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PhD THESIS ABSTRACT

**HELPING ANIMAL ENDANGERED SPECIES.
ATTITUDINAL, COGNITIVE AND
EMOTIONAL FACTORS INVOLVED**

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Key words: *conservation psychology, attitudes towards animals, anthropomorphism, empathy to animals, intention to donate, biodiversity conservation.*

CHAPTER 1. THEORETICAL FRAMEWORK

1.1. The context of interaction between humans and other species

All human societies coexist with non-human species and their interactions are extremely varied, ranging from hunting, to parasite, or partnership (Ingold, 1994). There is a wide range of behaviors that people do to benefit from other species, ranging from invasive interventions on animals in scientific research, to raise them for fur or meat, and to raise them as pets, all this describing the broad term of animal treatment (Knight & Herzog, 2009). By studying human-animal relations we seek to improve the well-being of humans and animals. The field study of human-animal interaction (HAI) is relatively new. The most widely circulated explanatory theories in the HAI are biophilia hypothesis (Wilson & Kellert, 1993), social support theory, attachment theory, social-cognitive theory and a variety of models generated from these theories, or from another conceptual frameworks. The need to adopt a common theoretical framework was brought up several times in human-animal interaction research (Poresky, 1989, Barba, 1995; Wilson, 1994; Serpell, 2009). Studies in the field of HAI can be assigned to one of the main categories of interest: the effects of interaction with non-human species on health, well-being and social relationships of people, people's attitudes towards animals and their treatment and policies and practices regarding non-human animals in our society (Knight & Herzog, 2009). Study of human-animal interactions can give us new perspectives on the human psyche, the mechanisms and processes that characterize it and it can help us improve the well-being of humans and non-human species.

1.1.1. Beneficial effects of interaction between humans and animals

Many of the benefits of close relationships between people and their pets have been proven and recognized by the scientific community (for a summary see Wells, 2009). Benefits were found in the cardiovascular system (eg.: Wilson, 1994) and it has been proven that animals have a role in relieving anxiety and stress (eg Beard, 1995; Apostol & Rusu, 2012). Also, it seems that people who have pets are happier, more relaxed, more energetic and less lonely (Beard, 1995). The presence of pets increases perceived social support and helps improve social relationships (for eg: Wilson, 1994). These benefits have contributed to the use of this resource in health care. Animal-assisted therapy and activities is one of the domains where animals are used in therapeutic interventions aimed at improving psychological, physiological, or social problems (for a summary see Fine, 2000; Chandler, 2005).

1.1.2. Policies and practices regarding non-human animals in society

Research in the HAI field was also generated from the need to understand the impact they have on society and their implications in public interest spheres such as developing policies and practices regarding the use of animals. Human- animal interaction is a social problem due to its spread in many areas of human life. Social activism in the field of animal protection is an area of interest for researchers in the field of HAI. Investigating attitudes towards animals and emotional and cognitive factors that contribute to their formation or modification, is a first step to better understand, improve and support this social movement.

1.1.3. The conservation of non-human species. Conservation psychology, an emerging field of study.

Currently, global biodiversity conservation is an issue that arouses an increasing interest and is equally a concern. According to the Red ListTM of International Union for Conservation of Nature (IUCN), biodiversity destruction has today a higher pace than ever, many species reaching critical thresholds of the number of individuals, while other disappearing (IUCN, 2012). The researchers assessed the global costs of biodiversity conservation and found an urgent need to significantly increase investment to protect global biodiversity (McCarthy, Donald, Scharlemann, et al., 2012). A significant part of the funding comes from non-governmental profile organizations worldwide after organizing campaigns to raise funds from individuals. Relatively little research is able to help activists to find out what the main factors that should be taken into account when seeking funds for animal conservation are. **Conservation psychology** is an umbrella field of research, applying principles, theories and methods from various branches of psychology in order to understand and solve problems related to human aspects of conservation. This field is characterized by focusing on a common goal, namely to encourage people to act with care and consideration for the natural environment (Saunders, 2003). American Psychological Association, via Division 34 (*Society for Environmental Population and Conservation Psychology*) defines conservation psychology as the scientific study of relationships between humans and the rest of nature, aiming to encourage conservation of the natural environment. Given that most environmental problems are caused by human behavior, their solution lies in changing those behaviors (Saunders, Brook, & Myers, 2006); and this is why psychologists can play an important role in conservation efforts. However, relevant research in this area is rare and scattered in the different disciplines, and there is a clear and continuing need for its replication in a structured way.

1.2. Attitudes towards animals and their treatment

Most researches contributing with their results to the HAI field are investigating attitudes towards animals and attitudes to animal directed behavior (Serpell, 2004).

1.2.1. The structure of attitudes

Attitude is a psychological tendency expressed by evaluating an entity as favorable or unfavorable (Eagly & Chaiken, 1993) and has a structure consisting of three components: the affective component, the cognitive one and the behavioral response tendency. There are several models explaining the multidimensional structure of attitudes towards animals. For example, Serpell (2004) proposed a two-dimensional model of attitudes towards animals, with the main motivational factors: affection (emotional response of humans towards animals) and utility (people's perception on the instrumental value of animals) and from their interaction may appear attitudes in order to support tensioned and paradoxical interaction that sometimes people have with animals. In the model proposed by Hills (1993) the three-dimensional structure of attitude transpires much better, because in addition to the affective and cognitive (values/ beliefs) components, appears what we believe to be the conative behavior component: the interest in the use of animals for their own benefit.

1.2.2. Types of attitudes

Originally, attitudes towards animals were considered a unitary concept, and the first measurement scales relate to attitudes toward animals in general (for review see Poresky, 1989; Taylor & Signal, 2009). Subsequently, researchers interested in HAI developed measures to better meet their research needs, distinguishing between different types of animals, from pets to wild animals, farm animals or pests.

1.2.3. Factors influencing the formation and/or modification of attitudes

Research in the field of attitudes towards animals has managed to bring into focus a large number of variables influencing to some extent how people think and feel in relation to other species. Thus, the factors influencing attitudes toward animals may be specific to animals, humans or culture.

1.2.3.1. Non-human characteristics that influence people's attitudes

Since the species can be highly variable both in terms of appearance and behavior, and that these features are intrinsic to the animal, people clearly make the difference between them basing on these issues and it is likely that they form the initial basis of attitude towards species. For example, people have a more favorable attitude toward animals as they are phylogenetically closer to them (Plous, 1993; Tisdell et al., 2004) and as they are perceived as aesthetically more pleasant (Gunnthorsdottir, 2001; Batt, 2009).

1.2.3.2. Individual factors influencing attitudes

Women generally have more favorable attitudes towards animals and more unfavorable to their mistreatment or use (Herzog, 2007). Young adults tend to have more favorable attitudes than those of older age, higher level of education is associated with better attitudes and people living in rural areas have less favorable attitudes and their attitudes are oriented towards the utility aspect (Kellert & Berry, 1980). People who have or have had pets in childhood generally have a better attitude towards animals and are more concerned with how they are treated (Serpell, 2004; Hills, 1993). Certain personality traits such as extraversion and agreeability, along with a high level of empathy, predict more favorable attitudes toward animals (Furnham et al., 2003). The more information a person has about them, the more favorable his opinion about the animals will be (Serpell, 2004).

