SOCIAL REJECTION AS A FORM OF BULLYING: THE EFFECT OF DOGS ON

STUDENTS' LONELINESS AND EMPATHY

by

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THESIS APPROVAL

"Social Rejection as a Form of Bullying: The Effect of Dogs on Students' Loneliness and Empathy" a thesis prepared by Athanasia Filippopoulou in partial fulfillment of the requirements for the Master of Arts degree in Applied Educational Psychology was presented October 27, 2021, and was approved and accepted by the thesis advisor, internal examiner and the School of Graduate and Professional Education.

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An Abstract of the Thesis of

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SOCIAL REJECTION AS A FORM OF BULLYING: THE EFFECT OF DOGS ON STU-DENTS' LONELINESS AND EMPATHY

Social exclusion is a form of bullying that causes a range of negative implications in students' personal and academic life. Bullies have been characterized by specific personality traits and lack of empathy. Thus, empathy can be used as a protective factor against bullying in intervention programs. Similarly, animals have a buffering effect against feelings of social rejection and a positive relationship with empathy through humane education programs. The aim of the present study was to investigate the effect of dog presentation on social exclusion and empathy on graduate and undergraduate students. In particular, this study explored the effect of dog presentation in terms of anthropomorphism, positive distraction and emotional connection on feelings of loneliness and affective and cognitive empathy. A total of 143 college students were recruited online and were randomly assigned to one of the four conditions. The results revealed that participants in the anthropomorphism group, in the positive emotional connection group, and in the positive distraction group experienced significantly less loneliness and more empathy compared to the control group. Additionally, participants in the anthropomorphism group, in the positive emotional connection group, and in the positive distraction group felt significantly more affective empathy compared to the control group. In contrary, only the participants in the anthropomorphism group felt significantly more cognitive empathy compared to the control group. Lastly, participants in the positive distraction group felt significantly less cognitive empathy compared to the

participants in the anthropomorphism group. Participants' pet attitude did not affect the

findings. Possible applications in the educational and clinical setting are further discussed.


*Keywords:* bullying, social exclusion, affective empathy, cognitive empathy, dog



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## EDUCATION

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MA in Applied Educational Psychology
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**DEREE – The American College of Greece**, Athens, Greece          09/2017 - 04/2020
BA in Psychology (The Open University)
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**DEREE – The American College of Greece**, Athens, Greece          07/2011 - 06/2016
BSc in Management &BSc in Business Administration (The Open University)
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Capstone 1: *"A Critical Review of Social Capital in Entrepreneurship Literature"*
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## PROFESSIONAL EXPERIENCE

**Counseling Fieldwork,** Dynamai, Pallini & Koropi          09/2021 - 12/2021
Early intervention for children with autism and ADHD based on ABA principles
(Supervisor – Dr. Pellios L., BCBA psychologist)

**Psychologist,**Asterion Draseis, Dafni          07/2021 - 08/2021
Socialization groups and semi-autonomous living skills for children and adults with Autism Spectrum, ADHD, and developmental disabilities

**Shadow Teacher– Special Education,**Kantza          07/2020 - 06/2021
Offered psychological interventions and tutor lessons to a child at the Autistic Spectrum (high-functioning) at home and school

**Counseling Fieldwork (part time),** Private Office, Nea Filadelfia          01/2020 - 04/2020
Psychological support for children with stress, anxiety, OCD, learning difficulties, autism, and ADHD
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**Managerial Support,** Paper Roll PC, Egaleo          09/2014 - 06/2020
Performed general office duties related to customers, suppliers, production and sales

**Counseling Fieldwork (part time),** Paidiko Ergastiri, Menidi & Faliro          05/2019 - 11/2019
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## SEMINARS & TRAINING

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illness and death, grief for senior people (20 hours)

***Applied Behavior Analysis (ABA),*** Mariolopoulos P. –Monorodi          05/2020
Training and application of ABA principles and the ABC model based on positive and negative reinforcement
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***Learning Difficulties Interventions,*** Samara M. - Protasis          04/2020
Training in the use of interventions for learning difficulties the based on Athina test (10 hours)

***Parent Effectiveness Training (PET),*** Papagos A.– Gordon Hellas          01/2020 - 03/2020
Training on parental skills based on Gordon's method (30 hours)

***Athina Test,*** Samara M. – Protasis          02/2020
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***Minnesota Multiphasic Personality Inventory (MMPI-2),*** Karaminas N. & Dr. Marini K.   01/2020 - 02/2020
– ISON Psychometrica
Training in the administration and interpretation (18 hours)

***Projective Psychological Testing,*** Tasiou A., Drositi A., Papadopoulou V. – ΔI.KE.ΨY          10/2019 - 01/2020
Training in the administration and interpretation of Thematic Apperception Test (TAT), Children's
Apperception Test (CAT), and Child Drawing Assessment (55 hours)

***Training in the Method "Positive Parents – Happy Children",*** Dr. Vourdas A.– ICPS          05/2019 - 06/2019
Training on parental workshops for children 3-8 years old with conduct problems, aiming to increase children's
positive behaviors, build interpersonal skills, resolve conflicts, and create positive discipline (32 hours)

***Drama Therapy for Children,*** Livaniou E.–ΔI.KE.ΨY          05/2019
Theories and application (14 hours)

***Play Therapy for Children & Adolescents,*** Dr.Karavella M. –ΔI.KE.ΨY          05/2019
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***CBT Techniques for Stress Management & Crisis Intervention,*** Tasiou A. -ΔΙ.ΚΕ.ΨΥ          04/2019
CBT techniques for stress management, post-traumatic stress, suicidality& self-harm behaviors (10 hours)

***Systemic Therapy: Theory and Practice,*** Dr. Soldatos M.–Deree          04/2018
Introduction to systemic theory, its principles and possible applications

***Psychosexual Disorders: Diagnosis and Treatment,*** Dr. Sotiropoulou V.-Deree          04/2018
Introduction to psychosexual disorders, its symptoms and possible treatments

## PRESENTATIONS

***Priming Effects on Prosocial Behavior: Is Altruism the Underlying Cause?***          06/2019
Filippopoulou A. & Sinos F.
5th Annual Student Research & Creative Arts Symposium – Deree, Poster Presentation
Psychology Instructor - Dr. Nega C.

