Relationship between emotional intelligence and empathy towards humans and animals

Raquel Gómez-Leal [Corresp., 1], **Ana Costa** [2], **Alberto Megías-Robles** [1], **Pablo Fernández-Berrocal** [1], **Luísa Faria** [2]

[1] Department of Basic Psychology, Faculty of Psychology, University of Málaga, Málaga, Spain

[2] Faculty of Psychology and Education Sciences, University of Porto, Porto, Portugal

Corresponding Author: Raquel Gómez-Leal
Email address: raqgomlea@uma.es

Previous research has highlighted that Emotional Intelligence (EI) is related to an array of positive interpersonal behaviours, including greater human empathy. Nonetheless, although animals are an integral part of our lives, there is still a lack of clarity regarding the way in which EI relates to empathy towards animals. The aim of this study was to investigate the relationship between EI and empathy towards humans and animals. We used the Trait-Meta Mood Scale to assess EI, the Interpersonal Reactivity Index to assess empathy for humans, and the Animal Empathy Scale to assess empathy for animals. Our findings revealed a positive relationship between empathy for humans and animals. In addition, the results also supported the idea that EI is positively related to empathy for humans, while the relationship between EI and empathy for animals was dependent on whether or not the participants had experience with pets. These findings provide a better understanding of the mechanisms underlying empathic behaviour and suggest that empathy for humans and animals can be influenced by different factors. Limitations and future lines of research are discussed.

Relationship between emotional intelligence and empathy towards humans and animals

Raquel Gómez-Leal[1], Ana Costa[2], Alberto Megías-Robles[1], Pablo Fernández-Berrocal,[1] and Luísa Faria[2]

[1] Department of Basic Psychology, Faculty of Psychology, University of Málaga, Spain.

[2] Faculty of Psychology and Education Sciences, University of Porto, Portugal

Corresponding author

Raquel Gómez-Leal

University of Málaga

Faculty of Psychology, Department of Basic Psychology.

Campus Teatinos, s/n. 29071. Málaga, Spain

Email: raqgomlea@uma.es

Abstract

Previous research has highlighted that Emotional Intelligence (EI) is related to an array of positive interpersonal behaviours, including greater human empathy. Nonetheless, although animals are an integral part of our lives, there is still a lack of clarity regarding the way in which EI relates to empathy towards animals. The aim of this study was to investigate the relationship between EI and empathy towards humans and animals. We used the Trait-Meta Mood Scale to assess EI, the Interpersonal Reactivity Index to assess empathy for humans, and the Animal Empathy Scale to assess empathy for animals. Our findings revealed a positive relationship between empathy for humans and animals. In addition, the results also supported the idea that EI is positively related to empathy for humans, while the relationship between EI and empathy for animals was dependent on whether or not the participants had experience with pets. These findings provide a better understanding of the mechanisms underlying empathic behaviour and suggest that empathy for humans and animals can be influenced by different factors. Limitations and future lines of research are discussed.

Keywords

Emotional intelligence; Empathy; Empathy for humans; Empathy for animals.

Nowadays it is generally accepted that the intelligent use of emotions has a positive impact on the psychological adaptation of the individual to their environment (Mayer & Salovey, 1997; Salovey et al., 1999; Salovey et al., 1995), providing them with a better chance of success (Mayer et al., 2008). Based on this perspective, research conducted within the field of emotional intelligence (EI) has made a significant contribution to knowledge and evidence regarding the positive effects of emotions. In particular, research in recent decades indicates that an array of positive outcomes can be attributed to higher levels of EI, including improved well-being and mental health (Martins et al., 2010: İnce et al., 2019), academic or professional performance (Costa & Faria, 2015; O'Boyle et al., 2011), prosocial behaviour and satisfaction with social networks (Ciarrochi et al., 2000; Mayer et al., 1999), lower levels of clinical symptomatology (Bastian et al., 2005; Megías et al., 2018a) and aggressive or disruptive behaviour (Brackett et al., 2004; Davis & Humphrey, 2012; Lopes et al., 2011; Megías et al., 2018b).

In this regard, research has also been devoted towards exploring the relationship between EI and empathetic behaviours, namely the positive effects of EI on empathy for other humans. Nonetheless, to date no research has addressed the specific relationship between EI and empathy for animals, in spite of the fact that animals play a very important role in our society, and are an integral part of culture, leisure, well-being, work, and politics. In fact, public opinion would suggest that people who show sensitivity to nonhuman species have greater emotional abilities. However, the analysis of well-known cases, such as activists who violate human rights to save animals or even Hitler and his Nazi companions who were animal lovers (Paton, 1993), demonstrate that these relationships may be more complex than they might appear. This study presents a preliminary attempt to extend knowledge on the relationship between EI and empathy towards humans and animals.

EI and empathy towards humans

EI can be conceptualized as the capacity to process emotional information and comprises the "ability to perceive accurately, appraise, and express emotion; the ability to access and/or

generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth" (Mayer & Salovey, 1997, p. 10). Thus, both intrapersonal and interpersonal emotional abilities are considered to fall under this category of mental abilities (Mayer & Salovey, 1997).

Particular interest has been paid to the link between EI and empathy, since the latter constitutes a relevant factor in social interaction and prosocial behaviour (Gilet et al., 2013). Empathy, as a multidimensional construct that comprises emotional, cognitive and motivational components (Baron-Cohen & Wheelwright, 2004; Cuff, Brown, Taylor, & Howat, 2014), is based on the abilities to recognize, understand, and share the feelings of others (Davis, 1980; de Waal, 2008; Preston & de Waal, 2002). More specifically, cognitive empathy reflects the way in which we understand others, their experiences and emotions, emotional empathy involves the emotional response to the experience of others and actually sharing that particular emotional state with the other (Smith, 2006), which often generates an empathic concern, understood as compassion or motivational empathy, which leads a person to take action to relieve the suffering of others (Eisenberg & Miller, 1987; Pfattheicher et al., 2015).