1.2.3.3. Cultural factors that contribute to the formation/ change of attitudes

The major intercultural differences arising in attitudes towards animals show that they depend to some extent on cultural heritage (Serpell, 2004) and are acquired by social learning and exposure to a particular type of experience. So when our goal is to change people's attitudes towards animals, it is important to consider a certain population's cultural representations of different species and to try using those means of communication that offers us the greatest advantages in the intervention that we want to make.

1.3. Gender, anthropomorphic thinking and empathy in relation to attitudes towards animals and their treatment

1.3.1. Gender differences observed in the HAI field

We can observe significant differences between women and men in some areas of the HAI, especially when attitudes are considered. For example, a study conducted in 11 countries in Europe and Asia has shown that women have more favorable attitudes toward animal rights and welfare than men (Phillips et al., 2011). A meta-analytic research of 18 studies on the subject found a moderate effect size for the differences in attitudes, a small one regarding differences in attachment and a large one at the behavioral level (Herzog, 2007). Differences between the sexes may help to understand the factors responsible for attitudes and behaviors in favor of, or against animals and, once we have determined them, we will be able to know how to intervene in order to change them.

1.3.2. Anthropomorphic beliefs about non-human animals

Anthropomorphism, meaning attributing animals mental experiences is "a common phenomenon cross-culturally, specific to certain species and almost irresistible" (Eddy, Gallup, & Povinelli, 1993, p 88). People attribute these experiences unequally: the closer phylogenetically they are to us, the more we tend to attribute them cognitive-emotional skills (Eddy et al., 1993; Herzog & Galvin, 1997; Knight et al., 2009). Anthropomorphism is

considered to be important because the more a person is convinced that some animals can think and feel like humans, the more favorable attitudes to their ethical treatment will he or she show. This relationship seems to depend on the phylogenetic proximity between species: the higher the degree of relatedness, the more we tend to assign better cognitive skills to animals from those species, and so to support ethical behavior towards them.

1.3.3. Empathy to non-human animals and empathy to humans

The working definition of empathy adopted in the present research is: the ability to understand and share the emotional state of another person or another non-human animal. Empathy has a multidimensional structure that is centered on two components: understanding (cognitive component) and sharing the mood (affective component) of other individual (Eisenberg, 2000). The ability to empathize or to feel compassion for others is important because it directs altruistic behaviors (e.g.: Eisenberg, 1988). There are studies that have investigated the relationship between empathy and attitudes to animals, and found an association between a high capacity to empathize (with other people) and highly favorable attitudes towards non-human species (e.g.: Ascione, 1993; Preylo & Arikawa, 2008). The relationship between these variables seems to be influenced by people's beliefs about the ability of animals to have human-like cognitive and emotional experiences (Hills, 1995, Knight et al., 2004) and by the degree of idealism and absolutism in a person's moral beliefs (Galvin & Herzog, 1992; Wuensch, Jenkins & Pote, 2002).

1.4. From attitudes to behavior: Theory of planned behavior (Ajzen & Fishbein, 1980; Ajzen, 1991)

The link between attitudes and behavior has been extensively studied: it is known that an attitude towards behavior and towards the object targeted by different behaviors is one of the predictors of behavior (e.g., Armitage & Christian, 2003). Other psychological factors such as self-efficacy, vested interest or context related factors, such as the way a demand is presented, can have a greater influence on a person, or can determine behaviors that are contradictory to attitudes. It is important to know these factors, as it can guide a fairer and more efficient investment of effort in a campaign. To the factors considered important in predicting the donations for non-human species that we extracted from the literature on HAI, we can add factors that have been proven to be important predictors for altruistic behaviors, but oriented towards members of the same species and ecological behaviors.

1.4.1. Theory of planned behavior (TPB) (Ajzen & Fishbein, 1988; Ajzen, 1991)

It is one of the first theories that bring into question the importance of the mediator and moderator factors in explaining the link between attitudes and behavior. *Behavioral intention* is the main predictor of behavior and mediating factor between attitude and behavior. This refers to all motivation necessary to achieve behavior reflecting the individual decision to follow a course of action. Behavioral intention is influenced by *attitudes toward the behavior* (positive or negative overall evaluation of the behavior) and by *subjective norms*, that result from perceived pressure coming from the significant others. Since an action may depend not only on individual's volitional control, but also on external factors, the authors took into account the introduction of the mediating factor of *perceived behavioral control*. Hence, the easier performing a behavior is perceived to be, the more likely the individual has the intention to conduct it. TPB has been implemented and proven to be useful in different disciplines, from health care, information technology, sociology, to social policy and it represents the dominant theoretical model in health psychology. This theoretical model has not yet been specifically applied to donation behavior aiming to protect endangered species. For this reason, we sought closest examples that could give us useful information: prosocial behaviors such as donations and environmentally friendly behavior.

1.4.2. Theory of planned behavior constructs in the context of investigating altruistic behavior

There are few studies that apply the above-mentioned model to the prosocial donations domain (e.g.: Anker et al., 2010; Pilliavin, et al., 2009). Studies aiming blood, marrow and organ donation or voluntary behavior, found that TPB is a good explanatory model for this type of behavior. These studies provide a good starting point for conceiving a measurement instrument for the multidimensional structure of attitudes towards donating money for conservation. At the same time, they also offer us the empirical basis for formulating hypotheses regarding the weight of affective and cognitive dimensions of attitude and its valence in predicting intention to donate funds for conservation. In addition to attitudes, both self-efficacy and perceived behavioral control are important predictors of intention to donate (Anker et al., 2010).

1.4.2. Theory of planned behavior constructs in the context of investigating environmentally friendly behavior

Research in environmental psychology explains the relationship between the level of environmental knowledge, attitudes towards the environment and motivations and behaviors to combat climate change (de Frutos & Egea, 2011). The model tested in this research highlights the following relations: positive attitudes towards climate change is the only direct predictor of environmentally friendly behaviors; knowledge level and eco- friendly motivations directly influence the attitudes and have a greater effect on positive attitudes than on the negative ones; the most important moderating variables are age and country-specific values.

1.5. Summary

The current approach falls in the conservation psychology domain, since, by using theoretical and methodological principles of related disciplines of psychology, it aims at discovering fundamental new information and strategies to contribute to biodiversity and natural resources conservation in order to improve the quality of life of humans and other non-human species. Competent organizations draw attention to the severity of the problems

related to the destruction of biodiversity, the conservation costs and the consequences of ignoring these circumstances. In order to obtain public support, conservation professionals need to know the socio-psychological factors that influence and determine the public's altruistic behavior towards endangered non-human animals. Our subject of interest can be approached from different perspectives, since we acquire valuable information from various fields of study. For this reason we felt the need for integration and systematization of what is now a collection of fairly extensive and rich knowledge. Thus, theoretical models, constructs and empirical data about the conservation of non-human animals were extracted and systematized from the human-animal interaction field of study, i.e. social, cognitive and environmental psychology. Although the link between attitudes and behavior towards the object of attitudes is generally well documented and empirically supported, this is not the case in the HAI field, or conservation psychology. The theory of planned behavior gives us the necessary theoretical support for studying the relationship between attitudes towards animals, perceived behavioral control and self-efficacy and behavioral intention to help endangered animals. By analyzing the literature we tried to find out to what extent it is possible and necessary to add some specific variables to the established theoretical model. We identified the possibility to include, in addition to the main constructs of the model, the variables that seem to contribute to the prediction of attitudes towards animals: anthropomorphic thinking and empathy towards animals.