## LANGUAGES

**English** (fluent), **German** (intermediate), **French** (intermediate), **Greek** (native)

## TECHNICAL SKILLS

SPSS IBM Software, MS Word, Excel, Access, PowerPoint, Publisher, Outlook, SingularLogic Enterprise ERP, Soft One ERP

## SOCIETIES & AFFILIATIONS

**Kifissia Stray Animal Club**, Volunteer
Took care of the animals (walks, feeding), found new homes and promoted online adoption and events (Puppy Days)

**ACG Cares**, Deree – The American College of Greece, Member
Promoted philanthropic events and took part in donations (e.g. food, clothes)

**Heritage Greece 2013 & 2014,** Deree – The American College of Greece, Volunteer
Helped international students discover their Greek heritage by participating in events and historical exhibitions

## INTERESTS

Travelling, Cooking, Biking

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Bullying is a worldwide phenomenon that affects many countries and creates negative implications on students. This could be easily seen from the prevalence rates among different countries. For instance, in U.S. schools, one in three children has been bullied (Smokowski & Kopasz, 2005), in England 24% of the students in primary schools experience victimization every week, while in Germany only 8% (Wolke et al., 2001). In Greece, among a sample of 1,758 students, ages 10-14 years old, 8.2% were victims, 5.8% bullies and 1.1% both bullies and victims (Sapouna, 2008). Similarly, another recent study in Greece with a sample of 466 participants, ages 18-40 years old, revealed that 24.5% of the participants had been traditional bullying victims (Papatsimouli et al., 2019). Moving internationally, a meta-analysis, conducted with 80 studies and with a sample of 335,519 students, found a mean prevalence rate of 35% for bullying (Modecki et al., 2014). Thus, bullying prevalence rates may vary across counties from 8%-75% in schools, depending on the country, the sample and the methods used (Çalışkan et al., 2019; Hymel, & Swearer, 2015, Peterson & Ray, 2006; Wolke et al., 2001). Gender differences are also present in bullying. In particular, a study conducted with secondary school students found that boys were bullied 1.5 times more than girls (Çalışkan et al., 2019). This could be explained from the fact that boys engage in more direct physical bullying compared to girls, who engage in indirect ways of bullying, such as rumor spreading (Pateraki & Houndoumadi, 2001). Even though many studies agree that boys bully more than girls (Camodeca et al., 2002; Iossi et al., 2013), some studies report no significant sex differences, indicating mixed evidence regarding gender and victimization rates at schools (Pateraki & Houndoumadi, 2001; Sapouna, 2008; Smith & Shu, 2000). Bullying does not seem to stop on one grade or another at school and has a continuum from primary school until college. More specifically, literature suggests that the likelihood of bullying increases by

1.2 times as the age of a student increases by one year (Çalışkan et al., 2019). Indeed, a study found that out of 25 students who were bullied in college, 18 (72%) have been also bullied in high school and elementary school respectively; while out of 26 bullies in college, 14 (54%) had been bullies in high school and elementary school (Chapell et al., 2006). Similarly, another study conducted with undergraduate students found that the negative effects of being a victim or a bully continued to exist in college, illustrating histories of bullying throughout school and college years (Adams & Lawrence, 2011). Even though the prevalence rates might differ from study to study depending on the sample, the instrument used and the method employed, it is an undeniable fact that bullying exists and can have negative implications on students. Based on a study conducted with 276 high schools, teasing and bullying were predictive factors of dropout rates for students across a period of 4 years (as cited in Cornell et al., 2013). In fact, victims of bullying suffer from absenteeism and poor academic performance (Juvonen et al., 2000; Smokowski & Kopasz, 2005). In other words, students may be afraid or reluctant to attend their classes when bullying occurs at school. Research has found that 7% of eighth graders in the U.S. have stayed at home at least one day per month in order to avoid bullying at school (as cited Smokowski & Kopasz, 2005). As a result, students miss days from school and this negatively affects their academic performance. A British study with students aged 8-13 years old found that victims of bulling had poorer academic competence compared to noninvolved children (as cited in Dake et al., 2003). Similarly, bullied middle school students aged 12-15 years old had lower GPA scores compared to other students (Juvonen et al., 2000). Moreover, students involved in school bullying had lower levels of school adjustment and school bonding (Dake et al., 2003). This means that they were less happy when they attended school, did poorly on schoolwork, had decreased desire to do well and often broke rules. However, this stance did not only affect performance at school but also it affected performance in employment settings later in life

(Smokowski & Kopasz, 2005) as well as in criminal records (Olweus, 2013). Based on a study, nearly 55% of a sample of 780 school boys bullies had at least one criminal conviction in 8 years time (Olweus, 2013). This indicates that bullying is a significant worldwide phenomenon with negative implications on students, both academically as well as later in their lives.

