

**Expanding human animal interaction research; is human animal
interaction associated with psychological functioning?**

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Abstract

The purpose of the current study was to expand the current Human Animal interaction research by broadening the range of individuals included in this research area; as well as examining the association between human animal interaction and elements of psychological functioning. An observational between groups design was employed and this study consisted of 93 participants who were gathered through an opportunistic convenience sampling method.

Correlational analysis found no statistically significant relationship between human animal interaction and: happiness ($r=.127$, $p=.23$), stress ($r=.06$, $p=.54$), and loneliness ($r=-.049$, $p=.64$); as well as no relationship between social support satisfaction and pet attachment. Regression analysis could not be completed due to the data not meeting the required assumptions. Exploratory analysis found no significant difference in mean scores between pet owners and non-pet owners for happiness, stress, or loneliness.

The current research may not have no direct clinical applications; however this research has implications for future research. Future research is required, should this future research find a relationship between human animal interaction and elements of psychological functioning there may be place for human animal interaction based therapy.

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Introduction

Fossil evidence dating back to half a million years ago indicates the prevalence of a relationship between humans and animals in the past (O’Haire, 2010). From an evolutionary perspective, in the past, animals were a source of food. However, a socioeconomic revolution occurred and resulted in the domestication of animals (Serpell, 1996). The scientific understanding of the human animal bond has made huge advantages in the recent decades. These advances follow from a workshop carried out by the National Institutes of Health (NIH) which outlined the health benefits of pets in 1987 (NIH, 1987). More recently, Beck and Katcher (2003) state that human animal interaction can influence psychological parameters which are important to health. Human animal interaction research has mainly focused on the advantages of *pets*. Research ranges from the health benefits of pets (O’Haire, 2010), the benefits of animal intervention programs (Bass, Duchowny, & Llabre, 2009), to fulfilling the human desire to be close to nature (Headey, 2003).

Human animal interaction research has not taken into consideration the general human animal interaction; i.e. individuals who work with animals daily, but may not own pets or partake in animal intervention programs. For example, veterinary surgeons or nurses, and farmers work with animals daily but may not own pets. Does this mean that their interaction with animals has no benefits to their health? This general interaction is still a form of human animal interaction, however, has not been considered in past research.

Although there is a lack of human animal research examining the benefits of *general* human animal interaction there is a variety of research examining the benefits of animal intervention programs and the benefits of pets to human health. Beetz and

colleagues (2012) completed a review and have stated that during the last decade, human animal interaction has become much more widely accepted as having a positive effect on human health. In recent years, substantial literature indicates that therapeutic riding can have a positive impact on mental health (Schneider & Harley, 2016). This recent study investigated the impact of therapeutic horse riding for people with disabilities such as mental health. Researchers found that the riders involved in the study were more positive on 21 of the 26-item scale following horse riding (in comparison to before horse riding) as well as the interview data suggesting that the riding program improves motivation, self-esteem, and relationship building (Schneider & Harley, 2016). These results must be interpreted with caution however, as open ended interview questions are of an exploratory nature and make it difficult to derive results. Animals also serve other purposes such as therapy animals to aid those with disabilities. Animal assisted therapy is an intervention which involves a trained animal along with their handler interacting with the aim of facilitating the handler's progress towards therapeutic goals (Barker & Dawson, 1998). Companion animals hold a therapeutic effect for individuals, for example: animal assisted therapy is a Canine Assisted therapy for children with Attention Deficit Hyperactivity Disorder (Schuck, Emmerson, Fine, & Lakes, 2015).

There are other researched benefits of human-animal interaction-attachment, for example. Bowlby (1969) proposed attachment theory suggesting that one strong emotional bond with a caregiver is critical to personal development. In relation to animal attachment, Rynearson's (1978) study suggested that pets and humans can be significant attachment figures for one another. Attempts have been made to draw a connection between Bowlby's Attachment Theory and Animal attachment. However, this connection has yet to be clarified by research. In 2006, Crawford, Worsham, and

Swinehart proposed that the term “attachment” may share attributes of the traditional attachment theory in relation to animals (Bowlby, 1969), however, fails to encompass the attributes of the original attachment theory. Despite research’s failure to fully reflect attachment theory, Tang, Chen and Chou (2013) conducted research to find that having an attachment with a pet has shown to provide benefits for individuals both psychologically and physically. They examined the relationship among 346 pet owners aged 16-70. Tang, Chen, and Chou suggest that associating pet attachment (which is an intrinsic factor) to happiness may require leisure coping (which is an extrinsic factor); i.e. taking advantage of leisure activities bettering interaction with their pets and influencing happiness. Their results show that happiness was affected by pet attachment, however, this affect was indirect and through leisure coping.

There is a continually growing line of evidence, which shows the diverse benefits of bonds between humans and animals (Mills & Hall, 2014). Curl, Bibbo and Johnson (2016) found an association between dog walking and the physical health of older adults; specifically, a healthier body mass index, fewer doctor visits and exercise that is more moderate. Exercise and physical activity have beneficial effects on mental health (Penedo & Dahn, 2005). In many cultures throughout history, the importance of human-animal bonds is recorded (Walsh, 2009). It is also evident in recent research; therapeutic horseback riding improved sensory seeking, social motivation, as well as decreasing distractibility on children with Autism spectrum disorder (Bass, Duchowny, & Llabre, 2009). Serpell (1991) conducted a study to examine the beneficial effects of pet ownership on human health; he found that the groups who owned pets’ general health improved while the groups with no pets had no statistically significant change to their health.

The benefits of animals to human psychological functioning is an area which has received miniscule research. Psychological functioning encompasses a wide range of aspects including an individual's emotion, social elements, and mental health (Preedy, 2010). It is known that positive emotions enhance psychological functioning (Mauss et al., 2011). Psychological functioning research focuses on examining its influencing factors; Akan and Grilo (1995); Neff, Kirkpatrick, and Rude (2007); Elliot and Maier (2014). Although the psychological functioning research focuses on the influencing factors, human animal interaction has not been investigated as an influencing factor for all elements of psychological functioning.

The ability to be happy can promote mental health (Taylor & Brown, 1988). There are many theories of happiness; the hedonistic approach, the desire theory, and the objective list theory are three of the theoretical traditions. Hedonism states that happiness is a matter of subjective well-being; a happy life minimises the feelings of pain and maximises the feeling of pleasure. This theory is rooted from the utilitarianism theory (Bentham, 1978). Desire theory is different however, and states that happiness is a matter of getting what you want (Griffin, 1986). Objective list theory also portrays happiness in a different light; lodges happiness outside of 'feeling' and onto a list of truly valuable things (Nussbaum, 1992; Sen, 1985). Myers (2000) questions if happiness is available to everyone, and also questions what exactly makes certain people very happy. Haybron (2003) believes it is plausible, that there is more than one psychological state involved with happiness. Happiness can be described in many ways, as suggested by the theories outlined above, but is simply the appreciation on one's life-as-a-whole, i.e. how much you like the life you live (Veenhoven, 2008).

A recent accomplishment known as positive psychology has taken place to try to understand happiness (Hershberger, 2005). Positive psychology is the scientific study of positive traits and other characteristics. Positive psychology is based on the premise that the desirable qualities can be improved through the application of scientific research as well as personal effort (Shelton & Lewis, 2014). There are multiple activities which make us happy. For example, participation in sport (Downard & Rasciute, 2011). Fowler and Rasciute (2008) suggest that one's happiness also depends on the happiness of those who we are connected; for example social support. Research suggests that happiness has many benefits. For example, Fredrickson's (1998) Broaden and build theory of emotion proposes that positive emotions provide a broadening of thought-action potentials and improve personal functioning.

Loneliness, on the contrary, is a suggested risk factor for mental health (Losada et al., 2012). The current understanding of loneliness suggests that loneliness is a complex dimension which can be experienced at many different levels; as an element of existence, not an illness (Nilsson et al, 2006). Loneliness can be described as the distressing feelings which one experiences when their social relationships are as not as satisfying as the individual desires. Social isolation has a role in promoting feelings of loneliness (Peplau & Perlman, 1982). Cacioppo, Cacioppo, and Boomsa (2014) outline how humans survived early in the history of their species by being together, in couples, groups, families, tribes-to provide a mutual protection. Also, that the pain caused by loneliness served to prompt a new connection or relationship which was necessary to survive.