CHAPTER 2. AIMS, OBJECTIVES AND RESEARCH APPROACH

This research **aims** to support and / or stimulate helping behaviors directed toward endangered animal species. This requires in-depth understanding of the factors and processes that influence and determine the decision of individuals to support conservation of endangered animal species. Since most environmental and wildlife extinction issues are caused by human behavior, a detailed understanding of the way these behaviors can be modified is required. As we are dealing with a complex behavior, to whose occurrence a variety of factors can contribute, it is necessary to identify the possible antecedents and to determine which are the most relevant, to understand their dynamics and processes and, finally, to test their effect in an applicative framework. The results of this research approach should help organizations know their target audience and educate, persuade and use it to protect biodiversity. Since these studies are part of the psychology conservation field, which aims to encourage the conservation of the natural environment and to improve the quality of people and other species' life, we considered it necessary to constantly emphasize the applied aspect of the results obtained in this research.

Thus, **the first objective** of this research was to investigate the psychological and socio-demographic factors that are associated with favorable attitudes towards animals and the extent to which they contribute to their prediction (**Study 1**). For this, it was necessary to adapt and validate for the Romanian population three assessment tools for the following constructs: anthropomorphic thinking, empathy to animals and attitudes towards animals. An explanatory model for the prediction of attitudes towards animals has been established. Furthermore, gender and anthropomorphic thinking differences, appeared in the attitudes and empathy towards animals led to the establishment of mediation models that contribute to the explanation of the relationship between these variables.

The second objective of this thesis was to investigate factors that contribute to people's intention to financially support biodiversity conservation efforts. The factors investigated, according to the theoretical model adopted (**Study 2**), were attitudes towards donating money for conservation, perceived behavioral control and self-efficacy in relation to this behavior and past donations. To assess these constructs, specific measurement instruments have been developed and tested on the Romanian population. In the predictive model of intent to donate for conservation, the psychological and socio-demographic factors investigated in previous studies were integrated.

Next, a **third objective** was to investigate the role that some of the psychological factors investigated in the previous studies play in determining helping behaviors. The intervention of two main factors was examined in the experimental studies: the animal humanization and the empathy towards it. In **Study 3**, we analyzed the way in which the humanization level of an endangered animal and its belonging to a certain class (mammals vs. reptiles) lead to changes in people's willingness to donate money for that particular specie. Were developed four messages designed to attract public support for a fictional animal species in danger of extinction, in which we manipulated the humanization level and the class, and then we measured the level of support provided by the participants, depending on the variant they read. Given the unexpected results of this experiment, in **Study 4** a similar experimental procedure was applied, intended to clarify the impact that the description of the animal (anthropomorphic vs. neutral) has on the amount of money donated, depending on the enabling of empathic feelings (high level of empathy vs. low level of empathy).

This thesis is **structured** in accordance with the motivation and objectives above. Thus, we first sought to identify factors that may be influencing the animal helping behavior and to establish a theoretical model which would enable an efficient study (*Chapter 1*). Next, we adapted, developed and validated on the Romanian population the assessment tools necessary for the study of the investigated constructs. Anthropomorphic thinking, empathy and attitudes to animals, perceived behavioral control and self-efficacy, past donations and attitudes to donation explain to a considerable extent the changes in the intention to donate money to conservation (*Chapter 3*). Finally, we investigated how the animal's humanization can influence the willingness of people to donate money for its conservation, depending on the class of the animal and on the expressed empathy level (*Chapter 4*).

Methodology was varied so that it met the research needs. First, the *critical analysis* of the *specialized literature* allowed the identification of impact factors for the human-animal interaction, the evaluation and choice of trustworthy measure instruments and the establishment of a suitable theoretical model. The validation of the scales and the testing of the predictive models were made in a *transverse correlational design*. Two *experimental studies* were designed to clarify the type of relationship between the animal's humanization, the empathy towards it and the willingness to protect it from extinction.

CHAPTER 3. PSYCHO-SOCIAL FACTORS THAT INFLUENCE THE INTENTION TO SUPPORT BIODIVERSITY CONSERVATION

In this chapter the possible influence that a series of psychological and socio-demographical factors may have on the intention to financially support conservation efforts is evaluated. The first study focuses on a detailed investigation of the attitudes towards animals and on the influence that empathy to animals, anthropomorphic-type cognitions and gender has on them. The second study from this chapter aims at establishing which psychological factors predict individuals' intention to financially contribute to the conservation of species. The predictive model obtained from these two studies represents an important theoretical and empirical starting point for the subsequent investigation of the factors that may be manipulated in order to change the intention and animal helping behaviors.

3.1. STUDY 1. INDIVIDUAL DIFFERENCES IN ATTITUDES TOWARDS ANIMALS. THE ROLE OF GENDER, ANTHROPOMORPHISM AND EMPATHY

3.1.1. Introduction

Attitudes towards animals are the most investigated psychological construct in the studies about the interaction between humans and other species (Serpell, 2004). The predictive value of attitudes related to different types of interactions with animals is recognized and investigated by interested researchers (e.g. Taylor, & Signal, 2009). Nevertheless, the attitudes towards animals have not yet been studied in the context of species' conservation. Before introducing this variable in the research related to conservation and helping behaviors towards wild animals, we considered necessary a clarification of the concept and of the dynamics of the factors that influence it. Furthermore, it was necessary to identify suitable instruments for the evaluation and to adapt them for Romanian speaking population.

The main objective of the present study is to investigate the relations that appear between the attitudes towards animals and their treatment and certain personal factors that have been proved to have a relationship with them. Within this research we attempt to shed more light in what concerns the role of individual differences in the level on empathy to animals and the anthropomorphic type attributions within the variations that appear in the attitudes towards animals.

This is probably the first large scale study on this theme conducted on a sample of Romanian population. Taking into consideration the socio-cultural factors that usually influence the formation and the maintenance of the attitudes towards animals and their treatment, the present study aims at replicating some findings observed until now almost exclusively on western populations.

3.1.2. Specific Objectives

Specific objective 1

Firstly, we aim at investigating the link between the socio-demographical factors, the level of empathy towards animals and anthropomorphism and the attitudes towards animals and their treatment.

Specific Objective 2

Determining the most important predictors of attitudes towards animals and establishing their importance, taking into consideration the contribution of each of them on predicting the variance of the scores.

Specific Objective 3

The clarification of the mechanism through which gender influences the attitudes towards animals and the link between gender, anthropomorphism and the affective and cognitive components of empathy. Therefore, we aim at investigating whether the differences between men and women concerning the attitudes towards animals may be better predicted by gender differences at the level of empathy to animals.