Several definitions exist in the literature about bullying; however all agree that bullying has specific characteristics and the people involved can take different roles. Bullying can be defined as a form of aggression where one or more children intentionally want to harm or disturb another child, who is not able to defend himself/herself (Smokowski & Kopasz, 2005). There are three main features that characterize bullying: intentionality, power imbalance, and repetitiveness. Indeed, the concept of an aggressive act underlies an intention or a desire to inflict harm or discomfort to another person (Olweus, 2013; Smokowski & Kopasz, 2005). The notion that the bully knows that his/her behavior will be unpleasant, distressing and unwanted from another person is usually enough to classify the behavior as intentional (Olweus, 2013). Secondly, a power imbalance should exist between the bully and the victim in terms of physical or psychological power. In other words, there is a perceived power imbalance between the bully and the victim associated with physical strength, difference in numbers and self-confidence, as well as popularity and status in the peer group as a way to establish dominance or maintain status (Olweus, 2013; Smokowski & Kopasz, 2005). Consequently, the victim is perceived defenseless and unable to reasonably support himself/herself. Thirdly, bullying behaviors tend to be repetitive (Olweus, 2013; Smokowski & Kopasz, 2005). In other words, they occur again and again and establish a pattern between the bully and the victim. In terms of the people involved and their roles, they can be categorized in four groups: bullies, victims, bully/victims, and bystanders. Bullies are the students who do the bullying on others (Wu et al., 2016). They tend to be aggressive or

destructive and enjoy dominating on other children (Carney & Merrell, 2001). Moreover, they tend to be hot-tempered and interpret others as being antagonistic (Smokowski & Kopasz, 2005).Victims are the recipients of the abuse, meaning the students who are bullied (Wu et al., 2016). The majority of the victims tend to be passive or submissive but there are also some victims who tend to have aggressive attitudes (Brockenbrough et al., 2002). In general, they often are unable to protect themselves from bullying acts and lack assertiveness skills (Smokowski & Kopasz, 2005). On the other hand, bully/victims are the students who both bully and have been bullied by others (Wu et al., 2016). They are children who are often bullied but also tend to provoke or tease other bullies. Also, they are characterized by both anxious and aggressive behaviors and thus they tend to first fight and then claim for defense (Smokowski & Kopasz, 2005). Lastly, bystanders are the students who observe and are not directly involved in the bullying process (Wu et al., 2016). Based on the participant role model, they can take four different roles:assistants, reinforcers, outsiders and defenders (Salmivalli et al., 1996). Each role represents a different way of reacting on the process of bullying. Assistants tend to assist and help the bully by holding the victim or chasing him/her (Salmivalli et al., 1996). Even thought they do not initiate the bullying, they tend to join in the end. On the other hand, reinforcers provide positive feedback to the bully by watching the bullying, laughing or cheering (Salmivalli et al., 1996). Although they do not actively attend the bullying, they provide positive reinforcement through attention to the bully. Thirdly, the bystanders are the outsiders meaning those who try to avoid the events of bullying (Salmivalli et al., 1996). Thus, they walk away from bullying situations, ignore bullying occurrences and take no stand on a specific side. In contrast, defenders actively support the victims by telling a teacher about the bullying situation and by confronting the bully (Salmivalli et al., 1996). As a result, they try to intentionally help the victim and stop the bullying event.

Bullying can also be related with several personality traits and personality variables. Researchers suggest that children can display a variety of personality traits, some of which remain stable from childhood until adulthood (Caspi, 2000). Thus, it is useful to highlight the possible correlations between the Big-Five personality traits and bullying. The Big-Five personality model divides personality in five dimensions: Neuroticism (N), Extraversion (E), Conscientiousness (C), Agreeableness (A), and Openness to Experience (O) (Costa & McCrae, 1992). In more details, these five dimensions illustrate the degree to which an individual is sensitive, nervous versus secure, confident (N); efficient, organized versus easy-going, careless (C), friendly, compassionate versus rational, critical (A), and inventive, curious versus conservative, cautious (O) (Caspi, 2000). Based on a study conducted with an Italian sample, bullies scored low in Agreeableness and high in Neuroticism; while victims scored low in Agreeableness and Conscientiousness and high in Neuroticism respectively (Tani et al., 2003). This indicates that bullies have low empathy and high aggressive behaviors; while victims have high introversion and feel less self-confident. Similarly, a meta-analysis found that the most consistent predictors for bullying and victimization were Agreeableness, Conscientiousness, Extraversion, and Neuroticism. In more details, the results illustrated that bullies and victims were associated with low levels of Agreeableness and Conscientiousness and high levels of Neuroticism and Extraversion (Mitsopoulou & Giovazolias, 2015). Consequently, specific personality patterns are present across bullies and victims that could become potential predictors of bullying. Furthermore, a lot of research has investigated the relationship between bullying and empathy. Empathy describes the ability to understand and/or feel what others are experiencing and it can be divided into cognitive and affective empathy (Jolliffe & Farrington, 2006; Noorden et al., 2015). Cognitive empathy refers to the ability to understand the emotions of another person; while affective empathy refers to the ability to experience the emotions of another person (as cited in Noorden et al.,

2015). Literature suggests that there is a negative association between empathy and bullying; while empathy is positively associated with actively helping the victims (Gini et al., 2007; Mitsopoulou & Giovazolias, 2015). In particular, low affective empathy is significantly related to frequent and occasional bullying (Jolliffe & Farrington, 2006). A systematic review of 40 studies found that bullying is negatively associated with affective empathy; while victimization is negatively associated with cognitive empathy (Noorden et al., 2015). The results indicate that bullies have an impaired ability on what others feel; however they are not incapable of knowing the feelings of the other person. In contrast, victims experience what the other person feels but do not understand the feeling of the other person, illustrating an opposite pattern with bullies. On the other hand, other studies have found negative associations between bullying and cognitive and affective empathy and no significant relationships between victimization and empathy (Mitsopoulou & Giovazolias, 2015; Zych et al., 2019). This could be explained from the fact that victims could intentionally become unemotional and thus do not empathize as a mechanism to overcome their suffering. Indeed, bullies lack empathy and thus many intervention and prevention programs have incorporated empathy training in their curriculum (Farrington & Ttofi, 2009).