Considering that perceiving and understanding emotion in others and emotional awareness are abilities involved in EI, it might be reasonable to suppose that there is a positive relationship between EI and empathy (Schutte et al., 2001). In fact, there are parallels between some of the features of EI and empathy. Petrides et al. (2004) found evidence to suggest that the trait EI models comprise affect-related functioning such as emotional awareness, empathy and relationship skills. According to Mayer and Salovey (1997), an individual with optimum EI can better perceive, understand, and manage their own emotions, and are more likely to be skilled at generalizing these abilities of perceiving, understanding, and managing to the emotions of others. Some authors have even argued that empathy is a result of EI, since the ability to reason about emotions in ourselves and others will have an impact on the accurate interpretation and management of social interactions and emotional experiences (Mayer et al., 2008).

Various authors have delved further into this relationship and confirmed that individuals with higher EI are also more empathetic towards other people (Fitness & Curtis, 2005; Mayer et al., 1999; Schutte et al., 2001, 2005). This positive relationship has been established when evaluating EI using different types of measures, including self-report (Fitness & Curtis, 2005;

Salovey et al., 2002; Schutte et al., 2001) and performance tests (Ciarrochi et al., 2000; Mayer et al., 1999). In particular, some studies found that attention to emotions correlated positively with the empathy dimensions of empathic involvement and personal distress (Aguilar-Luzón & Augusto, 2009; Extremera & Fernández-Berrocal, 2004). A higher level of emotional clarity and repair has also been positively associated with perspective taking and negatively associated with personal distress, both of which are aspects of empathic behaviour (Aguilar-Luzón & Augusto, 2009; Extremera & Fernández-Berrocal, 2004; Ramos et al., 2007).

Although the relationship between EI and human empathy has been explored in the literature, rather less attention has been paid to the issue of how EI relates to empathy directed towards other objects, including empathy for animals. Given that empathy is related to the socio-emotional abilities to recognize, understand and share the feelings of others, and that understanding and being aware of the emotional signs in animals (with more or less phylogenetic proximity to humans) can pose particular challenges since this is quite distinct from human interactions, the relationship between EI and empathy towards animals could be quite different from the one established with humans.

Relationship between empathy directed to humans and to animals

Over the past few decades, public opinion has shifted from the traditional conceptions of animals as objects to be used by humans to a broader ethical perspective of care and compassion towards them. In fact, the public attitudes to animals related to increasing sensitivity and concern about animal use have developed in parallel with the stronger beliefs about the ability of animals to experience pain and suffering, along with their cognitive abilities and their sentience (Cornish, Wilson, Raubenheimer, & McGreevy, 2018). This progressive change in society's attitudes towards animals is most likely to be based on the increasing proximity with animals in our daily life (e.g., pets) and on the countless contexts in which housed animals such as zoos, aquariums, museums, sanctuaries, shelters, nature centres and others offer opportunities to have educational experiences with animals and nature (Young, Khalil, & Wharton, 2018).

Within the broader research area on the nature of empathy, the earliest studies exploring the relationship between human individuals and other animals emerged and, in particular, these works demonstrated that humans are able to feel empathy for animals (e.g., Emauz et al., 2016; Paul, 2000). Moreover, empathy towards animals seem to have originated in a similar way as that

shown towards other humans (Ascione, 1992; Kohl, 2012; Ruckert, 2016). In his precursory research, Paul (2000) elaborated on the previous empathy definition put forward by Eisenberg (1995) and specified that empathy towards animals entailed a vicarious emotional response to the emotions or states of animals, and the cognitive understanding of their thoughts or feelings. For Drane (2009) empathy is the ability to feel what others are feeling, regardless of whether this comes from a direct relationship between humans or animals. Jorge Ritchman (cited in García, 2014) also extrapolated empathy towards our relationship with animals, considering this to be fundamental to our coexistence, since it allows us to perceive the damage that we can cause to other species, feel their suffering, or avoid it (García, 2014). More recently, a metanalytic review on empathy for animals defined empathy as a stimulated emotional state that relies on the ability to perceive, understand and care about the experiences or perspectives of another person or animal (Young et al., 2018). Therefore, empathy towards animals comprises the same three abilities as empathy towards humans – affective empathy, cognitive empathy, and empathic concern (Cuff et al., 2014). Affective empathy is the ability to sense or physically experience the emotions of another (Cuff et al., 2014). For instance, when an individual observes an animal in a state of suffering, he will experience distress as if he were responding to the same stimulus (Eres, Decety, Louis, & Molenberghs, 2015). Cognitive empathy is the ability to understand the experiences of others by recognizing and imagining their reality (Cuff et al., 2014), and might support (or not) our affective empathy. For instance, it supports our affective empathy when we believe the animal is suffering because we recognized that it is physically injured; or it does not provide such support, when, for instance, we understand that an animal is isolated due to their specific biological characteristics and it is not a sign of depression. Empathic concern, on the other hand, can motivate a person to take action and relieve the suffering of the animal (Eisenberg & Miller, 1987; Pfattheicher et al., 2015), and in that case, an individual would help an animal that is injured or trapped.

Some authors consider that empathy for animals has a strong heritable component and can evolve differently depending on the particular species of animals (Bradshaw & Paul, 2010). Research suggests that the development of empathic behaviour is due to its adaptative components, which would enable pro-social behaviour and inhibit aggression. Another possibility explored by some investigators is that the process of nurturing (e.g., providing food and shelter, care-giving) infants and babies would have had an impact on the development of the empathic behaviours of

humans, considering that the ability to empathetically respond to the distress shown by children is a crucial component of the emotional nurturance process (de Waal, 2008).

Moreover, the literature also indicates that there is a positive relationship between the empathy directed to humans and animals, although this is not of a high magnitude (Ellingsen et al., 2010; Emauz et al., 2016; Paul, 2000). Other studies have also found that concerns about animal suffering are associated with higher levels of empathy for humans (Ascione, 1992; Komorosky & O`Neal, 2015). However, when exploring whether individuals particularly characterized by high levels of affection towards animals have high levels of affection towards humans, the results are contradictory (Paul, 2005). For instance, a very high level of affection for animals can be related to a displacement of affection from people to pets. Therefore, it is not always evident that in order to be empathetic towards animals the individual should also be empathetic towards humans or vice versa. These findings suggest that empathy for humans and for animals — whilst many times related — are probably not the same unitary construct, representing different psychological concepts or, at least, separately influenced by specific factors (Paul, 2000; Paul, 2005). Perhaps the possibility that both types of empathy have shared and non-shared components or because they act under the influence of specific moderator mechanisms could explain why differences are often observed in the empathic responses shown towards human individuals and other animals (Paul, 2000).

