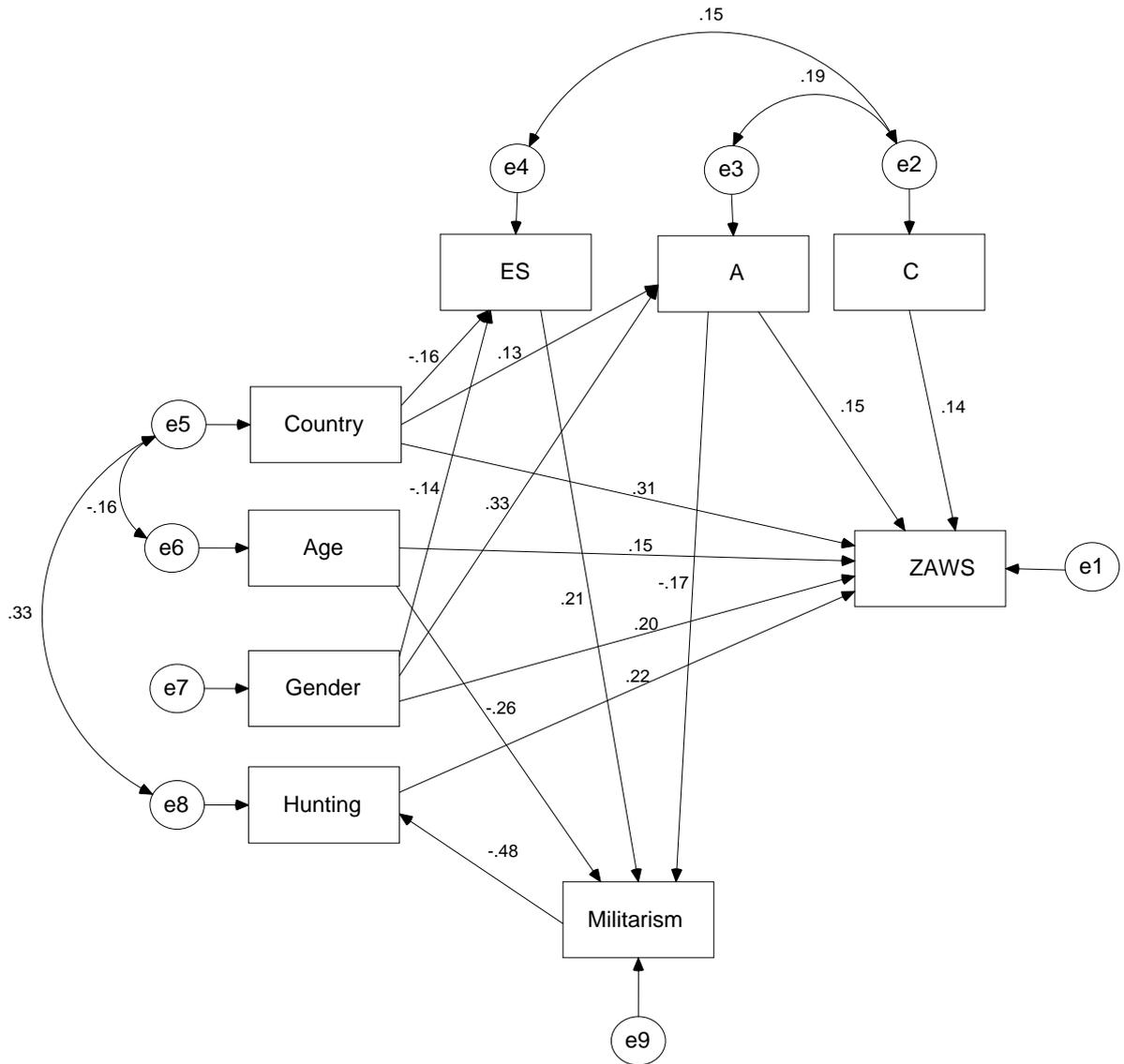
*Figure 3.2.* Path analysis model showing standardised regression coefficients for the variables included in the analysis.

Though the SEM was significant due to the large sample size ($\chi^2 = 96.958$, df=18, p<.001), the CMIN (used for large sample analyses) was acceptable (i.e., below 6.0) at 5.39. Various fit indices indicated that the model fitted the data relatively well (CFI = 0.907, RMSEA = 0.084, TLI = 0.815).

Positive attitudes were predicted by high A (0.15), high C (0.14), being a Cypriot resident (0.31; coded 1 for the UK and 2 for Cyprus), older age (0.15), being

female (0.20; coded 1 for males and 2 for females) and being a non-hunter (0.22; coded 1 for yes and 2 for no). A was predicted by being a Cypriot resident (0.13) and being female (0.33). ES was predicted by being a UK resident (-0.16) and being male (-0.14). Militarism was predicted by low A (-0.17), high ES (0.21), younger age (-0.26) and being a hunter (-0.48). E and I were not included in the final model as they did not have significant relationships with any of the other variables, so could not contribute substantially to the model.

### *3.6.* Discussion

Our study found individuals scoring high on A, high on C, Cypriot residents, older individuals, females and non-hunters expressed more positive attitudes towards animals. The militaristic interests did not show a direct pathway to positive attitudes to animals. High A was greater in Cypriot residents and females. UK residents and males reported higher scores for ES. People low on A, high on ES, younger individuals and hunters expressed more militaristic interests. These results mostly support the hypotheses of the study.

The fact that older individuals have more positive attitudes towards animals in this sample is surprising, given media portrayals of parents being coerced into taking on pets for their children, and the animal-friendly milieu of children's entertainment. While research has indicated that interest in animals and wildlife lessens as people become older (Bjerke, Ødergårdstuen, & Kaltenborn, 1998), others have found no effects of age on attitudes towards animals (Signal & Taylor, 2006). Younger individuals who have never owned pets or who have never had repeated contact with animals may be fearful

of barking dogs, cats that scratch, and generally characteristics of animals that are unfamiliar to them. The findings here may simply be a reflection of the younger participants' ignorance in caring appropriately for animals. Future research measuring the level of knowledge young individuals have on animal welfare topics, and the ways in which this knowledge can be increased and adapted, could inform the relevant authorities on appropriate methods for improving the relationships individuals have with their pets. Furthermore, this study may have successfully tapped into a large portion of older individuals who have animal companions. The prevalence of militaristic interests in younger people, on the other hand, is unsurprising given the findings of previous research (Egan et al., 1999).

Gender differences in attitudes towards animals found here have also been found in other research studies (Herzog, 2007), with one previous study also finding that besides women having better attitudes towards animals they are also more likely to report cases of animal abuse (Taylor & Signal, 2006). Gender differences found for A and ES also partially support previous studies (Costa et al., 2001; Gow et al., 2005). The unequal ratio of males to females in the sample may have been a contributing factor to the lack of gender differences in the other personality variables. On the other hand, the nature of the topic may have simply appealed to women more, and our findings served to reinforce this possibility.

Hunters seemed to be an appropriate group to include in this analysis since the study involves looking at animals, and also because there appears to be no literature into what the views of hunters are regarding animals. The additional findings that non-hunters have more positive attitudes towards animals and hunters show greater interest in militaristic activities, should again not come as a surprise. Hunters of animals do not

express positive attitudes towards animals perhaps as a way of reducing cognitive dissonance. For instance, a hunter with highly positive attitudes towards animals would find it difficult to kill the animal and choose instead to stop hunting altogether. On the other hand, it may be that having poorer attitudes towards animals precedes the act of hunting and in fact acts as a push factor to becoming a hunter. The militarism factor of the SIQ asks about guns and shooting, mercenaries and the armed forces. Hunting involves both the use of weaponry and stalking tactics that may be considered of a military nature. It is therefore, entirely unsurprising that the relationship between hunting and militaristic interests is so strong. Likewise, non-hunters do not differ from hunters on personality variables, suggesting that hunters and non-hunters are differentiated by their interests.

That personality traits such as A and C relate to positive attitudes towards animals supports Mathews and Herzog (1997). Persons higher in C are better at providing care for another living being, whether human or animal. Likewise, individuals scoring high in A have more prosocial motivations and empathic concern so provide more help, to more people, across more situations (Graziano, Habashi, Sheese & Tobin 2007). Low A predicting militaristic interests further supports previous research (Egan et al, 2003), whereas high scores on ES predicting militaristic interests were an unexpected finding. People with a wider range of interests, including militaristic interests, may be more emotionally stable than their counterparts who have not found a way to express themselves and their interests.

The generalisation of a five factor model of personality across the UK and Cyprus supports previous research (Gow et al., 2005; McCrae & Terracciano, 2005a; McCrae & Terracciano, 2005b) although there were personality differences between

Cyprus and the UK. Allik's (2005) findings are similar to the findings obtained in this study, and serve to show us that although differences exist, they may not be large enough to cause any real differences in practical settings. Cyprus and the UK are both European countries with similar standards of living, so it may be that greater differences will be found when they are collectively compared to cultures such as Asian and African which follow a significantly different way of life. There has been no previous research as to indicate whether attitudes towards animals are affected by the culture of the individuals in question. In this study, it appeared that overall Cypriots had better attitudes than the British to animals. This could be because Cyprus is a smaller island, more rural, which developed far later than the UK. It could be that Cypriots have had more contact overall with animals and so have better attitudes. The findings of this study support those of chapter 2 in which the ZAWS was developed and whose results indicated that residents of Cyprus have more positive attitudes towards animals.

In contrast to previous findings of age differences in personality (Goldberg, Sweeney, Merenda, & Hughes, 1998; Gow et al., 2005; McCrae & Terracciano, 2005b), the present results did not indicate any such differences. Correlations indicated positive relationships between age, E and ES. These personality variables were, however, removed from the final analysis as they did not contribute significantly to the model. The limitations in age distribution could also have been a contributing factor to this finding.

Limitations of this study include the opportunistic sampling method employed, and the difficulty in gathering a representative proportion of both genders and age groups. Furthermore, the cultural differences between Cyprus and the UK were not

fully explored through the use of a specific measure. The results, however, were reliable and valid, and it is not expected that these limitations had a significant effect on the conclusions arrived at from the analysis of the data. The limitations are recognised as potential problems for future studies that need to be dealt with appropriately so as to strengthen the power of the results.

Future research would benefit from an in-depth analysis of the thought processes involved in hunters and how they relate their behaviours and thoughts regarding animals in general. This would not only be an interesting new angle on the debate within what is considered animal abuse, but may also serve to reduce the negative beliefs attached to hunters and hunting in general; what some perceive as apparent callousness may be seen by others as benign animal husbandry (Serpell, 1996b). As noted above, many of the reasons presented behind the current findings are simply speculation. There are a great number of directions future research could take in order to offer more concrete explanations for the behaviours observed. Anecdotal evidence from Cyprus suggests that hunters who find their hunting dogs do not perform well or have aged take these dogs out on what would be hunting expeditions, but in fact abandon them in the wild to fend for themselves. So, besides the animals killed during the hunting season, a level of inconsideration and insensitivity to their own dogs is also evident. For countries like Cyprus where hunting is a common hobby it is vital to understand the thought processes of hunters as the consequences of their actions (e.g., abandoning their dogs) eventually becomes a societal problem. It would be interesting to include offenders with animal abuse convictions in the sample and see how they fare in regards to their attitudes towards animals, and how their personality is related to those attitudes and their offences. A general offender sample would also be very

interesting in determining whether the propensity to offend has any influence on attitudes towards animals, and whether people with different types of offences differ in their attitudes.

In conclusion, this study shows you can easily measure attitudes to animals, that the measure is comparable across Cyprus and the UK, and relates to personality, militaristic interests, and demographic variables. It is hoped that the ZAWS will provide the basis for many other studies to examine these issues in depth. Additionally, this study can provide starting points for the authorities to develop ways to tackle issues such as animal abuse. For example, interventions to preclude the problem to start with. For instance, the finding that younger people have more negative attitudes towards animals highlights the need for educational courses on animal welfare in schools. The ZAWS could be used to evaluate educational animal welfare programmes conducted in schools. Overall, this study is an important starting point for authority figures and academic researchers in general, provided the appropriate attention is paid to the significance of the findings.

Chapter 4: An extension of attitudes towards animals and personality into the relationships with delinquency and morality

A great deal is known about the relationship between animal abuse and interpersonal violence, and this chapter expands on this research by incorporating measures of morality, delinquency and personality in relation to expressed attitudes to animals.

## 4.1. Animal welfare and demographics

Attitudes to animals are partly influenced at varying degrees by emotions, opinions of man's dominance versus equality towards animals, and whether there is a presence of instrumental interests (e.g., the need for meat or defence). These beliefs and attitudes towards animals hold the same significance as our convictions regarding ourselves, other people and the natural world as whole (Cohen, Stassen, & Brom, 2009). We often give more weight as "co-citizens" to animals we have personal relationships with, and which appear to be more present in our society, which implies that these attitudes to animals are variable and do not apply to all animals at all times. This in turn leads to the conclusion that the values placed on animal welfare are also variable (Cohen, Stassen, & Brom, 2009). For example, Hills (1993) researched demographic factors associated with the different types of attitudes towards animals. Animal rights supporters had a weak instrumental basis for their attitudes to animals, and strong emotional and equality bases, whereas farmers had a strong instrumental basis and moderate to strong base supporting their dominance over the animal's position. Members of the urban public had moderate instrumental and emotional bases,

and a relatively weak basis supporting neither dominance nor equality. The author highlighted the significance of these findings for policy makers and indicated the need for future research to extend the findings to other social groups. Gender differences were limited primarily to farmers, and indicated that males based their attitudes more so on the instrumental value of the animals, whereas women were more influenced by empathy.

Besides being directly linked to attitudes towards animals, gender is also linked indirectly through studies of pet bonding and pet bereavement. Brown, Richards and Wilson (1996) used a small sample of adolescents, and found the degree of bonding with a pet and the intensity of bereavement after the loss of a pet was greater for girls. This study is interesting in highlighting the gender differences in experiencing or expressing emotions towards the animals. As noted in previous sections of this thesis, Raupp (1999) indicated that as males may also be at a greater risk of experiencing negative socialisation experiences with pets, they may have greater potential for animal abuse as adults, and may form weaker attachments to pets. The results do not imply that boys have worse attitudes towards animals than girls, nor that boys feel less grief for their pet once is it has gone. The differences may in fact be in the reporting of these feelings. Boys may generally find it harder to express their emotions or attitudes towards their pets or any other animals (or, indeed, humans). Interestingly, and in support of the nature of the findings above, Raupp (1999) also argued that sons and daughters had contrasting reactions to their father's level of dislike towards a pet. Boys appeared to show less attachment to pets as they grew up, with the reverse being true for girls. It is unclear how the nature of the girls' resistance to their father's dislike operates, and also prompts further questions as to how girls differ from boys in the

development of their attitudes, and what causes these differing effects for girls and

boys. The previous chapter argued for research indicating increased levels of empathy

in females as opposed to males accounting for the more positive attitudes towards

animals. Empathy could also be implicated here, with high levels of empathy in girls

act as a resisting force to their father's expressed dislike.

Henry (2004) demonstrated the same effect as Raupp, showing that women who

had observed animal cruelty showed greater subsequent sensitivity towards the

treatment of animals, whereas men who had witnessed acts of animal cruelty appeared

to be more callous. Again this indicates differences in the development of attitudes

towards animals that may be attributed to other factors, for example, personality traits

stereotypically associated with each sex. In addition, the women in Raupp's study

appeared to be going through sensitisation processes whereas the men seemed to be

following processes of desensitisation. Again, it is not clear what the reasons are for

these differences, which points to the need for further research. Overall, gender

differences in attitudes towards animals have been unambiguously demonstrated

(Herzog, 2007; Mathews & Herzog, 1997; Signal & Taylor, 2006), although the exact

nature of how these attitudes are formed remains to be seen.

Studies have also established links between attitudes to animals and occupation.

Kellert (1980) found that working with animals treated as commodities had an effect on

attitudes. Specifically, farmers, livestock producers, hunters and fishermen were more

concerned with the material value of animals, and displayed less concern for issues

related to animal welfare and cruelty. On the other hand, members of humane, wildlife

and environmental organisations displayed strong interest or affection for animals, or

strong concern for the treatment of animals. Similarly, location of residence has been

implicated as an influencing factor in attitudes towards animals. Farmers selected from the Western Australian Farmers Federation expressed support for the dominant status of humans over animals, whereas urban dwellers exhibited moderate levels of empathy and support of the instrumental use of animals, with some individuals agreeing with both equality and dominance over animals (Hills, 1993). The findings relating to location of residence and occupation are unsurprising, but vital in providing a complete image of how demographic factors interact in the formation of attitudes towards animals.

*4.2. Animal welfare and individual differences*

Mathews and Herzog (1997) found a positive correlation between sensitivity and imaginativeness to positive attitudes towards animals. Approximately 25% of the variance in these attitudes was accounted for by gender and sensitivity. People scoring high on sensitivity may be described as tender-minded and intuitive, whereas high scorers on imaginativeness are characterised as being unconventional. The characteristics associated with more positive attitudes towards animals are intuitively correct; however the analysis suggested personality traits were not a major factor in determining the attitudes of people towards animals. The paper's authors argued that one reason for this finding may be the small sample of college students used ($N = 99$). With a larger sample, or perhaps one with more extreme views (such as animal activists) the results may have been different.

Overall, a variety of studies have examined relationships between personality traits and attitudes towards animals. High levels of A, O, C and empathy (Austin, Deary, Edwards-Jones, & Arey, 2005; Furnham, McManus & Scott, 2003) have been associated with positive attitudes towards animals, whereas Eckardt (2010) found no

association between personality traits and attitudes to animal welfare. Austin et al.'s study argues the findings relating to the associations between personality and attitudes toward animal welfare can be applied to both farmers and students, perhaps indicating the universality of these links across a variety of societal groups. The previous chapter found that C and A were positively related to positive attitudes towards animals, thus supporting the findings of past research. Justifications for these findings and their links to other variables can be found in the previous chapter.

*4.3. Animal welfare and offending*

One of the first theories to incorporate cruelty to animals as a fundamental factor was MacDonald's (1961) triad hypothesis. Here, he attempted to provide much needed information regarding serial murderers by arguing for a combination of three characteristics that could lead to future aggression and even the propensity to murder. These three characteristics were: bed-wetting at an older age (past the age of 5), cruelty to animals and fire-setting. Subsequent research into the predictive nature of this theory has been limited (Wax & Haddox, 1974), and research into the triad has all but ceased.

However, animal abuse and offending have continued to be studied alongside each other (Arluke, Levin, Luke, & Ascione, 1999; Ascione, 1998; Ascione et al., 2007; Felthous, 1980), primarily due to the implications this phenomenon potentially has on an understanding of child abuse, relevant legislations and possible interventions for offenders of such crimes. The literature into animal abuse and offending is extensive and now spans more than 30 years of interest in this field. Studies carried out by Flynn (1999a; 1999b) revealed animal cruelty among college students, suggesting this was not a phenomena exclusive to the recognisably antisocial. In Flynn's studies approximately 18% had reported engaging in animal abuse with males being nearly

four times likely to have abused an animal. Significantly, those who had abused animals as youths were more likely to also support the use of corporal punishment and approve of a husband slapping his wife. These individuals may be characterised as abusive and possibly conservative in their views of discipline. A follow-up study of this sample would have been interesting to determine whether their views on punishment and discipline translate to actually carrying out these behaviours in their own lives. This study is important in indicating that even in non-offender samples, animal abuse occurs, and may be related to other types of interpersonal violence.

The suggestion that animal abuse can be carried out by all members of society, not just those with history of interpersonal violence, and the lack of studies on animal cruelty using general populations, acted as a significant influencing factor in determining the nature of  Henry's (2004) study. He used a sample of college students incorporating topics lacking in previous studies, such as self-reported delinquency, observing and carrying out acts of animal cruelty, and attitudes towards the treatment of nonhuman animals. Henry added to the existing literature by demonstrating that the relationship between animal abuse and other forms of anti-social behaviours is also present within the general population, in particular finding that those who had reported carrying out or observing acts of animal abuse were more likely to be involved in other delinquent behaviours. He suggested the development of sensitivity and concern for other animals seemed to be promoted more so by the observation of animal cruelty, rather than the participations in such acts. Men who observed such acts displayed more callous attitudes, whereas women who had observed such acts displayed greater sensitivity. The relatively high base rates for incidences of animal abuse (51% reported observing at least one act of animal abuse; 18% reported taking part in at least one such

act) suggest that other factors such as age, peer groups and the presence of disinhibitors such as drugs or alcohol may have a moderating effect on the relationship between animal abuse and other antisocial behaviours. Social facilitation effects for animal abuse are likely to occur as a result of diffusion of responsibility, as is the case for many delinquent behaviours.  The limitations of the sample used by Henry highlight the need to test these relationships in a larger sample of the general population. If these relationships can be established in a small sample of college students with their restrictions of age, it is likely that studies using a broad range of the general population will unearth more robust links with animal abuse and offending.

Henry's (2004) study remains salient, as animal cruelty and delinquency were examined alongside attitudes towards animals. Trends in this field have linked animal abuse to antisocial tendencies, without considering attitudes towards animals as part of the process. Additionally, previous research has most often used offender samples, effectively ignoring the relationships between these factors in non-offender samples. As a general conclusion to the studies using offender samples, a relationship between animal abuse and antisocial behaviours has been identified, though the true directional nature of this relationship is still being debated.

*4.4. Animal welfare and morality*

Research into the area of morality and moral reasoning essentially began with the work of Piaget (1932) into the intelligence of children. This work led to the development of the theory regarding a child's reasoning stages. These stages include the sensorimotor stage (birth-18 months), preoperational stage (18 months-6 years), concrete operational stage (6 years-early adolescence) and finally, formal operational stage (from early adolescence onwards) (Piaget, 1952). Piaget (1932) believed moral

reasoning developed in parallel to reasoning abilities, and moral judgements were based on social experiences.

Kohlberg (1958, 1969) subsequently attempted to replicate Piaget's work, and to expand on the development of moral reasoning beyond adolescence. He proposed six stages of moral reasoning that fell under three levels; preconventional, conventional and postconventional reasoning. Research beyond Kohlberg and Piaget has flourished over the years. The section below shall concentrate on morality in relation to animal research.

An increasing number of studies have been conducted on the morality of animal research, often incorporating medical students as their participants (Nickell & Herzog, 1996; Wuensch & Poteat, 1998). Similar studies have incorporated the study of empathy into animal welfare (Daly & Morton, 2008; Daly & Morton, 2009; Fidler, Coleman, & Roberts, 2000). While empathy is a concept closely related to morality, it cannot offer the same understanding of an individual's concept of right and wrong; one can empathise generally, despite being antisocial specifically, as seen in child molesters who display an equal amount of empathy to accident victims compared with non-offenders (Fernandez, Marshall, Lightbody & O'Sullivan, 1999). Investigations into levels of moral reasoning alongside attitudes towards animal violence are fewer in number, despite being of great significance in this field.

In a special 30th anniversary review of his own book, Singer (2003) argues that being a different species is not an ethically sound reason for not providing the same level of consideration as one would to a member of their own species. Nonhuman animals are equal to humans in terms of their capacity to suffer and so must be subject to the same moral consideration (Singer, 2003). Studies suggest people who believe in

animal rights are characterised by positive moral attitudes and an equivalent or higher level moral reasoning than matched control groups. Interestingly and in support of Singer's argument, this concern for animals is not reserved only for animals, but generalises to concern for humans as well (Block, 2003).

An older study comparing animal rights activists and non-activists, found a wide range of opinions regarding many issues. For example, 80% of activists (vs. 31% of nonactivists) valued nonhuman life as equally as human life, 85% (vs. 15%) supported the elimination of all animal research and more than 60 % (vs. 14%) supported laboratory break-ins. Indeed, 70% of the 40 activists who believed the animal rights movement should be primarily concerned with the use of animals in clothing or fashion, also reported buying leather products (Plous, 1991). These results, although dated in terms of modern practices in animal use and methods followed by animal activists, illustrates that even within the animal rights movement opinions and practices differ, and popular stereotypes may not be entirely accurate. Research also indicates that moral reasoning levels appear not to differ according to the specific type of animals (e.g., domesticated versus wild animals) (Dunlap, 1989). As would be expected, older children have more advanced animal reasoning levels than younger children, suggesting that animal reasoning abilities improve with age, just as other reasoning abilities do (Dunlap, 1989; Galvin & Herzog, 1992). In a highly relevant study to the topic being examined in this review, Vollum, Buffington-Vollum and Longmire (2004) investigated moral disengagement and attitudes towards animal cruelty using data obtained from the 2001-2002 Texas Crime Poll. Working on the basis of Bandura's theory of moral disengagement, which suggests that individuals are able to act in cruel and inhumane ways despite their own moral standards, they collected data from more

121

than 3,000 households. The analysis indicated that, overall, the public was interested and concerned as to the problem of animal cruelty as a crime in society generally. The authors note the unsurprising finding that people who marginalise animals through moral disengagement showed less concern for animals as victims of crime, and that their attitudes were less judgemental towards such acts. The significance of this study is illustrated through the relationship between moral disengagement and attitudes towards animal abuse. These findings are argued to reflect the social and cultural foundations upon which violence towards animals can grow in magnitude (Vollum et al., 2004). If one can morally disengage to the welfare of animals, one might also morally disengage to humane care and the treatment of vulnerable humans.