Bullying exists in several forms and subtypes. In general, literature has identified four subtypes: physical, verbal, relational, and cyber (Çalışkan et al., 2019; Sapouna, 2008; Wang et al., 2009). Physical bullying includes acts such as hitting, kicking, pushing, or spitting; verbal bullying includes name calling, insulting, or swearing; relational bullying includes social exclusion, exclusion from groups or games, spreading rumors, ostracizing; and cyber bullying includes creating discomfort through cell phones or the internet as well as humiliation (Çalışkan et al., 2019; Sapouna, 2008; Wang et al., 2009). Bullying can be further divided on direct or overt behaviors and on indirect or covert behaviors. Physical and verbal bullying belong to direct forms of bullying; while relational belongs to indirect form of

bullying (Scheithauer et al., 2006; Wang et al., 2009). This means that certain bullying behaviors can be more easily seen and be overt (e.g. physical harm) versus covert behaviors and relational aggression (e.g. social exclusion). In the latter case, the person deliberately tries to harm another individual by destroying his/her social relations (Scheithauer et al., 2006). Research on direct and indirect forms of bullying indicates that boys are more involved in direct bullying compared to girls who are more involved in indirect bullying (Sapouna, 2008;Wang et al., 2009). Additionally, boys are being significantly more often bullied compared to girls; probably due to the fact that boys tend to be more aggressive than girls and thus get easily into fights (Scheithauer et al., 2006). Moreover, a new form of bullying is rising as computers, cell phones and social media become more popular among adolescents. Thus, cyber bullying is defined as a form of bullying that occurs through mobile phones or personal computers with the use of e-mails, sms, and instant messages (Wang et al., 2009). Even though different types of bullying exist, research suggests that they are highly correlated; meaning that the same individual can be bullied in multiple ways (Wang et al., 2010). In other words, students tend to experience bullying in several forms simultaneously. Although several forms of bullying exist, the present paper will focus only on social exclusion. The rationale behind this decision comes from literature. There is evidence that some types of bullying behaviors change as a function of age of children. In more details, physical bullying tends to be more common in younger children compared to verbal and relational bullying, which are more prevalent in older children (Pateraki & Houndoumadi, 2001; Sapouna, 2008). This means that as children grow, mature and gain more social and verbal skills, they can use more sophisticated forms of aggression and thus move from physical to verbal and relational bullying. Additionally, a higher prevalence rate exists in verbal and relational victimization compared to physical and cyber bullying. Based on a study conducted with a sample of 7,182 students, grades 6-10, 54% had been bullied

verbally, 51% socially, 21% physically and 14% electronically (Wang et al., 2009). This indicates that relational bullying (e.g. social exclusion) occurs as the second most prominent way of victimization, illustrating high frequencies in schools. Therefore, the high prevalence rates of social exclusion in combination with the absence of literature for college students drew my research attention to conduct some further investigation.

Social exclusion may cause a wide range of negative implications on individuals, affecting physiological and emotional responses, cognitive processes, self-esteem, prosocial and antisocial behavior, as well as education and academic performance. All humans have a fundamental need to form and maintain social relationships with others (Baumeister et al, 2007; Baumeister & Leary, 1995). Thus, people may experience difficulties when their need to belong is not met or is being disrupted. First of all, social exclusion can cause both physical and emotional numbness. In particular, in terms of physical pain, individuals who experience social rejection have reduced pain sensitivity and increased pain threshold respectively (DeWall & Baumeister, 2006; Eisenberger et al., 2006; MacDonald & Leary, 2005). In other words, socially excluded individuals tend to feel less physical pain compared to socially active individuals. This could be explained from the fact that social exclusion activates the body's pain response causing physical insensitivity as a way to protect the person from acute pain. Therefore, physical pain and pain from social exclusion share the same underlying neural and psychological mechanisms (DeWall & Baumeister, 2006; MacDonald & Leary, 2005). Additionally, social exclusion causes emotional insensitivity; meaning that individuals lack empathy and feel emotionally numb (DeWall & Baumeister, 2006; Gerber & Wheeler, 2009). This acts as a protective mechanism by temporally shutting down the emotional system and thus reducing a person's suffering (Baumeister et al, 2007; DeWall & Baumeister, 2006). Secondly, social rejection impairs cognitive functioning. More specifically, a study examining the effect of social exclusion on cognition found that there