EI and empathy towards animals

To date, there are no reports regarding the relationship between EI and empathy directed to animals of any kind, except humans. One could argue that EI is related to several positive emotional outcomes such as empathy for humans (Fitness & Curtis, 2005; Mayer et al., 1999; Schutte et al., 2001, 2005) and that a similar association is likely to be found for empathy towards animals. However, as previously described, the literature on empathy for animals has presented mixed results, that is, supporting the association between attitudinal and prosocial behaviours towards animals and towards people (Ellingsen et al., 2010; Emauz et al., 2016; Komorosky & O`Neal, 2015) or indicating that those behaviours can be independent (Paul, 2005). Moreover, the dynamics of the relationships between individuals are far more complex than those established with animals. One possibility is that the ability to understand and manage emotions based on human interactions might prove to be insufficient to perceive and understand the emotions of

animals, which hinders the capacity of humans to empathise with them. Therefore, it is possible that for there to be an association between EI and empathy for animals, the influence of other variables — such as the person's current experience with animals — could be critical. In this regard, EI can be associated with empathy for humans and other positive human-oriented outcomes but might not necessarily be correlated with animal-oriented constructs, for instance, advocating for animal rights, being compassionate towards animals in distress, or taking a stance against the use of animals for scientific purposes.

Gender differences in EI and empathy

Previous studies in the literature have revealed gender differences in EI, and in empathy for humans and animals. Whilst in general, women score higher than men on the main factors that constitute EI, this difference appears to depend on the type of instrument used. Specifically, when a performance-based instrument is used, women score higher than men on all dimensions; however, when using a self-report instrument, particularly the TMMS (Salovey et al., 1995), women tend to score higher than men on the dimension of attention to emotions, and lower on the dimensions of emotional clarity and repair (Cabello & Fernández-Berrocal, 2015; Fernández-Berrocal & Extremera, 2008; Joseph & Newman, 2010; Navarro-Bravo et al., 2019). Further, previous studies indicate that women, compared with men, tend to exhibit higher levels of empathy for both humans and animals (Angantyr et al., 2011; Klein & Hodges, 2001; Paul, 2000; Serpell, 2004).

Aim

The main objective of this research was to investigate the relationship between EI and empathy for humans and animals. We conducted a detailed study through the analysis of several EI and empathy sub-dimensions. In addition, we examined the possible effect of previous experience with animals on these relationships. Based on the findings of the previous literature, we also explored possible gender-related differences in the scores of EI and empathy. We hypothesized that (1) there is a positive relationship between empathy for humans and empathy for animals; (2) there is a positive relationship between empathy for humans and EI; (3) with respect to the relationship between EI and empathy for animals, we conducted an exploratory analysis since it is not possible to formulate a clear hypothesis given the mixed findings reported in the previous literature; finally, (4) we proposed that the relationships between EI and empathy

for animals may depend on the degree of proximity that the person has with animals (operationalized according to whether they have pets or not).

Methods

Participants

The sample was composed of four hundred and seventy-one adult volunteers (34.4% male). They were recruited through advertisements at the University of Malaga, social networks, and online platforms. The age of the participants ranged from 18 to 65 years with a mean of 26.15 years (SD = 10.10). Two hundred and fifty-eight of the participants were pet owners. All participants were informed that confidentiality and anonymity of the collected data would be assured, and they were treated in accordance with the Helsinki declaration (World Medical Association, 2008). The study was approved by The Research Ethics Committee of the University of Málaga as part of the project PSI2017-84170-R (IRB approval number CEUMA 14-2019-H).

Procedure and instruments

Online questionnaires were completed by the participants through the LimeSurvey platform (http://limesurvey.org). The respondents accessed the questionnaires via an email link sent by the authors. An informed consent form was included in the survey, and the participants were assured of confidentiality and anonymity. To avoid missing data, the questionnaires were set up so that blank responses were not allowed. For each participant, this entire process took approximately 20 minutes to complete. The sample size was based on availability, but statistical power should not be a problem given that a power analysis using G*Power 3.1.9 (Faul et al., 2007) determined that 153 was the minimum number of participants required to obtain a power of 0.8 according to an alpha of 0.05 and medium effect size.

A description of each scale is detailed below:

Trait-Meta Mood Scale (TMMS; Salovey et al., 1995). The TMMS is a 24-item self-report scale widely used to assess EI. The questionnaire includes three sub-dimension scores: attention to emotions (awareness of our emotions, the ability to recognize our feelings and know what they mean), emotional clarity (ability to know, understand, distinguish and understand how emotions evolve, ability to integrate emotions in our thinking), and emotional repair (ability to regulate and control positive and negative emotions). Responses are given on a 5-point Likert type scale ranging from 1 (“Disagree strongly”) to 5 (“Agree strongly”). We used the Spanish version of the scale

(Fernández-Berrocal et al., 2004). In our study, the scale showed good internal consistency (Cronbach's alpha values of the sub-dimensions ranged between .85 and .91).

Interpersonal Reactivity Index (IRI; Davis, 1983) is a 28-item self-report scale used to measure empathy. This scale is composed of four subscales: perspective taking (ability of subjects to adopt other people's point of view), empathic concern (tendency of subjects to experience feelings of compassion and concern towards others), personal distress (tendency of subjects to experience feelings of anxiety and discomfort when witnessing the negative experiences of others) and fantasy (tendency of subjects to identify with fictional characters from books and movies). Each item uses a 5-point Likert scale ranging from 1 ("Does not describe me at all") to 5 ("Describes me very well"). We used the Spanish version of the scale (Escrivá et al., 2004). In our study, the scale showed adequate internal consistency (Cronbach's alpha value of the total score was .79 and for the sub-dimensions this ranged between .66 and .76).