*4.5. Individual differences and offending*

Studies investigating the individual differences of offenders and those with self-reported histories of delinquency are extensive and continue to flourish. Earlier studies primarily focused on the relationships between antisocial behaviour and Eysenck's Psychoticism (P), E and N factors. A recent meta-analysis investigated Eysenck's three factors and anti-social behaviour. Using 52 published and unpublished studies, Cale (2006) found that P had a moderate to large association with antisocial behaviours ($r = 0.39$), N had a moderate association ($r = 0.19$) and E a relatively small association ($r = 0.09$). These findings are unsurprising and support the general consensus surrounding the relationships between these personality factors and antisocial behaviour.

Gudjonsson, Einarsson, Bragason and Sigurdsson (2006) found that in a sample of more than 1,000 students, P contributed the most to the variance in self-reported offending, followed by impulsivity, E and a low score on the Lie scale. Once again, support was provided for the hypothesis that antisocial personality traits are

significantly related to self-reported offending. Gender differences in self-reported offending were also apparent in the results of this study. Although the most common offences for both males and females included adolescent alcohol consumption and truancy, males had a significantly higher total offending score than females. Furthermore, while females had significantly higher scores on E, N and self-esteem, males had significantly more antisocial personality traits. The summary of the findings give an interesting insight into how personality traits and gender interact to produce antisocial behaviours.

Nederlof, van der Ham, Dingemans and Oei (2010) argued that personality does not necessarily influence the specific offences adolescents are charged with, but rather influences their criminal development. Nederlof et al. argue this theory based on their research looking at personality, offence type and severity in juvenile delinquents, which found that although non-delinquent samples were different from delinquents on personality dimensions, these personality factors could not account for differences within the delinquents. This is an interesting finding and one that would be worth investigating further in order to determine whether personality factors remain largely irrelevant in differentiating between offenders, and the significance of social factors in triggering the specifics of an offender's lifestyle and offences.

Heaven (1996) investigated personality and self-reported delinquency using the "Big Five" personality dimensions described in the previous chapter. The author argued that previous researchers had focused on Eysenck's three personality factors due to the longstanding view that P exacerbates certain factors that ultimately lead to engaging in delinquent behaviours. Although this claim has long been supported in previous studies, Heaven (1996) believed difficulties with the P dimension necessitated carrying out a

study using the Big Five. The results indicated that high N, low A and low C were related to self-reported delinquency. However, the strength of these relationships varied between males and females and for the various types of delinquent behaviours. Support for the relationship between low A and delinquency is also found elsewhere (Charles & Egan, 2009). Heaven (1996) further indicated that E was not significantly related to delinquency, although sub-facets such as excitement-seeking and assertiveness were related to interpersonal violence and vandalism/ theft. Similarly, the A facets of trust, altruism and compliance were significantly related to vandalism/ theft. The main point to take from this study is the significance of N in understanding self-reported delinquency, and the need for new studies determining its significance over the course of the life span.

A more recent study further developed this field by investigating Eysenck's PEN, the Big Five, juvenile delinquency and criminal recidivism. van Dam, Janssens, and De Bruyn (2005) compared students to offenders, and found that students reported higher levels of the PEN model's E and the Big Five factors of A and O. Furthermore, although only PEN's P predicted the severity of criminal recidivism, PEN's P, and the Big Five's N and A were able to distinguish between recidivists and non-recidivists. van Dam et al. (2005) argue the reason for non-significant findings with E arise from the effects of incarceration on answering questions regarding social activities. The findings above are in line with previous research, but point to future research links between the interaction of personality and the environment particularly when dealing with criminal recidivists.

Data from the field of sensational interests also provides an insight into the relationship between personality and offending. Forensic patients were found to have

higher levels of N, and lower levels of E, O, A and C (Egan et al., 1999). The role of low C has also been implicated in weapon carrying in youths (Barlas & Egan, 2006). Here it was argued that people who are low on C (and therefore display a more irresponsible personality style), may also express a greater irresponsibility towards other areas of their life, and so will not consider the consequences of possessing a weapon. Low C alongside low A has also been implicated in the expression of physical aggression (Egan & Campbell, 2009). Similarly, low ES, low A and low C was also shown to predict sadistic personality disorder across populations from the USA and UK (Hagger-Johnson & Egan, 2010).

The brief review of personality factors implicated in offending indicates that high levels of P, high N, and low levels of A and C followed by low levels of O and E are often implicated in offending populations. It would be beneficial to extend the literature in animal welfare by carrying out a study that links these individual differences with attitudes towards animals and offending.

## 4.6. Individual differences and morality

Surprisingly, few studies have investigated individual differences, and specifically the five factor model, alongside morality. Dollinger and LaMartina (1998) argued that previous research linking moral reasoning to high levels of ego development (Gfellner, 1986), being broadminded and logical (Feather, 1988) and an increased sense of intuition (Redford, McPherson, Frankiewicz & Gaa, 1995) was evidence enough to assume that moral development would be positively related to the Big Five factor O. Results confirmed that O was the only factor to be significantly related to the Defining Issues Test used to measure moral reasoning. Dollinger and LaMartina argued that one possible reason why people who are more open would show

increased levels of moral reasoning is because higher levels of moral reasoning often require the ability to reconsider their judgements and be individualist, and the traits of O are ideal for assisting in this process.

Walker (1999) conducted an interesting study where he asked participants to provide descriptions of moral, religious and spiritual exemplars, the descriptions of which were analysed in terms of the five factor model. Overall, the most salient factors in the descriptions of such exemplars were A and C, followed by O, E and finally N. Although these findings do not relate directly to the topic of this research, they are interesting in highlighting the interactions personality factors may have on higher values. On the other hand, Walker (1999) notes that the participants were required to report on ideal exemplars, not real ones, and this may have resulted in a sum of traits that are unlikely to occur in real individuals.

Support exists for the view that moral values and moral development follow a common pathway across cultures (Gibbs, Basinger, Grime, & Snarey, 2007; Guerra & Giner-Sorolla, 2010). Gibbs et al. (2007) argues that it is the presence of diverse social experiences that assist in the development of an individual's theory of mind, and that this theory of mind promotes the development of moral judgement. The notion that the development of morality follows a common cross-cultural pathway allows researchers to carry out such cross-cultural research and interpret the findings based on other variables such as social conditions or personality factors.

*4.7. Morality and offending*

The final section of this introduction provides a brief review of the extensive literature into the relationship between morality and offending. Blasi (1980) carried out

one of the earliest reviews into this field, and found 10 out of 15 studies supported the view that delinquent persons have lower levels of moral reasoning than non-delinquent individuals. This study however suffers from a major limitation; primarily the lack of quantitative techniques in the analysis of the studies included in the meta-analysis. In an attempt to improve on Blasi and other meta-analyses of the time, Stams et al. (2006) carried out their own meta-analysis on the moral judgement of juvenile delinquents, including studies that were also employed in the previous meta-analysis. Overall, the meta-analysis produced a significantly large effect size (d = .76), which indicated that delinquents reported lower moral judgement scores even when socioeconomic status, culture, gender, age and intelligence were accounted for.

More recent studies have continued to support the presence of less mature moral reasoning in delinquents. Chen and Howitt (2007) compared male offenders in youth correctional institutions with students, and found that moral reasoning was significantly less mature in the offenders than in the controls, even though the offenders' mean age was higher than that of the students'. One implication derived from these findings is the need to understand whether offenders follow different age-related developmental processes to non-delinquent individuals.

Palmer and Hollin (1998) identified a precise area in which offenders express a deficit in moral development. Their research question specifically addressed whether the moral immaturity observed among offenders was evident across all moral judgements, or whether it was specific only to those values that are significant to offending behaviour. Consistent with previous research, the offenders scored lower than non-offenders on the moral values, however, the deficit in moral development was particularly pronounced for the moral values related to legal issues. The implications of

these findings lead to the conclusion that the development and expression of moral values may differ across offenders based on offence type. Palmer (2003a) goes on to argue that moral reasoning can be incorporated along with social factors to mediate the relationship between behaviour and parenting. Children who come from a harsh background develop negative models of the world which they then use to interpret all subsequent situations. This leads the children to act aggressively, which may ultimately develop into offending behaviour. Future research in this area would benefit from investigating the exact areas of deficit in moral development, and how these interact with the environment to produce the offending behaviours.

Palmer (2003b) argues that in investigating moral development and offending, certain factors need to be taken into account. For instance, the majority of past research has employed male adolescent offenders. The precise nature of the relationship between moral development and offending is not so well known for females and adults. Furthermore, as with all studies investigating offending, offending behaviours that have not been reported either by the individual or detected through official records cannot be accounted for. Finally, type of offence has been identified as an important variable in differentiating between offenders on moral development, and it could be that the type of victim or seriousness of the offence may also play a similar role (Palmer, 2003b). These are all important cautionary points and ones that should be taken into account for future research.

The primary purpose of the present study is to incorporate the research presented above on attitudes towards animals, individual differences, moral development and offending into one research study. It is expected that the results of this

study will follow previous results. In particular we expect males to display less positive attitudes towards animals than women (Henry, 2004; Raupp, 1999) and positive attitudes towards animals will also be associated with increased levels of O, A and C (Austin, Deary, Edwards-Jones & Arey, 2005; Furnham, McManus & Scott, 2003). The present study will not be able to determine whether participants have previously engaged in acts of animal abuse, however, studies indicating that those involved in animal abuse are also involved in other delinquent behaviours (Henry, 2004) leads us to conclude that those with less positive attitudes towards animals and so more likely to abuse them may also be involved in other delinquent behaviours. In line with previous research (Block, 2003; Vollum, Buffington-Vollum &Longmire, 2004), it is also hypothesised that positive attitudes towards animals will also be related to greater moral judgement. In terms of individual differences and delinquent or antisocial behaviours, it is expected that people scoring low on ES and low on C, A, E and O will report more delinquent or antisocial behaviours (Cale, 2006; Egan et al., 1999; Heaven, 1996), and that males will report more offending and antisocial traits than women (Gudjonsson et al., 2006). Finally, we predict that increased levels of O will be positively related to more sophisticated moral reasoning (Dollinger & LaMartina, 1998) and delinquency will be related to lower levels of moral judgement (Chen & Howitt, 2007; Stams et al., 2006). The interaction between individual differences, animal welfare, moral judgement and offending remains to be seen from the results of this study.

*4.8.* Method

*4.8.1. Measures*

Alongside the Zalaf Animal Welfare Scale (ZAWS) and IPIP Big Five personality factor markers (Goldberg, 2001) (see chapter 3), the following self-report measures were used in this study.

*4.8.1.1. The Self-Report Early Delinquency Instrument (SRED) (Charles & Egan, 2005)*

The self-reported delinquency measure used in this study was adapted from the SRED used in Charles and Egan (2005), which in turn was adapted from the original SRED developed by Moffitt and Silva (1988) in New Zealand. Items loading more than .6 on the factors identified by Charles and Egan (2005) were chosen for inclusion in the modified SRED used in this study in order to produce a shorter measure. The reason for this was so as to produce a shorter version of the SRED using items known for their reliability.

The shortened SRED consisted of 15 offences which participants are requested to indicate whether they had been involved in, and how frequently. The response choices were taken from Charles and Egan (2005), namely 0 = never, 1 = once and 2 = more than once.

*4.8.1.2. The Community, Autonomy and Divinity Short Scale (CADSS) (Guerra & Giner-Sorolla, 2010)*

The CADSS was used in this study to measure moral values, and also to assist the authors in collecting further data for their pilot version of the CADSS. Therefore the CADSS is not yet available in a published manuscript.

The CADSS consists of 30 items upon which participants are requested to express their opinion regarding acts they consider morally wrong and right. Responses range from never (1) to always (7). The subscales comprise Community (e.g., An

130

action/ behaviour is wrong if it is socially condemned); Autonomy (e.g., An action/ behaviour is right if it expresses someone's autonomy); and Divinity (e.g., An action/ behaviour is wrong if it pollutes the spirit).

For these two questionnaires that translation process was carried out by the current author and a native Greek speaker. The SRED and CADSS were given to a native Greek speaker to do the translations, and the current author carried out the back translations into English. There were no major discrepancies and any minor issues were discussed amongst the translators and resolved. All questionnaires in this chapter are available in Appendix B.

*4.8.2. Procedure*

The procedure was identical to that used in the previous study in this thesis. Both versions of all four questionnaires were made available online through an online questionnaire tool accessible by English and Greek-speaking participants. The links were forwarded to friends, family and through Facebook, and people were asked to forward it on themselves, crowd-sourcing a population sample.

Consent forms and debriefing forms were almost identical in content as the ones provided in the previous studies. Participants were included in the analysis if they completed all four questionnaires. Relevant information regarding refusal rates is provided by questionnaires that were left incomplete, as presented below.

For the UK, while 314 individuals started the survey, data for the analysis was based on 227 individuals, pointing to a refusal rate to complete the entire length of the survey of about 28%. Demographical data is available for 63 of the 87 people who did

not complete the survey. Their ages ranged from 16-62 years old (*M*=32.6, *SD*=11.3). The sample consisted of 16 males and 47 females.

In Cyprus, 413 individuals began the survey but data for the analysis was based on 299 individuals, which points to a similar refusal rate of about 28%. Demographical data was available for only 82 of these 114 people. Their ages range from 15-46 years old (*M*=27.2, *SD*=7.6). The drop-out sample consisted of 26 males and 56 females.

The refusal rates observed in the UK and Cyprus samples were to be expected considering the length of the survey as a whole (107 items); these rates, however, are not disheartening considering the high refusal rates reported for both electronic and non-electronic surveys across studies (Cook, Heath & Thompson, 2000). The reasons offered in the previous chapters for non-completion of the surveys also apply here.

*4.8.3. Ethical issues*

Ethical issues were considered extensively as with the previous studies. All previously employed preventative and protective measures were taken in this study to ensure the well being of the participants.

*4.8.4. Participants*

The British sample consisted of 60 males (26%) and 167 females (74%). The age range was 14-72 years old (*M* = 33.1 *SD* = 13.1). The Cypriot sample consisted of 62 males (20.7%) and 237 females (79.3%). The age range was 16-60 years old (*M* = 27.1, *SD* = 7.2). An independent samples t-test found that British participants were significantly older than Cypriot participants ($t$ (328) = 6.30, $p$ < .001) with a medium effect size of r=.30. Chi square tests indicated no significant gender difference proportions between nations ($\chi$(1)=2.350, $p$>.05).

*4.8.4.1. Total sample*

For the purposes of data analysis, the sample was combined and so the demographics as a whole shall be presented below. A total of 227 UK residents (43.2%) and 299 (56.8%) Cypriot residents were included in the analysis. Ages ranged from 14-72 years ($M = 29.7$, $SD = 10.6$), and comprised 122 males (23.2%) and 404 females (76.8%).

## *4.9.* Results

In keeping with the method used in previous chapters to analyse the data, and taking into account that the two samples are only significantly different on age, the two samples were combined for the following exploratory factor analyses and path analyses.

*4.9.1. EFA for the SRED*

An initial parallel analysis was carried out on the data in order to determine how many factors to retain, which suggested that factors with eigenvalues over 1.3 should be retained.  Following this criterion being considered, the Principal Components analysis using varimax rotation indicated the presence of four factors. After the removal of two items that did not load on any of the factors, four factors remained with a total of 13 items. Following a number of analyses in which a further five items that did not load on any factor and one factor which was made up of two items only were removed, a two factor solution remained. The first factor was labelled Antisocial behaviour, and the second factor Theft. Please see Table 4.1 for the items relating to each factor and the alpha reliabilities.

Table 4.1. *Summary of EFA results for the SRED (N = 526)*

| | Rotated Factor Loadings | |
| --- | --- | --- |
| Item | Antisocial | Theft |
| Carrying a weapon | **.77** | .01 |
| Using a weapon | **.76** | -.02 |
| Breaking windows of empty building | **.62** | .21 |
| Hitting a person to hurt them | **.47** | .23 |
| Taking a car without permission | **.43** | .11 |
| Stealing between 50p and £10 | .15 | **.86** |
| Stealing less than 50p | .03 | **.84** |
| Shoplifting | .19 | **.68** |
| Eigenvalues | 2.03 | 2.02 |
| % of variance | 25.39 | 25.21 |
| α | .60 | .74 |

*4.9.2. EFA for the CADSS*

In accordance with the analysis carried out by the authors of the CADSS, a Maximum Likelihood analysis with Varimax rotation was carried out on the data. Cross-loading and non-loading items were removed, resulting in 20 items loading on four factors. The first factor was labelled Autonomy, the second factor External Responsibility, the third factor Social Rules, and the fourth factor Divinity. Please see Table 4.2 for the items relating to each factor and the alpha reliabilities.

Table 4.2. *Summary of EFA results for the CADSS (N = 526)*

| | Rotated Factor Loadings | | | |
| Item | Autonomy | External Responsibility | Social Rules | Divinity |
|---|---|---|---|---|
| Wrong if restricts personal choice | **.93** | .16 | .05 | .07 |
| Wrong if restricts privacy | **.87** | .15 | .06 | .12 |
| Wrong if restricts possibility to defend themselves | **.82** | .13 | .05 | .11 |
| Wrong if restricts freedom of choice | **.78** | .20 | .08 | .03 |
| Wrong if restricts rights | **.68** | .19 | .15 | .06 |
| Right if accepted by family | .06 | **.77** | .20 | .20 |
| Right if respects family traditions | .06 | **.77** | .13 | .18 |
| Right if gain respect from family | .08 | **.63** | .07 | .13 |
| Right if expresses personal choice | .37 | **.59** | -.15 | .07 |
| Right if expresses autonomy | .27 | **.54** | -.05 | .08 |
| Right if protects needs | .30 | **.52** | .02 | .05 |
| Wrong if society considers unacceptable | .03 | -.01 | **.92** | .18 |
| Wrong if opposes society's rule | .05 | .00 | **.91** | .15 |
| Wrong if socially condemned | .04 | .07 | **.69** | .28 |
| Wrong if against rules of social group | .24 | .15 | **.61** | .20 |
| Wrong if against God's will | .03 | .11 | .19 | **.84** |

| | | | | |
|---|---|---|---|---|
| Wrong if against faith | .08 | .08 | .22 | **.81** |
| Right if accordance with scriptures | .00 | .39 | .12 | **.63** |
| Wrong if unnatural | .17 | .16 | .23 | **.45** |
| Wrong if against natural order | .35 | .18 | .27 | **.43** |
| Eigenvalues | 3.90 | 2.88 | 2.86 | 2.46 |
| % of variance | 19.50 | 14.39 | 14.28 | 12.30 |
| α | .92 | .83 | .88 | .83 |

The factor analyses for the two questionnaires indicated that the measures are appropriate for use in both populations. This thesis has already established that the ZAWS and IPIP Big Five factor markers are appropriate for the UK and Cypriot populations.

*4.9.3. Descriptive statistics*

Table 4.4 presents descriptive statistics for all the variables included in the analysis. The Antisocial and Theft subscales were combined to produce a single factor measuring delinquency which was labelled Del Total Score. All four subscales from the morality measure were also combined to produce a single morality factor labelled Mor Total Score. Correlations were calculated before the variables were added together. The Antisocial and Theft subscales were positively correlated ($r(524)=.29, p<.001$). Correlations between the morality variables are below in Table 4.3. Single variables were created so as to produce a clearer model in the path analysis. High scores on these variables mean higher reported delinquency and morality, respectively. Means, standard deviations and reliabilities are presented for each component of the scales. All subscales were highly reliable and appropriate for use in the subsequent analyses.

136

Table 4.3. *Correlations between morality variables (N=526)*

|  | Social Rules | External Responsibility | Divinity |
|---|---|---|---|
| Autonomy | .22** | .42** | .29** |
| Social Rules |  | .16** | .48** |
| External Responsibility |  |  | .39** |

**p<.01

Table 4.4. *Descriptive statistics for all variables (N = 526)*

|  | Mean | Std. Deviation | Reliability |
|---|---|---|---|
| ZAWS | 60.12 | 4.99 | .74 |
| Del Total Score | 9.99 | 2.58 | .69 |
| Mor Total Score | 90.60 | 16.86 | .89 |
| E | 32.02 | 7.91 | .86 |
| ES | 28.96 | 8.06 | .86 |
| C | 34.18 | 6.83 | .79 |
| I | 37.83 | 5.67 | .75 |
| A | 41.22 | 5.59 | .80 |

*4.9.4. Correlations between variables entered into model*

Table 4.5 shows the Pearson's correlations carried out on the variables that were entered into the model. Country of residence (coded as 1 for UK and 2 for Cyprus) was positively related to the ZAWS, morality and A. On the other hand, country was negatively related to age, delinquency, ES and I. Age was positively related to delinquency, ES, C and I. Age was negatively related to gender (coded as 1 for males and 2 for females) and morality. Gender correlated positively to the ZAWS, morality, C and A. Gender also correlated negatively with delinquency and ES. The ZAWS was

positively correlated with morality, C and A, and negatively correlated delinquency. Delinquency correlated negatively with morality, C and A. Morality was positively related to E, C and A, whereas it was negatively related to ES and I. E related positively to all personality variables except I, and ES related positively only to A. C was positively correlated to I and A, and I was positively correlated with A.

Table 4.5. *Correlations between variables subsequently used in path analysis*

| | Age | Gender | ZAWS | Del Total Score | Mor Total Score | E | ES | C | I | A |
|---|---|---|---|---|---|---|---|---|---|---|
| Country | -.28** | .07 | .40** | -.25** | .40** | .07 | -.18** | -.04 | -.12** | .14** |
| Age | | -.14** | -.07 | .11* | -.14** | -.01 | .22** | .16** | .11** | .07 |
| Gender | | | .18** | -.36** | .13** | .04 | -.12** | .09* | -.07 | .25** |
| ZAWS | | | | -.28** | .24** | -.03 | -.07 | .14** | .06 | .27** |
| Del Total Score | | | | | -.23** | -.03 | .05 | -.15** | .04 | -.28** |
| Mor Total Score | | | | | | .09* | -.10* | .14** | -.09* | .24** |
| E | | | | | | | .17** | .02 | .31** | .28** |
| ES | | | | | | | | .06 | .07 | .10* |
| C | | | | | | | | | .11** | .18** |
| I | | | | | | | | | | .23** |

$**p<.001$, $*p.05$

*4.9.5. Relationships between the ZAWS, Big Five markers, Delinquency, Morality and demographics*

Pathways in the model were inserted based on the hypotheses. Where no hypotheses were proposed, correlations were observed and if theoretically meaningful, pathways inserted based on these. Covariances between variables were only added where pathways were removed due to non-significance but where correlations were present. For instance, covariances between personality variables were added after observing correlations, and pathways were added to the country variable based on correlations since there were no hypotheses to guide the author.

This analysis was carried out using Amos 16.0 for SPSS. The combined sample of UK and Cypriot participants, excluding those who hadn't completed all four questionnaires, were used in the analysis ($N = 526$). A minimum sample size requirement of 100 participants to carry out the path analysis met (Worthington & Whittaker, 2006). The absence of a line connecting variables signifies no hypothesised direct effect. Predictive pathways have standardised regression coefficients beside them and all are statistically significant at p<.05 or less.

Due to the complexity of the analysis and the large numbers of variables, separate smaller analyses were carried out with various combinations of the variables. The models below serve to show how the analysis progressed to the final model which includes all the variables.

*4.9.5.1. Model 1*

Figure 4.1 presents the relationships between the ZAWS and the new variables, delinquency and morality. All pathways are significant at p<.05. The chi-

140

square could not be calculated ($\chi^2 = .000$) indicating a problematic model. Various fit

indices also pointed to a problematic model (CFI = 1.000, RMSEA = 0.234).

Low delinquency predicted scores on the ZAWS (-.24), and high morality

predicted scores on the ZAWS (.18). Low morality predicted delinquency (-.23).
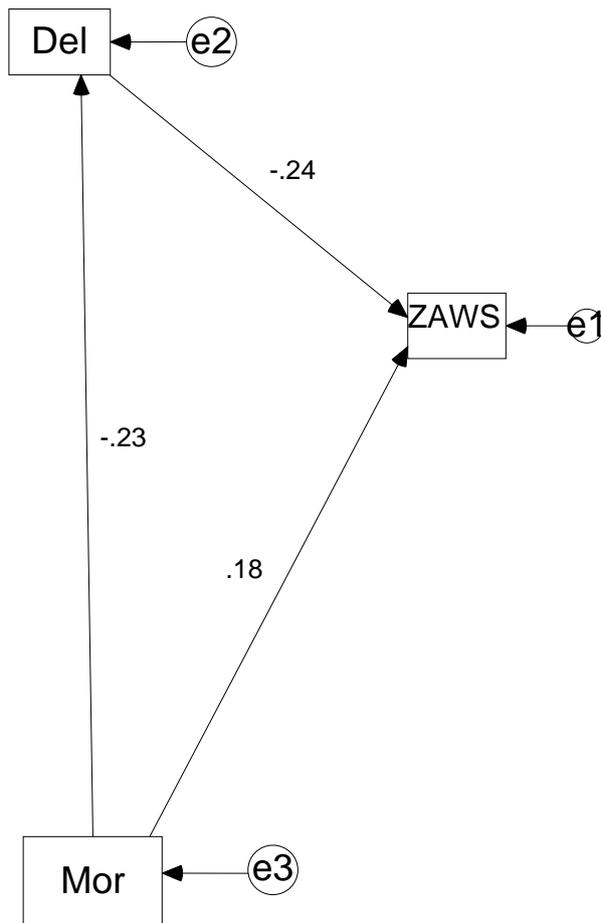


Figure 4.1. Path analysis showing relationships between the ZAWS, delinquency and morality

*4.9.5.2. Model 2*

Figure 4.2 presents the relationships between the ZAWS, delinquency,

morality and the addition of demographic variables. All pathways are significant at

p<.05. The chi-square was non-significant ($\chi^2 = 5.721$, *p*=.057). Fit indices indicated

that the model fit had improved from the previous model and in fact this model fit the data well (CFI = 0.990, RMSEA = 0.060, TLI = 0.948).