was a decline in complex cognitive abilities, such as reasoning or effortful logic; while performance on simple information processing remained intact (Baumeister et al., 2002). Additionally, during cognitive tasks there was a significant reduction in speed as well as accuracy that were not mediated by mood (Baumeister et al., 2002). This indicates that social rejected individuals experience difficulties in cognitive abilities; something that could affect students' academic performance. In terms of selective memory, a study examined the effect of social exclusion on selective retention of social information (Gardner et al., 2000). Researchers found that the selective memory of socially excluded individuals was aroused by socially relevant stimuli, allowing them to recall more information related to social events on a diary (Gardner et al., 2000). As a result, socially rejected individuals increase their attention on social cues in the environment as a mean to restore social disconnection and fulfill social needs. Thirdly, social exclusion seems to affect in some cases self-esteem. Some studies have found that socially excluded participants report lower levels of self-esteem compared to non-excluded individuals, illustrating a positive correlation between feelings of belongingness and self-esteem (Gerber & Wheeler, 2009; Leary et al., 1995; Zadro et al, 2004). Based on the sociometer hypothesis, self-esteem acts as a measure of social relationships and monitors feelings of belongingness or rejection by others (Leary et al., 1995). Thus, self-esteem decreases or increases following the same pattern with relational value and belongingness (Leary et al., 1995). On the other hand, other studies found that social exclusion had no effect onself-esteem (Blackhart et al., 2009; Nesdale & Lambert, 2007). In particular, a study conducted with children ages 8-10 years old found that rejection did not decrease self-esteem levels, suggesting that peer rejection has an immediate negative effect on affect rather than on victims' self-esteem (Nesdale & Lambert, 2007). Similarly, a meta-analysis found that rejection caused a significant change towards a negative emotional state; while self-esteem did not differ between socially rejected participants and controls (Blackhart et al., 2009).

Fourthly, social rejection seems to cause prosocial and antisocial behavior, such as aggression. A study that conducted 7 experiments found that social exclusion caused a significant reduction in prosocial behavior (Twenge et al, 2007). In more details, socially excluded students donated less money on a student fund, were less helpful after an accident, were unwilling to volunteer for lab experiments, as well as were less cooperative in a game with another student (Twenge et al, 2007). The effect was mediated by empathy, illustrating that social rejection interferes with emotional response. This impaired empathic understanding on others and thus declined cooperation or intention to help (Twenge et al, 2007). Additionally, the role of anger has been examined as a link between social exclusion and antisocial behavior. Research suggests that social exclusion is associated with feelings of anger and thus socially rejected individuals are more likely to engage in antisocial behaviors due to aggressive feelings (Chow et al., 2008). Similarly, rejected children tend to express significantly more anger verbally or through facial expressions compared to non-rejected children (Hubbard, 2001). Consequently, aggression may be directed against other innocent individuals and lead to further exclusion for the rejected individuals (Gerber & Wheeler, 2009). Even though this seems to be paradoxical, it could be explained from the fact that victims feel physically and emotionally numb, lack empathy and thus act aggressively on third parties as a way to gain a sense of control or power over others (DeWall & Baumeister, 2006; Gerber & Wheeler, 2009; MacDonald & Leary, 2005). Lastly, social exclusion negatively affects academic performance and education. In particular, students who exhibit peer relationship problems and social rejection tend to engage less in class and thus have a poorer academic performance compared to students who enjoy positive relationships with their peers (Juvonen et al., 2000; Wentzel, 2017). Additionally, absenteeism from school is highly correlated with social rejection meaning that the more excluded the students are from peers, the more absences they do from school. This has been illustrated from several studies

where the majority of the students tend to avoid going to school or pretend being sick in order

to keep social interactions to a minimum level and avoid social rejection (Juvonen et al.,

2000; Rivers, 2000; Smokowski & Kopasz, 2005). Thus, social exclusion may cause a variety

of implication in individuals in multiple levels and forms.

Animals provide social support to individuals and have a buffering effect against

social exclusion through anthropomorphism. More than 77% of dog and cat owners view

their pets as family members and confess that their pets improve their wellbeing (McConnell

et al., 2017). Indeed, when people include their pets in key social ingroup environments such

as in the family, they tend to attribute to their pets socially supportive traits, increasing their

ability to provide social support and thus promote mental and physical health in general

(McConnell et al., 2019; McConnell et al., 2011). Moreover, based on a study, pets were able

in experimental settings to prevent negativity caused by social rejection and thus serve as a

source of social support, providing positive physical benefits (e.g. more exercise) as well as

psychological benefits to their owners (e.g. increased self-esteem) (McConnell et al., 2011).

Consequently, it is an undeniable fact that pet owners benefit from their pets emotionally and

physically; while at the same time they feel less socially excluded. Furthermore, research

suggests that simple the presence of a dog is enough to reduce mental distress caused by

social exclusion (Aydin et al., 2012). In particular, participants, who were socially excluded

with the presence of a dog, reported significantly higher levels of self-esteem, life satisfaction

and perceived meaning in life, and had increased feelings of social acceptance compared to

socially rejected participants without a dog (Aydin et al., 2012). This indicates that just the

presence of a dog is able to help individuals effectively cope with feelings of social

exclusion, irrespectively of pet ownership. Similarly, another study found that just by

thinking about a cat or a dog, participants were able to sooth their negative feelings caused by

social rejection (Brown et al., 2016). As a result, both the presence and the thought of an