Animal Empathy Scale (AES; Paul, 2000) is a 22-item self-report scale used to measure empathy for animals through the assessment of the individual's feelings about animals and their treatment. The scale comprises items that enquire about both empathic relationships (e.g., "It makes me sad to see an animal on its own in a cage"; "It upsets me when I see helpless old animals") and non-empathic relationships (e.g., "Dogs sometimes whine and whimper for no real reason"; "Sometimes I am amazed how upset people get when an old pets dies"). Responses are scored by a 9-point Likert scale ranging from 1 ("Disagree strongly") to 9 ("Agree strongly"). We used the Spanish version of the scale in our study (La Torre Gómez, 2017). In our study, the scale showed adequate internal consistency (Cronbach's alpha value of the total score was .87).

Data analysis

First, descriptive statistics were computed to examine the characteristics of the scores of the measures employed, both for the total sample and divided by gender. Second, gender differences were contrasted using t-tests. Third, differences according to pet and non-pet ownership were examined by t-tests. Fourth, Pearson's correlations were conducted to explore associations between the study variables. Fifth, in order to verify if the association between empathy for animals and the variables of empathy for humans and EI are influenced by having pets, additional Pearson´s corelation analyses were carried out by dividing the sample into pet owners and non-pet owners. Finally, using Fisher's Z-test, we tested if there were significant

differences between the human empathy and EI correlation and the animal empathy and EI correlation, in the latter case for both the total sample and the sample divided according to pet ownership status. Descriptive statistics, t-test, Pearson's correlations, and Fisher's Z-test analyses were carried out using SPSS® version 24.0 (IBM Corporation, Armonk NY, USA) and FZT computator (http://psych.unl.edu/psycrs/statpage/regression.html).

Results

Table 1 displays the descriptive statistics and gender differences for the variables included in the study. We observed that women, in comparison with men, scored higher on the attention to emotions sub-dimension of EI ($p < .01$, with an effect size by Cohen´s standards [Cohen, 1988] of medium [0.34]), in the perspective-taking, empathic concern, fantasy, and personal distress sub-dimensions of human empathy ($p < .01$, small effect size for perspective-taking [0.25], medium effect size for fantasy and personal distress [0.40 and 0.32, respectively], and a large effect size for empathic concern [0.85]), and on the scale of empathy for animals ($p < .01$, medium effect size [0.47]). T-tests comparing pet owners and non-pet owners only revealed significant differences on the scale of empathy for animals, where pet owners obtained a higher score ($p < .01$, medium effect size [0.42]).

- Insert Table 1 -

Pearson´s correlation analysis including the total sample (see Table 2) confirmed that scores on the attention to emotions sub-dimension of EI were positively related to all sub-dimensions of human empathy (ps < .05); the emotional clarity sub-dimension was negatively related to personal distress, and positively related to fantasy and perspective-taking (ps < .05); and the emotional repair sub-dimension was positively related to perspective-taking and fantasy, and negatively related to personal distress (ps < .05). Regarding empathy for animals, the results revealed a positive relationship between the levels of empathy for animals and human empathy for the sub-dimensions of perspective-taking, fantasy and empathic concern. Moreover, higher levels of empathy for animals were related to higher EI, but only for the sub-dimension of attention to emotions.

346 – Insert Table 2 –

347

348 Pearson´s corelation analyses conducted by dividing the sample into pet owners and non-
349 pet owners (see Table 3) revealed a positive relationship between empathy for animals and human
350 empathy for the sub-dimensions of perspective-taking and empathic concern in both samples.
351 Moreover, a positive relationship was also revealed between empathy for animals and the human
352 empathy sub-dimension of fantasy, but only for the sample of pet owners. With respect to the
353 relationship between empathy for animals and EI, in the sample of non-pet owners, empathy for
354 animals was not related to any of the sub-dimensions of EI. However, in the sample of pet owners,
355 the results showed that higher levels of empathy for animals were related to higher EI for the sub-
356 dimensions of attention to emotions and repair.

357

358 – Insert Table 3 –

359

360 When specific comparisons between correlations were made using Fisher's z-test, it was
361 found that the EI sub-dimension of attention to emotions showed a significantly stronger positive
362 relationship with the human empathy sub-dimensions of perspective-taking ($Z = 3.07$, $p < .01$) and
363 empathic concern ($Z = 3.59$, $p < .01$) than with empathy for animals. Emotional clarity showed a
364 significantly stronger correlation with the human empathy sub-dimensions of perspective-taking
365 ($Z = 2.46$, $p < .05$), fantasy ($Z = 2.14$, $p < .05$), and personal distress ($Z = 3.46$, $p < .01$) than with
366 empathy for animals. Finally, emotional repair showed a significantly stronger relationship with
367 the human empathy sub-dimensions of fantasy ($Z = 2.67$, $p < .01$) and personal distress ($Z = 4.82$,
368 $p < .01$) than with empathy for animals. Finally, we did not find significant differences between
369 the animal empathy and EI correlation when the sample was divided into pet owners and non-pet
370 owners ($Z = 0.76$, NS, for attention to emotions, $Z = 0.22$, NS, for emotional clarity NS, $Z = 1.29$,
371 NS, for emotional repair).

372

373

374

375

376

377 **Discussion**

378 Previous studies in the literature have shown that EI is related to positive aspects, such as
379 better mental health, greater prosocial behaviours, and greater human empathy (Ciarrochi et al.,
380 2000; Fitness & Curtis, 2005; Martins et al., 2010). However, to date, the relationship between EI
381 and empathy for animals has not been studied, despite the fact that animals are an increasingly
382 important part of our society and everyday living. The present study attempted to delve more
383 deeply into the relationship between EI and empathy for humans and for animals. More in-depth
384 knowledge about these factors could help us to understand the differences that exist between
385 personal emotional capacities and sensitivity to animals.