A feeling of belonging has been described as one of the factors which influences health (Hagerty et al., 1996). Maslow (1954) proposed a psychological theory which

outlines a hierarchical model of basic needs. Individuals meet these needs through underlying motivational systems. Within this theory, Maslow identified 'a sense of belonging' as a basic human need-ranking third in the hierarchy. Brewer (2004) counterargues this idea and believes that if humans are adopted to live in groups, then humans should be focusing on the effectiveness of the group (p.111).

Loneliness can have a negative effect on many aspects of life. Hawkley and colleagues (2009) conducted loneliness research and found that loneliness among middle and older aged adults is an independent risk factor for physical inactivity. Researchers have examined methods for loneliness improvement. For example, loneliness is a common problem encountered by elderly people who are in long term care facilities (Banks et al., 2008).

Specific research has directly examined the loneliness of people who own pets and those who do not; Black (2012) found that pet ownership in adolescents relates to significantly lower scores of loneliness than their non-pet owning peers. There has been a variety of studies conducted on the benefits of pet ownership to the elderly population (e.g. Siegel, 1990; Garrity et al., 1989; Dembicki and Anderson, 1996) however, an area which was overlooked is the benefits of pet ownership for the younger generations. Zasloff and Kidd (1994) noted this lack of research and conducted a study including single women at a minimum of 21 years old; sample consisted of 59 pet owners and 89 non-pet owners. The participants were examined on their loneliness levels alongside attachment to their pets. Unexpectedly, their results found no significant difference in loneliness scores between pet owners and non-pet owners. Further statistical analysis found that the women who lived alone were lonelier than those who lived with a pet. Zasloff and Kidd suggest that these results indicate that pet ownership can aid with alleviating feelings of loneliness.

Social support research is one of the fastest growing areas (Sarason, Sarason, & Pierce, 1990). Social support research has gained an increased research focus in the recent years. This research focus examines the protective factors social support provides from pathogenic effects of stress (Cohen et al., 1985). Social support refers to a bond a person holds, be it a familial bond, friendship bond or social integration; these relationships and bonds are vital to mental health (Turner & Brown, 2010). Scientists have long noted the health benefits of social support (House et al., 1988). Close relationships are considered of utmost importance, and the importance of these close relationships has been examined thoroughly by Derlega and colleagues (1993), and Henderson (1992). Both have reported higher rates of depression, anxiety, and physical illness in the individuals who lack close relationships (McNicholas & Collis, p.50, 2006). Researchers examined the impact of interaction between humans and farm animals in the past (Hemsworth & Coleman, 2010). Cohen & Wills (1985) proposed a theory known as the stress buffering hypothesis in which he suggests that social support is good for health because having people around us protects us from the negative impacts of stress.

Debates and research findings from the past decade demonstrate that for a better understanding of ‘social support’ an alternative view of the term must be acknowledged (House, Umberson, & Landis, 1988). Albrecht and Goldsmith (2003) suggest that social support be viewed as an umbrella (protection) rather than a single unified construct. Value exists greatly in viewing social support as an umbrella, as it provides a sense of reassurance, acceptance, validation, and sharing the need for resources and assistance; hence, providing a connection or integration between a group of people who are connected (Albrecht & Goldsmith, 2003). Although perceived social support is believed to influence mental health and functioning both

directly and as a buffer, the theoretical mechanisms of how they work still requires examination and understanding (Thoits, 1995).

The Social Support hypothesis is one of two theoretical perspectives which guide human animal research (Beck & Katcher, 2003). The most influential perspective regarding social support hypothesizes that social support can be a stress buffer; reducing the effects of negative and stressful life events through the support and feeling as though there is support available (Lakey & Cohen, 2000, p.30). Ownership of a pet can be seen to enhance elements of social support, as having a pet is a catalyst to facilitate interaction between humans (Fine, 2011; Wood et al., 2005). Messent (1982) & McNicholas and Collis (2000) firmly established that being accompanied by a pet-especially a dog, increases an individual's likelihood to have positive social interactions between fellow dog owners/handlers (McNicholas & Collis, p.72, 2006). Animals have been suggested as a form of social support to humans; Van Houte and Jarvis (1995) suggest that relationships with animals can substitute for other social relationships. In the mid 70's there were three major papers published which reviewed the mounting evidence suggesting that social support had a direct positive effect on health, and served as a buffer of the psychological and physical stress of an individual (Cohen & Wills, 1985).

Hayward (2005) suggests that in the earliest form, stress was known as physical hardship or trial. By the 16th century stress was indicated as a form of an injury. The current modern day understanding of stress appeared in the 19th century; stress in a combination of external forces and internal responses (Hayward, 2005). Simply outlined, stress is the extent and management of forces and pressures that make up day to day life and experiences (Johnson, 2009). Similarly, McEwen (2000) describes stress as a perceived or real threat to the psychological or physiological integrity of an

individual. Stressful experiences include major life events, abuse, and trauma are sometimes related to the home environment and home (McEwen, 1998). McEwen (2008) states that stress begins in the brain, affecting the brain and the rest of the body; chronic stress can promote and exacerbate pathophysiology. Czabała and Miedziun (2015;2016) found that the most commonly used techniques used for coping with stress are: listening to music, concentrating on problem solving, as well as analysing and planning future activities. Their results showed that overall people who experience stress from a difficult situation use different coping strategies to deal with this stress. There is an increasing amount of high quality research regarding stress and coping strategies (Lazarus, 2000). However, further examination is required in order to gain a broader understanding of stress mediators. An interesting idea for research is the possible influence which human animal interaction can have on an individual's stress.

Beck and Katcher (2003) suggest that the second theoretical perspective which guides human animal research is the Biophilia hypothesis. The Biophilia hypothesis was proposed in the late 1900's (Kellert, 1997). Kellert and Wilson (1995) describe Biophilia as "the innate tendency to focus on life and lifelike processes" p.20. This is a fundamental human need to associate and interact with other living organisms (Kahn, 1997). Mills and Hall (2014) suggest that as a result of this innate need the presence of animal companionship increases the attention humans pay to their positive influences; buffering negative emotions. Supporting this theory, Clutton-Brock (1995), believe that animals have been bred to exist alongside humans filling many roles including herding, hunting, fishing, guarding, and simply being a friend.

To conclude, the literature regarding human animal interaction, including the human animal bond consists of studies including pet ownership, the benefits of pets to health,

and studies in which pets have been introduced as a form of intervention (Siegel, 1993). Previous research has not taken into consideration the individuals who have general interaction with animals other than with pets, i.e. those who interact with animals daily but may have to *pets* such as farmers, veterinary surgeons, or veterinary nurses. This is an area of the human animal bond which needs investigation as these individuals encounter human animal interaction. A small amount of research has investigated the social element of psychological functioning. Although there are multiple aspects of human animal interaction being researched there has been little research conducted examining the benefits of animals to the mental health aspect of psychological functioning.

Beetz and colleagues (2012) notes that although there is a vast amount of scientific research conducted in relation to human animal intervention, and therapeutic programs, there is a delay in the research regarding general human animal interaction including the benefits or disadvantages of interacting with animals.

It is clear from the research that animals have an impact on many aspects of the human life. There is a lack of research conducted to investigate areas such as: the influence of human-animal interaction on elements of psychological functioning. This lack of research needs investigation. Investigations should include examining if there is an association between human animal interaction and psychological functioning (specifically examining stress, happiness, loneliness, and social support levels).

Taylor and Brown (1988) suggest that the ability to be happy can influence mental health. Research has not considered the benefits that general human animal interaction can have on an individual's happiness. There has been a variety of research investigating loneliness, further research is required to investigate the association between animals and feelings of loneliness. Similarly, although there has been an

explosion in the social support research in the past two decades, this research examined the relationship between a variety of social stressors and health outcomes (Sarason, 2013, p.3).