animal have a buffering effect against negative feelings of social exclusion. The majority of the existing literature explains the findings through the theory of anthropomorphism. Anthropomorphism is defined as the tendency of humans to impose humanlike characteristics, motivations, intentions, or emotions to nonhuman agents (Epley et al., 2007). Theory suggests that there are three psychological determinants that explain whether or not people are likely to anthropomorphize based on the accessibility and applicability of anthropocentric knowledge, the motivation to explain and understand other agents' behaviors, and the desire for social contact and affiliation (Epley et al., 2007). In other words, people tend to anthropomorphize when anthropocentric knowledge is accessible and can be applicable, when they lack social connections to other people, and when they are motivated that these would be effective social agents. In general, people are motivated to maintain social relationships; however, when they lack human connection, they try to immediately restore it or compensate with nonhuman agents, such as animals (Epley et al., 2008a; Mourey et al., 2017). A study revealed that socially rejected participants attributed humanlike mental states or traits to pets as a mechanism to feel less disconnected (Epley et al., 2008a). More specifically, researchers found that socially excluded participants evaluated their pets as being significantly more socially supportive compared to the control group and they attributed humanlike traits to their pets (e.g. thoughtful, sympathetic, considerate) (Epley et al., 2008a). This indicates that socially rejected individuals are likely to anthropomorphize animals by giving them socially supportive human traits as a way to compensate for the social disconnection. The same seems to be true not only for animals but also for products, such as robots. Socially rejected participants attributed anthropomorphic characteristics on consumer products that thought to be alive through design, interaction, intelligence, responsiveness, and/or personality (e.g. a robot vacuum cleaner) as a way to satisfy their social needs (Mourey et al., 2017). Nevertheless, when researchers draw participants'

attention on the fact that these products were not alive, they limited their ability to fulfill social needs (Mourey et al., 2017). This means that products can compensate for a limited time for lack of social connection but since they are not alive they cannot provide genuine human interactions as animals do.

Animals, as part of humane education, increase students' empathy and could be used in intervention programs against social exclusion and bullying. More specifically, literature suggests that there is a link between deficits in empathy and antisocial behavior in students and thus empathy has been proposed as a protective variable against aggressive behaviors on others (Hastings et al., 2000; Warden & MacKinnon, 2003). Moreover, it has been found that animal-directed empathy can be generalized to human empathy. A study compared the human and animal empathic reactions on scenarios about human or animal abuse, having a victim in need of medical care (Angantyr et al., 2011). The results revealed that both men and women showed the same degree of empathy for a puppy and a baby respectively (Angantyr et al., 2011), illustrating a correlation between animal and human empathy. Taking into account the theory on anthropomorphism, humans attribute human traits to animals, find similarities with them and thus can better empathize (Young, Aet al., 2018). Similarly, the "ingroup empathy hypothesis" suggests that the more phylogenetically similar are the animals to the humans, the more empathy they elicit (Westbury & Neumann, 2008). Therefore, humans are able to generalize empathetic responses from animals to humans and vice versa. Moreover, studies on undergraduate students have found that those with high levels of empathy have significantly more positive attitudes towards animals, as well as negative attitudes for animal cruelty compared to students with low empathy (Erlanger & Tsytsarev, 2012). Similarly, owners of animals (e.g. dog or cat) tend to be significantly more empathetic compared to non-owners (Daly & Morton, 2006). Indeed, there is a relationship between students' attachment to pets, empathy and social competence; animals increase empathy and increased

empathy leads to prosocial behaviors (Daly & Morton, 2006; Warden & MacKinnon, 2003). Therefore, many intervention programs have moved towards humane education in order to teach children prosocial behaviors, increase their empathy and combat aggressive behaviors and bullying. Humane education curriculums have shown that teaching children kindness to animals can be also transferred to people (Arbour et al, 2009). In other words, prosocial and empathetic attitudes on animals can be generalized to humans. In particular, a study examined the effect of the presence of a dog in an elementary's school classroom in relation to social intelligence, empathy and social-emotional atmosphere (Hergovich et al., 2002). The results revealed that the children with the presence of the dog had increased sensitivity for the needs and the moods of other individuals compared to the control group (Hergovich et al., 2002). Moreover, the teachers reported that animal-directed empathy was increased not only towards animals but it was also transferred among children in the form of increased social interactions and reduced aggression (Hergovich et al., 2002). Similarly, another study conducted in 75 elementary schools found that the presence of animals in the classroom increased students' empathy, compassion and prosocial behavior, contributing positively in their socio-emotional development (Daly & Suggs, 2010). Lastly, another study conducted in elementary and middle school students, assessed students' self-reports and teachers' observations to measure students' aggressive behaviors and empathy before and after their exposure to a rescued shelter dog (Sprinkle, 2008). The results revealed that the program significantly increased students' empathy and prosocial behaviors and decreased aggression and violence. The program consisted of eleven 45-min weekly sessions where a dog was present and children were taught to identify and practice prosocial behavior as well as be empathetic (Sprinkle, 2008). The dog's presence in classroom created opportunities for the children to practice prosocial behavior (e.g. petting a frightened animal) and consider the thoughts and the feelings of the dog (Sprinkle, 2008). Consequently, it was difficult for the

students to act aggressively or in a violent manner towards others when they considered their thoughts and the feelings.

The aim of the present study was to investigate the effect of dogs on social exclusion and empathy on graduate and undergraduate students. For the purposes of this study, the terms social exclusion and social rejection were used interchangeably as one term. Continuing, the target population of this study was based on a gap in the literature regarding college students and social exclusion; since the majority of the studies have used primary or elementary school students (e.g. Cornell et al., 2013; Dake et al., 2003; Juvonen et al., 2000; Smokowski & Kopasz, 2005; Wentzel, 2017). Moreover, previous studies have found that animals have a buffering effect on social exclusion and thus alleviate feelings of loneliness (Aydin et al., 2012; Brown et al., 2016; McConnell et al., 2011). Most researchers explain the findings utilizing the theory of anthropomorphism, meaning that humans have the tendency to impose humanlike characteristics and emotions to animals (Epley et al., 2007). Thus, animals reduce individuals' feelings of social exclusion and loneliness by providing social support through anthropomorphism (Epley et al., 2007; Epley et al., 2008a; Mourey et al., 2017). However, still some researchers question whether anthropomorphism is the only factor or other positive experiences could contribute as well in soothing the feelings of rejection (Brown et al., 2016). For instance, animals could act as a positive distraction or provide emotional connection to individuals and thus alleviate the negative feelings of social rejection and produce similar outcomes (Aydin et al., 2012; Brown et al., 2016; McConnell et al. 2011; Meehan et al., 2017). Consequently, this study explored the effect of dog presentation in terms of anthropomorphism, positive distraction and emotional connection on feelings of social exclusion and loneliness. As a way to verify previous research (Aydin et al., 2012; Brown et al., 2016; Epley et al., 2007; Epley et al., 2008a; Mourey et al., 2017; McConnell et al., 2011), it was expected that participants in all three dog conditions would feel significantly