3.1.3. Method

Design and procedure

In order to determine the way in which the targeted variables are associated and co vary we used a correlational transversal design. The data were collected online, and the access to participants was facilitated by the nongovernmental organization for protecting the environment WWF Romania. The participants received the invitation message through their personal e-mail address, in which they were re-directed towards the web-page of our study. Completing all the scales (almost 100 questions) lasted about 14 minutes.

Participants

In this research the answers of 2683 adult Romanian participants' were analyzed, all of them being supporters of an organization that protects the environment. Among these, 1665 were women (62%) and 1018 men (38%), aged between 14 and 77 ($M = 36.54$, $SD = 12.630$). The vast majority of the participants lives in urban areas (90%) and has a high level of education (73% have higher education). More than half of the participants in the study (56%) have one or more pets. About 22% of them have donated money for the conservation of animal species ($N = 624$).

Instruments

We asked the participants about their sex, age, labor market status, level of education, place of residence and monthly income and about owning a pet in the present or in the past. The scales used to measure the psychological variables were adapted from English language and can be accessed in the addenda of the extended thesis. The scales used were: **Belief in Animal Mind** (Hills, 1995); **Empathy to Animals Scale** (Powell, 2010) and **Attitudes to Animals Scale** (Herzog, Betchart & Pittman, 1991).

3.1.4. Results

Firstly, we have predicted that at the level of the psychological variables that have been measured there would be differences between the socio-demographical variables. In order to check the emergence and the direction of these differences we have conducted independent samples t-tests, for dichotomous nominal variables. Where significant differences were noticed the size effect has also been computed. In the sample we investigated women tend to have more favorable attitudes towards animals than men: $t(2681) = 13.904, p < .001. (d = .54)$. The results also suggest the existence of a strong effect of gender over the emotional component of empathy toward animals, with a tendency of women to be more empathic and to have more favorable attitudes toward other species ($d = .57$).

The participants who have one or more pets have significantly more positive attitudes toward the fair treatment of animals, compared with those who do not own pets, $t(2681) = 10.609, p < .001. (d = .41)$; they also have a high tendency to anthropomorphize animals ($d = .32$) and they assume more easily the point of view of an animal ($d = .64$), therefore to empathize with it.

To verify that each of the psychological and socio-demographical factors that we analyzed has a role in the prediction of the variance of the attitudes and which is the degree in this case, we have conducted a multiple hierarchic regression. We have discovered that some of the socio-demographical variables (**gender, pets**), and also anthropomorphism and empathy to animals constitute direct predictors of the attitudes towards animals and explain 33.6% of the variance of attitudes ($R^2 = .336$). **Anthropomorphic-type attributions** add to the explicative power of the model 8.8%, and the two sub-scales of empathy to animals represent the most important predictor for the attitudes toward animals. The affective and cognitive components of empathy to animals have different weights in the power of explaining the scores of the attitude scales' variance. The scale of Empathic concern (ETA-EC) is responsible for 27% of the AAS variance: $\beta = .338, t = 17.291, p < .001$, and the subscale of Perspective taking (ETA-PT) explains 18% of the total variance of the attitudes towards animals ($\beta = .192, t = 9.708, p < .001$).

We have assumed that gender influences the attitudes towards animals more through the impact that it has over the affective component than through the cognitive component of empathy to animals. We have tested this hypothesis in a multiple mediation analysis. The relationship between gender and attitudes toward animals is partially mediated by both of empathy's to animal components (Sobel test = 13.1, $p < .001$). Only 15% of the effect of gender over the attitudes is mediated by the capacity to empathize with the animals through assuming their perspective, the mediation effect of the affective component being significantly higher. Therefore, 52% of the total effect of gender on the attitudes to animals is mediated by the general tendency to preoccupy for animal's wellbeing and by the capacity to feel compassion towards it.

Moreover, the relationship between anthropomorphism and the attitudes towards animals is partially mediated by the capacity to empathize with animals, at both the cognitive and emotional levels. Therefore, 61% of the overall effect of anthropomorphism on the attitudes towards animals is mediated by the general ability to empathize with animals.

3.1.5. Conclusions and discussions

From our knowledge, this is the first ample study conducted about the attitudes towards animals on our population. Three instruments have been adapted for Romanian populations, which proved to have good internal consistency and served the present research. The *Attitudes to Animals Scale* (Herzog, et al., 1991) is probably the most widely used questionnaire for assessing the attitudes people have toward other species and their treatment in our society. Apart from a very good internal consistency ($\alpha = .85$), this scale proved to also have construct validity, because of its capacity to discriminate between the persons who previously had prosocial behaviors towards other species and others that have not declared such behaviors. The Belief in Animal Mind scale (Hills, 1995) and Empathy to Animals Scale (Powell, 2010) also had a good internal consistency ($\alpha = .69$, respectively $\alpha = .87$).

This has been the first study that allowed the examination of the relationships between empathy to animals (and not that towards humans), socio-demographical variables, anthropomorphism and attitudes towards animals. Because of its structure, the empathy towards animals scale allowed us to discover the different effects that two components of empathy have on attitudes and the relationships between these and anthropomorphism, and respectively, gender.

Following analysis we have found that gender differences in the attitudes towards animals are mainly due to the differences that occur in the emotional experiences (e.g. empathetic type) rather than to differences in cognitive level (such as anthropomorphic attributions, which seem to be a universal tendency). People who own or have owned pets turn out to be more empathetic and more prone to anthropomorphic attributions, unlike people who do not have a pet around the house.

Genders, having a pet, anthropomorphism and the two components of empathy to animals have a unique significant role in explaining the variance of values on the attitude scale. The percentage of variance explained (33.6%) is considerably higher than that obtained in previous studies (e.g. Taylor, & Signal, 2005), which leads us to believe that this is a pretty good explanatory model.

The present study provided additional information on variables that explain differences between men and women concerning the attitudes towards animals. As the first comprehensive study of its kind conducted on the

Romanian population, it brings valuable information about the concerned population's attitudes towards animals and psychological and socio-demographic factors that influences them.

3.2. STUDY 2. THE THEORY OF PLANNED BEHAVIOUR IN PREDICTING THE INTENTION TO FINANCIALLY SUPPORT BIODIVERSITY CONSERVATION

3.2.1. Introduction

With this study we aim to determine the most relevant factors that influence individuals' decisions to support efforts for the conservation of endangered animal species and the effective behavioral involvement in the fight for the cause. The link between attitudes and behavior toward animals has not been systematically studied. The Theory of Planned Behavior is a useful and informative instrument to study the factors that influence the occurrence, the modification and the maintenance of prosocial behaviors related to the environment (De Groot, & Steg, 2007).

Given the lack of structure in the theory of the HAI domain, the information that we hold about attitudes towards animals and their importance in the context of interactions between humans and animals and evidence from Social Psychology and Environmental Psychology on the factors that determine and maintain behavior, in this study we wanted to address the intention to donate money for the conservation of biodiversity and its determinant factors in the context of the Theory of Planned Behavior.