Rational:

Human animal interaction is a well-researched area. However, human animal research focuses specifically on the advantages of *pet ownership*, including the benefits to physical health, as well as the advantages of intervention programs for individuals with developmental disorders such as Autism spectrum disorder. Multiple studies have been conducted examining the influence of animal assisted therapy on development, as well as many studies investigating the impact pets have on physical health. Research has suggested the benefits of pet ownership to loneliness and social interaction. Past research has not considered individuals who work with animals daily (veterinary practitioners or farmers for example) but have no pets. Individuals who work with animals daily but do not have ‘pets’ still have a form of human animal interaction and have not been included in past research. Research is required to examine if animals in general, *not specifically pet animals*, are associated with psychological functioning. Psychological benefits of human animal interaction have not received a vast amount of research. The purpose of the current study is to expand current human animal interaction research by broadening the level of interaction considered in research, as well as expanding the factors which are examined by thus research, i.e. examining if human animal interaction is associated with elements of psychological functioning.

The Biophilia hypothesis states that humans have “an innate tendency to focus on life and lifelike processes” (Kellert and Wilson 1995, p.20). Mills and Hall (2014) suggest that due to this need, when animals are present humans focus on the positive aspects of life, hence, buffering negative emotions. This hypothesis raises the question of the psychological benefits of human animal interaction. Does a humans psychological functioning benefit from animal interaction, based on this hypothesis?

The first area which needs investigation is attachment to pets and social support. This will be investigated by investigating pet attachment scores and social support scores. This will be investigated by examining the relationship between pet attachment and social support. A further research deprived area includes investigating if human-animal interaction is associated with elements relating to the mental health aspect of psychological functioning including happiness, stress, and loneliness. The purpose of this current study is to expand current human animal research; investigating the associations of general human animal. The current study will consider past research and examine if pet attachment is associated with increased social support scores, as well as expanding human animal research; investigating if general human animal interaction is associated with happiness, stress, loneliness. The current research derives from the known benefits of human companion animal bonds and interaction, as well as the biophilia hypothesis and social support theory.

Objectives

Objective 1:

To establish if strong attachment to a pet/companion animal is associated with a social support satisfaction score.

Objective 2:

To determine if higher levels of human-animal interaction are associated with happiness scores.

Objective 3:

To establish if higher levels of human-animal interaction are associated with perceived stress.

Objective 4:

To determine if higher levels of human animal interaction will be associated with loneliness scores.

Method section

Participants

The sample consisted of 93 participants. These participants were obtained through an opportunistic convenience sampling method. These 93 participants were recruited from several locations in the Republic of Ireland including the National College of Ireland, farms and multiple organisations across the country- pharmacy employees to name one. Gender specification was not a required for this study, hence there is no specific gender information available.

The participants included any individual who was over eighteen years of age and under sixty-five years of age. Although age was not a required piece of information for this study, each participant was required to verbally confirm that they were over eighteen years of age and under sixty-five years of age. This was to ensure that no participants included in the study were part of a vulnerable population. The obtained sample remained anonymous. Anonymity was achieved by ensuring the participants could not be identified through the results. Participants were required to complete an informed consent form. Participants had the option of either signing the informed consent sheet or ticking a box to provide their consent. Although the participants had the option to sign the consent sheet, their identity was only available to the researcher, thus, anonymous in the overall results.

Following completion of the questionnaires the researcher had the ability to divide the participants into groups depending on their level of interaction with animals.

Measures/Materials

There were several sets of materials and measures used for this study. The materials included an information sheet, informed consent sheet, likert scale. The measures included multiple questionnaires. The questionnaire booklet took 10-15 minutes to complete.

Information Sheet

Participants were provided with an information sheet which outlined the details of the study. No deception was used in this study. The information sheet contained information such as the participants right to withdraw their data at any point without their rights being affected as well as information in relation to their participation; that their participation is voluntary and no reward is provided (See Appendix A). The participants were required to retain the information sheet in case they wish to withdraw their data in the future. The participant identification number was written on top of this information sheet and was the same number as their informed consent sheet as well as the questionnaire booklet.

Informed Consent Sheet

Participants were required to sign and return an informed consent sheet before completing any of the questionnaires. This consent sheet simply requires the participant to either sign their name as a method of consent or tick the box. Ticking the box is an option to provide further anonymity for the participant. Each participant information sheet had an identification number wrote on the top. Should the participant have ticked the box to provide consent then identifying this participant would require them to return with their information sheet (the participant identification number on top). See Appendix B.

Likert Scale

A likert scale requiring participants to indicate their level of interaction with animals was used. This measure comprised of one item with a scale ranging from 0- Never interact with animals to 5-interact with animals daily. Participants were required to select one of the six options.

An extensive search was conducted to find a suitable scale to measure human-animal interaction, however, no scale was deemed suitable as the scales used in other research examines human interaction with their *pets* specifically. This study takes into consideration all levels of animal interaction-including those who work with animals such as farmers or veterinary practitioners who may not have pets but do encounter animal interaction, hence pet interaction questionnaires were not suitable.

This measure was composed by the researcher. However, before this measure was deemed eligible for this research a brief pilot was conducted to examine the ease of use and understanding of the scale (See Appendix C). Five individuals were provided with the scale and simply requested to complete the scale as well as rate their level of understanding and ability to use the scale (1-do not understand, 2-Somewhat understand, and 3-fully understand). Reliability and validity were not tested for this scale, although all individuals fully understood how to use the scale; thus, the scale was considered eligible.

The Oxford happiness questionnaire (Hills & Argyle, 2002).

Happiness was assessed using the Oxford Happiness questionnaire. This questionnaire was derived as an improvement from the original Oxford Happiness Inventory OHI (Argyle, Martin and Crossland, 1989). The questionnaires were devised as a broad measure of personal happiness. The OHI comprises of 29 items

each requiring the selection of one of four responses which are different for each question; while the Oxford Happiness Questionnaire OHQ includes similar items to those in the OHI but the answering system is different. The OHQ requires the participant to answer on a uniform six-point likert scale (see Appendix D). Total scores for the OHQ are calculated by reverse scoring items 1, 5, 6, 10, 13, 14, 19, 23, 24, 27, 28, and 29, then adding the numbers for all 29 questions. This total must then be divided by 29.

Hills and Argyle (2002) conducted reliability and validity analysis to find that the OHQ demonstrates high reliability with values of 0.91, with inter-correlations ranging from -0.04 to 0.65 with a mean of 0.28. Reliability analysis was conducted for the current study resulting with a Cronbach's Alpha value of 0.88.

Perceived stress Questionnaire (Levenstein, Prantera, Varvo, Scribano, Berto, Luzi & Andreoli, 1993).

This questionnaire contains a total of 30 items. These items are worded as statements and the individuals completing the questionnaire are required to circle the number which describes how often the statement applies to them. Individuals are requested to respond on a four-point scale where 1=almost never, up to 4 which is 'usually' (See Appendix E). This scale was designed with intended use for psychosomatic research. Total scores are calculated for the Perceived Stress questionnaire by reverse scoring items 1, 7, 10, 13, 17, 21, 25, and 29 then adding the answer for each of the 30 items. This results in a raw score, then 30 must be subtracted from this raw score-this score is then divided by 90 resulting in a total score.

The development of this scale required multiple steps. Initial discussion between four clinicians resulted in the generation of a preliminary list of 60 possible items. Caution was taken to ensure the items were applicable to adults of any age. Following a pilot test the items were reduced to 36 items. This version was then administered to 48 subjects. On assessment of the results a further 6 items were eliminated from the scale to ensure no sex biases and to improve clarity. This resulted in the development of the 30-item perceived stress questionnaire PSQ.

Leventsein and colleagues (1993) completed statistical analysis to validate this questionnaire. Test re-test reliability was 0.82. Factor analysis showed seven factors- those reflecting interpersonal conflict and tension were significantly associated with health outcomes. Their results represent favourable psychometric characteristics showing it correlates well with other measures in place to measure similar psychological constructs. Reliability analysis was conducted for the current study resulting with a Cronbach's Alpha value of 0.91.

UCLA loneliness scale (Russell, Peplau & Ferguson, 1978).

The UCLA loneliness scale is a 20-item scale which was devised to measure an individual's feeling of subjective loneliness as well as feelings of social isolation (Russell et al., 1978). Individuals completing this scale are required to indicate how often the statements are descriptive of themselves as a person (see Appendix F). Participants are required to indicate how often the statements are descriptive of them by circling one of four options; O-often feel this way, S-sometimes feel this way, R-rarely feel this way, and N-never feel this way. To obtain a total score these letters are

converted into numbers; O=3, S=2, R=1, and N=0. Total scores are obtained for this questionnaire by keeping scoring continuous-add the numbers for each item.