Females (.15), Cypriot residents (.37) and those reporting higher morality (.16) presented with higher scores on the ZAWS. Males (-.34), UK residents (-.19) and those with lower levels of morality (-.11) reported more delinquent behaviours. Females (.10) and Cypriot residents (.39) reported higher levels of morality.
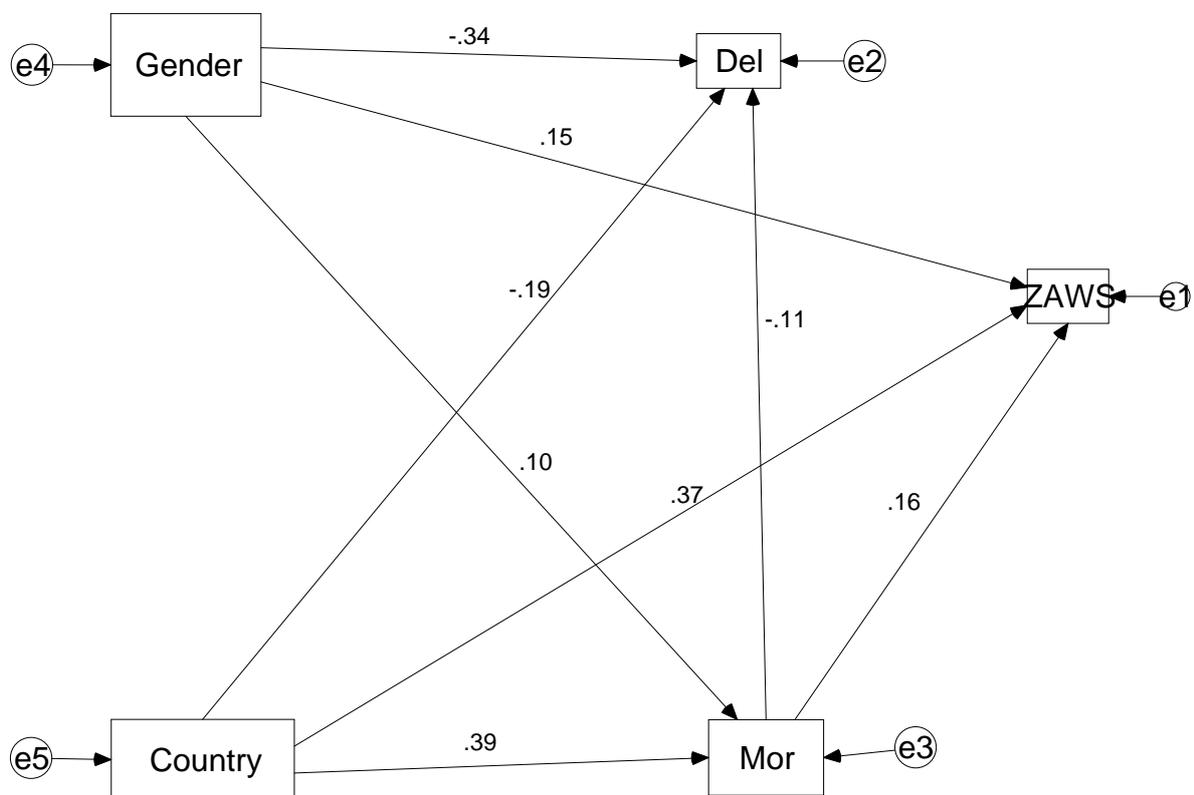


Figure 4.2. Path analysis showing relationships between the ZAWS, delinquency, morality and demographics

*4.9.5.3. Model 3*

Figure 4.3 presents the relationships between the ZAWS, delinquency, morality and personality. All pathways are significant at p<.05. The chi-square was significant ($\chi^2$ = 23.976, p<.05). Fit indices indicated that the model fit was roughly as

good as the previous model, but markedly better than the first one (CFI = 0.961, RMSEA = 0.052, TLI = 0.891).

Low delinquency (-.14), high morality (.25) and high A (.16) predicted higher scores on the ZAWS. Delinquency was predicted by low A (-.24), low C (-.10), high I (.09), and low morality (-.15). Morality was predicted by high A (.24), high C (.12), low I (-.18), low ES (-.14) and high E (.09).
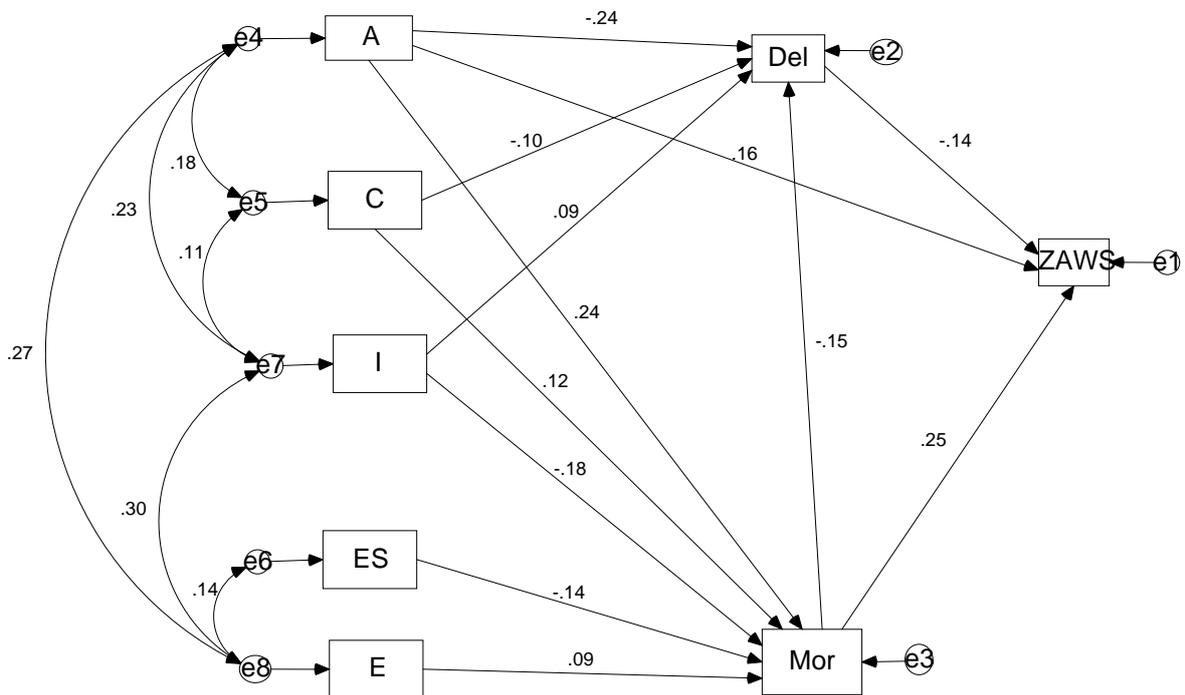


Figure 4.3. Path analysis showing relationships between the ZAWS, delinquency, morality and personality

### 4.9.5.4. Model 4a

Figure 4.4 presents the relationships between all variables included in the analysis, with significant pathways at p<.001. By using a strict significance criterion, we are able to create a more conservative and simplified model at the expense of losing interesting relationships. The chi-square was significant ($\chi^2$ = 62.563, p<.001).

The CMIN calculated at 3.91 indicates a good model fit. Various fit indices indicated that the model fit the data well (CFI = 0.909, RMSEA = 0.074, TLI = 0.840). Although the model fit is adequate, it is clearly not an improvement on the previous model. For clarity purposes, the model below is not presented with covariances and errors. Please see Figure 4.6 in Appendix A.4 for a complete depiction of the model including covariances and errors.

Higher scores on the ZAWS were predicted by high A (.22) and being residents of Cyprus (.37). Delinquency was predicted by low A (-.17), being male (-.31), and being residents of the UK (-.21). Morality was predicted by high A (.19) and being residents of Cyprus (.38). Females (.25) reported higher A. Those reporting higher levels of ES were older individuals (.21).
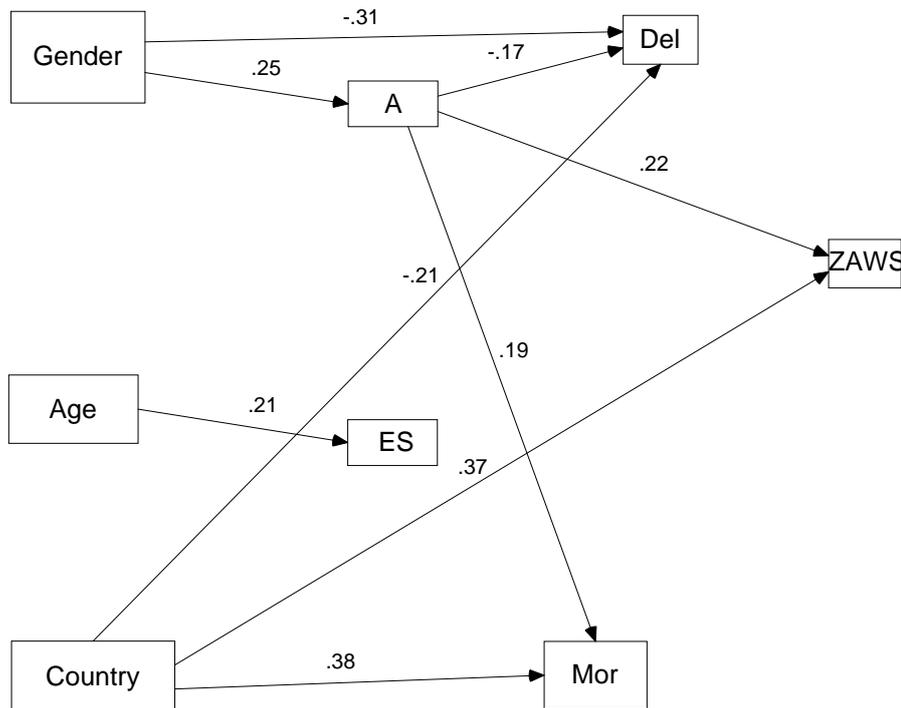


Figure 4.4. Path analysis showing conservative pathways for all the variables included in the analysis.

*4.9.5.5. Model 4b*

Figure 4.5 presents the relationships between all variables included in the analysis. All pathways are significant at p<.05. The chi-square was non-significant ($\chi^2$ = 28.183, p=.080) indicating a good model fit. Various fit indices indicated that the model fit the data well (CFI = 0.985, RMSEA = 0.03, TLI = 0.965). This final model is an improvement over the earlier models and shows how all the variables in the analysis interact. Seeing as new and interesting links with the ZAWS and country were discarded in the previous model, it was decided to retain the full model (Model 4b) and simply observe the conservative model for pathways that are stronger. As above, the figure below does not show covariances and errors, in order to make the relationships more transparent. Please see Figure 4.7 in Appendix A.4 for the full model including covariances and errors.

The ZAWS was predicted by low delinquency (-.13), high A (.17), high C (.11), and being a resident of Cyprus (.35). Delinquency was predicted by low A (-.15), being male (-.30), being a resident of the UK (-.22) and low C (-.11). Morality was predicted by high A (.16), high C (.12) and being residents of Cyprus (.38). Females (.28), older individuals (.13) and Cypriot residents (.16) reported higher A. Those reporting higher levels of ES were older individuals (.19) and UK residents (-.12). Females (.12) and older individuals (.17) reported higher levels of C. UK residents (-.12) reported higher levels of I.
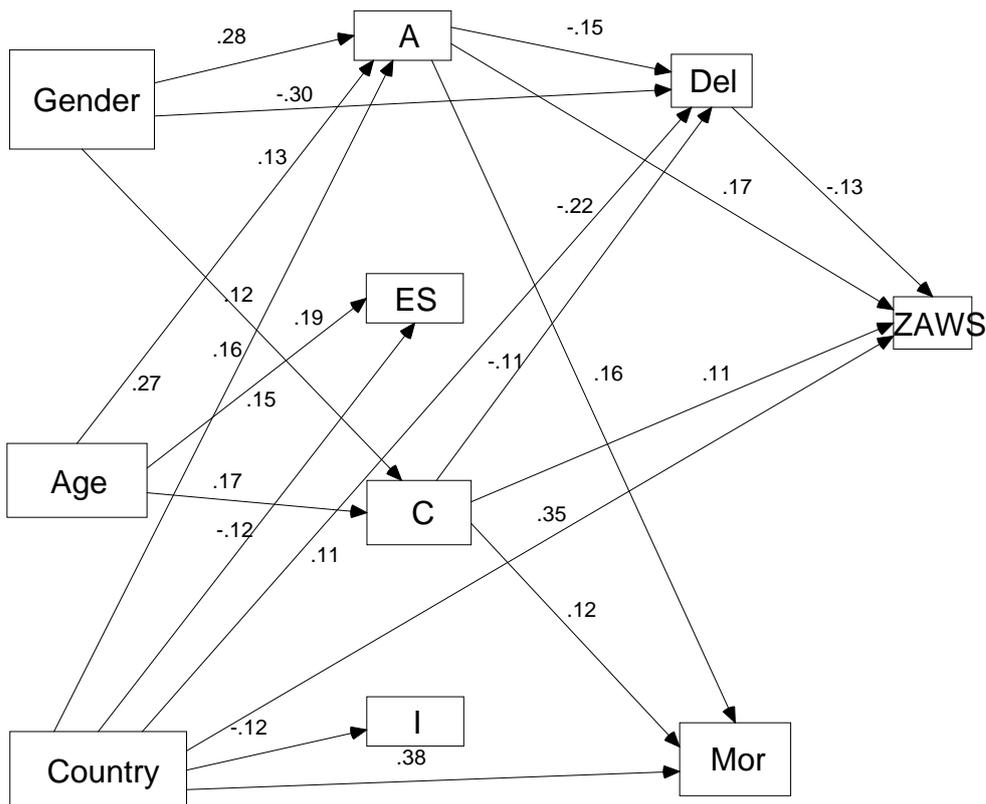
Figure 4.5. Path analysis showing standardised regression coefficients for all the variables included in the analysis.

## *4.10.* Discussion

Results from this study indicated people who reported higher scores on the ZAWS also reported low delinquency, high A, high C and were more likely to be Cypriot. Those reporting more delinquent behaviours expressed low A and low C, and were more likely to be males and residents of the UK. Those with higher scores on morality also reported high A and high C, and were more likely to be Cypriot residents. People with more agreeable traits tended to be females, older in age and

146

Cypriot. Those who are more emotionally stable tended to be older and UK residents. Those reporting higher scores on C were more likely to be females and older in age. Finally, people reporting high I were more likely to be UK residents. The discussion below will focus on all relationships present in model 4b. However, it is worth noting the strongest predictors of the variables in model 4a as specified by a stricter significance criterion. Primarily, the strongest predictors of the ZAWS are A and being residents of Cyprus. Delinquency's strongest predictors are being male, low A, and being residents of the UK. Morality is most strongly predicted by high A and being Cypriot residents. Finally, the strongest predictors of A are being Cypriot residents, and of ES increased age.

The finding that Cypriots have higher scores on the ZAWS has also been shown in previous chapters of this thesis. It was previously argued that this may be because Cyprus is a far smaller country than the UK and Cypriots are more often in contact with the rural lifestyle and animals in general.

A number of items in the ZAWS refer to taking care of animals, and providing shelter and food. A highly conscientious person would be vigilant about providing the appropriate care for an animal, even if a strong bond was not present. Similarly, the agreeable traits that facilitate the development and growth of interpersonal relationships, may also translate to relationships with animals. Once again this supports previous research (Austin et al., 2005), and findings from chapter 3 of this thesis.

The inference taken from previous research is that those reporting fewer delinquent behaviours should have higher scores on the ZAWS. This was demonstrated in the present study and is a starting point for future research to focus

on. It is vital to understand how a constellation of criminal behaviours influences attitudes towards animals and, indirectly, attitudes towards people in general.

The hypothesis that females would report higher scores on the ZAWS was not met here and contradicts previous findings (Henry, 2004; Raupp, 1999). Chapters 2 and 3 also demonstrated a relationship between the ZAWS and gender. The proportion of females to males was approximately the same in the previous chapter as in this one, so there appears to be no obvious reason why this relationship should not be demonstrated here. It would appear that as further variables are added to the model (in this case, delinquency) the relationship between gender and attitudes becomes non-significant. Further studies would clarify whether additional variables are able to moderate the strength of the relationship between gender and attitudes towards animals.

The results here support previous findings that males report more delinquent acts (Furnham & Thompson, 1991; Gudjonsson et al., 2006). Crime rates for recorded crimes in Cyprus were 936.96 per 100,000 inhabitants (UNODC, 2006) and for the UK the corresponding number was 10,399.21 per 100,000 inhabitants (UNODC, 2006). The finding that UK residents engage in more delinquent acts may be a reflection of the difference in crimes rates between the two countries, or of social factors such as alcohol consumption. Despite an increase in alcohol consumption per capita over the years, Cyprus still maintains a lower consumption average than the UK (9.3 litres of pure alcohol vs. 13.4, respectively) (World Health Organisation, 2011). Once the relationship between alcohol, aggression and criminality is taken under consideration (Wells, Graham, Speechley & Koval, 2005), the interaction between increased alcohol use and higher crime rates should not be a surprising reason for the

current findings. On the other hand, as argued below, this study suffers from sampling issues and it may be that the difference in crime rates can be attributed to these issues. Furthermore, the finding that agreeable and conscientious people engage in fewer delinquent acts supports previous research (Cale, 2006; Heaven, 1996) and predictions made previously.

That Cypriots are more moral than the British is unsurprising considering the size of Cyprus, and the commanding presence of religion. The 2001 census carried out in Cyprus indicated that approximately 94.8% of the population reported being Christian Orthodox (Statistical Service, 2004), as part of the Greek Orthodox church which has been present on the island since about 45AD (Church of Cyprus, 2008). Only about 0.1% did not report a religion, and 0.2% reported being atheists (Statistical Service, 2004). In the UK 71.8% reported being Christian (following the Church of England, Church of Scotland, Church in Wales, Catholic, Protestant and all other Christian denominations), 2.8% Muslim, followed by smaller numbers for other religions. The percentage of people who did not report a religion was 7.8% and 15.1% reported being atheists (Office for National Statistics, 2004). Statistics on religious observance also follow a similar trend. A survey by Manchin (2004) indicated that Cyprus has a weekly participation rate of 25% of the population whereas the UK has a weekly participation rate of between 10-15%. The dominance of one church and one religion in Cyprus makes it easier to promote such values as perceived as moral and therefore it is not surprising that the analysis has indicated Cypriots as having increased levels of morality than the British.

The positive relationship between A and C with morality does not support Dollinger and LaMartina (1998), who found that the best predictor for morality was O,

however is in accordance with Walker (1999). The role of C with morality is unclear; however, certain assumptions can be made about people expressing high levels of C. These are people who like order as opposed to chaos, and respect the structure of social rules and society as a whole. Morality as measured by the CADSS comprises items referring to religion and complying with social rules. Conscientious individuals express more moral values specifically in relation to society's rules. The relationship between A and morality is slightly clearer, as highly agreeable people are often characterised as sympathetic and caring towards others. A highly moral person may be characterised in a similar fashion, and so it is not surprising that these two characteristics are related.

That females in this study show more agreeable and conscientious traits than males also supports previous research (Costa, Terracciano, & McCrae, 2001; McCrae & Terracciano, 2005a; McCrae & Terracciano, 2005b). Likewise, older individuals being more conscientious, agreeable and emotionally stable supports findings by Goldberg, Sweeney, Merenda, & Hughes (1998), McCrae (2001), McCrae et al. (1999) and McCrae et al. (2004). The majority of these studies have been carried out cross-culturally, and these replicable findings can now be applied to Cyprus also. The relationship between age, C and A can argued to be robust due to the sample sizes and diversity within the cultures having been examined.

Major cross-cultural studies have indicated that significant personality differences exist between cultures, with personality differences being less prominent between individual countries. For instance, Allik and McCrae (2004) found that European and American were more outgoing and open to experience, whereas Asian and African cultures were introverted and traditional. There is therefore no reason to

150

expect that the UK and Cyprus would be significantly different on personality traits seeing as they are both modern European countries. The differences for scores on all three personality variables are in fact very small. For A, the means and effect sizes are as follows: Cyprus $M = 41.88$, UK $M = 40.34$; r = 0.14. For ES: Cyprus $M = 27.72$, UK $M = 30.60$; r = 0.19. Finally for I: Cyprus $M = 37.23$, UK $M = 38.63$; r = 0.13. It appears the sample sizes make these differences significant and the fairly small effect sizes further substantiate this argument. On the other hand, despite both being European countries with similar standards of living, it may be that the cultural differences that are present are sufficient in creating differences in the personality traits of their populations. Furthermore, high levels of A in Cyprus and high ES in the UK have been supported in Chapter 3 of this thesis. This finding warrants further research; future studies employing representative samples may in fact find that the result here does not replicate when more rigid recruitment techniques are employed. In the case that this result is confirmed, an opportunity will arise for such researchers to explore this difference and see where it originates from and how it influences other aspects of the cultures in question.

The prediction that O would be related to increased levels of morality was not demonstrated here. Research into the Big Five and morality is limited, and it may be that what Dollinger and LaMartina (1998) demonstrated in their own study is still an uncertain result that needs further investigating. In fact, O and E did not appear to have any significant contributions to make to a model incorporating the areas investigated above. The hypotheses regarding O and E with delinquency, and O with positive attitudes have not been met here.

That high levels of morality did not predict higher scores on the ZAWS does not support hypotheses derived from previous results (Block, 2003; Vollum et al., 2004), and was surprising, as was the unsupported prediction that delinquency should be related to lower levels of morality. A consensus appears to exist regarding this relationship as, besides making intuitive sense and being face-valid, it has been demonstrated both over time and cross-culturally. Hypotheses regarding delinquency, ES and E were not supported here, either. Previous research has primarily focused on juvenile delinquency and those with a known criminal history. While the present study included a wide age range, the conviction rates reported by participants were minimal. This may be one reason why these relationships were not demonstrated. Replication with an offender sample would seem warranted.

A limitation of this study was the use of self-report data and the possibility of deception associated with self-enhancement that is inherent with this method. The survey was conducted online and all data were kept anonymous, so it is unlikely that the use of self-report would have had major detrimental effects on the data. Similarly, the demographical range of the sample is not ideal as females, and younger adults are over-represented for both the Cypriot and British samples. Unfortunately, this is a problem faced throughout this thesis and it cannot be easily remedied when internet surveys are used. When time and money constraints do not present a problem, it is easier to control for the distribution of the sample's demographics in relation to the target population.

Assuming it is not simply a sampling matter, the findings here open up new research pathways for understanding how exactly it is that two countries with a similar

way of life differ so much in their personality, attitudes towards animals, and levels of criminality. The relationship specifically between attitudes towards animals and delinquency is an interesting one, and would benefit greatly from longitudinal research which could potentially identify the direction of the relationship. Future research could employ the ZAWS with child samples and shed further light on issues such as humane education programmes and the effectiveness of animal-assisted interventions.

The results here show that attitudes towards animals are related to personality, delinquency and country of residence. New relationships have been established where previously none have been identified, and previously established relationships have been further strengthened. Researchers in this field are now at the forefront of a quickly developing understanding of these relationships. The need to go forward is even more pressing now the beginning has been made.

Chapter 5: Attitudes towards animals and correlates in primary school children

Children hold the future of society in their hands. It is, therefore, of no surprise that psychological researchers often choose to observe children in their attempts to understand how thought processes and behavioural patterns emerge and develop through lifetime. In previous sections of this thesis, adult members of the general public had been approached and asked to give their views on attitudes to animal welfare. For this study, pre-adolescents (8-11 year olds) were examined in relation to the same constructs, in the hopes that the findings would allow for a broader understanding of how attitudes towards animals interact with personality, knowledge of animal welfare and treatment of animals in children. This is salient, as Endenburg and van Lith (2011) argued that animals are able to exert a positive influence on the emotional, social and cognitive development of children. The extent to which knowledge of animals, treatment of animals and personality have an interacting effect on attitudes towards animals will be examined below.

*5.1. Attitudes of children towards animals*

Empathy is positively related to attitudes towards animals (Daly & Morton, 2006). Primary school children who preferred both cats and dogs reported higher levels of empathy than those who preferred cats or dogs only; owners of both cats and dogs were more empathic than those who owned only a dog, only a cat, or neither; attachment to their pets correlated positively with self-reported empathy; and finally, girls were significantly more empathic than boys (Daly & Morton, 2006). Despite this work, studies into attitudes of children towards animals are still relatively uncommon.

154

Whereas empathy is regarded as an innate character trait (Preston & de Waal, 2002), attitudes can be changed as a result of exposure, contact and increased knowledge of the object in question (Glassman & Albarracín, 2006). For these reasons, children's attitudes towards animals will be examined in the hopes that significant gaps in the literature will be filled.

The level of bonding with a pet and subsequent bereavement when this pet is lost is an important indicator of general attachment levels, and attitudes towards animals. Brown, Richards, and Wilson (1996) used a sample of 55 adolescents between the ages of 12-17 to examine pet bonding and bereavement following pet loss. Adolescents with a greater bond to their pet experienced more intense grief at their loss, and the degree of bonding and intensity of bereavement was greater for girls. There are a number of difficulties inherent in finding adolescents who have recently lost their pet, and this study suffers from significant methodological flaws. The total sample was very small (although gender was distributed evenly). Most participants were middle class, and almost all were white. This makes it difficult to generalise these findings to individuals other than those who are demographically similar to the individuals chosen by Brown.