386 First, our study revealed that women, compared with men, showed a higher score on the EI
387 sub-dimension of attention to emotions. This result is consistent with the previous literature and
388 supports the hypothesis that women appear to have a greater ability to recognise feelings and know
389 their meaning (Cabello & Fernández-Berrocal, 2015; Fernández-Berrocal & Extremera, 2008). We
390 also found that women, compared with men, obtained higher scores on all the human empathy sub-
391 dimensions. Empirical studies have indicated that women have a greater capacity than men for
392 understanding the thoughts and feelings of others (Klein & Hodges, 2001; Schieman & Van
393 Gundy, 2000). Finally, we observed that women scored significantly higher than men on empathy
394 for animals. This finding is in accord with various studies showing that women tend to show a
395 more positive attitudes towards animals (Furnham et al., 2003, Paul, 2000; Serpell, 2004). With
396 regard to differences according to pet ownership, we found that pet owners showed higher scores
397 on empathy for animals than those participants who did not have a pet. These results are in accord
398 with those reported in the previous literature, showing that familiarity with animals increases
399 empathy for them (Paul, 2000).

400 With respect to the correlation analyses associated with Hypotheses 1 and 2, i.e., to test the
401 positive relationship between empathy for humans and the scores of empathy for animals and EI,
402 our results were consistent with most of the findings in the literature (Ellingsen et al., 2010;
403 Extremera & Fernández-Berrocal, 2004; Findlay et al., 2006; Fitness & Curtis, 2005; Juntilla et
404 al., 2006). Regarding Hypothesis 1, the results of the current and previous studies confirm that, in

general, an adequate level of EI is related to higher levels of empathy (Fitness & Curtis, 2005; Mayer et al., 1999; Schutte et al., 2001, 2005). However, it must be noted that an excess of empathic involvement (i.e., higher scores on personal distress) could hinder the ability to engage in emotionally intelligent behaviours (Extremera & Fernández-Berrocal, 2004). This latter assumption could explain the observation that levels of personal distress were negatively related to emotional clarity and repair. With regard to Hypothesis 2, we found a positive relationship between most of the human empathy sub-dimensions and empathy for animals (both for the total sample and for the sampled divided according to pet ownership). This finding is also in accord with previous research (Ellingsen et al., 2010; Emauz et al., 2016; Paul, 2000) and suggests that those individuals with higher scores on human empathy also have a more welfare-oriented attitude towards animals. Whilst several theories could explain this result, in general, research indicates that someone who is empathetic, that is, capable of adopting the point of view of animals, and exhibits concern about them is likely to have similar feelings towards people (Eisenberg et al., 1992; Lockwood, 1983; Messent, 1983; Rossbach & Wilson, 1992).

Finally, to address Hypothesis 3, we analyzed the relationship between EI and empathy for animals. Analysis of the total sample revealed that higher levels of empathy for animals were only positively related to the sub-dimension of attention to emotions. Moreover, we observed that the relationship between EI and several sub-dimensions of empathy for humans were significantly stronger than the relationship between EI and empathy for animals. In order to verify if these relationships depended on the degree of familiarity (in terms of ownership) that the person has with animals (Hypothesis 4), we conducted further analyses by dividing the participants into two samples, that is, pet owners and non-pet owners. When we analysed the sample of pet owners, the results revealed a positive correlation between the sub-dimensions of attention to emotions and repair with empathy for animals, whilst analysis of the sample of non-pet owners did not yield any significant relationship between EI and empathy for animals.

In summary, the current findings do not support the notion that people who have better emotional abilities are more empathetic towards animals. Our results instead appear to support the idea that the proficiency for understanding and managing emotions is developed on the basis of human interactions and such emotional abilities are insufficient to perceive and understand the emotional signs of animals and consequently empathise with them. Direct interaction with animals would thus be needed to improve these emotional abilities. To the best of our knowledge, this is

the first time that the relationship between EI and empathy for animals has been investigated. Although EI has been linked to better interpersonal social relationships, prosocial behaviour, and greater empathy for humans (Brackett et al., 2004; Gilet et al., 2013, Komorosky & O`Neal, 2015; Lopes et al., 2011), the results of our study indicate that EI may not be a determining factor in empathy for animals, or at least suggests that the mechanisms underlying both types of empathy are influenced by different factors (Paul, 2000, 2005).

The present study provides a first step towards a better understanding of the relationships between empathy for humans and animals. However, it is important to consider that the methodology employed was correlational and thus future lines of investigation should conduct experimental studies to determine causality between variables. Advances in the study of this relationship could have practical implications such as the promotion of interventions aimed at increasing human empathy levels through animal-assisted therapy. This type of therapy could be helpful for decreasing antisocial behaviours and aggressiveness among peers and, in addition, could promote appropriate attitudes and respect for animal welfare.

As limitations of the research, it is important to note that our sample was not gender matched, with a greater number of women than men (34.4% were men). Furthermore, given that previous literature has shown that the ability to empathize is influenced and reinforced by similarity, age, gender, culture, factors related to theory of mind or personality traits (de Waal, 2008; Kavanagh et al., 2013), future studies should explore possible differences in the empathy and EI relationship as a function of these factors. Finally, the questionnaires used in this research were self-report instruments, and, consequently, susceptible to possible response and introspective biases. It would therefore be useful to work with behavioural and performance measures in order to address these issues.

Conclusion

The main objective of the current research was to clarify the relationship between EI and empathy for humans and animals in order to have a better understanding of the factors that underlie empathic behaviour towards animals and its relationship with empathy for humans. Our results revealed the existence of a positive relationship between both types of empathy (humans and animals). A positive relationship between EI and empathy for humans was also observed. However, the relationship between EI and empathy for animals depends on the participants'

466 experience with animals. Overall, these results support previous literature regarding the positive
467 relationship between EI and empathy for humans, but the mixed findings observed between EI and
468 empathy for animals suggests a greater complexity in the relationships between these constructs,
469 perhaps indicating that both types of empathy can be guided by different factors or represent
470 different psychological constructs. Although preliminary conclusions can be drawn from these
471 results, further investigation is necessary in order to replicate these findings and better understand
472 the common and distinctive process involved in empathy for humans and animals, and their
473 association with EI abilities.

