Investigating the Relationship between Empathy, Interpretation of Behavioral Cues, and Childhood Experience with Pets in Young Adults

I. Project Description

A. Background and Description of Project

Empathy (i.e., the ability to imagine another's perceived emotional experience; Daly & Morton, 2006) is a vital component of social functioning. The ability to empathize leads to important pro-social behaviors with more positive outcomes, such as less aggression, more positive peer relationships, and increased likelihood of helping others (Eisenberg, Morris, McDaniel, & Spinrad, 2009). The development of empathy begins in early childhood and becomes more complex as children reach late childhood and adolescence, with levels of empathy continuing to change over a lifetime. Research suggests that empathy development is a fundamental part of adolescence, which is marked as a period of increased cognitive development as well as socioemotional changes. The level of empathy of adolescents affects their social interactions and ability to understand others' emotional states. Higher levels of empathy in adolescence leads to higher levels of empathy later in adulthood (Allemand, Steiger, & Fend, 2015). Thus, considering the continuity of empathy from childhood to adulthood, it is important to understand factors that foster empathy in development. Research shows that interactions with animals as children may play an important role in cultivating empathy.

Over the past two decades, an increase in evidence has shown that humans benefit from human-animal interaction (HAI), particularly in the development of empathy (Daly & Morton, 2006). Pets are at the center of meaningful relationships for many children, and children often have more opportunities to practice nurturing behaviors with animals than with humans, making animals an integral part of children's lives (Melson & Fogel, 1989). Experience with animals also enhances knowledge about and positive attitudes towards animals (Wemelsfelder, 2007). Empathy for animals has been shown to related to empathy for humans, and has been reported to be higher among people who had pets as children and who currently own pets (Angantyr, Eklund, & Hansen 2011; Paul, 2000), though there is conflicting evidence that shows relationships with animals as children does not necessarily generalize into compassion for humans in adulthood (Ascione, 1992). Further, people who have owned pets tend to show more positive attitude towards animals (Paul & Serpell, 1993).

However, there are some inconsistent findings regarding the relationship between the development of empathy in children with pets. For instance, many studies focus on one form of empathy, when in fact empathy is often differentiated into two forms: *cognitive empathy*, which is closely related to perspective taking, or understanding the mental state of another individual, and *emotional empathy*, which involves feeling the emotional states of another individual (Shamay-Tsoory, Aharon-Peretz, & Perry, 2009). There is more research focusing on affective empathy in regards to animals, so little is known about the involvement of cognitive empathy and perspective-taking in HAI (Meyer, Forkman, & Paul, 2014). Reading behavioral cues to determine one's underlying cognitive and emotional states involves perspective-taking. The ability to interpret animals' behavior is important not only for their welfare, but humans' safety as well. Misinterpreting animals' facial expressions makes children more vulnerable to bite injuries (Meints, Racca, & Hickey 2010), and even adults have difficulty reading the behavior of fearful or anxious dogs interacting with children (Demirbas et al., 2016). A recent study assessed whether interpreting the behavior animals was related to empathy for animals, and found that among veterinary students, those with lower empathy scores and no previous responsibility for dogs interpreted dogs' behavior as more aggressive (Meyer, Forkman, & Paul, 2016). However, that study had a sample that is not representative of the general population, and many questions still remain about the relationship between different forms of empathy among adults and their experience with pets as children. Whether owning a pet as a child leads to enhanced cognitive empathy (i.e., perspective-taking), both towards human as well as animals, as adults has yet to be explored.

The goal of the proposed study is to assess the relationships between empathy for animals and young adults' ability to interpret the emotional and cognitive states of companion animals based on their behavior. We will also assess whether there is continuity between within (i.e., other humans) and between species (i.e., dogs and cats). The research questions break down into three specific aims:

Aim 1: Are there differences in emotional and cognitive empathy of young adults, both towards animals and

in general (i.e., towards humans), based on whether they owned pets as children? Does this type of empathy depend on the type of responsibilities or attachment bonds they had with their pets as children?

Aim 2: Is the ability to correctly interpret behavioral signals in animals and humans related to emotional and cognitive empathy, both towards animals and in general? For instance, does higher empathy for animals mean that someone is better at interpreting the emotional or cognitive state of an animal?

Aim 3: Is there continuity between emotional and cognitive empathy for animals and general emotional and cognitive empathy? So, are people that are more empathic in general better at reading pets' behavioral cues, or is this relationship specific to empathy for animals?