Early research has indicated that those with sympathetic attitudes towards animals have similar attitudes towards people (Wagstaff, 1991). This is unsurprising since previous sections of this thesis have found that individuals scoring highly on A and C also report more positive attitudes towards animals. Admittedly, Wagstaff's study is only a snapshot of attitudes towards animals in people between the ages of middle adolescence (15 years old) to middle age (60 years old). This study cannot

155

fully inform on issues of attitudes towards animals in children, but it may act as a starting point for other studies.

Eagles and Demare (1999) investigated the attitudes of sixth graders (approximately 11 years old) before and after a week-long residential camp programme aimed at increasing ecologistic and moralistic attitudes towards the environment. Before attending the camp, children reported average attitude scores. Following the camp programme, attitudes remained the same. Similar studies as the one above indicate increasingly positive attitudes to animals in children from the ages of eight and 11 (Fonseca et al., 2011; Tanner, 2010). In Tanner (2010), fifth-graders in the USA reported their attitudes towards wildlife and habitat loss, finding pro-environmental attitudes that may have also been a result of environmental education incorporated in the curriculum across the state. The authors suggested data such as this can inform authorities on programmes that can increase positive knowledge and attitudes of children towards the environment. Lakestani, Donaldson, Verga and Waran (2011) examined attitudes to dogs in Italy, Spain and the United Kingdom. Children of approximately four years old were compared with University students. Children had more neutral attitudes towards dogs, whereas students across all countries tended to have slightly more positive attitudes. In both groups, dog owners had significantly more positive attitudes to dogs than non-owners. This suggests that contact with dogs may be significant in influencing the attitudes both children and adults have towards them. Recent studies have also provided further evidence to support this view (Huijding, Muris, Lester, Field, & Joosse, 2011; Randler, Hummel, & Prokop, 2012). Children between the ages of 11-13, when given the opportunity to work with unpopular live animals (such as wood lice, snails and mice) reported

significantly decreased levels of fear and disgust after having worked with the animals, as compared to the control group (Randler et al., 2012). Fonseca et al. (2011) counter this argument by stating ownership or contact with an animal is not necessarily associated with attitudes towards animals, since participants' reactions to other animals are not associated with ownership or contact, despite the majority reporting either owning or having contact with an animal. Questions remain, as to why studies in this area are inconsistent. Eagles and Demare employed a sample of 72 children who had not been a part of any environmental education programme in their current school year. Tanner, on the other hand, had a sample of 458 students from urban, suburban and rural areas. The differences in sample size, and that certain children had been previously exposed to environmental education could be a contributing factor to the differences in findings between researchers.

Research has also suggested that students (3-18 years) with pets enjoyed discussions and contact with other persons' pets, completed more school assignments related to animals, enjoyed watching more films and television programmes related to animals, read more stories with animals, and enjoyed zoos and parks significantly more than participants who did not own pets. Interestingly, boys watched more television programmes with animal content, and read more animal-related stories than girls. Primary school children had significantly more contact with non-family pets, liked pets significantly more, and reported completing more animal-related school assignments than nursery school and secondary school children (Kidd & Kidd, 1990). Children and their parents living in homes with pets are more likely to have positive attitudes and permissive family environments, despite being more likely to have been bitten by a pet (Schenk, Templer, Peters, & Schmidt, 1994). While being bitten by a

157

dog seems an unlikely correlate with positive attitudes to animals, it could be that positive attitudes are the precursor to being bitten. Individuals with positive attitudes may seek out more contact with dogs, and their chances of being bitten will be thus increased. Owning a pet appears a significant determinant of how attitudes towards animals develop through childhood (Miura, Bradshaw, & Tanida, 2002). On the other hand, perhaps positive attitudes to animals are already present but simply reinforced by the introduction of a pet. The high percentages of children wanting pets may be a clear indication of this view (Kidd & Kidd, 1985). It must be noted, however, that positive attitudes towards animals (and dogs in particular), do not necessarily mean more knowledge regarding how to actually interact with animals (Lakestani et al., 2011).

The issue of gender differences in attitudes to animals is also becoming apparent, with some studies claiming such differences exist (Fonseca et al., 2011; Tanner, 2010; Wedl & Kotrschal, 2009) and other studies claiming the opposite (Eagles, 1999). Fonseca et al. (2011) state that in their experimental group, girls had significantly more positive attitudes globally towards wild and livestock animals compared to boys.

Seeing as the participants of the present study were to be recruited from the Leicester area, it was decided to include a demographic variable measuring the religious preferences of the participants. The 2001 census indicated approximately 45% of Leicestershire residents reporting being Christian, 17% reporting no religion, 15% reporting being Hindu and 11% being Muslim (Office for National Statistics, 2001). Previous research into religious observance and attitudes, knowledge or treatment towards animals has so far been inconclusive. Some who have researched

158

this area have come to the conclusion that those with more liberal convictions express more positive attitudes towards animals (Bowd & Bowd, 1989). On the other hand, others argue for no significant differences between Christians and non-Christians regarding environmental attitudes (Hayes & Marangudakis, 2001). The same authors conclude that the two most significant factors in predicting attitudes towards nature are the individual's level of education, and levels of knowledge about the natural environment. Mellor et al., (2009) carried out a tri-national study into childhood cruelty to animals in Australia, Japan and Malaysia. Results indicated some effects of religion particularly for the youngest age group, yet the authors argue it is not possible to show how religion influences the results since knowledge of religious laws or adherence to these laws was not assessed. Overall, it would appear research into religion and its effects on attitudes, knowledge and treatment towards animals is still limited and in need of further clarification.

As shown above, research on attitudes to animals has primarily focused on companion animals such as dogs and cats. In an interesting variation, Prokop and Tunnicliffe (2008) investigated primary school children's attitudes towards bats and spiders. The results suggested that the children participating in the study had more negative attitudes towards spiders than bats. This was due likely to fear from direct experience with these animals. Boys showed more positive attitudes towards bats and spiders, whereas girls reared companion animals more frequently. These negative attitudes remained relatively unchanged as the age of children increased. In a follow up to their initial study, the same authors again questioned school children aged 10 to 15 years on their attitudes and knowledge of pests (e.g., beetles), predators (e.g., wolves), and those that may carry diseases harmful to humans (e.g. mice). Prokop and

Tunnicliffe (2010) found children had less positive attitudes towards unpopular animals but better knowledge of them. Once again, owning a pet was associated with more positive attitudes and better knowledge of all animals, whether popular or unpopular. Gender differences were present, with girls showing less preference for animals that may be a danger than boys. Regarding fears children have towards animals, Bowd (1984) found 73% of females and 51% of males in his sample of 104 fifth graders were afraid of some animals such as snakes, lions and spiders, but that pet ownership correlated negatively with fear. In fact, 94% of the sample reported owning a pet. The findings suggest fear can be reduced through contact with animals, pet ownership and caring for pets.

*5.2. Personality in children*

Research into older adolescents has clearly shown important developmental changes. Costa and McCrae (1994) showed consistent mean differences in a cross-sectional comparison of late adolescent students and adults. Scores on N, E and O were half a standard deviation higher for students than adult norms. On the other hand, students scored half a standard deviation lower on A and C. Increased levels of N, E and O in younger children are also supported by McCrae et al. (2002), who go on to argue that in fact college age individuals can be considered to be older adolescents.

In a study of delinquency and personality in 16-19 year olds, Heaven (1996) found females scored higher than males on all five personality dimensions. Ehrler, Evans and McGhee (1999) extended research into the Big Five in childhood downward to the ages of 9-13 years, observing the relationships these personality traits have with behavioural problems. The sample reported higher scores on C, O and E. The personality variables of C, O and A were associated mostly with poor social

160

behaviours such as attention deficits, conduct problems and hyperactivity. The authors argued children with a combination of low C, O and A would exhibit behaviours such as noncompliance with adult rules, lack of respect, low motivation for school work, distractiveness, aggressiveness and overall juvenile delinquency. Children with this trait pattern may subsequently be at risk for psychopathologies such as conduct disorder. By contrast, correlations between high N and social problems and internalising behaviours may be indicative of underlying anxiety and depression. Subsequent research has further supported the link between low A and C with aggressiveness (Asendorpf, Van Aken, & Marcel, 2003). Ehrler et al. (1999) conclude by arguing for more research into school-age children and the combination of factors that lead to problem behaviour.

A 13 year longitudinal study carried out in Sweden has shed light on the development of personality traits in children from the age of 2 to the age of 15. One finding, among the many significant findings uncovered by the authors, indicated that E, A, and N were not entirely coherent constructs in earlier years, and that these traits were not well defined until later childhood. Reasons for this were argued to be that children need life experiences and experiences of a wide variety of social situations to allow these traits to be expressed. It may then be concluded that not all personality traits are evident at all ages, or that some have a developmental dimension (Lamb, Chuang, Wessels, Broberg, & Hwang, 2002).

De Fruyt, De Bolle, McCrae, Terracciano and Costa (2009) went a step further and assessed the structure of personality in early adolescence for 24 cultures. The results supported previous claims that observer ratings of adolescents resemble those of cross-cultural self-ratings and observer ratings of adults. In fact, personality

161

structure was identical in younger and older adolescents. Another large cross-cultural study, this time employing more than a million participants further demonstrated that around the age of 10 years old, participants reported higher levels of E than the other personality domains. This was followed by N, A, and finally C, which had the lowest mean score compared to the other personality domains (Soto, John, Gosling, & Potter, 2011).

*5.3. Knowledge and treatment of animals*

Knowledge of animals is significant in many ways; one of which is for the protection against animal bites and attacks. In an investigation of what children know about preventing dog bites, almost half of the children in the sample (43% of 300 5-15 year olds) did not pass the knowledge test. Older children were more likely to pass the test, while more than 70% of the children had not received any education or training on how to avoid dog bites (Dixon, Mahabee-Gittens, Hart, & Lindsell, 2012). As a result of the findings above, and in the interest of advancing this field, the knowledge young children have about animals shall be discussed below.

To illustrate the significance of knowledge, Kellert (1996) argued that knowledge can change the opinion of an individual if their viewpoint is not strongly held. On the other hand, knowledge interacts with values, attitudes and beliefs, and may exert only a mild influence when values are held strongly. Specifically regarding animals, it would not be expected that the same developmental pathways are present for knowledge of animals' physiological, conservation and ecological needs. It appears that animals' physiological needs are the first to be understood fully. Conservation and ecological needs show the next strongest developmental trends

across the ages of 4 and 14 years, but still follow different trajectories (Myers, Saunders, & Garrett, 2004).

One of the few studies found by the present researcher relevant to knowledge of animals, and attitudes children have towards animals, comes from Prokop, Kubiatko and Fančovičová (2008), who claims a positive relationship is present. Interestingly, younger children (from an age range of 10-19 in the sample) expressed more knowledge of birds than older children. In another related study, animal sentience, along with attitudes to animals, was examined before and after a longitudinal project looking at the effect of having animals in the classroom. Fonseca et al. (2011) found positive attitudes towards animals and high scores on knowledge of animal sentience both before and after the project. Knowledge of animal sentience is not entirely comparable with knowledge of animal welfare as investigated in this report; however, the limited number of studies in this area compels the researcher to include such studies and provides further support for the argument that more research is needed in this area.

Similarly, research into children's behaviour towards animals has also been lacking, arguably due to the lack of an appropriate measure assessing children's behaviour towards animals. An exception is Thompson and Gullone (2003); in a study outlining the development of the Children's Treatment of Animals Questionnaire (CTAQ), boys and girls did not differ significantly on their treatment of animals (Thompson & Gullone, 2003).

*5.4. Conclusion and hypotheses*

The research presented above on the knowledge and treatment of animals in children is relatively insubstantial in formulating an opinion regarding the progression of this field. It is apparent that further research is needed if conclusions are to be drawn. Additionally, further research is needed to clarify the questions of whether pet ownership and gender differences are able to act as an influencing factor in the formation of attitudes towards animals. As argued above, the combined research into attitudes towards animals, personality and knowledge and treatment of animals in children is limited. Steps need to be taken to tackle these research issues, if changes are to be implemented that can have a positive effect on the development of our children.

The research above has highlighted mixed results on the attitudes of children towards animal welfare. We tentatively expect to find positive attitudes towards animals (Fonseca et al., 2011; Tanner, 2010), regardless of age, with girls expressing these positive attitudes more so than boys (Fonseca et al., 2011). In support of findings from the previous chapters of this thesis, high levels of A and C are likely to be associated with these positive attitudes. High percentages of pet ownership are expected (Bowd, 1984), with pet owners expressing more positive attitudes (Bowd, 1984; Lakestani; et al., 2011; Schenk, et al., 1994; Randler, Hummel & Prokop, 2012). Despite reports of no relationship between pet ownership and attitudes (Fonseca et al., 2011), the majority of the research states otherwise and it is expected a similar pattern will be shown here. Personality research suggests that children will express higher levels of N, E and O (Costa & McCrae, 1994; McCrae, et al., 2002) with females scoring higher than males on all personality traits (Heaven, 1996). The hypothesis regarding N, E, and O is tentative; however, seeing as past research has primarily

164

concentrated on older adolescents and college students, and has produced mixed findings (Lamb et al., 2002). It is also possible that results will follow Soto et al.'s (2011) large scale study and indicate higher levels of E, followed by lower levels of N, A, C and O.

Seeing as research in this field is limited, knowledge of animals in younger children is correspondingly modest (Dixon et al., 2012). It is expected that knowledge of animals will be positively related to caring attitudes to animals and ownership of pets (Prokop et al., 2008; Prokop & Tunnicliffe, 2010).We intuitively expect a positive relationship between knowledge and treatment of animals in children. However, past research is limited, and has indicated that knowledge of animals may not necessarily be related to how animals are treated (Lakestani et al., 2011). Finally, we do not expect any major effects of religion on attitudes, knowledge or the treatment towards animals. In accordance with Bowd and Bowd (1989) we loosely expect more positive attitudes, more knowledge and more positive treatment towards animals in more liberal religious groups. One must therefore remain cautious as to what the analyses will indicate. As not much is currently known about the treatment of animals by children any further firm hypotheses cannot be made. We tentatively expect the treatment of animals to depend on a combination of all variables; knowledge, attitudes, personality and demographics

*5.5.* Method

*5.5.1. Measures*

Alongside the ZAWS, the following self-report measures were used in this study.

### 5.5.1.1. The Ten-Item Personality Inventory (TIPI) (Gosling, Rentfrow & Swann, 2003)

This 10-item measure of the Big Five personality dimensions was used instead of the longer measures of personality so as to reduce the time spent and cognitive effort required by the children in the sample to complete the questionnaires. Participants are asked to indicate on a seven point scale, ranging from 1 (disagree strongly) to 7 (agree strongly), the degree to which a list of personality characteristics applies to them. To assist comprehension of the terms in the TIPI, a list of definitions was compiled for use by the researcher and teaching assistants. The definitions were phrased in simple terms that even younger children could understand. Furthermore, a list of definitions would assist in providing the children consistent definitions of the terms, as opposed to different things being told by each adult. This list of definitions is in Appendix B.

### 5.5.1.2. The Knowledge about Animal Issues Scale (KAIS) (Mariti, et al., 2011)

The scale used in this study was adapted from the original scale developed by Mariti, et al. (2011). In Mariti's study, two separate questionnaires were employed, one before their educational project and one after the project. The two questionnaires had identical and also unique questions. For the purposes of this study, a list was made including all the identical questions from both questionnaires and the unique questions. Questions referring specifically to animals such as cats and rabbits were removed, whereas questions referring to dogs were retained. The KAIS was originally

166

made up of 42 items (including both unique and identical questions). Of these, 15 items were removed as they were of no significance to the present study. The reason for retaining general questions and those referring to dogs is that the current study was part one of a two-part study in which children were subsequently provided with a humane education programme specifically referring to dogs. The wording of items was modified slightly to ease comprehension for younger children. Some items requested a yes/no or true/false answer, whereas others were multiple choice and asked to tick a range of responses. In accordance with the authors of the KAIS, a correct answer was scored with a +5 and a wrong answer was scored with a -5. The authors did not state what they did with missing values on answers to the questions. To deal with this problem, missing values were also assigned a value of -5. This would allow the final total score to be indicative of both the correct and wrong answers provided by the child, and also those answers that were left blank. A total score was produced at the end of the scale, with higher scores related to more knowledge about animals.

*5.5.1.3. The Children's Treatment of Animals Questionnaire (CTAQ) (Thompson & Gullone, 2003)*

The CTAQ consists of 13 items in which participants are required to indicate whether they would engage Often (3), Sometimes (2) or Never (1) in a particular activity. This questionnaire was found to be reliable and valid for use with young girls and boys. All questionnaires in this study are available in Appendix B.

*5.5.2. Procedure*

The headmasters of local schools in Leicestershire were approached by email with the details of the study requesting their permission to carry out this project in their schools. Once the headmasters had consented, consent was requested from the children's parents, in the form of a letter sent home with the children. Details of the project regarding the purpose and method were outlined in the forms sent out to the parents. This initial stage of the study took place within a single session at each school.

The same procedure was followed for all three schools participating in the study. All children who were given permission to participate in the study, regardless of what year they were in, were taken from their classes, placed in a separate room and asked to complete a series of questionnaires. The participants were given brief instructions on how to complete the questionnaire. These instructions consisted mainly of the researcher telling the students to answer the questions truthfully, answer all the questions, and not look to their neighbour's answers. They were reminded that they could ask for help if they needed it and the session was not timed. All sessions took place on the school premises, and in the presence of a teaching assistant employed by the school. All forms employed in this study are available in Appendix D.

*5.5.3. Refusal rates*

Once the schools had accepted the researcher's request to be part of the study, the total number of students in Years 4, 5 and 6 were requested in order to ensure enough consent forms were provided to the school for the parents. Each school requested a total of 100 consent forms for all three years. The number of consent forms returned from School 1 was 19 with 100% participation. School 2 had a total of 22 returned consent forms again with a participation of 100%. School 3 had 46

returned consent forms with a participation of 98%. A total of 87 students across all three schools were given permission to take part in the study, out of a total of 300 students approached, pointing to a 29% response rate. At the time of data collection one student (5%) was absent from School 1, two children (9%) were absent from School 2 and three children (7%) were absent from School 3.

### 5.5.4. Ethical issues

Ethical issues surrounding this research were considered in detail due to the sensitive participant group. The consent form clearly stated the names of the researchers, contact details for the researchers and the details of participation in this study. Participants and their parents were made aware that their participation was voluntary and that they were free to remove, without any reason, their data at any point up until the questionnaire was submitted to the researcher. At the start of the questionnaire sessions, participants were again reminded that their name would not be on any of the papers and the researcher would answer any questions they might have. On the debriefing form, participants were assured that their data was anonymous and contact information for the researchers was again provided. Contact details were also provided for animal welfare organisations, in case participants or their parents needed more information or felt affected by the issues raised in the questions. All of the information conveyed either verbally or written were done so in a child-friendly way, so as to facilitate the children in understanding all aspects of the study.

### 5.5.5. Participants

A total of 81 participants took part in this study; 37 males (46%) and 44 females (54%). The age range was 8-11 years old ($M$=9.12, $SD$=.95). Forty two

169

children (52%) reported being Christian, 22 reported no religion (27%), eight (10%) stated they were Hindu, seven (9%) stated they were Muslim, one individual (1%) reported following another religion not mentioned above, and one individual (1%) did not report a religion. A total of 55 children (68%) said they owned a pet. Eighteen children (22%) were recruited from School 1, 20 children (25%) from School 2, and 43 children (53%) from School 3. Children were recruited from Years 4, 5 and 6. A total of 38 children (47%) were in Year 4, 24 (30%) in Year 5, and 19 (24%) in Year 6. The distribution of religion, in particular, would appear to be representative of the population of Leicester as mentioned in Section 5.1.

For the purpose of determining whether the three schools in the samples differed significantly on demographical details a multinomial logistic regression was carried out with the schools variable as the dependent variable, and age, gender, religion, school year and pet ownership as independent variables. Parameter estimates indicated significantly more Hindu students in School 1 than School 3, significantly more pet owners in School 1 than School 3, and finally, significantly fewer Christian students in School 2 than School 3.

*Table 5.1*. Multinomial logistic regression for school with demographic variables

|  | B(SE) |
|---|---|
| School 1 vs. School 3 | |
| Intercept | -6.86 (2.86) |
| Muslim | 39.75 (6337.54)* |
| Hindu | 3.99 (2.02) |
| Christian | 2.29 (1.51) |

170

| | |
|---|---|
| Other | -13.33 (0.00) |
| Age 8 | -18.07 (2530.34) |
| Age 9 | -16.04 (2530.34) |
| Age 10 | .40 (1.81) |
| Gender | -.86 (0.93) |
| Year 4 | 19.27 (2530.34) |
| Year 5 | .48 (1.76) |
| Pet Owner | 2.98 (1.43)* |
| School 2 vs. 3 | |
| Intercept | -.83 (1.87) |
| Muslim | -1.73 (10502.44) |
| Hindu | -.13 (1.22) |
| Christian | -2.28 (0.78)** |
| Other | -18.47 (0.00) |
| Age 8 | .09 (2.36) |
| Age 9 | .77 (2.18) |
| Age 10 | .16 (1.82) |
| Gender | .31 (0.73) |
| Year 4 | .39 (1.84) |
| Year 5 | .97 (1.56) |
| Pet Owner | .14 (0.87) |

*Note:* $R^2$ = .55 (Cox & Snell), .63 (Nagelkerke). Model $\chi^2(22) = 62.96$, $p<.001$. * $p<.05$, ** $p<.01$.

## *5.6.* Results

### *5.6.1. Tests of normality*

The scores for the ZAWS, KAIS and CTAQ were observed for normality before the analyses were carried out. Z- scores indicated significantly negative skewness for the KAIS (z = -2.6.18) and CTAQ (z = -2.202), but no significant skewness for the ZAWS (z = -1.951). Kurtosis was non-significant for all variables (z = 0.110 for the ZAWS, $z$ = -0.272 for the KAIS, and -0.072 for the CTAQ). The Kolmogorov-Smirnov test further indicated scores on the KAIS, $D(81)$ = .107, $p$ <.05, and the CTAQ, $D(81)$ = .109, $p$<.05, were significantly non-normal (ZAWS $D(81)$ = .094, $p$ >.05). As a result of the findings above, the data was assumed to be non-normal as a whole, and the tests carried out below reflect this assumption.

*5.6.2. Missing values*

Missing values on the KAIS were treated as answers that were unknown to the children. Missing values for the CTAQ were treated in the same way as in the KAIS. Seeing as the measure asked the participants to report on their behaviours, imputed values would not have been appropriate. For the KAIS missing values were assigned a value of -5 so as to be accounted for in the final score. Missing values on the CTAQ were assigned a value of 0.

Missing values on the TIPI and ZAWS were subject to regression estimation. Two items of the TIPI had a total of three missing values; item 3 had one missing value and item 8 had two missing values. Regression estimation was successfully employed to impute values where they were missing. Seven items of the ZAWS had a total of 10 missing values; items 2, 7, 11 and 13 each had one missing value and items 3, 4 and 5 each had two missing values. Regression estimation was carried out successfully on five of these items (items 3, 4, 7, 11 and 13). For the remaining items

172

2 and 5, correlations were observed with the remaining items of the ZAWS. These items did not correlate with any of the other items and so were removed entirely.

### 5.6.3. Reliability analysis for the ZAWS, KAIS and CTAQ

Since the ZAWS had been created for an adult population, and had not been previously used with children, the reliability of the measure as a whole was examined to determine how well the structure upheld for this sample of children. An exploratory factor analysis was not appropriate as there were only 81 participants in the sample. Items 3, 4, 6, 7, 8, 10 and 13 were reverse-coded to produce positively worded items. An initial reliability analysis produced a Cronbach's alpha of .531 which could be increased to .640 with the removal of item 9. Another reliability analysis was carried out excluding item 9 resulting in a final alpha of .640, and a total of 10 items for use in analyses with the ZAWS. Cronbach's alpha for the ZAWS is admittedly low, but at an acceptable value. The reliability analysis for the KAIS and CTAQ indicated satisfactory Cronbach's alphas of .625 and .668 respectively.

### 5.6.4. Reliability analysis for the TIPI

Once again, an EFA was not appropriate as the sample size was too small for such an analysis. Items 2, 4, 6, 8 and 10 were reverse coded in accordance with the instructions providing by the authors of the scale to produce positively worded items. A reliability analysis carried out on the items produced mixed results. Subsequently, it was decided to proceed with the full analysis of the data without the personality constructs as variables. Please see Table 5.2 for the alpha reliabilities of each personality construct.

173

Table 5.2. *Alpha reliabilities for personality variables (N =81)*

| Personality construct | Cronbach's α |
|---|---|
| Extraversion | -.075 |
| Agreeableness | .072 |
| Conscientiousness | .019 |
| Emotional Stability | -.895 |
| Openness to Experiences | -.440 |

*5.6.5. Scoring for the KAIS and CTAQ*

Analysis for the KAIS and CTAQ did not involve EFA as these measures were not developed with the aim of producing subcomponents. Their aim is to produce a final score adding to the total knowledge an individual has about animals and the degree to which children engage in positive behaviours towards these animals, respectively. As recommended by the authors of the CTAQ, item 5 (Yell at a pet) was reverse coded before the total score was calculated. A total score was calculated for the KAIS reflecting all correct answers, wrong answers and missing values. The total score for the CTAQ similarly reflects the extent to which the participants engage in positive behaviours towards animals.

*5.6.6. Descriptive statistics*

Table 5.3 presents descriptive statistics for the variables included in the analysis. Means, standard deviations and reliabilities are presented for each component of the scales.