3.2.2. Specific Objectives

Determining the main predictors of intention to donate money for animal conservation and their relative importance, depending on each one's contribution to the variance of scores.

Examination of the structure of multidimensional attitudes toward donation and perceived behavioral control in the context of wildlife altruistic behavior.

Finally, we intend to investigate whether the basic model can be enriched with variables that were found to be relevant in relation to attitudes towards animals, depending on the distal predictors or moderators: socio-demographic characteristics, anthropomorphism and empathy to animals.

3.2.3. Method

Design and Procedure

This study is part of broader research, which includes Study 1 of this thesis. A transversal correlational design was used. Data were collected online, in parallel with those analyzed in the first study. The procedure is identical to the first research described above. Completing all scales (approximately 100 questions) took on average 14 minutes.

Participants

In this research the same sample ($N = 2683$) of Romanian adults as that described in the previous study of this thesis was used.

Instruments

In addition to socio-demographic data and the responses to the scales of anthropomorphism, empathy and attitudes towards animals, the following instruments were used for this research:

- *The Attitudes towards Donations for Conservation of the Species Scale* is an instrument that contains 24 items designed to measure people's multidimensional attitudes toward money donation for conservation. This takes the form of three questions (affective, cognitive and global components), each with eight attributes to be assessed (positive and negative valence).

- *The Perceived Behavioral Control and Self-Efficacy Scale* contains six items designed to measure behavioral control and self-efficacy related to donating money for conservation.

- *The Intention to Contribute Financially for the Conservation of Species Scale*. The instrument consists of five items designed to assess the extent to which subjects thought about it and aim to donate a certain amount of money to support conservation efforts.

- *Past Behavior*. We used two questions to determine whether the participants of this study have ever donated money to support biodiversity.

The measures used in this research are described in detail in the extended version of the thesis and presented in full form in the Addenda.

3.2.4. Results

Analyzing the Pearson correlation matrix (see Table 10 in the extended version of the thesis) it has been found that the variables included in the design co vary in different proportions. To verify that each of the psychological and socio-demographic factors included in the analysis has a role in predicting intentions and what the percentage is in each case, we performed several hierarchical multiple regression analyses.

The final model obtained ($F_{(6, 2676)} = 764.709, p < .001$) includes the following unique predictors with a statistically significant role in explaining the variance in scale scores intentions: perceived control over behavior, self-efficacy, past donations, positive attitudes towards donation, attitudes towards animals and empathy towards animals. This model is responsible for a total percentage of 63.1% of the variance of intention. When you control the effect of other independent variables, beliefs regarding the ease with which the behavior can be made has a unique contribution to the explanatory power of the model by 6.9% ($sr^2 = 0.069$) and those related to confidence in their own ability to conduct the behavioral are responsible for 13.6% ($sr^2 = 0.136$) of the variance explained. Among the

subscales of attitudes toward donation, only the one assessing positive attitudes and including the cognitive and affective dimensions contribute significantly to explaining the variance in intentions: $\beta = .118, t = 8.101, p < .001$. Past behavior seems to be a pretty significant predictor, accounting for 4.4% ($sr^2 = 0.044$) of the total variance explained by intention. The original theory was enriched, to a lesser extent, with two variables that were introduced based on the results from previous studies (empathy), but also based on the theory (attitudes towards animals). Thus, although attitudes towards animals ($\beta = .072, t = 5.088, p < .001$) are responsible for only 1% ($sr^2 = 0.009$) of the variance explained by the criterion variable, and empathy towards animals ($\beta = .053, t = 3.963, p < .001$) also contributes less than 1%, both variables increasing the explanatory power of the model obtained.

Gender, having a pet and anthropomorphism represents distal antecedents of the intention to support conservation, their effect being mediated by attitudes towards animals. Thus, 98% of the total effect of gender on intention is due to the effect of mediation of attitudes. Also, 41% of the effect owning a pet has on the intention of helping other animals is mediated by attitudes towards animals. Another mediation analysis conducted revealed that individual's tendency to anthropomorphize animals influence their intention to financially contribute to their protection, both directly, and through general attitudes towards animals.

3.2.5. Conclusions and discussions

Although it is known that at this moment the rate of species' extinction is very fast worldwide (IUCN, 2012), there are few studies that addressed this issue and that can be included under the umbrella of Conservation Psychology (e.g.: DeKay, & McLelland, 1996, Gunnthorsdottir, 2001). The lack of funds to support conservation efforts is one of the major problems that government or non-profit organizations face (McCarthy et al., 2012), and they ask the general public to supplement their resources. Cognitive, emotional and attitudinal or socio-demographic factors involved in the decision to support conservation must be known in order to be manipulated in persuasive or informative messages.

The developed instruments were based on both theoretical and empirical considerations proved to be safe and well served research' purposes.

In terms of socio-economic and psychological status, the donors have a different profile than those who have not donated: they have a higher level of education, live in urban areas, have higher incomes and own pets. Donors have more favorable attitudes towards animals and towards donations and more pronounced intentions to donate money in the future. This information may be useful in selecting target audience for fundraising campaigns for conservation. At the same time, they provide important information about the educational needs of less well educated and wealthy people.

There are several types of contributions that this research brings into the conservation psychology field: theoretical advances (PBT is a solid and informative theoretical for conservation and biodiversity preservation behaviors), methodological innovations (measurement instruments designed to capture the multidimensional structure of TPB variable); empirical information about socio-demographic and psychological characteristics of environmental supporters and of donors in our country, data regarding the most important factors that have an impact on individuals' intention to financially contribute to wildlife conservation. The knowledge acquired can be extremely useful in producing educational and awareness campaigns for the general public and, especially, it can be used to create fundraising campaigns for biodiversity conservation.

CHAPTER 4. CHARACTERISTICS OF ANIMALS AND COGNITIVE AND EMOTIONAL FACTORS CAUSING CHANGES IN WILLINGNESS TO PAY FOR CONSERVATION

4.1. STUDY 3. ANTHROPOMORPHISM, PHYLOGENETIC PROXIMITY AND WILLINGNESS TO PAY FOR CONSERVATION

4.1.1. Introduction

Research related to conservation of endangered species highlighted some animal features that can influence peoples' decision to help them. Researchers assume that people tend to have more favorable attitudes towards non-human species that belong to the class of mammals, at the expense of birds, reptiles, fish and invertebrates (DeKay, & McLelland, 1996; Eddy et al., 1993). It is believed that this preference can be explained using the Principle of similarity (Plous, 1993), according to which people tend to appreciate more the animals that are more similar to them in terms of their physical, cognitive, emotional, or behavioral features. This disparity in attitudes would explain the differences believed to arise in willingness to protect endangered species.

We know from the research about animal anthropomorphisation that people tend to anthropomorphize more mammals than birds and reptiles (Hills, 1995). Furthermore, a recent experimental study (Butterfield, Hill, & Lord, 2012) showed that participants who were asked to anthropomorphize a pet were more willing to assist it, than those who were not inclined to assign it particular human features.

Organizations that fight for conservation develop messages trying to precisely manipulate this tendency of people to attribute human qualities to non-human animals. The effect of this strategy has not yet been systematically investigated. So, assuming that anthropomorphic type attributions represent an important determinant factor underlying the change of both attitudes, and behavior towards animals, we decided to investigate this relationship in the context of willingness to support non-human animal conservation by donating money.