less lonely compared to the control group. Possible differences between the groups in the reduction levels of loneliness are still a research question. Furthermore, a negative relationship between affective empathy, cognitive empathy and bullying exists in the literature (Gini et al., 2007; Jolliffe & Farrington, 2006; Noorden et al., 2015; Mitsopoulou & Giovazolias, 2015). Lack of empathy may lead in antisocial behaviors in students and promote bullying and social exclusion (Hastings et al., 2000; Warden & MacKinnon, 2003). Therefore, empathy is an important variable that could be used as a protective factor against aggressive behaviors in bullying. Researchers have found that animals enhance people's empathy though humane education and this could be used in intervention programs against bullying and social exclusion (Arbour et al, 2009; Daly & Suggs, 2010; Hergovich et al., 2002; Sprinkle, 2008). However, there is no available research to my knowledge that examines a cause and effect relationship between animals and students' affective and cognitive empathy. As a consequence, the present study additionally investigated the effect of dog presentation on total empathy as well as on affective and cognitive empathy to identify possible differences between the three conditions (anthropomorphism, positive distraction and emotional connection) and the control group. This study contributed to the existing literature by generating new knowledge regarding college students and social exclusion and identifying other potential positive sources of dogs in enhancing feelings of social rejection and affective and cognitive empathy. The findings could be used in intervention strategies against bullying in the educational setting.

**Method**

**Participants**

For the present study, 143 graduate and undergraduate students were recruited to participate in an online experiment. The sample was primarily a non-probability convenience sample of students currently enrolled in the American College of Greece (Deree) from

different majors. All participants were recruited online, using their academic emails to inform them about the study and ask them to voluntary participate. Only individuals who were 18 years old or older were able to participate in the experiment. The sample consisted of 51 (35.7%) males, 90 (62.9%) females, and 2 (1.4%) persons who did not wish to disclose their biological gender. Moreover, the average age of the sample was 24 years old ($M$=23.76, $SD$=4.16), ranging from 18 to 37 years old. Additionally, most of the participants were undergraduate students (72%, $N$=103); while 40 (28%) were graduate students. The majority of the undergraduate students were majoring in Liberal Arts and Sciences (42%, $N$=60); while the majority of the graduate students were majoring in Counseling and Psychotherapy (10.5%, $N$=15).  Furthermore, 126 of the participants (88.1%) currently have or had a pet; while most of them have/had a pet for more than 6 months (78.3%, $N$=112). In more details, 96 participants have/had a dog (67.1%), 69 have/had a cat (48.3%), 23 have/had a bird (16.1%), 9 have/had a rabbit, 26 have/had a fish (18.2%), 12 have/had other animals (8.4%), and 17 did not have any pet (11.9%). Lastly, in terms of the groups, 46 participants were assigned in the anthropomorphism condition (32.2%), 37 were in the positive distraction condition (25.9%), 30 were in the positive emotional connection (21%) and 30 were in the control group (21%). For a more complete depiction of the demographics, see Table 1.

**Materials**

      **Demographic Section.** Participants were asked to provide some general demographic information regarding their age, biological sex, current level of education (*Undergraduate/Graduate*), major (*Business and Economics/Liberal Arts and Sciences/Fine and Performing Arts*), as well as whether they currently have or had a pet (*Yes/No*), what kind of pet do they have or had (*Dog/Cat/Bird/Rabbit/Fish/Other*) and for how long they have or had the pet *(Less than 6 months/More than 6 months)* in order to infer emotional bonding (Bouma et al., 2020) (see Appendix A).

**Pet Attitude Scale (PAS).** A 18-item Pet Attitude Scale (PAS; Templer et al., 1981; see Appendix B) was used to measure attitudes towards pets. Participants were asked to rate their agreement on different statements based on a 7-point Likert scale (1=*Strongly Disagree*, 7=*Strongly Agree*). The scale included statements such as "I frequently talk to my pet". The total score for each participant was computed and higher scores indicated more pet friendly attitudes. Items 4, 6, 12, 13, 15, and 17 were negatively worded and thus, they were reversely scored before running the analysis. Based on Templer and his colleagues (1981), PAS scale has high levels of internal reliability ($\alpha$=0.93).

**Cyberball 4.0.** Cyberball 4.0 was used to create an ostensible group interaction, where implicit rejection in the form of ostracism was manipulated experimentally towards the participants. Based on literature, ostracism is the most intense type of rejection because individual's initial response to ostracism is automatic (Gerber & Wheeler, 2009). Additionally, Cyberball was designed to induce intense feelings of social exclusion and many studies have revealed its reliability and validity in doing so (Gerber & Wheeler, 2009; Williams & Jarvis, 2006; Zadro et al, 2004). In particular, Cyberball is an online ball-tossing game where participants believe that they are playing with two or three other players; while in reality they are ignored and excluded. The course of the game, the speed and the frequency of inclusion were controlled by the researcher (Williams & Jarvis, 2006). The game had a duration of 5 minutes and a total of 30 throws (Aydin et al., 2012). Participants were not informed that they were going through an experience of social exclusion and were left to infer it on their own. They received the ball only twice at the beginning from each player and then never again (Aydin et al., 2012).