174

Table 5.3. *Descriptive statistics for all variables (N = 81)*

|      | Mean   | Std. Deviation | Reliability |
|------|--------|----------------|-------------|
| ZAWS | 41.15  | 5.46           | .64         |
| KAIS | 119.14 | 42.66          | .63         |
| CTAQ | 30.73  | 3.92           | .67         |

*5.6.7. Correlations between variables in the analysis*

Table 5.4 shows the Spearman's correlations between the key variables that were entered into the model. The ZAWS correlated positively with the KAIS. The CTAQ did not correlate with any of the variables in the analysis.

Table 5.4. *Correlations between variables*

|      | KAIS   | CTAQ |
|------|--------|------|
| ZAWS | .54**  | .10  |
| KAIS |        | .22  |

**p<.001, *p.05

*5.6.8. Relationships of the ZAWS, KAIS and CTAQ with demographic variables*

Due to the non-normality of the data, and complexity of the variables, a range of techniques were employed to explore the relationships. Initially, a MANOVA using rank-transformed data was carried out. Subsequently, regressions were carried out as a way of confirming the results above, seeing as this analysis is not strictly dependant on parametric data. Findings were almost identical across all analyses, and these will be presented below.

*5.6.8.1. MANOVA on rank-transformed data*

Levene's test indicated the assumption of homogeneity had not been met for the rank scores of the ZAWS (F(44,35) = 1.77, *p*<.05) and rank scores of the CTAQ (F(44,35) = 1.78, *p* <.05). Using Pillai's Trace, there were significant effects of school year on the three dependent variables (ZAWS, KAIS, CTAQ) (*V* = 0.45, *F*(6,68) = 3.30, *p* <.05); but no significant effect of gender, pet ownership, school and religion. Separate univariate ANOVAs indicated significant effects of school year on the ZAWS (*F*(2,35) = 6.36, *p* <.01 and KAIS *F*(2,35) = 7.57, *p* <.01. Significant effects were also found for gender, *F*(1,35) = 4.68, *p* <.05 on the KAIS. Contrasts were subsequently requested for school year and gender. These indicated significantly higher scores in Year 6 students compared to Year 4 students on the ZAWS (*p*<.01) and KAIS (*p*<.01). Significantly higher scores were also present in Year 6 students compared to Year 5 students on the KAIS (*p*<.01). Significantly higher scores were reported by females on the KAIS (*p*<.05)

For a more in-depth understanding of the findings, the MANOVA above was followed up with discriminant analysis. This analysis indicated two discriminant

functions for school year. The first explained 93% of the variance, with a canonical

$R^2 = .49$, and the second function explained 7% of the variance, with a canonical $R^2 = .15$.

The first discriminant function significantly differentiated the school years, $\Lambda = .74$,

$\chi^2(6) = 23.07$, $p < .01$. When the first function was removed, the second function was

not able to significantly differentiate the school years, $\Lambda = .98$, $\chi^2(2) = 1.77$, $p > .05$.

Correlations between the three variables (ZAWS, KAIS and CTAQ) and the

discriminant functions indicated that the ZAWS loaded highly on function 1 ($r = .76$)

and less so on function 2 ($r = .65$). The KAIS loaded highly on function 1 ($r = .84$) and

less so on function 2 ($r = -.27$). The CTAQ loaded on function 2 ($r = .34$) and less so on

function 1 ($r = -.09$). The discriminant function plot indicated that the first function

differentiated Years 4 and 6, whereas the second function differentiated Year 5 from

Years 4 and 6. There were no significant discriminant functions for gender.

In simple terms, the analyses above show that school year is the only

demographical variable to have a significant effect that retains its significance across

stricter statistical analyses on the ZAWS and KAIS. Children in Year 6 (in other words,

older children) report significantly higher scores than children in Year 4 (younger

children) on the ZAWS and KAIS. Children in Year 6 scored significantly higher than

Year 5 children on the KAIS. When more rigorous tests were applied, the effects

previously observed for gender were found to be non-significant.

*5.6.8.2. Multiple regression analyses*

In order to carry out the multiple regressions intended for the data, three

variables (school, religion and school year) were transformed as they consisted of more

than two levels. Dummy variables were created in which groups were compared against

a baseline. Field (2009) recommends choosing either a control group as the baseline or if there is not specific hypothesis, then using the group with the majority of people. For all variables here there were no specific hypotheses, and so groups with the majority of the participants were chosen. For school, this group was School 3, for religion this group was Christian and for school year, this group was Year 4. The dummy variables created will be used in the multiple regression analyses.

The first multiple regression analysis included the ZAWS as the dependent variable and the remaining variables as predictors. Variables were entered in Model 1 based on the hypotheses, with the remaining variables entered in Model 2, using the Enter method. See Table 5.5 for details of this first analysis. This initial analysis indicated that significant predictors of the ZAWS were Year 4 vs. Year 5, Year 4 vs. Year 6 and the KAIS. Two further regression analyses were carried out which indicated the KAIS as the only significant predictor of the ZAWS. Table 5.6 has the details of this final regression model. Results indicated that high scores on the ZAWS are predicted by an increased level of knowledge of animals, and this model accounts for 38% of the variance.

The second multiple regression analysis included the KAIS as the dependent variable. Variables were again placed in the model using the Enter method based on the hypotheses outlined in the introduction. Table 5.7 has the details of the first model. Another regression analysis was carried out with only the significant predictors from Model 2 included in the analysis. Please see Table 5.8 for this analysis. This analysis shows that high scores on the ZAWS, being students in Year 6, being female and being

students of school 3 were all significant predictors of the KAIS, and this model accounted for 51% of the variance.

The final multiple regression carried out included the CTAQ as the dependent variable. Again, variables were inserted into the model using the Enter method based on the hypotheses presented earlier. Table 5.9 has details of this analysis. No variables significantly predicted treatment of animals.

*Table 5.5.* Multiple regression for variables predicting the ZAWS

|  | B | SE B | β |
|---|---|---|---|
| **Model 1** | | | |
| Gender | 0.52 | 1.06 | .05 |
| Year 4 vs. Year 5 | 2.46 | 1.13 | .21* |
| Year 4 vs. Year 6 | 2.92 | 1.47 | .23* |
| Pet Ownership | 1.90 | 1.02 | .16 |
| KAIS | 0.06 | 0.01 | .49*** |
| CTAQ | 0.10 | 0.13 | .07 |
| **Model 2** | | | |
| Gender | 0.54 | 1.14 | .05 |
| Year 4 vs. Year 5 | 2.04 | 1.27 | .17 |
| Year 4 vs. Year 6 | 2.70 | 1.62 | .21 |
| Pet Ownership | 1.99 | 1.25 | .17 |
| KAIS | 0.06 | 0.02 | .49*** |
| CTAQ | 0.10 | 0.14 | .07 |
| School 3 vs. School 1 | -0.71 | 1.66 | -.05 |
| School 3 vs. School 2 | 0.06 | 1.40 | .01 |
| Christian vs. Muslim | 1.03 | 2.52 | .05 |
| Christian vs. Hindu | 1.28 | 1.79 | .07 |
| Christian vs. Other | -5.02 | 4.50 | -.10 |
| Christian vs. None | 0.45 | 1.39 | .04 |

Note: $R^2 = .45$ for Model 1, $\Delta R^2 = .01$ for Model 2. *$p<.05$, ***$p<.001$.

*Table 5.6.* Multiple regression for the KAIS predicting the ZAWS

|  | B | SE B | B |
|---|---|---|---|
| Model 1 | | | |
| KAIS | 0.08 | 0.01 | .62*** |

Note: $R^2$ = .38 for Model 1. ***p<.001.


*Table 5.7.* Multiple regression for variables predicting the KAIS

|  | B | SE B | B |
|---|---|---|---|
| Model 1 | | | |
| ZAWS | 4.50 | 0.70 | .58*** |
| CTAQ | 1.90 | 0.98 | .17 |
| Model 2 | | | |
| ZAWS | 3.11 | 0.77 | .40*** |
| CTAQ | 1.82 | 0.94 | .17 |
| Gender | 22.33 | 7.58 | .26** |
| Year 4 vs. Year 5 | 4.37 | 9.16 | .05 |
| Year 4 vs. Year 6 | 35.65 | 10.82 | .36** |
| Pet ownership | -0.71 | 8.99 | -.01 |
| School 3 vs. School 1 | -25.15 | 11.31 | -.25* |
| School 3 vs. School 2 | 5.80 | 9.84 | .06 |
| Christian vs. Muslim | 12.80 | 17.73 | .09 |
| Christian vs. Hindu | -14.56 | 12.55 | -.10 |
| Christian vs. Other | 29.28 | 31.86 | .08 |
| Christian vs. None | -6.26 | 9.81 | -.07 |

Note: $R^2$ = .41 for Model 1, $\Delta R^2$ = .16 for Model 2. *p<.05, **p<.01, ***p<.001.

*Table 5.8.* Multiple regression for variables significantly predicting the KAIS

|  | B | SE B | B |
|---|---|---|---|
| Model 1 |  |  |  |
| ZAWS | 3.68 | 0.69 | .47*** |
| Gender | 20.04 | 7.33 | .24** |
| Year 4 vs. Year 6 | 30.02 | 9.07 | .30*** |
| School 3 vs. School 1 | -23.37 | 8.37 | -.23** |

Note: R² = .51. **p<.01, ***p<.001.

*Table 5.9.* Multiple regression for variables predicting the CTAQ

|  | B | SE B | B |
|---|---|---|---|
| Model 1 |  |  |  |
| ZAWS | .06 | .10 | .09 |
| KAIS | .02 | .01 | .27 |
| Model 2 |  |  |  |
| ZAWS | 0.08 | 0.11 | .11 |
| KAIS | 0.03 | 0.02 | .31 |
| Gender | -0.87 | 1.00 | -.11 |
| Year 4 vs. Year 5 | -0.06 | 1.15 | -.01 |
| Year 4 vs. Year 6 | -1.58 | 1.45 | -.17 |
| Pet ownership | 0.89 | 1.12 | .11 |
| School 3 vs. School 1 | 0.14 | 1.47 | .02 |
| School 3 vs. School 2 | 1.30 | 1.23 | .14 |
| Christian vs. Muslim | -2.00 | 2.22 | -.14 |
| Christian vs. Hindu | -1.44 | 1.58 | -.11 |
| Christian vs. Other | -0.87 | 4.02 | -.03 |
| Christian vs. None | -0.30 | 1.23 | -.04 |

Note: R² = .11 for Model 1, ΔR² = .07 for Model 2.

## 5.7. Discussion

Results indicated the KAIS was the only significant predictor of the ZAWS. Findings also indicated significantly higher scores on the ZAWS for children in Year 6. This finding was made non-significant, however, in the regression analysis once the KAIS was taken into account, and so is argued to be an unreliable finding. In a finding common to all the analyses carried out above, scores on the KAIS were significantly predicted by high scores on the ZAWS, being in Year 6, being female and being students of School 3. The CTAQ was not implicated in any of the analyses above.

The positive relationship between attitudes towards animals and knowledge of animals was expected and supports Prokop et al. (2008) and Prokop & Tunnicliffe (2010). The results have in fact shown this to be a two-way relationship. How much you know of animals influences your attitudes towards them and your attitudes towards animals influence how much you know of them. One logical conclusion of this is that children's positive attitudes of animals begin to be formed with the more knowledge they acquire of animals. These positive attitudes then promote the desire to learn even more about animals.

As expected and in support of Dixon et al. (2012), older children (i.e. children in Year 6) differed significantly in their attitudes and knowledge of animals from the younger children. It is entirely reasonable to expect children of eight years old to be less knowledgeable about animals, compared to children of 10-11 years old. It may be that younger children's attitudes are still being informed by contact with animals, and are not entirely consolidated as yet. That is not to say that frequent contact with animals

183

is always a precursor to positive attitudes, as the quality of such interactions is also implicated in the formation of attitudes. On the other hand, younger children may be more fearful of animals, which in turn are expressed in terms of less positive attitudes. Tested at a later age, it may be that some of these children will express more positive attitudes, as a result of their increased knowledge and more contact with animals.

That girls and boys differed on knowledge of animals is surprising considering the literature review above, and these findings entirely contradict those by Kidd and Kidd (1990) who found boys were more active than girls in reading animal-related stories and watching television programmes with animals. This, however, does not necessarily mean boys' knowledge of animals will differ from girls. Approximately 95% of the sample here reported reading a book with animals as the topic. The entire sample of boys (100%) and approximately 91% of girls reported reading such books. These are extremely high percentages of children who read animal-related books, while remaining cautious to the fact that such books are not the only way children can learn information about animals and the appropriate ways to treat them. Gender was roughly evenly distributed in this sample, so one argument for this finding could be that boys did not take the testing phase sufficiently seriously and so did not respond to the questions accordingly. On the other hand, boys and girls may not differ on the reading of animal-related books, but rather, boys may read around an extensive range of topics which includes animals, and girls tend to focus more, and thus learn more, on animal-related books. Also, boys may choose to read more fact-related books, whereas girls choose emotional, empathic stories that portray animals as more human-like. It would appear additional research is needed to uncover why despite similar levels of reading animal-related books, girls express more knowledge than boys.

Similarly, it is difficult to justify why students from School 3 should have more knowledge of animals than students of School 1. All three schools had never taken part in such a study, nor had they taken part in a humane education programme. It could be that animals are incorporated more so in the curriculum of School 3 as opposed to School 1. On the other hand, more than half of the sample was recruited from School 3 and this difference in distribution may have been the influencing factor in the results. Means requested for each school of the KAIS suggest there may be other reasons for these findings that this study cannot identify (School 1 $M$=97.78; School 2 $M$=128.50; School 3 $M$=127.56).

In accordance with Lakestani et al. (2011), no relationship was established between how much you know of animals, and how you claim to treat them. In fact, how animals are treated was not significantly implicated in any of the results and was not predicted by any of the variables in question. This is surprising and cannot be easily explained considering the positive correlations between the three variables of significance; the ZAWS, KAIS, and CTAQ. It would appear that the treatment of animals is influenced by factors other than those included in this analysis. Future studies may choose to look at parental influences on attitudes (Schenk et al., 1994), children modelling their own behaviour on that of their parents' (Volant, Johnson, Gullone, & Coleman, 2008) or even peer influences. Previous research has failed to fully investigate this area, and the current research study has not been able to provide any clarifying answers. Issues surrounding how and why animals are treated, are a topic that warrants further investigation.

The prediction that girls would express more positive attitudes than boys was not met here. Although girls did express more positive attitudes, this difference was not significant. Additional analyses in light of these findings carried out with the aim of establishing the origin of this result indicated that there were no significant gender differences in pet ownership, and in fact 70% of the entire sample owned an animal. High levels of pet ownership support previous findings of similar studies (Bowd, 1984). In the case of the present study it could be that the high levels of pet ownership in this sample across both genders contributed to the positive attitudes expressed here by both girls and boys.

That there were no differences between those who did and did not own pets is also surprising. The percentage of children having read an animal-related book exceeded greatly that of children who own pets (68%). This high level of interest in animals across all participants may be enough to produce the same level of positive attitudes, increased knowledge of animals, and positive treatment towards animals, regardless of whether the individual is an animal owner or not.

No specific hypotheses were formulated for differences between the schools, and religions on the variables in question. It is, however, not surprising that no such differences were found as there has been no relevant literature to indicate conclusive findings otherwise. The three schools included in this study were all within seven miles of Leicester City Centre, with School 1 being the closest at three miles away. The schools did not differ hugely on their location; they did differ, however, on their religion. This does not appear to have made an impact on attitudes towards animals, knowledge of animals and the treatment of animals. All religions are known for their

compassionate stance towards animals. Individuals of Muslim faith are similarly encouraged to treat animals with kindness and avoid treating animals in any way that may be harsh or cruel (BBC, 2009). Muslims, however, consider dogs to be unclean and this may be reason enough for some people to hold negative attitudes and possibly treat dogs they have contact with cruelly (Abou El Fadl, 2004). It would appear that this belief is either not upheld in the Muslim children of this sample, or this belief is not powerful enough to deter the children from learning about animals and maintaining positive attitudes towards them.

A limiting factor of this study was the small sample size and unequal distribution of participants across schools. Gender and age were relatively well distributed considering the complicated nature of recruitment whereby firstly schools had to recruited, and then parents approached for permission. On the other hand, once the age of the participants is taken into account, 81 children are a satisfactory number under such strict time constraints.

Future studies, and ones with the benefit of time and resources, would most surely aim to recruit more schools and students for such an interesting study. In a more comprehensive analysis of the children's development, children across different age groups could be examined. For instance, young school-aged children, adolescents and young adults could be compared on the same measures as above, or similar, in the hopes of tracing the development of animal welfare attitudes, thoughts and behaviours as the development of the child changes. Furthermore, studies on animal welfare in children and adolescents would contribute significantly to the literature on animal abuse by including measures of delinquency. With the appropriate sample size, measures and

analyses, such a study could identify the origins of animal abuse in the development of an individual.

Results of this study have partially supported the hypotheses arrived at from the literature review. New findings have also been reported for knowledge of animals and how this interacts with attitudes to animals. It is clear that further research needs to be carried out to fully understand the nature of attitude development in children, when animals are at the core of these attitudes.

Chapter 6: Implementing the ZAWS in an evaluation of a humane education

programme

A new and interesting line of research within the field of animal welfare is emerging through the literature. This field investigates the efficacy of humane education programmes in producing positive change in the thoughts and behaviours children have towards animals. Programmes such as the Child Development Project (Battistich, Watson, Solomon, Schaps & Solomon, 1991) and "People and Animals" (Savesky & Malcarne, 1981) have thrived over the years. However, there appears to be no consensus regarding what types of humane educational programmes are the most efficient and how they can be successfully assessed. The review discusses the procedures employed by previous researchers in assessing humane education programmes, and outlines the results found in this field so far.

*6.1. Benefits of humane education programmes*

The concept of humane education has gained interest over the past years, but suffers from neglect at the hand of authorities who have failed to realise the significance of this field. On the other hand, humane education programmes may be introduced and tested, while subsequent research indicates they have failed in producing the desired effect and thus need to be modified and improved (see Vockell & Hodal, 1980). Humane education is seen as a way for children to generalise positive teachings aimed at animals to their own interactions with other children and people. The significance of humane education is further highlighted when it is employed as a

strategy to prevent violence in children. Children are more likely to be attentive to a

programme incorporating animals, than other types of programmes targeting violent

behaviours (Faver, 2010). Furthermore, whether contact with animals is face-to-face or

through animal-related stories or materials, feelings of empathy and perspective-taking

are enhanced. Finally, enhancing empathy through a humane education programme

may assist in preventing the development of behaviours that lead to violence (Faver,

2010). Teachers, when questioned, support the benefits of such programmes arguing in

favour of the socio-emotional development and academic development of the children.

In addition, animals in the classroom are believed to help increase a child's

compassion, empathy and moral awareness (Daly & Suggs, 2010), with the presence of

a dog in the classroom producing positive effects for children's interpersonal

relationships and their classroom attentiveness (Kotrschal & Ortbauer, 2003). These

effects are stronger in boys than girls, pointing to gender differences that have not yet

been accounted for by previous researchers (Kotrschal & Ortbauer, 2003) nor by the

findings in chapter 5 of this thesis.

*6.2. Limitations of previous studies*

Limitations of the humane education field were outlined briefly in chapter 1.

Here additional limitations by the same author (Ascione, 1997) will be identified along

with his suggestions to future researchers. Perhaps the most significant suggestion was

to develop reliable and valid measures of testing humane education programmes,

preferably, a single measure that could apply to a wide range of education programmes

(Ascione, 1997). Currently there is no single way in which these education programmes

are assessed, presumably due to the fact that most programmes follow a wide range of

methods. Secondly, Ascione (1997) recommends sensitivity to any likely research bias when carrying out such programmes; for example, that the experimenters are not made aware of which children have taken part in such programme and which children have not, i.e. double-blind trials. Thirdly, the children chosen to take part in such programmes should represent the population of the country and region being examined. It is entirely possible, and in fact hoped, that results from a humane education programme will be used alongside demographics and environmental factors to improve such programmes. In addition, the duration of humane education programmes is a significant factor to consider. Longitudinal studies are the preferred way forward to truly understand the effectiveness of these programmes, with these programmes extending across years, rather than being limited to a single year or age group. Two final suggestions for future research offered by Ascione's review is for behaviours towards animals to be assessed alongside the humane education programme effectiveness, and for humane education programmes to also target issues such as child abuse and neglect, and delinquency (Ascione, 1997). These suggestions and limitations are referred to when reviewing past research below.

*6.3. Studies researching humane education programmes*

Subsequent researchers have seemed to come to the conclusion that the best way forward regarding obtaining the best results from humane education programmes is to carry these out over time, as opposed to a single session. The studies reviewed below have all used humane education programmes over time, rather than a single session. On the other hand, not all studies have used control groups. Studies with and without control groups will be compared below, as it appears the use of control groups

is a distinguishing feature of recent studies of humane education programmes. Without the use of a control group, claims of positive results cannot be fully supported seeing as you can never be entirely confident that the programme, as opposed to another factor, has created this effect.

Recent studies employing the use of control groups show the effectiveness of humane education programmes in producing some level of change in children (Aguirre & Orihuela, 2010; Arbour, Signal, & Taylor, 2009; Ascione, 1992; Ascione & Weber, 1996). Ascione (1992) observed the impact of a one year programme on the empathy and attitude levels of younger and older children. Following the programme, the control and experimental groups of younger children were not significantly different on attitudes. On the other hand, older children's attitudes of animals were significantly more positive in the experimental group than control group. Empathy levels increased for the experimental group post-test regardless of the children's school grade. It would appear there is a main effect for age, and an age-intervention interaction here. In a related study, Ascione and Weber (1996) found this effect to be maintained at least a year later. Subsequent studies continue to support the positive effects humane education programmes have on attitudes to animal welfare in children.

Arbour et al. (2009) supports Ascione's finding that empathy increases following such a programme, indicating gender differences in how this finding is expressed. Here, the increase in empathy was only significant for males. This could be because levels of empathy in girls are already at a normative level, whereas boys tend to report lower levels of empathy and so have more scope for increasing such levels (Arbour et al., 2009).

Jamieson et al. (2012) carried out a new variation of the typical humane education programmes by examining the effect of a chicken-focused programme on the attitudes, knowledge and behaviours towards chickens and other animals. This programme consisted of a single event in which the treatment group were taught about the welfare of poultry overall and how poultry are handled in industry. Results were generally positive; knowledge of poultry and positive behaviours did increase following the programme, although increased knowledge was directed more to the biology of chickens. Increased knowledge and positive behaviours, on the other hand, did not generalise to other animals and decreased over time. Jamieson et al. (2012) argue the knowledge gained here was superficial and not a deeper understanding of the issues that may then be applied to other contexts. Furthermore, findings related to an increase of attitudes were negligible. The authors concluded that further examination is needed of attitudes towards animals, in order to determine whether a change in these attitudes can then lead to a change in knowledge and behaviours towards animals.

Unsurprisingly, studies that have not used control groups in their design have also argued for the benefits of humane education programmes. Rewards of humane education programmes come in the form of changes to beliefs about aggression, increased empathy, and less participation in violent and aggressive behaviours (Sprinkle, 2008). Additional benefits include a reduction of fear towards animals, increased responsibility towards animals and pets, and a better quality of relationships with pets (Mariti et al., 2011). On the downside, as a result of not using control groups, there is no way to truly determine whether it was the humane education programme that produced these effects or just baseline effects. Uncontrolled studies such as the above serve only to undermine the importance of humane education by allowing critics the

benefit of arguing against the usefulness of these programmes since appropriate scientific methodologies have not been employed.

*6.4. Humane education, knowledge and treatment towards animals*

The successfulness of humane education programmes is also demonstrated when children report more knowledge of animals following participation in such programmes. Aguirre and Orihuela's (2010) study of children in rural Mexico found significantly more correct answers to questions of animal welfare in the experimental group than the control group. On the one hand, it is particularly important for children in rural areas to be knowledgeable of animal welfare. The author chose rural schools that had not participated in humane education programmes before, but it was not known whether the actual contact these children had with animals was on the same level as the contact urban children generally have. It would be safe to argue that these findings can only be applied to children in rural areas.

Findings regarding the extent to which humane education programmes influence interactions with animals remain infrequent, questionable and inconsistent (Arbour, Signal & Taylor, 2009; Nicoll et al., 2008). Both studies cited in the previous sentence failed to find an effect of the humane education programme on how animals are treated by the participants. In Nicoll et al. (2008), only post-test scores were taken on their measure of behaviour, with the authors recognising their limited comparative potential between pre-test and post-test scores. More research is needed to determine whether humane education programmes can influence how participants subsequently treat animals, and if such an effect is observed, what the underlying mechanisms are for

194

creating this effect. Nicoll et al.'s (2008) study is vital in highlighting the need for research to maintain consistency in its methods.

*6.5. Conclusion and hypotheses*

The benefits of humane education programmes and their success in producing positive change have been clearly outlined above. These benefits range from increasing positive attitudes towards animals to generally reducing aggressive behaviour. There is no doubt as to the advantages of providing humane education programmes to children. However, questions can be cast upon findings due to the inconsistent methodology applied. Following a meta-analysis, Marino (2012) concluded that research in this area is not yet at an experimentally rigorous level to give definitive conclusions whether programmes such as the above are entirely effective, and particularly whether exposure to live animals is required for such programmes to be effective. Admittedly, most studies have included control groups in their design. Some studies, however, continue to use only an experimental group. Furthermore, humane education programmes range in duration from a single-session to year-long curriculum based programmes. Experimenter bias remains an issue in such studies, as does the specific nature of the programmes, i.e. the content and focus under consideration. Most researchers chose to study empathy, while others focused on attitudes and behaviours towards animals. It is in the opinion of this researcher that further research is needed to clarify the advantages of humane education programmes, and this research should incorporate all the benefits of methodologies previously employed.  This study examined such an area.