474

475

476 **References**

477

478 Aguilar-Luzón, M. C., & Augusto, J. M. (2009). Relationship between perceived emotional
479 intelligence, personality and empathic behaviour in nursing students. *Behavioural*
480 *Psychology, 17*, 351-364.
481 Angantyr, M., Eklund, J., & Hansen, E. M. (2011). A comparison of empathy for humans and
482 empathy for animals. *Anthrozoös, 24*(4), 369-377.
483 https://doi.org/10.2752/175303711X13159027359764
484 Ascione, F. R. (1992). Enhancing children's attitudes about the humane treatment of animals:
485 Generalization to human-directed empathy. *Anthrozoös 5*(3), 176-191.
486 https://doi.org/10.2752/089279392787011421
487 Baron-Cohen, S., & Wheelwright, S. (2004). The empathy quotient: An investigation of adults
488 with Asperger syndrome or high functioning autism, and normal sex differences. *Journal*
489 *of Autism and Developmental Disorders, 34*, 163-175.
490 https://doi.org/10.1023/B:JADD.0000022607.19833.00
491 Bastian, V. A., Burns, N. R., & Nettelbeck, T. (2005). Emotional intelligence predicts life skills,
492 but not as well as personality and cognitive abilities. *Personality and Individual*
493 *Differences, 39*(6), 1135-1145. https://doi.org/10.1016/j.paid.2005.04.006
494 Brackett, M. A., Mayer, J. D., & Warner, R. M. (2004). Emotional intelligence and its relation to
495 everyday behaviour. *Personality and Individual Differences, 36,* 1387-1402.
496 https://doi.org/10.1016/S0191-8869(03)00236-8
497 Bradshaw, J. W., & Paul, E. S. (2010). Could empathy for animals have been an adaptation in the
498 evolution of Homo sapiens. *Animal Welfare, 19*(1), 107-112.
499 Cabello, R., & Fernández-Berrocal, P. (2015). Implicit theories and ability emotional
500 intelligence. *Frontiers in Psychology. 6*:700. https://doi.org/10.3389/fpsyg.2015.00700
501 Ciarrochi, J. V., Chan, A. Y. C., & Caputi, P. (2000). A critical evaluation of the emotional
502 intelligence construct. *Personality and Individual Differences, 28,* 539-561.
503 https://doi.org/10.1016/S0191-8869(99)00119-1
504 Cohen, J. (1988). *Statistical power analysis for the behavioral sciences (2nd edition)*. Hillsdale,
505 NJ: Erlbaum.

506 Cornish, A., Wilson, B., Raubenheimer, D., & McGreevy, P. (2018). Demographics regarding
507 belief in non-human animal sentience and emotional empathy with animals: A pilot study
508 among attendees of an animal welfare symposium. *Animals, 8*(10), 174.
509 https://doi.org/10.3390/ani8100174
510 Costa, A., & Faria, L. (2015). The impact of emotional intelligence on academic achievement: A
511 longitudinal study in Portuguese secondary school. *Learning and Individual Differences,*
512 *37*, 38-47. https://doi.org/10.1016/j.lindif.2014.11.011
513 Cuff, B. M. P., Brown, S. J., Taylor, L., & Howat, D. J. (2014). Empathy: A review of the concept.
514 *Emotion Review 8*(2), 144–153. https://doi.org/10.1177/1754073914558466
515 Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *Journal*
516 *Supplemental Abstract Service Catalog of Selected Documents in Psychology, 10*, 1-17.
517 Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a
518 multidimensional approach. *Journal of Personality and Social Psychology, 44*(1), 113-
519 117. https://doi.org/10.1037/0022-3514.44.1.113
520 Davis, S., & Humphrey, N. (2012) Emotional Intelligence predicts adolescent mental health
521 beyond personality and cognitive ability. *Personality and Individual Differences, 52*(2),
522 144-149. https://doi.org/10.1016/j.paid.2011.09.016
523 De Waal, F. B. (2008). Putting the altruism back into altruism: The evolution of empathy. *Annual*
524 *Review of Psychology, 59*, 279-300.
525 https://doi.org/10.1146/annurev.psych.59.103006.093625
526 Drane, J. (2009). *Sufrimiento y depresión: Cómo la comprensión y la fe pueden ser de utilidad*.
527 Bogotá: San Pablo.
528 Eisenberg, N. (1995). Empathy. In A. R. Manstead & M. Hewstone (Eds.), *The Blackwell*
529 *Encyclopaedia of Social Psychology* (pp. 203–208). Oxford: Blackwell.
530 Eisenberg, N., Fabes, R. A., Carlo, G., Troyer, D., Speer, A. L., Karbon, M., & Switzer, G. (1992).
531 The relations of maternal practices and characteristics to children's vicarious emotional
532 responsiveness. *Child Development, 63*, 583-602. https://doi.org/10.1111/j.1467-
533 8624.1992.tb01648.x
534 Eisenberg, N., & Miller, P.A. (1987). The relation of empathy to prosocial and related behaviours.
535 *Psychological Bulletin, 101*, 91–119.

Ellingsen, K., Zanella, A. J., Bjerkås, E., & Indrebø, A. (2010). The relationship between empathy, perception of pain and attitudes toward pets among Norwegian dog owners. *Anthrozoös, 23,* 231-243. https://doi.org/10.2752/175303710X12750451258931

Emauz, A., Gaspar, A., Esteves, F., & Carvalhosa, S. F. (2016). Adaptação da Escala de Empatia pelos Animais (EEA) para a população portuguesa. *Análise Psicológica, 34*, 189-201. http://dx.doi.org/10.14417/ap.1049

Eres, R., Decety, J., Louis, W. R., & Molenberghs, P. (2015). Individual differences in local gray matter density are associated with differences in affective and cognitive empathy. *NeuroImage 117*, 305–310. https://doi.org/10.1016/j.neuroimage.2015.05.038

Escrivá, V., Navarro, M., & García, P. (2004). La medida de la empatía: Análisis del Interpersonal Reactivity Index. *Psicothema, 16*(2), 255-260.

Extremera, N., & Fernández-Berrocal, P. (2004). Emotional intelligence, quality of interpersonal relationships and empathy in university students. *Clínica y Salud, 15*, 117-137.

Fernández-Berrocal, P., & Extremera, N. (2008). A review of trait meta-mood research. In A. M. Columbus (Ed.), *Advances in Psychology Research* (Vol. 55, pp. 17-55). New York, NY: Nova Publishers.