4.1.2. Specific objectives

We aimed to investigate the impact of both animal anthropomorphisation, and class to which it belongs on peoples' willingness to help protect it by donating money. Starting from the assumption that any possible differences

in attitudes and behaviors towards animals from different classes are based on preferred anthropomorphic attributions, we investigated the role of anthropomorphic priming in determining changes in intention to help animals.

4.1.3. Method

Participants

This research included 225 participants, of which 148 were women (65.8%) and 77 were men (34.2%), aged between 14 and 65 years old ($M = 36.32$, $SD = 12.611$). The vast majority of participants came from urban areas (90%) and has a very high level of education (70% have higher education). More than half of survey participants (60%) now have one or more pets. This is a convenience sample obtained from voluntary participation, following an invitation received by e-mail.

Design and procedure

In order to test the proposed hypotheses, we implemented a *within subjects bifactorial experimental design*. Our dependent variable is the willingness to pay for conservation. The manipulated variables are class and description of the animal. The independent variable animal class has two modalities: mammal and reptile and animal description varies between the two ways: anthropomorphic and neutral.

We also measured socio-demographic variables: gender, age, educational level, place of residence, owning a pet and trait anthropomorphism.

Data was collected online, after participants have accessed a direct link in the message from e-mail invitation. The software that we used allowed the randomization of participants in one of the 4 groups: Group 1 - mammal + anthropomorphic description, Group 2 - mammal + neutral description, Group 3 - reptile + anthropomorphic description and Group 4: reptile + neutral description. Participants read one of four messages that were presented as an article in a professional journal. Then people were asked to provide a sum of money that would be willing to donate for the conservation of animal they had just read about. Once they had completed the trait anthropomorphism scale, participants were informed about the true purpose of the study. Completing the procedure lasts about 5 minutes.

In this study we used **Belief in animal mind** scale (Hills, 1995), described in previous sections of this summary.

The **manipulation text** has been constructed by the author based on research about the humanization of pets (Butterfield et al, 2012). The text was presented as extracted from a popular magazine about nature, from the News on biodiversity section. In order to develop and test the text, we used two experts: a biologist and a psychologist. The four texts differ only in terms of animal class and attributes, or adverbs used in the description. For example, in the anthropomorphic version the fictional animal named tartoga is *shy* and *affectionate* with its cubs, while in the neutral version tartoga is presented as a *solitary* animal and *vigilant* with its cubs. Ten such animal attributes were generated and manipulated from one version to another. The text is a description of animal's behavior and habitat and of species issues related to survival. According to the news, the animal is declared by the IUCN to be endangered specie.

The dependent variable **willingness to pay for conservation** was measured using a forced-response question, where participants were asked to say how much of the total amount of 500 RON they would donate to save from extinction the tartoga specie (*Tartrix pavonia*) and how much are they willing to donate to other similar cases? The question software was set such that it is impossible to donate an amount greater or less than 500 RON.

4.1.4. Results

An analysis of variance with means comparisons between the four independent samples was performed in order to test the experimental hypotheses.

Hypothesis 1

1.a. The assumption that participants will donate on average as much money for a mammal, as to a reptile ($M_{G1,2} = 204.67$, $SD = 103.24$, $N = 106$; $M_{G3,4} = 212.94$, $SD = 106.25$, $N = 119$) is confirmed. The main effect of the independent variable animal class ($F_{(1, 224)} = .504$, $p = .478$) on the dependent variable is not statistically significant. So, if we don't consider the effect of animal description, the mere affiliation to a class or another does not lead the group participants to donate different amounts for mammals and reptiles.

1.b. We expected participants to donate on average more money to the animal described in anthropomorphic terms than for the animal described in neutral terms, and this hypothesis cannot be supported by the collected data. We cannot see a statistically significant effect of the independent variable animal description on the dependent variable: $F_{(1, 224)} = .007$, $p = .935$.

1.c. Finally, the most informative results come from testing the hypothesis that participants will donate on average more money for the mammal described in anthropomorphic terms and for the reptile described in anthropomorphic terms, than for the mammal described in neutral terms and the reptile described in neutral terms. We can see a statistically significant effect of the interaction between the two independent variables, animal class and description, on the dependent variable $F_{(1, 224)} = 5.514$, $p = .020$, therefore this hypothesis is confirmed and we can say that there is a 95% chance that differences observed ($M_{G1} = 218.97$, $SD = 103.37$, $N = 58$; $M_{G2} = 187.40$, $SD = 101.46$, $N = 48$, $M_{G3} = 196.17$, $SD = 111.52$, $N = 60$; $M_{G4} = 230.00$, $SD = 98.64$, $N = 59$) are due to experimental manipulation and not chance. Contrary to our initial expectations, when the description is anthropomorphic, people tend to donate more money for mammals than reptiles. In the neutral description condition reptile gets the most generous donation, as opposed to mammal.

Hypothesis 2

We assumed that participants' tendency to anthropomorphize animals will affect their performance in this experiment and we wanted to control for this possibility. We checked whether the effects observed modify their size when we deal only with subjects who have a medium level of anthropomorphism, or close to mean. A second analysis of variance was performed on the sample obtained by selecting participants who have an average level of anthropomorphism ($\pm 1 SD$). The statistically significant effects are the same: no significant main effect, a significant interaction effect. When we take into account participants with a medium level of trait anthropomorphism, the observed moderation relationship ($F_{(1, 138)} = 6.585, p = .011$) changes from a small effect size ($\eta^2 = .024$), to a moderate one ($\eta^2 = .047$).

4.1.5. Conclusions and discussions

The results reveal that the relationship between the type of description used in the message and the amount of money that participants are willing to donate to protect the specie is moderated by the class to which the animal belongs. Thus, the present experiment data show that the distinction between an anthropomorphic description of an animal and a neutral one is informative when seeking support for conservation of the species, only if the class to which it belongs is highlighted. Most times, this is inevitable: even if the animal affiliation to the class is not explicitly mentioned, people generally know how to automatically make this categorization.

These results suggest that the assumed cognitive mechanism of humanization works only in certain situations. In other words, people find it very easy to anthropomorphize mammals, but have difficulty anthropomorphizing reptiles. Thus, we speculate that the observed differences are due to the phenomenon of cognitive dissonance, which occurs when reading the text showing the anthropomorphized reptile, or the mammal described in neutral terms.

The experiment proves that anthropomorphizing animals through campaigns could be fruitful, but only for mammalian species. Also, it can be seen that people are willing to donate equally for reptiles and mammals, as long as the message is the right one.