Following Ascione (1992), Fitzgerald (1981), and Vockell and Hodal (1980), it was expected that the experimental group would have significantly more positive

195

attitudes towards animals than the control group and this effect would sustain over time (Ascione & Weber, 1996). Regarding knowledge of animals and behaviours towards animals, increases in the experimental group given the intervention compared to controls were tentatively expected (Aguirre & Orihuela, 2010; Mariti et al., 2011; Nicoll et al., 2008). While there is limited research on the impact of humane education programmes on knowledge and behaviours, it is expected that these changes to attitudes, knowledge and behaviour will be more prominent in older children (Ascione, 1992) and males (Arbour et al., 2009).

*6.6.* Method

The method employed for chapter 6 is identical to chapter 5, seeing as chapters 5 and 6 were designed as one study and only later differentiated for the analysis and report.

*6.6.1. Measures*

All measures used in chapter 5 were also used in the analysis of this study, barring the Ten-Item Personality Inventory (TIPI), which was found unreliable for this sample. The measures used were the ZAWS, (see chapter 2), the Knowledge about Animal Issues Scale (KAIS) (Mariti, et al., 2011) and the Children's Treatment of Animal Questionnaire (CTAQ) (Thompson & Gullone, 2003).

*6.6.2. Procedure*

The first part of the questionnaire completion session (Time 1) was outlined in the method section of chapter 5. Following this first session, half of the children given

parental consent to participate were allocated randomly to one of two groups. They either immediately observed a workshop on animal welfare carried out by a professional from the Dogs Trust with the help of their helper dog, or they were placed into the waiting-list control group. This workshop was a one-off session lasting approximately one hour, and covered mainly how dogs communicate, responsibilities of dog ownership, and how to care for a dog. The physical presence of the dog allowed for a more interactive and hands-on experience for the children. Immediately following this session, children in both groups were tested on KAIS and CTAQ (Time 2). The ZAWS was not measured at this stage, as it was not expected that attitudes towards animals would have changed in the hour following the workshop when the children were tested a second time.

Approximately two months later, participants were re-tested on the ZAWS, KAIS and CTAQ to determine whether any change had occurred as a result of the workshop (Time 3). The aim was to test children in Time 3 approximately one month after their workshop. Due to exam periods and Christmas holidays, this re-test was carried out two months later. Although research would argue for longer periods of re-testing (i.e. up to a year, in order to determine long term effects), time constraints of both the researcher and schools could not allow for a year to lapse following the workshop. Once this final session was completed, the education officer returned to the school and carried out the same workshop where all children, including those in the control and those not given permission to participate, were able to participate and gain the potential rewards of this programme

197

As previously, all participants and their parents were informed that their questionnaires would remain anonymous. The unique name the participants provided was used to match the questionnaires across the three different time points. Once they had completed the questionnaire, participants and their parents were provided with a debriefing form outlining all the details of the study and providing contact details for the researchers and organisations they could turn to for further information or advice (e.g., Dogs Trust).

*6.6.3. Ethical issues*

Given this study involved children**,** ethical issues were considered in detail and all measures taken to ensure the protection of the participants were upheld from the first session until the last. On the debriefing form, participants were assured that their data was anonymous and contact information for the researchers was again provided. Contact details were also provided for animal welfare organisations, in case participants needed more information or felt affected by the issues raised in the questions. During the workshops, children were observed for any anxiety or phobias, and in the case where the child did not feel comfortable, they were allowed to leave the session.

*6.6.4. Participants*

Participant details can be found in the method section of chapter 5. For the purposes of the analysis below, participants were included who had completed all questionnaires at all three times. Data from eight participants had been matched across two of the three times, and data from five participants were only available for one time. Thus, some participants were removed from the analysis since they could not be reliably matched across all three times. This resulted in a total of 70 participants across

198

Times 1, 2, and 3. Participants were split evenly into control and experimental groups. Children were chosen randomly from their consent forms. The control group consisted of 19 boys (56%) and 15 girls (44%) with a mean age of 9.29 (*SD*= 0.94). Seven children were students of School 1 (21%), nine children students of School 2 (27%) and 18 students of School 3 (53%). The experimental group consisted of 11 boys (31%) and 25 girls (69%) with a mean age of 9.33 (*SD*=.93). Six children were from School 1 (17%), nine from School 2 (25%) and 21 from School 3 (58%).

In determining significant demographical differences between the control and experimental groups, a logistic regression was carried out with group as the dependent variable and age and gender as the independent variables. Parameter estimates indicated significantly more females in the experimental group than control group. See Table 6.1 for details of this analysis. Gender differences are obviously undesirable in studies of this nature, but are a likely outcome and consequence of randomly assigning participants to groups.

*Table 6.1.* Logistic regression for group with age and gender

|  | B(SE) |
| --- | --- |
| Control |  |
|  |  |
| Intercept | -.58 (0.88) |
| Age 8 | .12 (0.99) |
| Age 9 | .41 (0.92) |
| Age 10 | -.55 (0.91) |
| Gender | 1.23 (.54)* |

*Note: $R^2$ = .10 (Cox & Snell), .13 (Nagelkerke). Model $\chi^2(4)$ = 7.06, $p > .05$. * $p > .05$.*

Seeing as tests of normality in section 5.6.1. of chapter 5 indicated the data for this study was non-parametric; the analyses below reflect that fact. In chapter 5 a MANOVA was carried out using the original data and subsequently compared to a MANOVA using rank-transformed data in accordance with the non-parametric data. Here the same method will be employed; following a Spearman's correlation between the variables, a Wilcoxon's Signed Ranks test for the ZAWS and Friedman's ANOVA for the KAIS and CTAQ, will be carried out to determine any differences between the control and experimental groups across time. This analysis will then be compared to a Repeated Measures ANOVA which will inform as to the power of analyses such as the ANOVA in finding an effect when data is non-parametric. The Repeated Measures ANOVA will also make it possible to observe the interactions between the variables in the analysis.

*6.7.* Results

*6.7.1. Missing values*

As in chapter 5, missing values on the KAIS and CTAQ for Times 2 and 3 were assumed to be answers that were unknown to the children. Values were, thus, not imputed and the missing values for the KAIS were assigned a value of -5, whereas for the CTAQ they were assigned a value of 0. The KAIS had one missing value on each of the items 5, 8, 11, 12, 15, 18, 20, 22, and 24. There were two missing values on item 10. Each of the items 16 and 27 had three missing values, items 4 and 26 had four missing values and finally, item 25 had five missing values. The CTAQ had one missing value on each of the items 1, 5, 10, 11 and 12, and two missing values on each of the items 3, 7 and 8. Only one item of the ZAWS had a single missing value in Time

3 (item 10) and this missing value was imputed through the use of regression estimation.

### 6.7.2. Scoring for the ZAWS, KAIS and CTAQ

In accordance with chapter 5, a final score estimating the total knowledge an individual has about animals and the degree to which children engage in positive behaviours for these animals was produced. The same method was followed for the ZAWS where a total score of positive attitudes towards animals was produced.

### 6.7.3. Descriptive statistics

Table 6.2 presents descriptive statistics for the KAIS and CTAQ in Time 2, and for the ZAWS, KAIS and CTAQ in Time 3. Means and standard deviations are presented for each variable. Cronbach's alphas were calculated in chapter 5 for the three variables and they were found to be acceptable; ZAWS $\alpha$ = .640, KAIS $\alpha$ = .625 and CTAQ $\alpha$ = .668.

Table 6.2. *Descriptive statistics for the KAIS and CTAQ in Time 2 (N = 80) and ZAWS, KAIS and CTAQ in Time 3 (N = 81)*

|  | Mean | Std. Deviation |
|---|---|---|
| Time 2 |  |  |
| KAIS | 124.50 | 48.99 |
| CTAQ | 30.79 | 4.54 |
| Time 3 |  |  |
| ZAWS | 43.24 | 4.09 |
| KAIS | 128.00 | 48.00 |
| CTAQ | 30.76 | 3.83 |

*6.7.4. Correlations between variables in the analysis*

Seeing as analyses in chapter 5 section 5.6.1. indicated the data for the ZAWS, KAIS and CTAQ were non-parametric, the analyses in this chapter were chosen for this type of data. Table 6.3 shows the Spearman's correlations carried out on the variables in Time 2, and Table 6.4 shows the Spearman's correlations for Time 3. At Time 2, group (coded 1 for control and 2 for experimental) correlated positively with the KAIS. At Time 3, group and the ZAWS correlated positively with the KAIS.

Table 6.3. *Correlations between variables at Time 2*

|  | KAIS | CTAQ |
|---|---|---|
| Group | .26* | -.10 |
| KAIS |  | -.12 |

*p<.05

Table 6.4. *Correlations between variables at Time 3*

|  | Group | ZAWS | KAIS | CTAQ |
|---|---|---|---|---|
| Group |  | .16 | .31* | -.12 |
| ZAWS |  |  | .48** | .14 |
| KAIS |  |  |  | -.08 |

* p<.05, **p<.001

*6.7.5. Non-parametric tests of difference across Times 1, 2 and 3 for the ZAWS, KAIS and CTAQ*

Scores of both groups, control and experimental, on the ZAWS significantly increased from Time 1 to Time 3, with medium effect sizes for both groups (Table 6.5). As expected, differences in scores on the KAIS were non-significant for the control

group across the three times. Differences in scores for the KAIS across the three times

for the experimental group were found to be significant (Table 6.6). There were no

significant changes in scores on the CTAQ from Time 1 to Times 2 and 3 in either

group (Table 6.6). When differences on the KAIS were explored further, they were

found to significantly increase from Time 1 to Time 2 and Time 1 to Time 3 with

medium effect sizes, but not from Time 2 to Time 3 (see notes in Table 6.6).

*Table 6.5.* Wilcoxon Signed Ranks test for differences in the ZAWS across time
in the control and experimental groups

| | Medians | | | | |
| --- | --- | --- | --- | --- | --- |
| | ZAWS Time 1 | ZAWS Time 3 | $Z$ | $p$ | $r$ |
| Control | 41 | 43 | -2.18 | .03 | -0.25 |
| Experimental | 42 | 44 | -2.40 | .02 | -0.28 |

*Table 6.6.* Friedman's ANOVA for differences across time in the KAIS and CTAQ in the control and experimental groups

| | Medians | | | | |
|---|---|---|---|---|---|
| | KAIS Time 1 | KAIS Time 2 | KAIS Time 3 | $x^2$ | $p$ |
| Control | 130 | 130 | 135 | 1.27 | .53 |
| Experimental | 135 | 145 | 155 | 13.48 | .00* |
| | CTAQ Time 1 | CTAQ Time 2 | CTAQ Time 3 | $x^2$ | $p$ |
| Control | 31.5 | 31 | 32 | 0.85 | .66 |
| Experimental | 30.5 | 30.5 | 30.5 | 1.18 | .56 |

* Wilcoxon Signed Ranks test was carried out to explore this difference. Scores at Time 1 and Time 2 were not significantly different ($Z$= -1.90, $p$>.05). Scores at Time 3 were significantly larger than at Time 1 ($Z$= -3.78, $p$<.01, $r$=-0.44). Scores at Time 2 were not significantly different from Time 3 ($Z$= -1.66, $p$>.05)

*6.7.6. Non-parametric tests of difference between the control and experimental groups for the ZAWS, KAIS and CTAQ*

As expected, there were no significant differences in scores between the control and experimental group on the ZAWS at Time 1. Contrary to expectations, however, scores on the ZAWS did not differ between the two groups at Time 3. Scores on the KAIS were not significantly different across groups at Time 1. At Times 2 and 3, the experimental group had significantly higher scores than the control group, with medium effect sizes for both times. There were no significant differences on the CTAQ between the control and experimental group at Times 1, 2 and 3. Please see Table 6.7 for details of this analysis.

*Table 6.7.* Mann Whitney test for differences between groups across Times 1, 2 and 3 for attitudes, knowledge and treatment

|  | Group medians | | | | | |
|---|---|---|---|---|---|---|
|  | Control | Experimental | $U$ | $z$ | $p$ | $r$ |
| ZAWS Time 1 | 41 | 42 | 591 | -1.36 | .17 | -0.16 |
| ZAWS Time 3 | 43 | 44 | 608.50 | -1.18 | .24 | -0.14 |
| KAIS Time 1 | 130 | 135 | 596 | -0.76 | .45 | -0.09 |
| KAIS Time 2 | 130 | 145 | 448 | -2.40 | .02 | -0.28 |
| KAIS Time 3 | 135 | 155 | 402.50 | -2.90 | .00 | -0.34 |
| CTAQ Time 1 | 31.5 | 30.5 | 492.50 | -1.41 | .16 | -0.17 |
| CTAQ Time 2 | 31 | 30.5 | 539 | -0.86 | .39 | -0.10 |
| CTAQ Time 3 | 32 | 30.5 | 526.50 | -1.01 | .31 | -0.12 |

### 6.7.7. Repeated Measures ANOVA

The results indicated significantly higher scores on the ZAWS at Time 3 than Time 1, $F(1,68) = 10.01$, $p<.01$, with a medium effect size $r=.36$. The interaction between the ZAWS and group was non-significant ($F(1,68) = 0.25$, $p>.05$). Mauchley's test indicated the assumption of sphericity had been met for the effects of the KAIS, $\chi^2(2) = 1.82$, $p>.05$, and CTAQ, $\chi^2(2) = 4.26$, $p>.05$. There were no significant effects of time on KAIS scores, $F(2,136) = 1.28$, $p>.05$. Interactions between scores on the KAIS and group were significant, $F(2,136) = 5.15$, $p<.01$. Contrasts indicated a significant increase from Time 1 to Time 3 in the interaction

between the KAIS and group ($F$ (1,68) = 10.71, $p<.01$; medium effect size $r=.37$).

Please see Figure 6.1 for a plot of these interactions. There were no effects of time on

the CTAQ ($F$ (2,136) = 0.09, $p>.05$, and nor was the interaction with group significant

($F$ (2,136) = 0.37, $p>.05$).
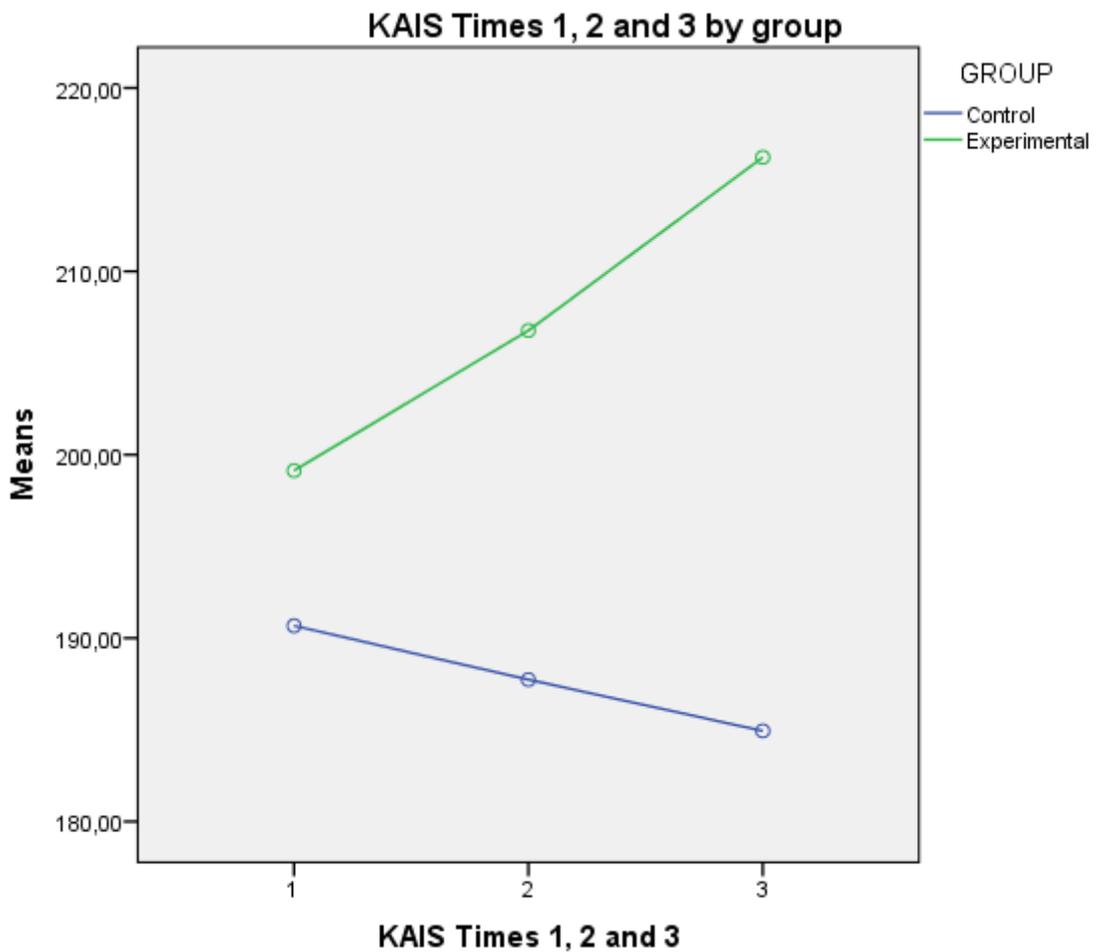


*Figure 6.1.* Mean scores on the KAIS at Times 1, 2 and 3 for each group

*6.8.* Discussion

Overall, results from both parametric and non-parametric analyses were identical. This study found that attitudes towards animals measured by the ZAWS at Time 3 were significantly higher than at Time 1 for both the control and experimental group. Neither control nor experimental groups differed on attitudes towards animals at baseline or outcome. Knowledge of animals increased from Time 1 to Time 2, and Time 1 to Time 3, but not from Time 2 to Time 3 in the experimental group; there were no changes in the control group. As expected, knowledge of animals at Time 1 was not significantly different across the experimental and control groups, and levels of knowledge of animals remained relatively unchanged in the control group across all three assessments. Regarding the treatment of animals, there were no significant differences across time for either group. Nor did the experimental and control groups differ on the CTAQ over the three sessions. These results show the humane education programme by the Dogs Trust is able to increase knowledge of animals as measured by the KAIS, and increase attitudes towards animals as measured by the ZAWS. Behaviours towards animals were not modified by the programme; the CTAQ was not implicated in any findings across chapters 5 and 6.

The findings for this study did not fully uphold the hypotheses. Whereas attitudes towards animals became more positive following the intervention, this was also observed for the control group. One could argue for a fault in the design; however, the same effect was not observed for KAIS and CTAQ scores. The medium effect sizes further support this being a genuine finding. One possible reason for this finding may be the effect of the initial exposure to the testing procedure. The children were aware through the questionnaires that the topic of the study was centred on animals. Thus, their subsequent responses may reflect their need to please the researcher, or to present

themselves in a better light. Alternatively, the ZAWS may need further testing in child populations in order to determine its reliability and validity.

The findings here related to knowledge of animals (Aguirre & Orihuela, 2010; Arbour et al., 2009; Ascione, 1992; Mariti et al., 2011; Nicoll et al., 2008) fully support previous findings that humane education programmes can increase the knowledge children have of animals, and that this knowledge will be stable across time. This study measured knowledge of animals immediately following the humane education programme, and approximately two months following the programme. The larger effect size for the differences from Time 1 to Time 3 would suggest this effect may have been found had the children been tested at a later stage.

The lack of any significant relationships with the CTAQ is surprising. However, the CTAQ was also not implicated in any of the findings in chapter 5 indicating perhaps problems with the measure itself. On the other hand, it may be that how you treat animals is more influenced by how your friends treat them, or how animals are treated within the household. The influence of peers and family members on attitudes to animals was not measured here; this is, however, an interesting area to focus on for future research and one that may provide greater insight into the contributing factors to how animals are treated.

Limitations of this study centre around the time elapsed from Times 1 and 2 to Time 3, and the duration of the intervention. Research has indicated the optimum duration of such an intervention is approximately a year (Ascione, 1992; Ascione, 1997) and in order to test the efficiency of such an intervention in producing a long lasting change, the assessment should be carried out following a longer period of time.

However, due to the time limits of this study and in light of the positive findings, the researchers believe the duration of the intervention was appropriate for producing an effect in the children.

This study has demonstrated the efficiency of a humane education programme as provided by the Dogs Trust in increasing the knowledge children have of animals, but also in promoting positive attitudes towards animals. The need for further research in this area has been highlighted in regards to the use of the ZAWS with child populations and the appropriateness of the CTAQ as a measure of behaviours towards animals. Previous research has been vital in pointing to ways research of this kind can be improved. One such suggestion has been to provide a multi-session programme or even a year long programme incorporated into the curriculum. Despite the session provided by the Dogs Trust being successful in improving knowledge and attitudes to animals, a longer programme may have produced stronger effects. Similarly, a validation study for the ZAWS in a child population would have been appropriate prior to this intervention. This validation study would have ideally included a wide range of ages, and a large sample of children. Overall, if more time had been available to the researcher a greater sample of schools may have been recruited and many of these limitations could have been resolved. This study is arguably a success in regards to increasing knowledge of animals as a result of a humane education programme, but suffers from limitations future research should address.

Chapter 7: General Discussion

*7.1. Summary of thesis*

The aim of this thesis was to create a new questionnaire measuring aspects of animal welfare, comprising general attitudes to animals, active, passive, and ambiguous abuse, the functions of such abuse, and the individual's responsibility for their actions. This new measure was designed to fill gaps in recent literature regarding the lack of measures covering these components of animal abuse. This measure was to be the first of its kind to provide data on these issues about the people of Cyprus as well as the UK. Chapter 1 presented evidence that only two sub-components of the new measure were unique and reliably measurable; positive and negative attitudes towards animals. As these correlated with each other and were essentially reciprocal, the negative attitude towards animals subscale was recoded into positively worded items. This new measure, renamed the ZAWS, was used in subsequent studies that considered how it related to measures of personality, sensational interests, delinquency and morality. The final section of this thesis took an applied approach and used the ZAWS, measures of personality, knowledge of animals, and treatment towards animals to evaluate a humane education programme.

*7.2. Discussion of findings*

One common finding across chapters 2, 3 and 4 was the higher reported levels of positive attitudes towards animals in Cypriot compared to UK residents. This finding, and its consistency across three studies, is significant for two reasons. Primarily, and due to its consistency, it can be argued that this effect is strong and can be demonstrated over time, seeing as there was a difference of a year between the

210

studies done in chapters 2 and 4, with chapter 3 taking place halfway through. Secondly, the consistency of the finding adds weight to the claim of internal validity for the ZAWS's ability to predict attitudes towards animals in the UK and beyond. Additional consistent results found in the studies described by chapters 2 and 3 were the high reported levels of positive attitudes towards animals in females relative to males. This finding also supports previous findings (Flynn, 1999; Herzog, 2007; Miller & Knutson, 1999). Personality predictors of the ZAWS were also consistent across chapters 3 and 4. Specifically, high levels of A and high levels of C significantly predicted positive attitudes towards animals, again supporting previous research (Austin, Deary, Edward-Jones & Arey, 2005; Mathews & Herzog, 1997). Findings relating to the gender and personality differences in individuals expressing positive attitudes towards animals are equally significant in highlighting the reliability of the ZAWS to identify relationships that have been previously established using different measures and samples by other researchers.

## 7.3. Discussion of methods

### 7.3.1. Data collection

The primary method of data collection in chapters 2, 3 and 4 was across the Internet. A Eurostat survey carried out in 2011 on Internet usage in Europe indicated an increase in Internet access from 24% in 2002 to 57% in 2011 for Cypriot households. Despite this being far lower than the European average (73%) and UK average (83%), the figures are a clear indication that for Cyprus Internet usage, and perhaps technology usage in general, is rapidly increasing and will continue to do so (Eurostat, 2011). Internet use in the UK is higher than the European average and indicates a nation that is

in a sense dependant on the use of the Internet to carry out tasks such as enrolment in schools, query governmental services, pay bills and even order their weekly household shopping. Taking this use into consideration, it was considered a waste of a significant opportunity to ignore the use of the Internet and rely solely on the use of paper questionnaires. A combination of these two methods was chosen for chapter 2, which proved to be a time-consuming study and one that involved a great amount of effort, both on the part of the researcher and the part of the participants. The researcher was dependant on the kindness and willingness of people to take time out from whatever they were involved in at the time to help complete the questionnaires. Nevertheless, one benefit of engaging participants face-to-face with paper questionnaires was that it was easier to recruit a more representative sample; i.e. the researcher could recruit older people when needed, or males and females based on the proportions already obtained. Section 2.4.4.3 highlights the roughly even distribution of Cypriot and UK residents and genders obtained for the sample that completed the paper version, as compared to those who completed the Internet version. In the subsequent chapters where only Internet recruitment was employed, Section 3.6.4 and Section 4.8.4 clearly indicate inadequacies of this opportunistic method in addressing the sampling problems surveys of this type face with gender, age, and educational distribution. On the other hand, internet recruitment allows for a larger number of participants, as indicated in the total samples recruited in chapters 3 and 4. Overall, it was argued in Section 2.6, that while using both Internet and face-to-face methodologies were successful for the purposes of the study, it was impracticable that both were employed in future studies due to limitations related to time and money. Seeing the sample size of chapters 3 and 4, an argument can be made for using Internet recruitment when time and money are limited.