Russell and colleagues (1978) composed this scale by recruiting 239 adults from UCLA. This scale was devised by selecting a pool of 25 items from a 75-question loneliness questionnaire by Sisenwein (1964). A total score was computed for each participant based on the sum of the responses to the 25 questions. Participants then filled out other questionnaires; subjective self-report measure for current loneliness. Participants simply rated their degree of current loneliness on a five point likert scale. Participants also rated their current mood as part of the research. A revised loneliness scale was then developed from the initial 25-item pool based on the correlation of each item to the total loneliness scale score.

The UCLA loneliness scale shows high internal consistency with Cronbach's alpha of .96. Russell and colleagues (1978) state that this exceeds Nullally's (1967) criterion for a measure to be used. However, further testing found with a sample of 102 students who were assessed over a two-month period a test re-test reliability of the scale found a correlation of .73 which suggests some stability of the measure over time. Validity tests showed the correlation between subjective self-report measures and the loneliness scale to be highly significant ($r(45) = .79, p < .001$). Reliability analysis was conducted for the current study. Cronbach's Alpha value was 0.96.

Pet attachment questionnaire (Zilcha-Mano, Mikulincer, & Shaver, 2011).

The pet attachment questionnaire PAQ consists of 26 statements. The participant is required to respond by rating how much they agree or disagree to each statement. The individual is required to respond on a seven-point scale-1 being strongly disagree and

7 being strongly agree (See appendix G). The pet attachment questionnaire provides two total scores; one for the anxious dimension, and one for the avoidant dimension. Item number 1 must be reversed scored. Total scores for the avoidant dimension are obtained by adding each answer of the odd numbered question. An individual's score in the anxiety dimension is obtained by adding the answers of the even numbered questions. Total scores for the overall questionnaire are obtained by adding all answers for each item.

This pet attachment questionnaire was created to measure attachment anxiety and avoidance in a human relationship with pets. Multiple items from scales designed to measure attachment to pets were considered alongside scales designed to measure attachment orientations (Zilcha-Mano et al., 2011). Interviews were conducted with pet owners which resulted in the addition on new items being added. This resulted in a total of 50 items. 10 pet owners were asked to rate the relevance of each question and because of their comments some minor wording alterations were made. 26 items which had a high loading on one factor and low loading on another factor following exploratory principle component analysis were chosen. To evaluate the stability of PAQ scores a further sample (which was different to those involved in the question selection process) of 50 individual pet owners were recruited. This sample were required to complete the PAQ on two separate occasions; one at the time of recruitment, and one 6 months later.

Zilcha-Mano and colleagues (2011) conducted reliability analysis which resulted with Cronbach's alpha for attachment anxiety and avoidance being high at both time points ranging from 0.86-0.89. Pet attachment anxiety had a test re-test reliability coefficient of 0.75 while pet avoidant had a test re-test coefficient of 0.80. These results allowed for the researcher to judge the PAQ as having adequate internal

consistency as well as test re-test reliability (Zilcha-Mano et al., 2011). Reliability analysis was conducted for the current study which resulted in a Cronbach's Alpha value of 0.97.

Social support questionnaire (SSQ6)(Sarason, Levine, Bashman, & Sarason, 1983).

Sarason and colleagues (1983) suggest that irrelevant to how social support is conceptualised, there are two basic elements; available others who a person can turn to in times of need, and a degree of satisfaction with this support. Hence, the development of a questionnaire intended to quantify these two dimensions. The social support questionnaire requires two distinct answers for each of the six questions. Scores are yielded for: 1) the number of social supports available, and 2) satisfaction with the support that's available. See Appendix H. This social support questionnaire yields two distinct total scores; average number of people listed, and the average satisfaction score. Add the number of people listed for each question then divide by 6 to obtain the average number of people listed. Add the satisfaction scores for each item then divide by 6 to obtain the average satisfaction score.

The short version social support questionnaire (ssq6) was developed to have the ability administer the test within a limited period of time. The short version social support questionnaire (ssq6) derived from the original social support questionnaire which contained 27 items. A three-item questionnaire was developed initially; however, statistical testing showed kurtosis to the left as well as the correlation coefficient 0.17 being lower than the original questionnaire 0.24. Following these results the number of questions doubled; items for the 6 items questionnaire were chosen through statistical analysis. Correlation showing internal reliability were highly satisfactory between the original social support questionnaire and the 6-item

ssq (number of family for ssq 0.40; ssq6 0.42) similar correlations emerged with the satisfaction aspect of the scale (original ssq 0.59; ssq6 0.58). Results from statistical analysis show that the short version (ssq6) social support questionnaire has acceptable psychometric properties (Sarason et al., 1987).

Reliability analysis was conducted for the current study which resulted in a Cronbach's Alpha value of 0.83.

Design

This study employs an observational between groups, quantitative research design. Key variables include the independent variable which is the participants level of interaction with animals. The dependent variables include: happiness, stress, loneliness, social support, and pet attachment scores (should they own a pet).

Procedures

Initially, this research project was submitted to the ethical review board at the National College of Ireland in application of ethical permission. Permission was granted to complete this research as there was no violation of the 'NCI Ethical Guidelines for Research with Human Participants'-no participants were from a vulnerable population and informed consent was received from each participant.

The researcher compiled an information sheet, consent form, and questionnaire booklet which required the participant to rate their level of interaction, as well as complete 4/5 questionnaires (4 if no pet or 5 if the participant currently owned a pet).

These 3 items were presented to each participant. Each of these three items had a number written on the top. This number was the participant's identification number.

Individuals were approached in multiple locations including several colleges, business', and farms. Several of the participants included friends and family. When the individuals were approached, they were asked if they would like to participate in a third-year psychology student's final year research dissertation. If the individuals were willing to participate they were provided with the information sheet. The participants were required to read the information sheet. Following this, if they were willing to participate they were required to sign an informed consent sheet. On returning the consent sheet the participants were provided with the questionnaire booklet. The questionnaire booklet contained written instructions for each of the five questionnaires. However, the researcher asked the individual if they had any queries about how to complete the questionnaires. The researcher was also available if the participant had any questions relating to the answering system or the questionnaire itself. The completed questionnaire booklet was then returned to the researcher and stored in a secure manner which only the researcher had access to. Some participants did not complete the questionnaire immediately. The researcher would return to collect the completed questionnaire later if participants were not available to complete it immediately. This process was repeated for each participant.

Following collection of all the participant's questionnaires the questionnaire booklets were then examined checking for completeness. The data (answers) obtained from the questionnaires was then added to an spss statistics file. Once the data was placed into the spss file all questionnaire booklets were returned to storage.

Results

For the current research, both descriptive and inferential statistics were conducted.

Descriptive statistics were run for the current study. Table 1 displays the descriptive statistics for all continuous variables. Table 2 and graph 1 display the descriptive frequency of pet ownership. Descriptive statistics including the mean, median, standard deviation, and range were calculated for all continuous variables. Descriptive frequency was calculated for the categorical variable of pet ownership. Inferential statistics are written up following the descriptive statistics.

The mean score for happiness ($M=4.14$) was considered relatively high considering the range (1-6), the Standard Deviation was 0.67. The mean score for level of interaction ($M=3.75$) indicates that the average level of interaction was 3.75 with a standard deviation of ($SD=1.51$). Stress mean scores ($M=0.42$) were on the lower end of the possible range (0-1) with a standard deviation of ($SD=0.16$). Loneliness mean scores ($M=13.42$) are considered low considering the possible range (0-60), with the standard deviation of ($SD=13.2$). Social support satisfaction had a mean score of ($M=5.41$), which was considered high based on a possible range of (1-6). Standard deviation for social support satisfaction was ($SD=0.79$). Pet attachment total score mean was ($M=35.29$) was considered low based on the possible range of (0-126), with the standard deviation being ($SD= 32.02$).

Descriptive Statistics

Table 1-Descriptive statistics and reliability of all continuous variables.