Fernández-Berrocal, P., Extremera, N., & Ramos, N. (2004). Validity and reliability of the Spanish modified version of the Trait Meta-Mood Scale. *Psychological Reports, 94*, 751-755. https://doi.org/10.2466/pr0.94.3.751-755

Fitness, J., & Curtis, M. (2005). Emotional intelligence and the trait meta-mood scale: Relationships with empathy, attributional complexity, self-control and response to interpersonal conflict. *E-Journal of Applied Psychology: Social section, 1*, 50-62.

Furnham, A., McManus, C., & Scott, D. (2003). Personality, empathy and attitudes to animal welfare. *Anthrozoös, 16*(2), 135-146. https://doi.org/10.2752/089279303786992260

García, A. (2014). *Para no ceder a la hipnosis. Crítica y revelación en la poesía de Jorge Ritchman.* Madrid: Pontificia Universidad Javeriana

Gilet, A.-L., Mella, N., Studer, J., Gruhn, D., & Labouvie-Vief, G. (2013). Assessing dispositional empathy in adults: A French validation of the Interpersonal Reactivity Index (IRI). *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences du Comportement, 45*, 42-48. https://doi.org/10.1037/a0030425

566 Gómez-Leal, R., Megías-Robles, A., Gutiérrez-Cobo, M. J., Cabello, R., Fernández-Abascal, E.
567 G., & Fernández-Berrocal, P. (2019). Relationship between the Dark Triad and depressive
568 symptoms. *PeerJ, 7*, e8120. https://doi.org/10.7717/peerj.8120
569 İnce, B., Şimsek, Ö. F., & Özbek, L. (2019). Attachment and depression: The mediating roles of
570 personal life projects and emotional intelligence. *Current Psychology*, 39 1910-1920.
571 https://doi.org/10.1007/s12144-019-0136-4
572 Joseph, D. L., & Newman, D. A. (2010). Emotional intelligence: an integrative meta-analysis and
573 cascading model. *Journal of Applied Psychology, 95*, 54–78. https://doi.org/
574 10.1037/a0017286
575 Kavanagh, P. S., Signal, T. D., & Taylor, N. (2013). The dark triad and animal cruelty: Dark
576 personalities, dark attitudes, and dark behaviors. *Personality and Individual Differences,*
577 *55*(6), 666-670. https://doi.org/10.1016/j.paid.2013.05.019
578 Klein, K. J. K., & Hodges, S. D. (2001). Gender differences, motivation, and empathic accuracy:
579 When it pays to understand. *Personality and Social Psychology* Bulletin, 27, 720–730.
580 https://doi.org/10.1177/0146167201276007
581 Kohl, R. (2012). *Prison animal programs: A brief review of the literature.* Milford, MA: Office of
582 Strategic Planning and Research, Massachusetts Department of Correction.
583 Komorosky, D., & O'Neal, K. (2015). The development of empathy and prosocial behavior
584 through humane education, restorative justice, and animal-assisted programs.
585 *Contemporary Justice Review, 18*(4), 1-12.
586 https://doi.org/10.1080/10282580.2015.1093684.
587 La Torre Gómez, R. S. (2017). *Adaptación de la Escala de Empatía Animal en Estudiantes*
588 *Universitarios de la Provincia del Santa*. (Tesis doctoral). Universidad Cesar Vallejo,
589 Chimbote, (Perú).
590 Lopes, P. N., Nezlek, J. B., Extremera, N., Hertel, J., Fernández-Berrocal, P., Schütz, A., &
591 Salovey, P. (2011). Emotion regulation and the quality of social interaction: Does the
592 ability to evaluate emotional situations and identify effective responses matter? *Journal of*
593 *Personality, 79*(2), 429-467.https://doi.org/10.1111/j.1467-6494.2010.00689.x
594 Martins, A., Ramalho, N., & Morin, E. (2010). A comprehensive meta-analysis of the relationship
595 between emotional intelligence and health. *Journal of Personality and Individual*
596 *Differences, 49,* 554-564. https://doi.org/10.1016/j.paid.2010.05.029

Mayer, J. D., Caruso, D., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *Intelligence, 27*, 267-298. https://doi.org/10.1016/S0160-2896(99)00016-1

Mayer, J. D., Roberts, R. D., & Barsade, S. G. (2008). Human abilities: Emotional intelligence. *Annual Review of Psychology, 59*, 507-536. https://doi.org/10.1146/annurev.psych.59.103006.093646

Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Implications for educators* (pp. 3–31). New York: Basic Books.

Megías, A., Gómez-Leal, R., Gutiérrez-Cobo, M. J., Cabello, R., & Fernández-Berrocal, P. (2018a). The relationship between trait psychopathy and emotional intelligence: A meta-analytic review. *Neuroscience and Biobehavioral Reviews*, *84*, 198–203. https://doi.org/10.1016/j.neubiorev.2017.12.003

Megías, A., Gómez-Leal, R., Gutiérrez-Cobo, M. J., Cabello, R., & Fernández-Berrocal, P. (2018b). The relationship between aggression and ability emotional intelligence: The role of negative affect. *Psychiatry Research, 270*, 1074-1081. https://doi.org/10.1016/j.psychres.2018.05.027

Navarro-Bravo B, Latorre J. M., Jiménez A, Cabello R, & Fernández-Berrocal P. (2019). Ability emotional intelligence in young people and older adults with and without depressive symptoms, considering gender and educational level. *PeerJ* 7:e6595 https://doi.org/10.7717/peerj.6595

O'Boyle, E. H., Humphrey, R. H., Pollack, J. M., Hawver, T. H., & Story, P. A. (2011). The relation between emotional intelligence and job performance: A meta-analysis. *Journal of Organizational Behavior, 32*(5), 788-818. https://doi.org/10.1002/job.714

Paton, W. (1993). *Man and Mouse: Animals in Medical Research*. Oxford: Oxford University Press.

Paul, E. S. (2000). Empathy with animals and with humans: Are they linked*? Anthrozoös, 13*(4), 194-202. https://doi.org/10.2752/089279300786999699

Paul, E. S. (2005). Love of pets and love of people. In A. L. Podberscek, E. P. Paul, & J. A. Serpell (Eds.), *Companion animals and us. Exploring the relationships between people and pets* (pp. 168-186). New York, NY: Cambridge University Press.