212

However, if the issue of time and money is of less significance (as in the case of properly funded research), it is in the opinion of this researcher that more representative samples of the population under investigation can be reached by the use of both Internet and paper questionnaires.

*7.3.2. Humane education study*

One significant point of discussion regarding chapter 6 is centred on the duration of the humane education programme. In this study, the duration of the programme was approximately one hour, and carried out in a single session. Researchers have investigated various methods for testing the effects of such programmes, and there appears to be a consensus regarding the optimum duration of such programmes in producing long-lasting changes. Ascione (1992; 1997) argues this optimum length is a year. It was argued in Section 6.4. that the programme used in this study was successful despite being a single hour-long session, this view being based on the results found in favour of the hypotheses and in support of previous research. These hypotheses, based on previous research, were that attitudes towards animals, knowledge of animals and treatment to animals would increase in the experimental group than the control group. The programme provided by the Dogs Trust was always intended to be a single one-hour session, as that is what the Dogs Trust provides in their school liaison role with primary schools. Furthermore, the researcher was limited in the time and funds that were available to assist in carrying out this study. In addition, schools were first contacted only a few months before the first data collection time was intended to take place. Therefore, there would have been very limited time to organise a programme lasting a full year that would fit in with the school's timetable, even if the

213

Dogs Trust was able to provide such a programme. Furthermore, for a school to make a prior commitment in devoting a year to such a programme would imply that they are entirely trusting in the effects of the programme; in other words, the school authorities are convinced as to the appropriateness and effectiveness of the programme in producing desired changes in children. Such programmes, however, are uncommon in the UK and research of these programmes in the UK is virtually unheard of. Therefore, it would not be expected for school authorities to be knowledgeable of these programmes, nor to have either positive or negative opinions of them.

The time between participation in the humane education programme and post-testing at Time 3 was not in line with previous research. *A propos* of Ascione (1992), an ideal amount of time between participation in the programme and the last post-test time is approximately a year. This procedure is employed so as to test any possible long-term effects of the programme. Education and attitudinal effects of the programme were found at Time 3, which was carried out approximately two months after the intervention. Although this leads to the conclusion that the programme was at least partly successful, we are not able to determine if these effects are maintained over a longer period.

Perhaps a limiting aspect of the humane education study was that it was not replicated in Cyprus so as to maintain continuity following the previous studies. Attempts were made to carry out the humane education study in Cyprus, but the researcher was met with a great deal of difficulty. Firstly, the researcher was informed that a written request to approach the schools would have to have been made at the Ministry of Education. If and when this request was approved, headteachers would

214

have had to have been approached in a similar process to the one used in the UK. Secondly, non-profit animal welfare organisations were approached to determine the existence of a programme on a par with the Dogs Trust programme. The researcher was informed that, while a number of years ago such a programme existed and was administered to certain schools, once funding was terminated the programme also ended. The possibility of developing a humane education programme based on the one provided by the Dogs Trust was considered, but there was no suitably qualified person to carry out this programme. Considering the limitations in time, and that those assisting in creating and running the project in Cyprus would be working on a voluntary basis as no funds were available to pay them, it was decided to concentrate on the humane education project in the UK. Future researchers could take this opportunity to develop programmes and methods in Cyprus based on existing literature and known to be effective in producing positive changes in children.

## 7.4. Discussion of theory

### 7.4.1. Investigation of animal abuse

Chapter 1 provided the introduction to this area, covering the major themes of this thesis. Animal abuse was initially thought the main focus of the thesis. The aim of developing the new measure in chapter 2 was to incorporate all areas outlined in chapter 1 that were lacking in previous attention, including different a priori aspects of animal abuse. However, the exploratory factor analysis (Section 2.5.1) indicated these a priori constructs reduced to a two-factor solution measuring positive and negative attitudes towards animals. Therefore, the focus of all subsequent studies was re-directed to have generic attitudes towards animals as the primary variable of concern. As a

215

result, attention to more specific issues within animal abuse was hugely diminished, except in terms of theoretically relating how attitudes towards animals influence behaviours towards animals, whether these behaviours are positive or negative. The literature reviews for each study reflect the change in emphasis towards attitudes to animals, and it is hoped the progression from chapter 1 to subsequent chapters is smoothly carried out and justified adequately.

### 7.4.2. Cross-cultural research

The cross-cultural investigation of Cyprus and the UK was conceptualised as another major focus of the thesis. Specifically, it was assumed that Cyprus would follow a collectivist style of society whereas the UK would be more in line with more individualistic societies. Reasons for choosing Cyprus are outlined in Section 3.4. Additionally, perhaps the most significant reason for investigating Cyprus is the limited research in this field for the residents of Cypriots. Furthermore, the present author has previously lived in Cyprus, and contacts the author has in Cyprus were hoped to be vital in carrying out the studies smoothly and successfully. Ultimately, these contacts were vital in the recruitment of participants and promotion of the internet links for the studies.

When literature into individualistic and collectivist cultures was reviewed, it was found to be a massively researched area. Research into Cyprus was still limited however, so incorporating this field into the thesis would have been an added benefit for Cyprus. On the other hand, including measures of cross-cultural differences and modifying the structure of the thesis to accommodate this large field would have altered the direction of the studies entirely, and taken away from the issue of animal abuse, and

subsequently attitudes towards animals. It was, therefore, decided not to include research into individualist and collectivist cultures or cross-cultural differences, and simply compare findings between the UK and Cyprus.

*7.4.3. Personality*

It was hoped that the inclusion of personality constructs into the study employing the sample of children would assist in translating the previous findings in adults to a younger population. After taking into consideration the age of the children, the need for shorter testing sessions to aid the concentration of the students, and the timetabling of schools, it was decided to substitute the IPIP Big Five Factor Markers that were used in chapters 3 and 4, with a shorter personality scale. The scale chosen was the Ten-Item Personality Inventory (TIPI), described in Section 5.5.1.1. Despite a large number of studies supporting the external reliability and validity of the TIPI (Back, et al., 2010; Ehrhart, et al., 2009; Gosling, Rentfrow & Swann, 2003; Muck, Hell & Gosling, 2007), analyses in chapter 5 indicated the TIPI was unreliable for use in our sample. Although Cronbach's alpha is not suggested for use on two-item scales, alphas calculated here for informative purposes were very low for all five constructs, and negative for three of the personality constructs. For each of these three constructs, the two items were negatively correlated after recoding of the negatively worded item thus indicating relationships between the items in opposite directions of those expected. Donnellan, Oswald, Baird and Lucas (2006) created the Mini-IPIP, with four items per Big Five trait. In their justifications for why another short measure of personality was needed, the authors argued a measure with two items per scale, as in the case of the TIPI, will not easily obtain adequate internal consistencies, nor reasonable content or

construct breadth. This problem was demonstrated in chapter 5. Further reasons for developing a new short measure of personality, though unrelated to the aims of chapter 5, were that the TIPI may pose problems in contexts where structural equation modelling is used or in situations where exploratory factor analytic techniques are appropriate. These techniques are common for most contemporary personality research. In general, problems with the TIPI in chapter 5 could be due to problems inherent with the measure itself, and further validation is definitely needed when using the TIPI with children.

*7.5. The wisdom of hindsight*

When considering what could have been done differently in this thesis, all possibilities relate back to the methodological and theoretical considerations mentioned above.

The TIPI clearly could not be used in this thesis, whether because of limitations inherent in the measure, or due to the small, child sample. If problems with the reliability of the TIPI had been identified earlier, it is possible that other alternatives to shorter personality measures could have been used. For instance, the Mini-IPIP may have been more appropriate here as it seems to have been developed in such a way that overcomes some of the limitations of the TIPI.

The humane education study as a whole (chapters 6) could also have been carried out differently. If time constraints had not been so strict, testing at Time 3 could have taken place approximately a year after the administration of the programme, as opposed to two months. Seeing as the programme was successful in altering levels of knowledge and attitudes towards animals, it would have been interesting to see whether

these changes were maintained across a long period of time. With regard to sampling, all schools in the Leicestershire area were approached, and they were informed that not a great deal amount of time as a whole would be required for the study, minimising any disruption of routines. This approach was taken when communicating with the schools to increase the chances of successful recruitment. If more time had been available to the researcher, more schools could have been successfully approached and recruited from outside the Leicestershire area, thus leading to a larger sample size. Finally, chapters 5 and 6 indicated the CTAQ had no predictive or differentiating value when used in the analyses. The CTAQ was designed for use in children, so sampling is not assumed to be the reason as to why the CTAQ was ineffective here. The analyses indicate the interaction between attitudes towards animals and knowledge of animals and their relationships with other variables were enough to produce an effect, without the added effect of the treatment of animals variable. On the other hand, although good reliabilities were reached with the CTAQ in the original study (see Thomson & Gullone, 2003), the CTAQ was developed with only a sample of 25 boys and 36 girls in Australia. Chapters 5 and 6 suggest the CTAQ is in need of further validation studies for use in UK samples, in contrast with the ZAWS which has shown reliability and consistency across a series of studies and populations.

Improvements to the gender and nation balances could also have been made. Efforts were made to promote the survey link to groups thought to include more males (e.g., sports groups) and requests were made for participants to forward the link to as many males as possible. Furthermore, the links were sent to as many individuals and groups in the UK as possible, in order to decrease the differences in sample size between the two countries. It was observed, however, that groups and people in Cyprus

219

became personally involved in the study due to its content. Although people in the UK seemed to find the topic of the surveys interesting, they did not appear to want to be involved personally and did not choose to forward the links on themselves as readily as Cypriot participants did. Reasons for the seemingly deeper involvement of Cypriot participants could be that Cyprus is a smaller country, people are linked in more ways than in the UK, and that the issue of animal welfare is still in its infancy in Cyprus, thus encouraging people to be more proactive. If possible, more time would have been allowed for the data collection periods in order to tackle the gender and country distribution.

*7.6. What worked*

It was not intended or expected that the ZAWS would be composed only of subscales measuring attitudes towards animals. However, as demonstrated above, this is what the analysis of a broader set of items revealed, despite their different original conceptual roots. Findings consistently indicated the presence of positive attitudes towards animals, which consistently showed links to age, gender and personality. These findings support previous studies by other researchers, leading to the conclusion that the ZAWS can reliably predict attitudes towards animals, and continues to predict attitudes towards animals when other variables are included in the analysis. In the analyses involving the child sample, the ZAWS was also able to predict positive attitudes to animals. One problematic finding in chapter 6 indicating higher ZAWS scores in both the control and experimental groups following the humane education programme, points to the conclusion that the ZAWS may need further validation in a child sample, or that younger persons respond in a more socially desirable way.

Overall, results support the argument for the effectiveness of the ZAWS of measuring attitudes towards animals in an adult population.

Despite the shortcomings of the method employed in chapter 6, and the problematic nature of the CTAQ, the investigation of a humane education programme in children was arguably successful. Effects were observed in the direction expected, and although the ZAWS and CTAQ may need further validation, the humane education programme was evidently successful in increasing the knowledge children have of how to care for animals.

The ZAWS has been involved in successful replications of previous findings, as outlined above. On the other hand, the inclusion of the ZAWS, and measures of delinquency and morality in chapter 4 falsified previously found results for the samples in this study. Hypothesised links between morality and attitudes towards animals, and morality and delinquency were not observed. Although research would suggest a link between morality and attitudes towards animals, the path analysis in Section 4.9.5.5. shows that the inclusion of personality and delinquency in the model are significantly stronger in predicting attitudes towards animals than morality. If this effect is true for this sample, and not simply a statistical effect of the large model, this might imply that principles of right and wrong are less significant to this field than levels of delinquent behaviours and personality variables. Similar implications can be drawn from the insignificant relationship between morality and delinquency. On the other hand, reasons could also be those outlined in Section 4.10; i.e. low conviction rates in the sample were the reason these relationships were not identified.

*7.7. Future applications of this work*

Directions of future research could branch out in various areas. One such area is the field of animal abuse. The ZAWS could be used alongside an already established measure of animal abuse in a validation study to determine whether attitudes towards animals are able to predict whether animals are abused or not. The validation side of this study would inform readers as to the ability of the ZAWS to accurately predict positive or negative behaviours towards animals. In extending Paulhus and Williams' (2002) Dark Triad paradigm, and a follow up study by Buckels (2009), who argued for the inclusion of everyday sadism into a new Dark Tetrad of personality, the ZAWS could be incorporated as a variable aimed at predicting sadism towards animals. Employing the "bug-killing" task used by Buckels (2009) with the inclusion of the ZAWS as a measure of attitudes towards animals would enable researchers to quantify the relationship between attitudes to animals (which theoretically should predict behaviours) and sadistic aggression.

As argued above, future research could also focus on validating the ZAWS in a child sample. With a larger sample of children, exploratory factor analytic and structural equation modelling techniques could be employed to test the structure of the ZAWS in children. Subsequent studies could then replicate the studies using an adult sample, to see the development of such effects across various ages. In addition, self-presentation scales, such as the Paulhus Deception Scales (1998) may be appropriate in future research in order to identify whether participants are choosing to present themselves in a better light. This possibility for considered for the findings in chapter 6, whereby scores on the ZAWS increased for both the experimental and control groups following the intervention.

222

*7.8. Conclusion*

Overall, the ZAWS has been successfully used in adult populations in both Cyprus and the UK to measure attitudes towards animals, and the relationships these attitudes have with demographic variables and personality variables. The use of the ZAWS was extended from theoretical questions to practical applications with its inclusion in the study of a humane education programme. Results have provided support for previous findings, new results can be added to the field, and Cyprus has gained much needed research into this field. Theories were developed based on previous research of constructs that were likely to have a relationship with attitudes towards animals. As in the case of morality and treatment of animals, some of these constructs were found to be irrelevant in the prediction of attitudes towards animals. Furthermore, through the technique of graphically presenting the data, the relationships between the constructs are made even clearer. Even clearer has been the conclusion that although some variables may have an indirect effect on attitudes towards animals, measurement models such as the above, and by consequence theories of attitudes towards animals, can be reduced to simpler ones when allowed. The field of attitudes towards animals has been shown through the literature reviews, the studies carried out in this thesis, and the humane education study to apply to all areas of society. Research informs us that attitudes towards animals are linked to the abuse of animals, which can be linked to general levels of delinquency ranging from theft to interpersonal violence. The field of attitudes towards animals has also been highlighted in the development of prosocial qualities in children; under the right conditions and appropriate exposure to animals and animal related material, prosocial feelings to both animals and humans can

223

be fostered and cultured, resulting in well-balanced adults capable of positive and

healthy relationships.

Appendix A.4
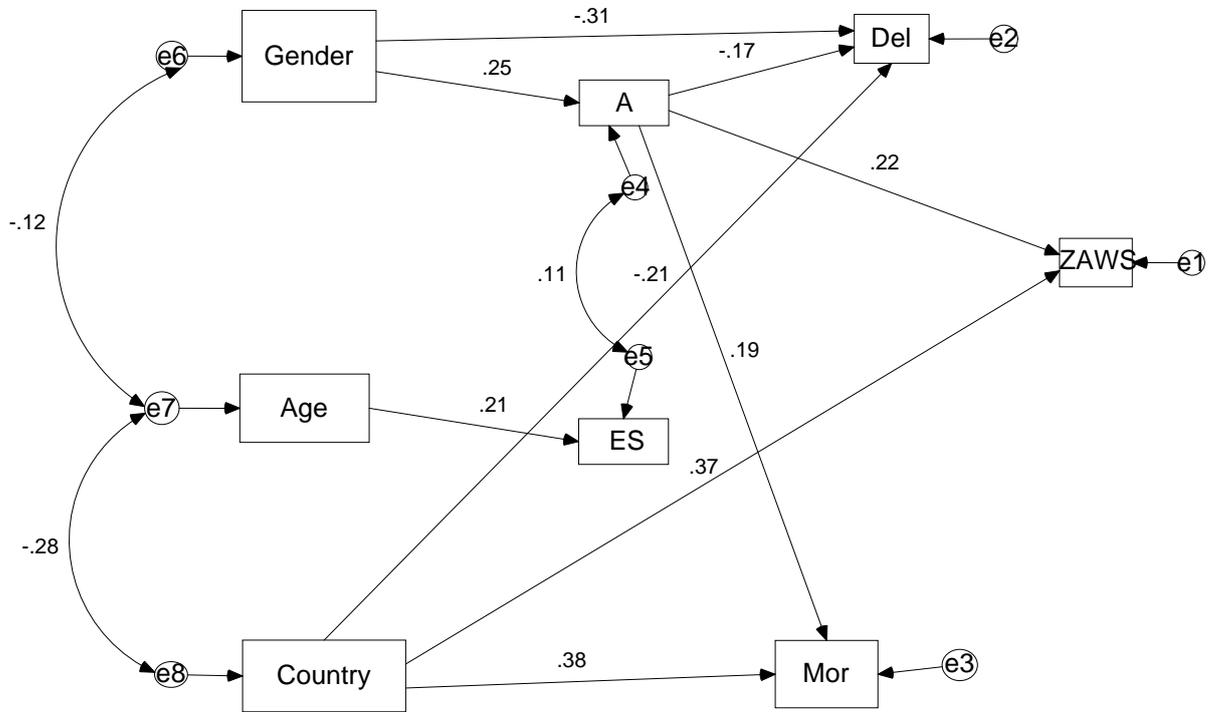


Figure 4.6. Path analysis showing conservative pathways with covariances and errors for all the variables included in the analysis.
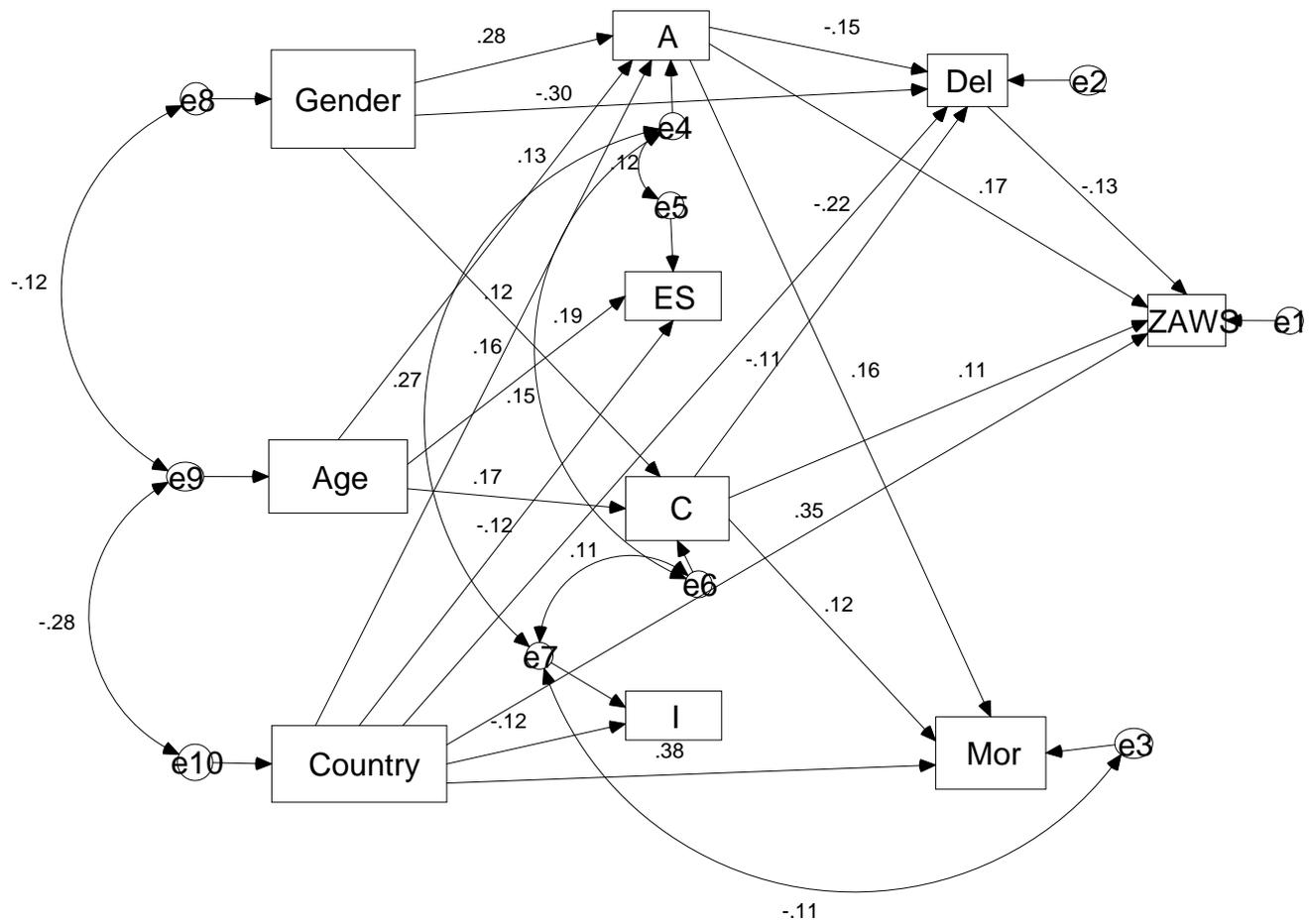
Figure 4.7. Path analysis showing standardised regression coefficients with covariances and errors for all the variables included in the analysis.

Appendix B: Questionnaires used in chapters 2, 3, 4, 5 and 6.

Zalaf animal welfare scale

Please choose one answer from 1 to 5, where 1 is "Completely disagree" and 5 is "Completely agree"

Note: Questions that ask about pets, refer to mammals (eg, cats, dogs) and NOT fish, reptiles etc.

| | Completely disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Completely agree |
|---|---|---|---|---|---|
| Animals have feelings just like people. | 1 | 2 | 3 | 4 | 5 |
| Dogs behave only when they fear their owner. | 1 | 2 | 3 | 4 | 5 |
| Dogs cannot show their affection for their owners. | 1 | 2 | 3 | 4 | 5 |
| The owners of an animal can do whatever they like with it. | 1 | 2 | 3 | 4 | 5 |
| Pets should be treated as part of the family. | 1 | 2 | 3 | 4 | 5 |
| Releasing your anger on a pet is helpful. | 1 | 2 | 3 | 4 | 5 |

| | Completely disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Completely agree |
|---|---|---|---|---|---|
| The bigger an animal is the harsher you should treat it. | 1 | 2 | 3 | 4 | 5 |
| The bigger an animal is the more vicious it is. | 1 | 2 | 3 | 4 | 5 |
| There is no need to hunt since meat can be bought from the supermarket. | 1 | 2 | 3 | 4 | 5 |
| A dog will learn more from being hit than instructed. | 1 | 2 | 3 | 4 | 5 |
| A pet's living area needs to be cleaned daily. | 1 | 2 | 3 | 4 | 5 |
| Animals need to be kept in comfortable conditions, just like people. | 1 | 2 | 3 | 4 | 5 |
| What people call animal abuse is actually playing. | 1 | 2 | 3 | 4 | 5 |

## 50-Item Set of IPIP Big-Five Factor Markers

Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Indicate for each statement whether it is 1. Very Inaccurate, 2. Moderately Inaccurate, 3. Neither Accurate Nor Inaccurate, 4. Moderately Accurate, or 5. Very Accurate as a description of you.

| | | Very Inaccurate | Moderately Inaccurate | Neither Accurate Nor Inaccurate | Moderately Accurate | Very Accurate |
|---|---|---|---|---|---|---|
| 1. | I am the life of the party. | 1 | 2 | 3 | 4 | 5 |
| 2. | I feel little concern for others. | 1 | 2 | 3 | 4 | 5 |
| 3. | I am always prepared. | 1 | 2 | 3 | 4 | 5 |
| 4. | I get stressed out easily. | 1 | 2 | 3 | 4 | 5 |
| 5. | I have a rich vocabulary. | 1 | 2 | 3 | 4 | 5 |
| 6. | I don't talk a lot. | 1 | 2 | 3 | 4 | 5 |
| 7. | I am interested in people. | 1 | 2 | 3 | 4 | 5 |
| 8. | I leave my belongings around. | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|---|
| 9. | I am relaxed most of the time. | 1 | 2 | 3 | 4 | 5 |
| 10. | I have difficulty understanding abstract ideas. | 1 | 2 | 3 | 4 | 5 |
| 11. | I feel comfortable around people. | 1 | 2 | 3 | 4 | 5 |
| 12. | I insult people. | 1 | 2 | 3 | 4 | 5 |
| 13. | I pay attention to details. | 1 | 2 | 3 | 4 | 5 |
| 14. | I worry about things. | 1 | 2 | 3 | 4 | 5 |
| 15. | I have a vivid imagination. | 1 | 2 | 3 | 4 | 5 |
| 16. | I keep in the background. | 1 | 2 | 3 | 4 | 5 |
| 17. | I sympathize with others' feelings. | 1 | 2 | 3 | 4 | 5 |
| 18. | I make a mess of things. | 1 | 2 | 3 | 4 | 5 |
| 19. | I seldom feel blue. | 1 | 2 | 3 | 4 | 5 |
| 20. | I am not interested in abstract ideas. | 1 | 2 | 3 | 4 | 5 |
| 21. | I start conversations. | 1 | 2 | 3 | 4 | 5 |
| 22. | I am not interested in other people's problems. | 1 | 2 | 3 | 4 | 5 |
| 23. | I get chores done right away. | 1 | 2 | 3 | 4 | 5 |
| 24. | I am easily disturbed. | 1 | 2 | 3 | 4 | 5 |
| 25. | I have excellent | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| | ideas. | | | | | |
| 26. | I have little to say. | 1 | 2 | 3 | 4 | 5 |
| 27. | I have a soft heart. | 1 | 2 | 3 | 4 | 5 |
| 28. | I often forget to put things back in their proper place. | 1 | 2 | 3 | 4 | 5 |
| 29. | I get upset easily. | 1 | 2 | 3 | 4 | 5 |
| 30. | I do not have a good imagination. | 1 | 2 | 3 | 4 | 5 |
| 31. | I talk to a lot of different people at parties. | 1 | 2 | 3 | 4 | 5 |
| 32. | I am not really interested in others. | 1 | 2 | 3 | 4 | 5 |
| 33. | I like order. | 1 | 2 | 3 | 4 | 5 |
| 34. | I Change my mood a lot. | 1 | 2 | 3 | 4 | 5 |
| 35. | I am quick to understand things. | 1 | 2 | 3 | 4 | 5 |
| 36. | I don't like to draw attention to myself. | 1 | 2 | 3 | 4 | 5 |
| 37. | I take time out for others. | 1 | 2 | 3 | 4 | 5 |
| 38. | I shirk my duties. | 1 | 2 | 3 | 4 | 5 |
| 39. | I have frequent mood swings. | 1 | 2 | 3 | 4 | 5 |
| 40. | I use difficult words. | 1 | 2 | 3 | 4 | 5 |
| 41. | I don't mind being the centre of attention. | 1 | 2 | 3 | 4 | 5 |
| 42. | I feel others' | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| | emotions. | | | | | |
| 43. | I follow a schedule. | 1 | 2 | 3 | 4 | 5 |
| 44. | I get irritated easily. | 1 | 2 | 3 | 4 | 5 |
| 45. | I spend time reflecting on things. | 1 | 2 | 3 | 4 | 5 |
| 46. | I am quiet around strangers. | 1 | 2 | 3 | 4 | 5 |
| 47. | I make people feel at ease. | 1 | 2 | 3 | 4 | 5 |
| 48. | I am exacting in my work. | 1 | 2 | 3 | 4 | 5 |
| 49. | I often feel blue. | 1 | 2 | 3 | 4 | 5 |
| 50. | I am full of ideas. | 1 | 2 | 3 | 4 | 5 |