	Mean	Median	SD	Range	Possible Range	Cronbach's Alpha
LOI	3.75	4.00	1.51	0-5	0-5	-
Happiness	4.14	4.17	0.67	2.55-5.79	1-6	.88
Stress	0.42	0.39	0.16	0.09-0.80	0-1	.91
Loneliness	13.42	9.00	13.2	0-60	0-60	.96
Social Support						.83
Average NOPL	3.45	3.17	1.53	1-7.5	0-54	-
Average Satisfaction	5.41	5.67	0.79	1.83-6	1-6	-
Pet attachment						.97
Avoidant	15.87	15.00	15.96	0-65	13-91	-
Anxiety	19.42	20.00	18.27	0-63	13-91	-
PATS	35.29	43.00	32.02	0-126	0-126	-

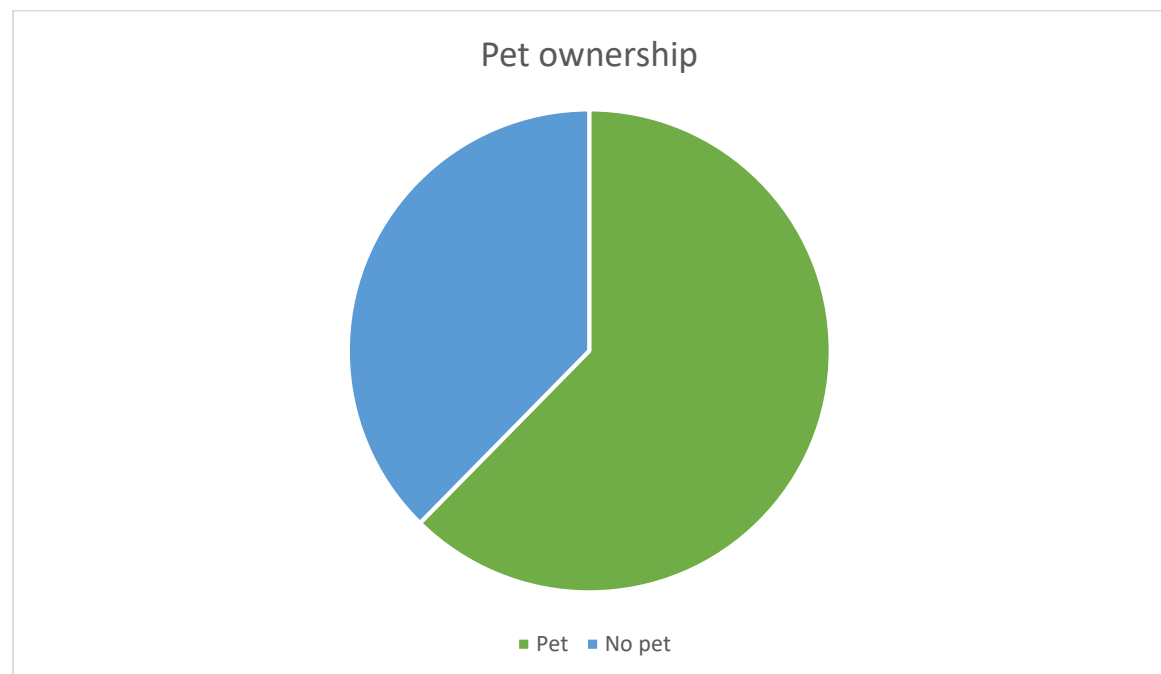
*NOPL=Number of people listed. *PATS= Pet Attachment Total Score.

*SD= Standard Deviation. *LOI=Level of Interaction.

*N=93.

Table 2-Frequencies for the current sample of pet ownership (N = 93)

Variable	Frequency	Valid Percentage
Pet ownership		
Pet	58	62.4
No pet	35	37.6



Green= Pet owners 62.4%

Blue= Non-pet owners 37.6%

Inferential Statistics

Inferential statistics were calculated for the current study to investigate the four research aims. Correlational analysis was conducted to investigate the relationship between human animal interaction and several dependent variables. Both the Pearson product moment correlation coefficient and Spearman's rho correlation coefficient were conducted for this research. Spearman's rho correlation coefficient analysis was conducted for three research aims as the data did not meet the assumptions of the Pearson product moment correlation analysis. Regression analysis was an intended statistical analysis for this current study, however, the data did not meet the assumptions for regression analysis, hence, regression could not be performed. An independent samples t-test was conducted as an exploratory analysis. The independent samples t-test was not an intended statistical analysis, however, was conducted for exploratory purposes.

Correlation

The relationship between pet attachment and social support scores was investigated using Spearman's rho correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There no significant relationship between the two variables ($r = -.060$, $n = 92$, $p = .57$). This indicates that the two variables share approximately 0.36% of variance.

The relationship between levels of human animal interaction and happiness was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was no significant difference between the two

variables ($r = .127$, $n = 93$, $p = .23$). This indicates that the two variables share approximately 1.61% of variance.

The relationship between human animal interaction and perceived stress scores was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was no significant difference between the two variables ($r = .06$, $n = 93$, $p = .54$). This indicates that the two variables share approximately 0.36% of variance.

The relationship between human animal interaction and loneliness was investigated using Spearman rho correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was no significant relationship between the two variables ($r = -.049$, $n = 93$, $p = .64$). This indicates that the two variables share approximately 0.24% of variance.

Exploratory Analysis

The relationship between pet ownership and social support scores was investigated using Spearman's rho correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There no significant relationship between the two variables ($r = .074$, $n = 93$, $p = .48$). This indicates that the two variables share approximately 0.55% of variance.

T-tests-Exploratory Analysis

An independent samples t-test was conducted to compare happiness scores between pet owners and non-pet owners. There was no significant difference in scores between the two groups of pet ownership, $t(91) = 0.64$, $p = .53$, two-tailed with pet owners ($M = 4.14$, $SD = .66$) scoring higher than non-pet owners ($M = 4.08$, $SD = .69$). The

magnitude of the differences in the means (mean difference = .092, 95% CI: -1.94 to 0.377) was small (Cohen's $d = .089$).

An independent samples t-test was conducted to compare perceived stress scores between pet owners and no-pet owners. There was no significant difference in scores between the two groups of offenders, $t(91) = 0.64$, $p = .449$, two-tailed with pet owners ($M = .42$, $SD = .17$) scoring higher than non-pet owners ($M = .41$, $SD = .15$). The magnitude of the differences in the means (mean difference = 0.008, 95% CI: -.06 to -.08) was minimal (Cohen's $d = .05$).

An independent samples t-test was conducted to compare loneliness scores between pet owners and non-pet owners. There was no significant difference in scores between the two groups of pet ownership, $t(91) = -.021$, $p = .98$, two-tailed with non-pet owners ($M = 13.46$, $SD = 15.17$) scoring higher than pet owners ($M = 13.40$, $SD = 11.99$). The magnitude of the differences in the means (mean difference = -.061, 95% CI: -5.7 to 5.58) was small (Cohen's $d = -.004$).

*M= Mean score

*SD= Standard deviation

Discussion

The aim of the current study was to expand the current human animal interaction research, which currently investigates the physical health benefits of pet ownership as well as the benefits of intervention programmes to humans. Expanding on this research involves investigating the relationship between general human animal interaction and psychological functioning. This research also expands on the current research (O’Haire, 2010; Bass, Duchowny, & Llabre, 2009; Headey, 2013) by including people who do not have pets but do interact with animals- non-pet owners or those who don’t partake in animal assisted therapy have not previously been included in human animal interaction research. The current study also expands the current human animal research by looking at the benefits of human animal interaction to human psychological functioning. With intentions of achieving this aim, four research aims were proposed: 1. To investigate if there was an association between pet attachment and social support, 2. To determine if levels of human animal interaction are associated with happiness scores, 3. To establish if levels of human animal interaction are associated with perceived stress, and 4. To determine if levels of human animal interaction are associated with loneliness scores.

The results of the current study indicate no significant results for any of the aforementioned research aims. Aim 1 results show no significant correlation between pet attachment and social support satisfaction. Hence, pet attachment and social support satisfaction had no relationship. Similarly, for research aims 2, 3, and 4, no correlation was found. The results show no significant correlation, between levels of interaction and happiness, levels of interaction and stress, as well as no significant correlation between levels of interaction and loneliness. Hence, no relationship was found between levels of human animal interaction and happiness, stress, or loneliness.

It was found that no relationship exists between pet attachment and social support satisfaction. Although Bowlby's (1984) attachment theory has not been applied to animals, research has found that having an attachment to a pet has psychological benefits to humans (Tang et al., 2013). The social support hypothesis is one of the guiding factors of human animal interaction research (Beck & Katcher, 2003). Fine (2011) believes that pet ownership enhances social support for humans as pets are a catalyst for interaction. However, this relationship was not found in the current study nor was any relationship. Higher levels of human animal interaction were not associated with higher social support scores, and vice versa, lower levels of interaction were not associated with low or high social support scores.