B. Methodology

Participants will consist of approximately 100-200 young adults (18-24). They will be recruited by circulating fliers and posters on the UNO campus and at the Nebraska Humane Society. Previous pet ownership will not be required, so that we may compare individuals that grew up with pets to those who did not. An online survey will be created and made available in the UNO Department of Psychology Research Participation System (SONA). Participants will be asked questions regarding basic demographic, their childhood experience with pets including the age of the participant when they had dogs or cats present in their home, their responsibility for their childhood pets (feeding, playing, exercising, grooming, etc.), their attachment to their childhood pets using the 9-item Short Attachment to Pets Scale (SAPS, Marsa-Sambola et al., 2015), and current pet ownership and responsibilities. Participants will then complete the 22-item Animal Empathy Scale (Paul, 2000), the 18-item Pet Attitude Scale (Templer, 1981), and the 22-item Empathy Quotient-Short form (Wakabayashi et al., 2006), which contains subscales relating to both emotional and cognitive empathy.

Following the questionnaires, participants will be asked to view several images featuring dogs, cats, and/or humans interacting in a variety of contexts (based on those from Kujala, Somppi, Jokela, Vainio, & Parkkonen, 2017). After each image, participants will be presented with a list of adjectives and asked to assess the emotional or behavioral state each individual in that clip by selecting the adjective that best describes their personal impression. These adjectives will consist of similar words as those used by Meyer et al., (2016) that address both emotions (e.g., happy, playful, anxious, aggressive) and cognitive states (e.g., curious, shy, confused, guilty). Experts in the area of animal behavior will determine what emotional and cognitive states best describe each individual in each image, and participants' responses will be graded as far as how close their response was to the 'correct' response. Data will be analyzed in SPSS using correlations to assess relationships between variables and t-tests to examine differences in the variables based on ownership of pets as children.

C. Project Timeline

Mar-May	Online survey development: selecting images, collecting expert evaluations of images, selecting questionnaire items, integrating measures to an online platform
May-Jun	IRB protocol preparation and submission
Jul-Nov	Recruitment and data collection: post and hand out fliers, monitor activity
Nov-Dec	Data preparation and analysis
Dec-Jan	Poster preparation for UNO Research and Creativity Fair, and pending the outcome, manuscript preparation for submission to a peer-reviewed journal such as *Anthrozoös*

D. Student/Faculty Mentor Roles

As the student researcher, I will be responsible for assisting in the development of the online survey, preparing the IRB protocol, overseeing data collection, assisting with data analysis, and preparing the poster for presentation. My mentor, Dr. Strasser, will oversee the development of the survey and analyzing of the data, and guide me in the preparation of the IRB protocol and data collection process.

II. Budget Justification

The student stipend is requested to be $2000. This amount will serve as a salary for the student researcher during the course of the project including:

- preparation of the online survey (~8 hrs/wk*8 wks = 64 hrs)
- writing and revisions to the IRB protocol (~5 hrs/wk*8 wks = 40 hrs)
- recruitment of participants and monitoring data collection (~2 hrs/wk*20 wks = 40 hrs)
- data preparation and analysis (~8 hrs/wk*4 wks = 32 hrs)
- poster preparation (~8 hrs/wk*3 wks = 24 hrs)

The other portion of the grant will be used towards supplies needed to complete the project.

Office supplies for fliers		$100
Student Stipend		$2000
Total FUSE		**$2100**

lll. References

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To Whom It May Concern,

It is my sincere pleasure to write a letter in support for **Paige Phillips**. Paige is an exceptionally bright psychology student who has been volunteering in my laboratory. Paige is very interested in understanding the human-animal bond, especially during early childhood, and how it might contribute to empathy in adulthood. I am impressed with her ability to understand the material and ask questions. Paige was able to synthesize a large amount of research articles in order to develop her own independent research question for this FUSE grant. I am impressed with how well she was able to synthesize the material and develop a novel research project that is unique yet adds to the overall research in my laboratory. I am confident that the project will be completed in the time required. I also anticipate the results will make a significant contribution to the field and will be presented at a professional conference (and perhaps even publication) in the future. In conclusion, it is with great pleasure and with no reservations that I strongly recommend Paige for this grant.

Sincerely,

Rosemary Strasser, Ph.D.