628 Petrides, K. V., Furnham, A., & Martin, G. N. (2004). Estimates of emotional and psychometric
629 intelligence: Evidence for gender-based stereotypes. *Journal of Social Psychology, 144*,
630 149–162. https://doi.org/ 10.3200/SOCP.144.2.149-162
631 Pfattheicher, S., Sassenrath, C., & Schindler, S. (2015). Feelings for the suffering of others and the
632 environment: Compassion fosters pro-environmental tendencies. *Environment and*
633 *Behavior, 48*(7), 929–945. https://doi.org/10.1177/0013916515574549
634 Preston, S. D., & de Wall, F. B. (2002). Empathy: Its ultimate and proximate bases. *Behavioral*
635 *and Brain Sciences, 25*, 1-72. https://doi.org/10.1017/S0140525X02000018
636 Ramos, N. S., Fernandez-Berrocal, P., & Extremera, N. (2007). Perceived emotional intelligence
637 facilitates cognitive–emotional processes of adaptation to an acute stressor. *Cognition and*
638 *Emotion, 21*, 758-772. https://doi.org/10.1080/02699930600845846
639 Ruckert, J. H. (2016). Justice for all? Children's moral reasoning about the welfare and rights of
640 endangered species. *Anthrozoos, 29*, 205–217.
641 https://doi.org/10.1080/08927936.2015.1093297
642 Salovey, P., Bedell, B., Detweiler, J. B., & Mayer, J. (1999). Coping intelligently: Emotional
643 intelligence and the coping process. In C. R. Snyder (Ed.), *Coping: The psychology of what*
644 *works* (pp.141-164). New York: Oxford University Press.
645 Salovey, P., Mayer, J. D., Goldman, S. L., Turvey, C., & Palfai, T. F. (1995). Emotional attention,
646 clarity, and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. In
647 J. W. Pennebaker (Ed.), *Emotion, disclosure, and health* (pp. 125–154). Washington, DC:
648 American Psychological Association.
649 Salovey, P., Stroud, L. R., Woolery, A., & Epel, E. S. (2002). Perceived emotional intelligence,
650 stress reactivity, and symptom reports: Further explorations using the trait meta-mood
651 scale. *Psychology and Health, 17*, 611-627. https://doi.org/10.1080/08870440290025812
652 Schieman, S., & Van Gundy, K. (2000). The personal and social links between age and self-
653 reported empathy. *Social Psychology Quarterly, 63*, 152–174.
654 https://doi.org/10.2307/2695889
655 Schutte, N. S., Malouff, J., Bobik, C., Coston, T., Greeson, C., Jedlicka, C., & Wendorf, G. (2001).
656 Emotional intelligence and interpersonal relations. *Journal of Social Psychology, 141*,
657 523-536. https://doi.org/10.1080/00224540109600569

Serpell, J. A. (2004). Factors influencing human attitudes to animals and their welfare. *Animal Welfare-potters Bar then Wheathampstead, 13*, 145-152.

Smith, A. (2006). Cognitive empathy and emotional empathy in human behavior and evolution. *The Psychological Record, 56*, 3-21. https://doi.org/10.1007/BF03395534

World Medical Association (2008). *World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects*. Retrieved from https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/

Young, A., Khalil, K. A., & Wharton, J. (2018), Empathy for animals: A review of the existing literature. *Curator, 61*, 327-343. https://doi.org/10.1111/cura.12257

Table 1(on next page)

Table 1. *Means, standard deviations (SD), and t-test for gender differences.*

1 **Table 1**. *Means, standard deviations (SD), and t-test for gender differences.*

	Total sample		Men		Women			
	Mean	SD	Mean	SD	Mean	SD	t-test	Cohen´s d
Attention (TMMS)	3.35	.88	3.15	.89	3.45	.86	-3.49**	0.34
Clarity (TMMS)	3.16	.83	3.24	.83	3.12	.84	1.59	0.14
Repair (TMMS)	3.17	.76	3.23	.74	3.15	.77	1.11	0.11
Perspective-taking (IRI)	3.57	.67	3.46	.68	3.63	.66	-1.21**	0.25
Fantasy (IRI)	3.23	.70	3.06	.66	3.32	.70	-4.01**	0.40
Empathic concern (IRI)	4.00	.61	3.66	.67	4.16	.50	-9.19**	0.85
Personal distress (IRI)	2.40	.77	2.25	.75	2.49	.77	-3.19**	0.32
Animal empathy (AES)	148.39	28.28	139.84	27.03	152.85	27.97	-4.85**	0.47

* $p < .05$, ** $p < .01$

2

Table 2(on next page)

Table 2. *Pearson's correlations between EI and empathy for humans in the total sample.*

Table 2. *Pearson's correlations between EI and empathy for humans in the total sample.*

	2	**3**	**4**	**5**	**6**	**7**	**8**
1.Attention (TMMS)	.27**	.06	.32**	.25**	.35**	.20**	.13**
2.Clarity (TMMS)	-	.35**	.12*	.10*	-.02	-.26**	-.04
3.Repair (TMMS)		-	.13**	.24**	.08	-.24**	.07
4.Perspective-taking (IRI)			-	.25**	.33**	-.11*	.13**
5.Fantasy (IRI)				-	.35**	.22**	.20**
6.Empathic concern (IRI)					-	.16**	.29**
7.Personal distress (IRI)						-	.03
8. Animal empathy (AES)							-

* $p < .05$, ** $p < .01$

Table 3(on next page)

Table 3

Table 3. *Pearson's correlations between EI and empathy for humans and animals according to pet ownership.*

Table 3. *Pearson's correlations between EI and empathy for humans and animals according to pet ownership.*

	Attention (TMMS)	Clarity (TMMS)	Repair (TMMS)	Perspective-taking (IRI)	Fantasy (IRI)	Empathic concern (IRI)	Personal distress (IRI)
Animal empathy (AES) (Pet owners)	.18**	-.02	.14*	.13*	.27**	.40**	.05
Animal empathy (AES) (Non-pet owners)	.11	-.04	.02	.14*	.12	.15*	.04

* $p < .05$, ** $p < .01$