This lack of relationship may be due to some limitations of the study. These limitations include two of the questionnaires used in this study; Social support questionnaire (Sarason et al., 1983) and the Pet attachment questionnaire (Zilcha-Mano et al., 2011). Participants had issues with understanding the social support questionnaire (Sarason et al., 1983). Participants thought they were required to copy the example which is provided and did not understand that there was two parts to each item. Although each participant fully completed the questionnaire they required assistance, and may not have fully understood the requirements, thus, not providing a reliable score. The second limitation is the pet attachment questionnaire. Although participants did not have an issue completing this questionnaire, issues arose when total scoring the questionnaire. The scoring system provides a total score for two dimensions: anxious and avoidant. There was no specific guidance provided show a total 'attachment' score. However, for the current study both dimensions were simply added together to obtain an attachment score. This is a limitation of the study and may have resulted in unreliable results.

The current study found that no relationship exists between levels of human animal interaction and happiness. Present happiness research focuses on positive psychology (Hershberger, 2005); that desirable qualities can be achieved through scientific research and personal effort (Shelton & Lewis, 2014). This scientific research found no relationship between human animal interaction and happiness. However, this may be due to a limitation of the study; the human animal interaction measure. As the past research is conducted on the benefits of pet ownership, these studies use pet ownership scales such as the Companion animal bond scale (Poresky et al., 1987), and pet attachment scales Lexington Attachment to pet's scale LAPS (Johnson et al., 1992). A Human Animal interaction scale had not been developed at the commencement of the current study, hence, a brief likert scale was developed by the researcher. This likert scale was not validated and may have flaws. This measure may not be reliable. Following the study research was conducted which revealed a newly developed Human animal interaction scale (Fournier, 2016). This new scale was developed and evaluated but may not have validation. Should this scale have been available before the beginning of the current study, it would have been used. The likert type measure used for the current study may not be a reliable measure, influencing the results.

The third aim found no relationship existing between levels of human animal interaction and perceived stress. The relationship between human animal interaction was investigated, i.e. higher levels of interaction would have a negative or positive relationship with perceived stress. Limited research evidence is in support of the benefits of human animal interaction on the reduction of stress parameters including norepinephrine and epinephrine (Beetz et al., 2012). Research has investigated mental stress and social support together in a study to find that having social support through

pet ownership lowers the blood pressures response to stress (Allen, Shykoff, & Izzo, 2001). Although this study investigates pet ownership specifically, it suggests that animals can be a buffer for the stress response by providing a form of social support.

Although the results of the current study suggest that there is no relationship between human animal interaction and perceived stress, these results should be aired with caution due to some limitations. The measure used to obtain the participants level of human animal interaction was composed by the researcher. This measure has not been validated, nor any reliability analysis ran. A second limitation is present for this objective, the perceived stress questionnaire although found reliable (.96), is a self-report measure. As this questionnaire is a self-report measure, participants may not have responded truthfully. There are other methods available to obtain stress scores which are not susceptible to participant error; the stress thermometer, biodots which also measure stress level through the skins temperature, and a stress monitor.

The fourth and final research aim of the current study also found no significant relationship between levels of human animal interaction and loneliness. Although past research looks specifically at pet ownership and loneliness the current finding contrasts with some of this past research; Black (2012) found that ownership of a pet in adolescence relates to significantly lower scores of loneliness than non-pet ownership. However, supports other research; Zasloff & Kidd (1994) found no difference in loneliness scores between non-pet owners and pet-owners. Gilbey and Tani (2015) conducted a review to evaluate quantitative studies investigating the effects of companion animals and loneliness. Their review concluded that companion animals do not alleviate loneliness, animal assisted therapy may alleviate loneliness- they suggest this may be due to the therapy over the actual animal interaction. Considering that companion animal research mainly finds that pets do not alleviate

loneliness, it is considered acceptable to find that general human animal interaction has no relationship with loneliness. Although the variety of research suggests that loneliness is not alleviated by companion animals, some research does suggest that loneliness can be alleviated by pet ownership. The current inconsistent research does not support or oppose the proposal that loneliness can be alleviated by pet ownership or human animal interaction. Gilbey and Tani (2015) suggest that further research examining the alleviating role of companion animals will not improve the current understanding, hence the requirement for rigorous randomised control studies.

Past research suggests that pet ownership has a positive influence human health (O'Haire, 2010), as well as therapeutic horse riding having a positive impact on an individual's mental health (Schneider & Harley, 2016). Taking into consideration that past research has found benefits of pets and the insignificant findings of general human animal interaction correlational analysis of the current study, a further statistical analysis was run. A t-test was run to investigate if there was a difference between the happiness scores of pet owners and non-pet owners. No significant difference was found between pet owner's happiness scores and non-pet owner's happiness scores. A t-test was also run to investigate if there was a significant difference between pet owners and non-pet owner's perceived stress scores. No significant difference was found between those who owned pets and those who did not. It is suggested that this may be due to a type two error, i.e. a false negative result.

The current study encompasses several further limitations which must be considered before research replication and interpretation of results. Some of these limitations have been outlined above while explaining the research results. The above limitations include the lack of general human animal interaction scale, difficulty understanding the social support questionnaire, and the pet attachment questionnaire total scoring

system. Further limitations are prevalent in this study. Sample size is one of the further limitations. This study consists of 93 participants which may be considered relatively small for scientific research purposes. It may too be a possibility that the same obtained for this research is not representative of the general population due to the opportunistic convenience sampling method. This issue arises when generalising the results to the general population-it is advised that extreme caution should be taken. A further limitation is the length of the questionnaires which the participants were required to complete. A booklet was composed which contained the human animal interaction scale as well as the five questionnaires. The questionnaires ranged from twelve items to twenty-six items. Completion time was estimated at 10-20 minutes, which was long; it was clear from observing the participants that halfway through the questionnaires that they were losing interest.

Human Animal Interaction research requires further study. The current study extends the possibility for a variety of further research. Specifically, investigating the possible benefits and detriments of general human animal interaction. The detriments of human animal interaction were not considered in the current study. This is worth investigation as animals may have a more negative than positive effect on human psychological functioning. Future research could consider investigating the detrimental impacts of pet ownership as the current past research focuses on the benefits of pet ownership. There is an evident need for a validated measure of general human animal interaction as this is currently unavailable. This measure should be developed with intent of incorporating all forms of human animal interaction. This would allow for the further study of general human animal interaction research with a valid and reliable measure.

To conclude, this study aimed to advance the current human animal interaction research by expanding both the range of participants included in the research, and the factors which may be associated with or influenced by human animal interaction. This was achieved by not only including participants who have pets, are involved with animal based intervention programs, or participate in animal assisted therapy but including those who have general human animal interaction; i.e. those who interact with animals such as farmers or veterinary practitioners, but may not own a companion animal. Expanding the examination of factors which may be influenced by human animal interaction simply involved investigating the relationship between human animal interaction and elements of psychological functioning; mental health, and social factors. The results of the current study found no significant relationship between pet attachment and social support satisfaction, no significant relationship was found between human animal interaction and happiness, stress, or loneliness. Further statistical analysis was carried out following the insignificant results to find no significant difference in mean happiness and stress scores of pet owners and non-pet owners. Results should be interpreted with some caution due to the limitations of the study.

Despite the current study having no clinical applications due to finding no relationship between general human animal interaction and elements of psychological functioning, future research is required which may find such a relationship. Clinical applications for may be prevalent should future research find a relationship between human animal interaction and elements of psychological functioning. These applications could include animal assisted therapy or intervention programs which advise those suffering from mental health issues to interact with animals with the intentions of alleviating their mental health issues. For example, if human animal

interaction was found to improve happiness which is an aspect of mental health, then individuals may be advised to consider animal related activities as part of their therapy.

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Appendix A

PARTICIPANT INFORMATION SHEET

ARE ANIMALS ASSOCIATED WITH PSYCHOLOGICAL FUNCTIONING?

Is interaction with animals associated with happiness, stress, and loneliness? Are pets associated with social support?