4.2. STUDY 4. ANTHROPOMORPHISM AND EMPATHY IN WILLINGNESS TO PAY FOR CONSERVATION

4.2.1. Introduction

The fact that an anthropomorphic description generates altruistic behaviors towards mammals, but the lack of humanization has the same effect for reptiles, makes us believe that anthropomorphisation is not the most important mechanism responsible for changes in attitudes, or behavior. From previous studies we know that empathy is an essential factor underlying altruistic behavior (e.g.: Eisenberg, 2000). To our knowledge, the causality relation between empathy and helping animals has not yet been established in empirical studies. In light of this information, we believe it would be interesting to clarify the relationship between anthropomorphism and empathy towards animals in relation to the willingness to help the species. We can assume that there may be differences between the role that high and low empathy plays in the relationship between the description of animal and willingness to protect it. The difference between the way an animal is perceived and how it is presented may lead to conflicting effects. For this reason, a description in neutral terms could generate more favorable responses when empathy to animal is encouraged, while the effect of an anthropomorphic description could be enhanced by the intervention of empathy. In this context, it is necessary to determine what role empathy and anthropomorphisation of the animal play in determining helping behavior.

4.2.2. Specific objectives

In the study described here we aimed to investigate the impact of the ability to empathize with the animal on the relationship between anthropomorphisation of the animal and people's willingness to help protect it by donating money.

On the one hand, our objective was to clarify the effect of description on willingness to pay revealed in previous research.

On the other hand, we wanted to confirm the presence of differences in people's willingness to support the described animal species, depending on the degree of empathy suggested.

So, the objective we had was to clarify the role that both anthropomorphisation and empathy have in relation to animal helping behaviors.

4.2.3. Method

Participants

The research included 228 participants, of which 117 were removed from the initial analysis in order to ensure the control of potential confounding variables. Of the 111 individuals remaining in the final analysis, 76 were women (68.5%) and 35 men (31.5%), aged between 17 and 68 years old ($M = 39.21, SD = 13.21$). The vast majority of participants came from urban areas (89%) and has a very high level of education (70% have at least bachelor's degree). More than half of survey participants (63%) now have one or more pets, and most of them (85%) declare they have had at least one in the past.

Design and procedure

To test the proposed hypotheses, we implemented a *bifactorial experimental design with independent samples*.

The dependent variable is **willingness to pay for conservation** and is operationalized, as in the previous study, based on a prime number, which denotes a sum of money. The manipulated variables are the description of the animal and the level of empathy. The independent variable **animal description** varies between the two ways: anthropomorphic and neutral. The variable **level of empathy** has two modalities: high level of empathy and low level of empathy.

In order to obtain a tighter experimental control, we primarily measured trait anthropomorphism and trait empathy. Socio-demographic variables: gender, age, educational level, place of residence and having a pet are considered label variables and are also controlled in the analysis.

The procedure in this study is very similar to the one described in the previous section: participants accessed a link from the invitation message received by e-mail. Once they have received some general information about the research, they answered the socio-demographic questions. On page two of the study, where the message manipulating the independent variables was displayed, a filter designed to ensure randomization of participants in one of the 4 experimental groups was set: Group 1 - anthropomorphic description + high empathy, Group 2 – neutral description + high empathy, Group 3: anthropomorphic description + low empathy and Group 4: neutral description + low empathy. After experimental manipulation, the filter was removed. Immediately after reading the assigned text, participants were checked to see if the manipulation had the desired effect. Then the measurement for the dependent variable followed, where participants were asked to provide a sum of money that they would be willing to donate for the conservation of animal they had just read about. Finally, subjects were asked to complete the anthropomorphism and empathy towards animals scales. Then they were informed about the true purpose of the study. On the last page, the experimenter explained the need to present false information and participants could find a contact address where they were free to ask questions or leave comments. Completing this procedure takes about 7 minutes.

Description of the instruments used

In this study we used the same measurement instruments of anthropomorphic thinking and empathy towards animals that we have used in previous research of this thesis: **Belief in animal mind scale** (Hills, 1995), respectively **Empathy to animals scale** (Powells, 2010).

The manipulation text was identical to the one used in the previous study (4.1.) and it was conceived after examining the research in the field (Butterfield et al, 2012; Huddy, & Gunthorsdottir, 2000). The only differences were replacing nouns "mammal" and "reptile" with "a new specie" and changing the name of the animal. The new common name of the animal (norseta) and the scientific name (*Narrus antiopa*) were chosen by the experts consulted, from a list of ten such names generated by the researcher, as a second option. The two texts differ only in terms of attributes and adverbs used in the description.

These text versions combine with **instructions for changing the level of empathy**. This manipulation method of the empathy level was taken from similar research and adapted to Romanian language (after van Lange, 2008). In the high empathy level condition, participants were asked to read the text (on animal norseta) trying to imagine as vividly as possible how the animal feels in the described situation and how its life is affected. The instructions for low empathy encourage readers to be as objective and detached while assessing animal's description.

The dependent variable **willingness to pay for conservation** was adapted from the procedure used by Tisdell et al. (2004) to assess the same construct and is identical to the one used in the previous experiment of this thesis.

4.2.4. Results

Our first step was to analyze the effect the manipulation of the independent variables animal description, and empathy had produced. Participants for whom the manipulation did not work at the minimum threshold established for one or both independent variables were eliminated from further analysis (8%). In the next step, to control the effect that too high or too low levels of trait anthropomorphism and trait empathy might have on the results, only participants with scores lying in a mean ($\pm 1 SD$) on both scales were kept in the sample. Thus the main group was obtained, in which the experimental hypothesis was tested ($N = 111$). Next, an analysis of variance of means with comparisons between the four independent samples was performed (ANOVA- Univariate).

1.a. The assumption that on average participants will donate more money for an animal described in anthropomorphic terms ($M_{G1,3} = 209.81$, $SD = 111.68$, $N = 52$) than for the one described in neutral terms ($M_{G2,4} = 212.63$, $SD = 98.34$, $N = 59$) was not confirmed ($F_{(1, 110)} = .001$, $p = .975$);

1.b. We also assumed that on average participants will donate more money in high empathy condition ($M_{G1,2} = 233.92$, $SD = 101.28$, $N = 60$) than in low empathy condition ($M_{G3,4} = 184.71$, $SD = 102.49$, $N = 51$), and this hypothesis is confirmed. The data obtained show a statistically significant effect of the independent variable empathy level on the dependent variable: $F_{(1, 110)} = 5.899$, $p = .017$;

1.c. Finally we tested the hypothesis that we will observe a statistically significant effect of the interaction between the two independent variables on the dependent variable, but the direction of this effect could not be predicted, therefore will be explored. This sub-hypothesis was confirmed, and we are able to say with a 95% probability that the differences in the amounts of money donated for conservation of the specie are due to simultaneous variance of the animal description and empathy level: $F_{(1, 110)} = 4.348$, $p = .039$.

The revealed interaction is actually different from the assumed one: when description is anthropomorphic, people tend to donate as much money regardless of the instructions on their empathy level. In contrast, in the neutral

description condition, empathy level plays a significant role because when high, donations are larger and when low donations are at their lowest value.