Sensational Interests Questionnaire

Please indicate on a scale from "Great dislike" to "Great interest", how you feel towards the items listed below.

| | Great dislike | Slight dislike | No opinion | Slight interest | Great interest |
|---|---|---|---|---|---|
| 1) Alternative medicine | 1 | 2 | 3 | 4 | 5 |
| 2) Astrology | 1 | 2 | 3 | 4 | 5 |
| 3) Black magic | 1 | 2 | 3 | 4 | 5 |
| 4) Body-building | 1 | 2 | 3 | 4 | 5 |
| 5) Camping | 1 | 2 | 3 | 4 | 5 |
| 6) Country and hill walking | 1 | 2 | 3 | 4 | 5 |
| 7) Crossbows, knives and swords | 1 | 2 | 3 | 4 | 5 |
| 8) Drugs | 1 | 2 | 3 | 4 | 5 |
| 9) Fishing | 1 | 2 | 3 | 4 | 5 |
| 10) Flying saucers | 1 | 2 | 3 | 4 | 5 |
| 11) Foreign travel | 1 | 2 | 3 | 4 | 5 |
| 12) Gardening | 1 | 2 | 3 | 4 | 5 |
| 13) Guns and shooting | 1 | 2 | 3 | 4 | 5 |
| 14) Martial arts | 1 | 2 | 3 | 4 | 5 |
| 15) Medicine | 1 | 2 | 3 | 4 | 5 |
| 16) Mercenaries and the SAS | 1 | 2 | 3 | 4 | 5 |
| 17) Motor-bikes | 1 | 2 | 3 | 4 | 5 |
| 18) Paganism | 1 | 2 | 3 | 4 | 5 |
| 19) Philosophy | 1 | 2 | 3 | 4 | 5 |
| 20) Psychology and psychiatry | 1 | 2 | 3 | 4 | 5 |
| 21) Singing and making music | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| 22) Sporting activities | 1 | 2 | 3 | 4 | 5 |
| 23) Survivalism | 1 | 2 | 3 | 4 | 5 |
| 24) Tattoos and body-piercing | 1 | 2 | 3 | 4 | 5 |
| 25) The armed forces | 1 | 2 | 3 | 4 | 5 |
| 26) The environment | 1 | 2 | 3 | 4 | 5 |
| 27) The paranormal | 1 | 2 | 3 | 4 | 5 |
| 28) Vampires and werewolves | 1 | 2 | 3 | 4 | 5 |

The Self-Report Early Delinquency Instrument (SRED)

From the following list, would you please state as HONESTLY AS POSSIBLE how many of the things you have EVER done. Almost everyone does a lot of the things listed below at some point in their life. NOBODY else will know how you answered the questions. Please answer as many questions as you can.

| | Never | Once | More than once |
|---|---|---|---|
| 1) Carrying a weapon | 1 | 2 | 3 |
| 2) Fighting in the street | 1 | 2 | 3 |
| 3) Breaking windows of empty building | 1 | 2 | 3 |
| 4) Using a weapon | 1 | 2 | 3 |
| 5) Hitting a person to hurt them | 1 | 2 | 3 |
| 6) Getting drunk | 1 | 2 | 3 |
| 7) Buying or drinking alcohol | 1 | 2 | 3 |
| 8) Trouble through alcohol | 1 | 2 | 3 |
| 9) Trespassing | 1 | 2 | 3 |
| 10)Stealing between 50p and £10 | 1 | 2 | 3 |
| 11)Stealing less than 50p | 1 | 2 | 3 |
| 12)Shoplifting | 1 | 2 | 3 |
| 13)Taking a car without permission | 1 | 2 | 3 |
| 14)Breaking into a house | 1 | 2 | 3 |
| 15)Stealing out of a parked car | 1 | 2 | 3 |

## The Community, Autonomy and Divinity Short Scale (CADSS)

With what frequency do the phrases below justify someone's action as right? Using the 7-point rating scale, please rate the frequency to which every justification for the acts presented below is RIGHT according to your judgement.

| An action/behaviour is right if… | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Never | Almost never | Rarely | Sometimes | Often | Almost always | Always |
| 1)...by doing it, the person gains respect from the family. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2)...it follows nature's law. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3)...it expresses someone's autonomy. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4)...it is God's will. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5)...it is socially approved. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6)...it respects the natural order. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7)...it respects family traditions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8)...it is in accordance with the scriptures. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9)...it expresses personal choice and liberty. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10)...it respects someone's privacy. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11)...it is in accordance with religious authority. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12)...it is accepted by the | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| family. | | | | | | | |
| 13)...it protects someone's interests and needs. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

In the next section, the sentences cover what YOU would consider a morally WRONG action or behaviour.

| An action/behaviour is wrong if… | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Never | Almost never | Rarely | Sometimes | Often | Almost always | Always |
| 14)...it pollutes the spirit. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15)...it is unnatural. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16)...it is socially condemned. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17)...it is against true faith. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18)...the family considers it unacceptable. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19)...it restricts the individual's rights. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20)...it is against the rules of one's social group. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21)...society considers it unacceptable. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22)...it opposes the rules of society. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23)...it is against God's will. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24)...it restricts the freedom of choice of a | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| person. | | | | | | | |
| 25)...it opposes the beliefs of the family. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26)...it is against the natural order. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27)...it restricts someone's privacy. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28)...it restricts personal choice and liberty. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29)...it restricts the possibility of a person to defend herself/himself. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30)...it is against nature's law. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Knowledge about Animal Issues Scale (KAIS)

Try to think of how you act with your pet and answer the following questions. If you do not have a pet try to think of other people's pets or imagine that you had a pet. When questions ask about animals, try to think of animals you might have at home like cats, dogs, rabbits, guinea pigs and hamsters. Some questions can have more than one answer.

1. Do you have an animal at home? Circle your answer

| Yes | No |
|-----|-----|

2. How have you learned what you know about animals? Tick all that apply

| Parents/ family | |
|-----------------|---|
| Friends | |
| School | |
| Books/ magazines | |
| Internet | |
| TV programmes | |

3. Have you ever read a book on animals? Was it fiction or fact? Circle your answer

| Yes | No |
|-----|-----|

Tick your answer

| Fact | |
|------|---|
| Fiction | |

4. Which of these animals is **<u>not</u>** a mammal? Tick all that apply

| Dog | |
|-----|---|
| Cat | |
| Panda | |
| Lizard | |
| Elephant | |

5. Can animals communicate with each other? Circle your answer

| Yes | No |
|-----|-----|
|     |     |

6. If you meet a dog off its lead, what do you do? Tick all that apply

| Run towards it |  |
|----------------|--|
| Run away from it |  |
| Walk slowly away from it |  |
| Throw stones at it |  |
| Try to pet it |  |

7. Which rules to avoid problems with dogs are correct? Answer T for true, F for false

| Stay away from dogs that are growling or showing their teeth |  |
|-----|-----|
| Keep calm and walk away slowly from angry dogs |  |
| Run up to strange dogs and shout loudly near them |  |
| Ask the owner first if you are allowed to pet a dog |  |
| Don't bother a dog that is eating or sleeping |  |

8. Do any diseases that animals have pass on to people? Circle your answer

| Yes | No |
|-----|-----|
|     |     |

9. What should a dog have in order to always find his/ her owner? Tick all that apply

| Microchip |  |
|-----------|--|
| Long leash |  |
| Colourful collar |  |
| Clothing |  |
| Identity tag |  |

10. Is it possible to teach something to animals? Circle your answer

| Yes | No |
|-----|----|
|     |    |

11. How do dogs approach each other in a non threatening way? Tick all that apply

| They bark at each other | |
|-------------------------|---|
| The walk slowly towards each other | |
| They smell each other | |
| They ignore each other | |
| They growl at each other | |

12. What can you find in a dog shelter? Tick all that apply

| Many types of dogs | |
|--------------------|---|
| Food and water for the dogs | |
| Housing for the dogs | |
| Other animals like cats | |
| All of the above | |

13. What is possible to teach to a dog? Tick all that apply

| How to fetch | |
|--------------|---|
| How to sit | |
| How to lie down | |
| How to behave | |
| None of the above | |

14. Can animals communicate with children? Circle your answer

| Yes | No |
|-----|----|
|     |    |

15. Can animals feel physical pain? Circle your answer

| Yes | No |
|-----|----|
|     |    |

16. Can children learn something from animals? Circle your answer

| Yes | No |
|-----|-----|

17. Why are dogs considered man's best friend? Tick all that apply

| Because they are loyal | |
|---|---|
| Because they help handicapped people | |
| Because they are pretty | |
| Because they like spending time with you | |
| Because they do not stay angry with you when you make mistakes | |

18. Do you think that it is correct if a dog in the house can do anything he/ she wants? Circle your answer

| Yes | No |
|-----|-----|

19. Do animals like to play? Circle your answer

| Yes | No |
|-----|-----|

20. Do animals suffer if they are on their own? Circle your answer

| Yes | No |
|-----|-----|

21. When we adopt an animal, why must we take care of it and cater to its needs? Tick all that apply

| Because if we don't it might run away | |
|---|---|
| To make sure the animal is happy | |
| To make sure the animal is healthy | |
| So that it will do what we want | |
| So that it doesn't become sick | |

22. Is it true that an abandoned dog can look after itself without a human owner?

Circle your answer

| Yes | No |
|-----|-----|

23. Why do we have to vaccinate dogs and cats?  Tick all that apply

| So that they'll like us | |
|-------------------------|---|
| To stop them running away | |
| To make them more obedient | |
| So that they don't bark or scratch | |
| So that they don't get sick | |

24. What is the question to ask yourself before adopting a dog? Tick all that apply

| Will the dog play with me? | |
|----------------------------|---|
| Will the dog do as I say? | |
| Will I be able to feed, exercise and look after the dog the way I should? | |
| Do I have enough time to spend with the dog? | |
| Will my friends like my dog? | |

25. Do you think having an animal in the house may be harmful for your health?

Circle your answer

| Yes | No |
|-----|-----|

26. How do dogs see their owners? Tick all that apply

| As their friend | |
|-----------------|---|
| As someone to be afraid of | |
| As someone to play with | |
| As someone to bark at until they get their food | |
| As someone who will hit them if they make a mistake | |

27. What do you think of animals in general? Tick all that apply

| | |
|---|---|
| Animals are my friends | |
| Animals would hurt us if we let them | |
| Animals should always be kept under our control | |
| We should always try to take care of animals | |
| We should try to make the animals in our care happy | |

Children's Treatment of Animals Questionnaire

Try to think of how you act with your pet and answer the following questions. Do you take part in the following activities Often (3), Sometimes (2) or Never (1) with your pet?

If you do not have a pet try to think of other people's pets or imagine that you had a pet. How often would you take part in the following activities if you had a pet?
Please circle the correct answer

|  | Often (3) | Sometimes (2) | Never (1) |
|---|---|---|---|
| Play with a pet | 3 | 2 | 1 |
| Give food or water to a pet | 3 | 2 | 1 |
| Take a pet for a walk | 3 | 2 | 1 |
| Pat a pet | 3 | 2 | 1 |
| Yell at a pet | 3 | 2 | 1 |
| Cuddle a pet | 3 | 2 | 1 |
| Cry with a pet when I am sad | 3 | 2 | 1 |
| Talk to a pet | 3 | 2 | 1 |
| Allow a pet to stay in my room | 3 | 2 | 1 |
| Play dress up with a pet | 3 | 2 | 1 |
| Groom a pet | 3 | 2 | 1 |
| Tell my secrets to a pet | 3 | 2 | 1 |
| Spend time with a pet | 3 | 2 | 1 |

Ten-Item Personality Inventory

Please read each sentence carefully. For each sentence, please circle the answer which best describes how you think of yourself.

| | | Completely false | Quite false | A little false | Neither false nor true | A little true | Quite true | Completely true |
|---|---|---|---|---|---|---|---|---|
| 1 | Extraverted, enthusiastic | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | Critical, quarrelsome | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | Dependable, self-disciplined | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | Anxious, easily upset | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5 | Open to new experiences, complex | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6 | Reserved, quiet | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7 | Sympathetic, warm | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | Disorganised, careless | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | Calm, emotionally | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | Complet ely false | Quite false | A little false | Neither false nor true | A little true | Quite true | Completely true |
|---|---|---|---|---|---|---|---|---|
| | stable | | | | | | | |
| 10 | Convention al, uncreative | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Extraverted:** Being interested in the physical and social environment

**Enthusiastic:** Showing a lot of excitement and interest

**Critical:** To judge people or things negatively

**Quarrelsome:** To argue or disagree with people often

**Dependable:** Trustworthy, reliable

**Self-disciplined:** To control yourself and your feelings, in order to improve yourself

**Anxious:** To feel worried

**Open to new experiences:** Willing to try new things

**Complex:** To have lots of ideas, feelings and memories

**Reserved:** To control yourself with others and not be very affectionate

**Quiet:** To say little

**Sympathetic:** To be kind, tender and affectionate

**Warm:** To be friendly and enthusiastic

**Disorganised:** To not plan things properly

**Careless:** To not give enough attention to something

**Calm:** To feel peaceful, and not be nervous or angry

**Emotionally stable:** Your feelings don't change suddenly

**Conventional:** To follow tradition and do things the way most people do

**Uncreative:** Not creative and not original

Appendix C: Format of consent forms and debriefing forms used in chapters 2, 3 and 4

**Participant Consent Form**

**BACKGROUND INFORMATION**

**Title:**

**Researchers:** Our names are Alexia Zalaf and Dr Vince Egan from the University of Leicester, School of Psychology.

**Purpose of data collection:**

**Details of Participation:** The research involves participants completing a questionnaire with subsections by themselves. The questionnaire will be available online. The session should take about 20 minutes. Please feel free to leave comments at the end of the questionnaire.

**CONSENT STATEMENT**

1. I understand that my participation is voluntary and that I may withdraw from the research at any time up until when the questionnaire is submitted to the researcher, without giving any reason.

2. I am aware of what my participation will involve.

3. My data are to be held confidentially and only Miss Alexia Zalaf and Dr Vince Egan will have access to them.

4. My data will be kept in a locked filing cabinet for a period of at least five years after the appearance of any associated publications. Any aggregate data (e.g. spreadsheets) will be kept in electronic form for up to three years after which time they will be deleted.

5. In accordance with the requirements of some scientific journals and organisations, my coded data may be shared with other competent researchers. My coded data may also be used in other related studies. My name and other identifying details will not be shared with anyone.

6. The overall findings may be submitted for publication in a scientific journal, or presented at scientific conferences, as part of the researcher's ongoing PhD study programme.

7. This study will take approximately three months to complete.

8. *I will be able to obtain general information about the results of this research by contacting the research after*

I am giving my consent for data to be used for the outlined purposes of the present study

All questions that I have about the research have been satisfactorily answered.

In case you would like more information before you take part in the study, please find the contact details of the researchers below:

Alexia Zalaf: az58@le.ac.uk
Dr Vince Egan: ve2@le.ac.uk

I agree to participate.

Participant's signature:  _____

Participant's name (please print):  _____

Date:  _____

Please note that this form will be kept separately from your data

**Participant Debriefing Form**

**An investigation of the effects of personality, morality and types of behaviours on attitudes towards animals.**

Thank you for your time and participation in this study.

The aim of this study was to use a newly developed questionnaire that measures positive and negative attitudes towards animals along with three scales measuring aspects of personality, morality and types of delinquent behaviours. The results of this study will enable us to understand which aspects of personality contribute to the development of attitudes towards animals, and what types of behaviours are related to these attitudes. Furthermore, it will enhance our understanding of how views on morality relate to attitudes towards animals. Another important aspect of this study is that it will allow us to compare both Cyprus and the UK in which aspects of personality affect attitudes towards animals and whether any differences between the two countries can be attributed to culture.

Eventually, it is hoped that this study will promote the understanding of why people hold certain views about animals and then how these views influence behaviours.

Participation in this survey is anonymous and data will not be provided to third parties.

If you feel affected by any of these issues or would like further information, please find contact details below for organisations of interest in the UK and Cyprus.

Cyprus:

Cyprus Voice for Animals

- http://www.cva.com.cy/CVA/Welcome.html

- Tel: 7000 DOGS (3647) (only for Cyprus)

- info@cva.com.cy

- Mailing Address

   CVA - Cyprus Voice for Animals

   Tefkrou 3, 2322,

   Lakatamia, Cyprus


Argos Sanctuary

- http://www.argossanctuary.com/

- Tel: (00357) 99326045

- argos@cytanet.com.cy


Cyprus Veterinary Services

- http://www.moa.gov.cy/moa/vs/vs.nsf/DMLindex_gr/DMLindex_gr?OpenDocument


<u>United Kingdom:</u>

The Royal Society for the Protection of Cruelty against Animals (RSPCA)

- http://www.rspca.org.uk/

- Cruelty line: 0300 1234 999

- Advice line: 0300 1234 555

- RSPCA Enquiries Service, Wilberforce Way, Southwater, Horsham, West Sussex RH13 9RS, United Kingdom.


The British Association for Shooting and Conservation (BASC)

- http://www.basc.org.uk/en/about-basc/


Please feel free to contact myself or my supervisor in case you have any questions or comments. The contact details are as follows:

Alexia Zalaf

E-mail: az58@le.ac.uk


Dr Vince Egan

E-mail: ve2@leicester.ac.uk

Website: http://www2.le.ac.uk/departments/psychology/ppl/ve2

## Appendix D: Request forms to headteachers, parent information, consent and debriefing forms

Dear Ms Ridley,

I am a second year PhD psychology student working under the supervision of Professor Vincent Egan at the University of Leicester, researching animal welfare, personality and delinquency in members of the general population in the UK and Cyprus. I am hoping to extend my findings to children, and to use the information I have already gathered to guide the focus of the questions and help to understand the magnitude of the problem in animal welfare issues, and also how it can be managed.

I would like to research the effectiveness of what is called 'Humane education'. This is a programme that aims to build respect, kindness and responsibility in childrens' relationships with animals and people through the use of animal related stories, activities and lessons. Encouraging empathy and pro-social behaviour in children helps develop social skills which hopefully continue into adulthood.

I am writing to request permission to approach the children under your care for purposes of psychological research we are conducting at the University of Leicester, UK. Following consent being given by the child's parents, all children will be asked to complete a series of short questionnaires. One half of the children will then be presented with a brief hour-long session covering animal welfare issues carried out by a trained professional from the Dogs Trust. A month later all children will complete the same questionnaires in order to determine the efficiency of the programme, and whether there are differences in the behaviour and attitudes of those children who completed the programme and those that didn't. During this later period, the half of the children who did not receive the intervention with the trained professional will receive this session. It is expected that this study will take place over a period of a single term, and preferably in the new autumn term. This work would readily fit into any personal development timetabling the school may seek to provide. We would, of course, feed back results to staff who would like to know the outcome of the study.

I am currently in the process of applying for a CRB check, and aim to have the process completed by the start of the study. Please feel free to contact myself or my supervisor in case you have any questions or comments. The contact details are as follows:

Alexia Zalaf:  E-mail: az58@le.ac.uk

Professor Vincent Egan: E-mail: ve2@leicester.ac.uk

Thank you very much for your cooperation. I look forward to hearing from you soon.

Yours Sincerely, Alexia Zalaf

**University of Leicester**

**Parent/ Guardian Information Form**

**BACKGROUND INFORMATION**

**Title of study: Assessing the attitudes of children towards animals, and the impact of a humane education workshop on the development of these attitudes.**

**Researchers:** Our names are Alexia Zalaf and Professor Vincent Egan from the University of Leicester, School of Psychology.

**Purpose of study:** To study the effectiveness of what is called 'Humane education'. This is a teaching programme that seeks to build respect, kindness and responsibility in childrens' relationships with animals and people through the use of animal related stories, activities and lessons. It is claimed that encouraging empathy and constructive social behaviour in children helps develop personal skills which continue into adulthood.

**Details of Participation:** All children will be asked to complete a series of short questionnaires. One half of the children will then be presented with a brief hour-long session covering animal welfare issues carried out by a trained professional from the Dogs Trust. A month later all children will complete the same questionnaires in order to determine the efficiency of the programme, and whether there are differences in the behaviour and attitudes of those children who completed the programme compared to those that didn't. During this later period, the half of the children who did not receive the intervention with the trained professional and the dog will receive this session.

**University of Leicester**

**Parent/ Guardian Consent Form**

**CONSENT STATEMENT**

1. I understand that my child's participation is voluntary and that my child may withdraw from the research if they wish.
2. I understand what my child's participation will involve.
3. My child's data will be held confidentially and only Miss Alexia Zalaf and Professor Vincent Egan will have access to them.
4. My child's data will be kept securely and no individual will be recognisable in the analysis. All names and identifying details will be replaced with a code number.
5. In accordance with the requirements of some scientific journals and organisations, my coded data may be shared with other competent researchers. My coded data may also be used in other related studies. My child's name and other identifying details will not be shared with anyone.
6. The overall findings may be submitted for publication in a scientific journal, or presented at scientific conferences, as part of the researcher's ongoing PhD study programme.
7. This study will take approximately four months to complete.
8. I will be able to obtain general information about the results of this research by contacting the researcher after February 2012.


I am giving my consent for data to be used for the outlined purposes of the present study

All questions that I have about the research have been satisfactorily answered.

In case you would like more information before you take part in the study, please find the contact details of the researchers below:

Alexia Zalaf: az58@le.ac.uk

Professor Vincent Egan: ve2@le.ac.uk

I agree to participate. ☐

I do not agree to participate. ☐

Parent/ Guardian's signature: _____

Parent/ Guardian's name (please print): _____

Child's name: _____

Child's school year:   Year 4, Year 5 or Year 6

Date: _____

Please note that this form will be kept separately from your child's data.

Please sign the consent form and place it back into the envelope. Seal the envelope and hand it into the form teacher.

**Assessing the attitudes of children towards animals and the impact of a humane education workshop on the progression of these attitudes.**

Thank you for your time and participation in this study.

The aim of this study was to use a newly developed questionnaire that measures positive and negative attitudes towards animals along with three scales measuring aspects of personality, and knowledge of animal welfare issues. The results of this study will enable us to understand which aspects of personality contribute to the development of attitudes towards animals. Furthermore, this study will provide new and important information on the level of knowledge of animal welfare issues in children. Through the humane education programme, the children were educated on a wide range of such issues. It is our hope that this humane education programme had a positive effect in building respect, kindness and responsibility in the childrens' relationships with animals and people. Encouraging empathy and pro-social behaviour in children helps develop social skills which hopefully continue into adulthood.

Eventually it is hoped that the positive effects produced by this humane education programme will be recognised by the wider community, and thus action will be taken to incorporate such programmes more rigorously into the school curriculum.

Participation in this survey is anonymous and data will not be provided to third parties.

If you feel affected by any of these issues or would like further information, please find contact details below for organisations of interest.

The Dogs Trust

- http://www.dogstrust.org.uk

- 0207 837 0006

- Dogs Trust, 17 Wakley Street, London, EC1V 7RQ, United Kingdom

The Royal Society for the Protection of Cruelty against Animals (RSPCA)

- http://www.rspca.org.uk/

- Cruelty line: 0300 1234 999

- Advice line: 0300 1234 555

- RSPCA Enquiries Service, Wilberforce Way, Southwater, Horsham, West Sussex RH13 9RS, United Kingdom.

Please feel free to contact myself or my supervisor in case you have any questions or comments. The contact details are as follows:

Alexia Zalaf

E-mail: az58@le.ac.uk


Dr Vincent Egan

E-mail: ve2@leicester.ac.uk

Website: http://www2.le.ac.uk/departments/psychology/ppl/ve2

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277

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