INVITATION

The researcher of this study is a 3rd year psychology student from the National College of Ireland conducting a final year project. You are being asked to take part in a research study on the effects of human-animal interaction on levels of happiness and levels of stress. This project is being supervised by a college lecturer Dr. Joanna Power. The project has been approved by the psychology research ethics committee.

WHAT WILL HAPPEN

In this study, you will be asked to first of all rate your level of interaction with animals (for example: currently own a pet/have daily interaction with animals). Secondly you will be required to fill out a happiness questionnaire which contains 29 questions (for example: I don't feel particularly pleased with the way I am) which you will answer selecting one of 6 answers on a scale from strongly agree to strongly disagree. Thirdly, you will be asked to complete a second questionnaire about stress. This will include a total of 25 questions (for example: I find myself grinding my teeth) which you will be required to answer with a simple yes/no answer. Fourth you will be required to complete a loneliness questionnaire. If you have a pet then you will be required to complete an attachment to pet questionnaire. Then finally you will be required to complete a social support questionnaire. This study is not taking personal information of the participants. You will be required to sign the following consent sheet with your name, however this is the only information required. Participants will not be identifiable from the results.

Participants will be provided with this information letter, with a number on the top of it. This will match the number on the questionnaires. Each information letter and set of questionnaires will have a different number wrote on them. The participant must hold onto this information letter (importantly the number on the sheet) in case they wish to withdraw the date they provided from the study at any point in the future-see below. Should you need a debriefing session following the completion of these questionnaires my contact details are below you may contact me and I will provide this session. Below is also the contact number for a support group called AWARE which you can contact if you feel you cannot contact me.

TIME COMMITMENT

The study takes approximately 15-20 minutes to complete. Each questionnaire should take approximately 5 minutes. I have allocated time for reading this information letter and signing the informed consent letter. There will only be 1 session. The study itself is expected to last just over 4 months. However, once the questionnaires are completed there will be no further communication required on my behalf. If you wish to know the results of this study when it is completed, then please contact me on the email address below or provide your email address allowing me to email you the results.

PARTICIPANTS' RIGHTS

You have the right to decide to stop being a part of the research study at any time without providing explanation. You have the right to ask that any data you have supplied to that point be withdrawn/destroyed.

You have the right to refuse to answer or respond to any question that is asked of you. You have the right to halt your completion of the questionnaires without penalty at any point if you wish.

You have the right to have your questions about the process answered (although I cannot complete the questionnaires for you, I can explain a question if you do not understand). If you have any questions following reading this information sheet, you should ask the researcher before the study begins.

BENEFITS AND RISKS

There are no known benefits for you in this study. There are no major implications for you in this study. As the study involves retrieving memories of animal interaction you may feel saddened if this animal has passed on. Should you feel any way under stress or sadness during the completion then you have the right to withdraw.

This study involves the completion of standardised stress, loneliness, pet attachment, and happiness questionnaires which are routinely used as preliminary screen for clinical conditions. The stress test used is not sufficient to derive a complete diagnosis of a participant. The scores from this study would not be sufficient for clinical diagnosis or decisions. The results from this study will not be used for diagnostic purposes. It is not possible to provide feedback of individual scores to participants. Results of the study as a whole can be provided.

COST, REIMBURSEMENT AND COMPENSATION

Your participation in this study is voluntary. There is no reward provided for your participation in this study.

CONFIDENTIALITY/ANONYMITY

The data we collect do not contain any personal information about you. The data collected from this study will be anonymous information about level of animal interaction, your happiness, and stress. No one will link the data you provided to the identifying information you supplied.

No individual's data will be used alone. All the data obtained will be compiled, analysis be ran on the data and one whole result derived. The final result of the study will be presented as part of a final year project presentation; however it is stressed that NO participant's data will be used alone. No participant will be identifiable. No participant's data will be used for any purpose other than the proposed research and a presentation of the study. Neither will anybody have access to this data other than the researcher.

FOR FURTHER INFORMATION

The project supervisor Dr. Joanna Power will be glad to answer your questions about this study at any time. You may contact her at Room 2.16, National College of Ireland, Mayor Street, IFSC, Dublin 1. Or by email at: Joanna.power@ncirl.ie

If you wish to obtain the final results of this study, you should provide your email address beside your signature on the informed consent letter following. Or contact the researcher directly on: x14549547@student.ncirl.ie

AWARE SUPPORT CONTACT INFORMATION:

Call: 016617211

Email: info@aware.ie

Informed Consent Form

PROJECT TITLE: ARE ANIMALS ASSOCIATED WITH PSYCHOLOGICAL FUNCTIONING?

PROJECT SUMMARY

By signing below, you are agreeing that: (1) you have read and understood the Participant Information Sheet, (2) questions about your participation in this study have been answered satisfactorily, (3) you are aware of the potential risks (if any), and (4) you are taking part in this research study voluntarily (without coercion).

If you would rather not provide your name please simply tick the informed consent box, ticking this box means that you are agreeing to all the above. No conditions change, it is just a further option to provide anonymity.

Participant's Name (Printed)*

Participant's signature*

Date

Name of person obtaining consent (Printed)
consent

Signature of person obtaining
consent

I am aware that participation in this study involves completion of some standardised tests which are routinely used as preliminary screens for clinical conditions/impairments of which I might not be aware. I understand that these assessments are not sufficient for diagnostic purposes, nor will they be used in this manner in this study. I also understand that the researchers cannot inform participants of individual test scores.

Appendix C

Pilot study for likert scale

Below is a scale which categorises individuals based on their level of interaction with animals. The purpose of this pilot study is to provide the researcher with people's level of understanding of this scale i.e. to see if people understand how to use this scale.

You are required to rate your level of understanding for use of the following scale, as well as providing a brief comment in the comment box.

Below is a scale which you are required to select one of six options. You simply must put an 'x' beside the category which you feel reflects you best.

5. Very Frequently: Daily basis
4. Frequently: You participate in animal related activities
3. Occasionally
2. Rarely
1. Very rarely: Might see friends pet once or twice a year
0. Never

0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____

Can you please rate your level of understanding and ability to use the above scale?

- 1-Do not understand _____
- 2-Somewhat understand, i.e. do not understand some part _____
- 3-Fully understand how to use this scale_____

Please provide your comments (if you have any) on the usability and ease of understanding about the above scale. Thank you for your time. Your participation is greatly appreciated.

Comment box:

Appendix D

Oxford Happiness Questionnaire

Instructions:

Below are a number of statements about happiness. Please indicate how much you agree or disagree with each by entering a number in the blank after each statement, according to the following scale:

1 = strongly disagree

2 = moderately disagree

3 = slightly disagree

4 = slightly agree

5 = moderately agree

6 = strongly agree

Please read the statements carefully, some of the questions are phrased positively and others negatively. Don't take too long over individual questions; there are no "right" or "wrong" answers (and no trick questions). The first answer that comes into your head is probably the right one for you. If you find some of the questions difficult, please give the answer that is true for you in general or for most of the time.

1. I don't feel particularly pleased with the way I am. (R) ____
2. I am intensely interested in other people. ____
3. I feel that life is very rewarding. ____
4. I have very warm feelings towards almost everyone. ____
5. I rarely wake up feeling rested. (R) ____
6. I am not particularly optimistic about the future. (R) ____
7. I find most things amusing. ____
8. I am always committed and involved. ____
9. Life is good. ____
10. I do not think that the world is a good place. (R) _
11. I laugh a lot. ____

12. I am well satisfied about everything in my life. ____
13. I don't think I look attractive. (R) ____
14. There is a gap between what I would like to do and what I have done. (R) ____
15. I am very happy. ____
16. I find beauty in some things. ____
17. I always have a cheerful effect on others. ____
18. I can fit in (find time for) everything I want to. ____
19. I feel that I am not especially in control of my life. (R) ____
20. I feel able to take anything on. ____
21. I feel fully mentally alert. ____
22. I often experience joy and elation. ____
23. I don't find it easy to make decisions. (R) ____
24. I don't have a particular sense of meaning and purpose in my life. (R) ____
25. I feel I have a great deal of energy. ____
26. I usually have a good influence on events. ____

Appendix E

Perceived Stress Questionnaire

Instructions for the General questionnaire: For each sentence, circle the number that describes how often it applies to you in general, during the last year or two. Work quickly, without bothering to check your answers, and be careful to describe your life in the long run.