4.1.5. Conclusions and discussions

Contrary to our expectations, the mere description of the animal in anthropomorphic or neutral terms does not seem to have a unique effect on the decision to help it: participants have donated approximately equally for both humanized and neutral described animals. However, this relationship varies depending on whether the donor empathizes or not with the described animal. In this situation, significant differences in the amounts donated for the animal described in neutral terms when empathy was encouraged, and the animal described in neutral terms when an emotional distance was encouraged, appear. When the description is primed with anthropomorphic type designations, the empathy intervention seems to have no impact: an animal described in human terms to which empathic feelings are manifested earns as much money as the humanized animal to which donors are objective and distant. These results suggest the possibility that animal anthropomorphisation automatically triggers empathic reactions due to similarity with the described animal. If this assumption was correct, the lack of differences in the conditions of high and low empathy may be evidence that animal anthropomorphisation is a cognitive compensatory mechanism in the relation to helping behavior. It is therefore possible that, in certain circumstances, animal anthropomorphisation to be sufficient and to automatically trigger feelings of compassion for the animal and, as a consequence, to lead to altruistic behavior towards it. Thus, it is possible that in the low empathy condition, the anthropomorphic description to have compensated for the lack of empathy. These presumptions however require further investigation.

Corroborating the results of the two experiments, we conclude that animal presentation in neutral terms, as close as possible to the biological ones, supplemented by activating empathic feelings, would be the best solution. Developing messages that reach key aspects in a broad category of population underlies the construction of effective fundraising campaigns for biodiversity conservation. The principles discovered in this chapter's research, represent a significant contribution to knowledge in the field of conservation psychology, primarily through their practical applicability, but also for their methodological and theoretical implications.

CHAPTER 5. GENERAL CONCLUSIONS AND DISCUSSIONS

This study was aimed at stimulating helping behaviors directed toward endangered animal species. This approach is part of conservation psychology because, using theoretical and methodological principles of psychology related disciplines, has as a general aim the discovery of new information and strategies destined to contribute to biodiversity conservation and natural resources in order to improve the quality of people's and non-human species' lives. Since most environmental and wildlife extinction issues are caused by human behavior, detailed understanding of the way in which these behaviors can be modified is required. For this, it was necessary to understand in depth the factors and processes that influence and determine the decision of individuals to support conservation of endangered animal species.

The research approach of this thesis was based on a few central questions: (1) What are the socio-demographic and psychological factors that influence attitudes toward animals, what is their dynamic and which are the reliable instruments to measure them? (Study 1); (2) To what extent can be predicted the intentions of individuals to contribute financially to the conservation of biodiversity based on the attitudes, the perceived behavioral control and the self-efficacy and the past donations? (Study 2); (3) What is the role the animal anthropomorphisation and its class have on the availability of people to pay for the conservation of the species? (Study 3); (4) What is the impact that type of description of the endangered animals and the empathy induced level have on the willingness of individuals to donate money for this? (Study 4).

We will review next the main theoretical, empirical and methodological contributions brought by this thesis.

In Chapters 1 and 3, a systematic investigation of the factors and processes involved in forming and changing attitudes towards animals and in the intention to support conservation of endangered species is performed. The main **theoretical contributions** are based on:

- the systematization of psychological constructs, of the socio-demographic factors and of cognitive processes which are supposed to be essential in influencing the animal helping behavior (Chapter 1);
- introducing the theoretical model on which further research is structured: the Theory of planned behavior was used here for the first time to investigate the relationship between animal helping behaviors and the cognitive and emotional factors that have the capacity to influence them;
- testing the Theory of planned behavior as a theoretical valid model and useful in explaining the behavior of helping the animal endangered species (Study 2);
- completing the model by adding the specific factors of human interaction with animals (attitudes and empathy towards animals, anthropomorphism, gender and owning a pet) that contributes to the explanatory power of this complex and brings it specificity;

Also, the research approach brings several **empirical contributions**:

- empirical evidence of the mechanism underlying gender differences in the attitudes towards animals are presented for the first time (Study 1);
- the mechanism that explains the connection between owning a pet and expressing more favorable attitudes toward animals in general has been revealed for the first time (Study 1);
- Studies 1 and 2 represent the first empirical researches of attitudes towards animals and of the intention to support biodiversity made on the Romanian population;

- valid conclusions about psychological and socio-demographic characteristics of Romanian supporters of environmental protection and biodiversity conservation. This may be the target audience for the fundraising campaigns for biodiversity conservation in our country;
- the first empirical evidence of the relationship between the intention to donate money to conservation and attitudes toward donation, empathy and attitudes to animals, perceived behavioral control, self-efficacy and past donations (Study 2);
- evidence that the attitudes toward animals and the empathy to them play a significant role in influencing the intention to donate money to conservation;
- determining of the role of distal predictors for intention of anthropomorphism, gender and ownership of a pet and of the mediation relationship of attitudes towards animals (Study 2)
- the first empirical evidence that public support to mammals or reptiles is not different, but depends on the method of description (Study 3);
- highlighting the role that activating feelings of empathy can have when class membership is not involved, but the description of the animal varies (Study 4);
- inferring based on the results of the two experiments that animal presentation in neutral terms, accompanied by activation of empathic feelings would be a superior solution compared to the other methods investigated.

This research brings several **important contributions in terms of methodology**:

- selection, adaptation and validation on the Romanian population of three assessment tools important for the HAI study and the conservation psychology (Study 1): The Attitudes to Animals Scale (Herzog, et al., 1991), Belief in Animal Mind Scale (Hills, 1995) Empathy to Animals Scale (Powell, 2010);
- development of measurement tools adapted to the specific theme: Intent Scale to donate money to conservation of biodiversity, Attitudes to donations scale and Perceived behavioral control and self-efficacy scale. The instruments created proved to have good or very good psychometric qualities, and when they were empirically tested on an extended sample of the Romanian population (Study 2) showed a good conformity to the theoretical model under which they were developed;
- construction of experimental stimuli (Study 3, 4). Messages used in both experiments were designed in such a way as to allow investigation of the combined effect that anthropomorphized or neutral descriptions of the animal, its membership class and an increased or decreased level of empathy had.

The results of this research have both **theoretical and practical implications** in the study of human-animal interaction and conservation psychology. For example, explaining gender differences in the attitudes towards animals is useful because they can be arguments in favor of animal welfare education, they can help develop marketing strategies that differ depending on the target audience in fundraising and awareness campaigns.

Information on socio-economic profile of donors may be useful in selecting the target audience for fundraising campaigns for conservation. At the same time, it provides important information on educational deficiencies which may occur in people who have a less favorable socio-economical profile. They could be the target of information, education and support campaigns of the (non) governmental organizations.

The extremely exciting conclusion of Study 3 is that people are more receptive, so more generous to a message where the mammal is anthropomorphized and to one in which a reptile is described in neutral terms. Therefore, we can infer that anthropomorphisation, within average limits, is beneficial to the animal as it promotes the formation of positive attitudes and of altruistic intentions and behavior towards them. Therefore, its development should be encouraged also in the case of species that look less similar to people.

The information that people are willing to donate the same sums for reptiles and mammals can support organizations that sustain biodiversity conservation in developing the appropriate messages for the species they promote.

Enabling empathic feelings in the case of a neutral description of the endangered animal leads to the most generous donations from participants. This information can be useful both in the creation of messages in the campaigns to protect endangered animals and in the design of effective strategies to educate youth in the spirit of fair, ethic treatment of animals.

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