Please respond on a 4-point scale where: 1 = Almost Never, 2 = Sometimes, 3 = Often, and 4 = Usually

1. You feel rested 1 2 3 4
2. You feel that too many demands are being made on you 1 2 3 4
3. You are irritable or grouchy 1 2 3 4
4. You have too many things to do 1 2 3 4
5. You feel lonely or isolated 1 2 3 4
6. You find yourself in situations of conflict 1 2 3 4
7. You feel you're doing things you really like 1 2 3 4
8. You feel tired 1 2 3 4
9. You fear you may not manage to attain your goals 1 2 3 4
10. You feel calm 1 2 3 4
11. You have too many decisions to make 1 2 3 4
12. You feel frustrated 1 2 3 4
13. You are full of energy 1 2 3 4
14. You feel tense 1 2 3 4
15. Your problems seem to be piling up 1 2 3 4
16. You feel you're in a hurry 1 2 3 4
17. You feel safe and protected 1 2 3 4
18. You have many worries 1 2 3 4
19. You are under pressure from other people 1 2 3 4
20. You feel discouraged 1 2 3 4
21. You enjoy yourself 1 2 3 4
22. You are afraid for the future 1 2 3 4

23. You feel you're doing things because you have to not because you want to 1 2 3 4
24. You feel criticized or judged 1 2 3 4
25. You are lighthearted 1 2 3 4
26. You feel mentally exhausted 1 2 3 4
27. You have trouble relaxing 1 2 3 4
28. You feel loaded down with responsibility 1 2 3 4
29. You have enough time for yourself 1 2 3 4
30. You feel under pressure from deadlines 1 2 3 4

Appendix F

Loneliness Scale

INSTRUCTIONS: Indicate (by circling) how often each of the statements below is descriptive of you.

O indicates "I often feel this way"

S indicates "I sometimes feel this way"

R indicates "I rarely feel this way"

N indicates "I never feel this way"

1. I am unhappy doing so many things alone O S R N
2. I have nobody to talk to O S R N
3. I cannot tolerate being so alone O S R N
4. I lack companionship O S R N
5. I feel as if nobody really understands me O S R N
6. I find myself waiting for people to call or write O S R N
7. There is no one I can turn to O S R N
8. I am no longer close to anyone O S R N
9. My interests and ideas are not shared by those around me O S R N
10. I feel left out O S R N
11. I feel completely alone O S R N
12. I am unable to reach out and communicate with those around me O S R N
13. My social relationships are superficial O S R N
14. I feel starved for company O S R N
15. No one really knows me well O S R N
16. I feel isolated from others O S R N
17. I am unhappy being so withdrawn O S R N
18. It is difficult for me to make friends O S R N
19. I feel shut out and excluded by others O S R N
20. People are around me but not with me O S R N

Appendix G

Pet Attachment Questionnaire

PLEASE ONLY ANSWER IF YOU HAVE A PET

The following statements concern how you feel in the relationship with your pet. We are interested in how you experience the relationship with specific pet. If you have more than one pet, please select the one that you have the closest relationship with, and answer all the below questions about your relationship with this specific pet. Respond to each statement by indicating how much you agree or disagree with it, using the following rating scale:

1 2 3 4 5 6 7
Disagree Strongly.....Neutral/Mixed.....Agree

1. Being close to my pet is pleasant for me 1 2 3 4 5 6 7
2. I'm often worried about what I'll do if something bad happens to my pet
1 2 3 4 5 6 7
3. I prefer not to be too close to my pet 1 2 3 4 5 6 7
4. Sometimes I feel that I force my pet to show more commitment and desire to be close to me 1 2 3 4 5 6 7
5. I prefer to keep some distance from my pet 1 2 3 4 5 6 7
6. If I can't get my pet to show interest in me, I get upset or angry 1 2 3 4 5 6 7
7. Often my pet is a nuisance to me 1 2 3 4 5 6 7
8. Signs of affection from my pet bolster my self-worth 1 2 3 4 5 6 7
9. I feel distant from my pet 1 2 3 4 5 6 7
10. I often feel that my pet doesn't allow me to get as close as I would like
1 2 3 4 5 6 7
11. I'm not very attached to my pet 1 2 3 4 5 6 7
12. I get angry when my pet doesn't want to be close to me as much as I would like it to
1 2 3 4 5 6 7
13. If necessary, I would be able to give away my pet without any difficulties
1 2 3 4 5 6 7

14. I get frustrated when my pet is not around as much as I would like it to be
1 2 3 4 5 6 7
15. I have no problem parting with my pet for a long duration 1 2 3 4 5 6 7
16. I need shows of affection from my pet to feel there is someone who accepts me as I am
1 2 3 4 5 6 7
17. I get uncomfortable when my pet wants to be close to me 1 2 3 4 5 6 7
18. I feel frustrated if my pet doesn't seem to be available for me when I need it
1 2 3 4 5 6 7
19. I get nervous when my pet gets too close to me 1 2 3 4 5 6 7
20. Without acts of affection from my pet I feel worthless 1 2 3 4 5 6 7
21. I want to get close to my pet, but I keep pulling away 1 2 3 4 5 6 7
22. I am worried about being left alone without my pet 1 2 3 4 5 6 7
23. I try to avoid getting too close to my pet 1 2 3 4 5 6 7
24. I need expressions of love from my pet to feel valuable 1 2 3 4 5 6 7
25. When I'm away from my pet for a long period of time, I hardly think about it
1 2 3 4 5 6 7
26. I need a lot of reassurance from my pet that it loves me 1 2 3 4 5 6 7

Appendix H

Social Support Questionnaire 6 (SSQ6)

Instructions:

The following questions ask about people in your life who provide you with help or support. Each question has two parts. For the first part, list all the people you know, excluding yourself, whom you can count on for help or support in the manner described. Give the person's initials and their relationship to you (see example). Do not list more than one person next to each of the numbers beneath the question.

For the second part, circle how satisfied you are with the overall support you have.

If you have no support for a question, check the words "No one," but still rate your level of satisfaction. Do not list more than nine persons per question.

Please answer all questions as best you can. All your answers will be kept confidential.

Example:

Who do you know whom you can trust with information that could get you in trouble?

No one 1) T.N. (brother) 2) L.M. (friend) 3) R.S. (friend) 4) T.N. (father)
5) L.M. (employer) 6) 8) 6) 9)

How Satisfied?

6 – very satisfied

5 – fairly satisfied

4 – a little satisfied

3 – a little dissatisfied

2 – fairly dissatisfied

1 – very dissatisfied

1. Whom can you really count on to be dependable when you need help?

No one 1) 2) 3) 4)
5)
6) 7) 8) 9)

How Satisfied?

- 6 – very satisfied
- 5 – fairly satisfied
- 4 – a little satisfied
- 3 – a little dissatisfied
- 2 – fairly dissatisfied
- 1 – very dissatisfied

2. Whom can you really count on to help you feel more relaxed when you are under pressure or tense?

- No one 1) 2) 3) 4)
- 5)
- 6) 7) 8) 9)

How Satisfied?

- 6 – very satisfied
- 5 – fairly satisfied
- 4 – a little satisfied
- 3 – a little dissatisfied
- 2 – fairly dissatisfied
- 1 – very dissatisfied

3. Who accepts you totally, including both your worst and your best points?

- No one 1) 2) 3) 4) 5)
- 6) 7) 8) 9)

How Satisfied?

- 6 – very satisfied
- 5 – fairly satisfied
- 4 – a little satisfied
- 3 – a little dissatisfied
- 2 – fairly dissatisfied

1 – very dissatisfied

4. Whom can you really count on to care about you, regardless of what is happening to you?

No one 1) 2) 3) 4)
5)
6) 7) 8) 9)

How Satisfied?

6 – very satisfied

5 – fairly satisfied

4 – a little satisfied

3 – a little dissatisfied

2 – fairly dissatisfied

1 – very dissatisfied

5. Whom can you really count on to help you feel better when you are feeling generally down-in-the dumps?

No one 1) 2) 3) 4)
5)
6) 7) 8) 9)

How Satisfied?

6 – very satisfied

5 – fairly satisfied

4 – a little satisfied

3 – a little dissatisfied

2 – fairly dissatisfied

1 – very dissatisfied

6. Whom can you count on to console you when you are very upset?

No one 1) 2) 3) 4)
5)