**Pet Athropomorphism.** Participants were asked to think of a dog that they own or know well and pick from a list of 14 anthropomorphism traits those 3 that best described the dog (Epley et al., 2008a). A list of fixed traits were presented to the participants, priming

them to attribute human traits on a dog and thus go through the process of anthropomorphism. The anthropomorphic traits that were presented to the participants were thoughtful, considerate, sympathetic, embarrassable, creative, devious, jealous, insecure, shy, imaginative, polite, humble, curious, and ignorant (Haslam et al., 2005).

**Positive Distraction.** Photographs selected from IAPS and OASIS were used to create a positive distraction on participants (Kurdi et al., 2016; Lang et al., 2008). All photos were depicting different dogs; such as puppies, dogs alone or dogs with a man or a woman handler. Participants saw a set of 25 items from OASIS and another 5 items from IAPS in a random order. The slideshow included 30 photographs in total for a time frame of 4 seconds each. The items were selected based on positive valence and arousal ratings. For the OASIS, the mean valence was 5.62, ranging from 4.13 to 6.49; while the mean for the arousal was 4.15, ranging from 3.52 to 5.03 (Kurdi et al., 2016). Similarly, the mean valence for IAPS was 7.02, ranging from 5.78 to 8.34 and the mean for the arousal was 4.50, ranging from 4.10 to 5.41 (Lang et al., 2008).

**Autobiographical Essay Prime.** Participants, depending on their condition group, were asked to write an autobiographical essay prime in order to mentally engage on a personal experience (Brown et al., 2016). In the positive emotional connection group, participants were asked to reflect on a positive experience they had with a dog or imagine a positive experience with a dog and elaborate on their feelings. This primed them to mentally have a positive emotional connection with an animal. Similarly, in the control group, participants were asked to reflect on a positive experience and write about their best vacations. All participants had up to 5 minutes to complete their essay.

**UCLA Loneliness Scale.** A 20-item UCLA Loneliness Scale (UCLA LS; Russell et al., 1978; see Appendix C) was used to measure subjective feelings of loneliness and feelings of social isolation. Participants were asked to rate each item based on whether they feel or not

this way either (O="*I often feel this way*", S="*I sometimes feel this way*", R="*I rarely feel this way*", N="*I never feel this way*"). The scale included statements such as "I am unhappy doing so many things alone" or "I have nobody to talk to". The total score for each participant was computed and higher scores indicated higher levels of loneliness. In particular, all O's counted for 3 points, all S's for 2 points, all R's for 1 point, and all N's for 0 points respectively and the scoring was kept continuous. Based on a study assessing the psychometric properties of the scale, UCLA LS was highly reliable, both in terms of internal reliability ($\alpha$=0.89-0.94) and test-retest reliability ($r$ = 0.73) for a 1-year period (Russell, 1996). In terms of convergent validity, UCLA LS had significant correlations with other measures of loneliness (Russell, 1996).

**Basic Empathy Scale.** A 20-item Basic Empathy Scale (BAS; Jolliffe & Farrington, 2006; see Appendix D) was used to assess affective and cognitive empathy. Affective Empathy subscale measures the emotional congruence with another person's emotions; while the Cognitive Empathy subscale measures the ability to understand another person's emotions (Albieroet al., 2009). Participants were asked to rate each statement based on a 5-point Likert scale (1=*Strongly Disagree*, 5=*Strongly Agree*). Examples of the statements included in the scale were "My friend's emotions don't affect me much" for cognitive empathy and "After being with a friend who is sad about something, I usually feel sad" for affective empathy. Nine items were for the cognitive empathy (items 3, 6, 9, 10, 12, 14, 16, 19, 20) and eleven items were for the affective empathy (items 1, 2, 4, 5, 7, 8, 11, 13, 15, 17, 18) (D'Ambrosio et al., 2009). The total score for each participant was computed and higher scores indicated higher levels of empathy. Research on the psychometric properties of the scale indicated good internal reliability for the total scale ($\alpha$=0.79), for the Affective Empathy subscale ($\alpha$=0.85), and for the Cognitive Empathy subscale ($\alpha$=0.79) respectively (Albieroet al., 2009; D'Ambrosio et al., 2009). Additionally, test-retest reliability ($r$ = 0.70) for a 3-week

period illustrated acceptable levels of reliability (D'Ambrosio et al., 2009).

**Design**

The study had a between participants design and four condition groups. The independent variable was dog presentation as anthropomorphism, positive distraction, positive emotional connection, and control and the dependent variables were loneliness and empathy. Furthermore, participants' attitudes towards pets was thought to be a potential confounding variable and thus all hypotheses and research questions were investigated after controlling for this variable.

**Procedure**

The study had been ethically reviewed by the Institutional Review Board (IRB Committee) of the American College of Greece before it started running. The sample was recruited online, using the emails of the students from the Registrar's Office. An email informed students from the Undergraduate and Graduate Division about this study and asked them to voluntary participate. The whole experiment was conducted online by randomly assigning participants into the four conditions of the study. Firstly, participants received an informed consent form, which informed them about the aim of the study and their rights, and had to sign it prior proceeding with the experiment (see Appendix E). Participants started the experiment by completing some general demographic information, the PAS and the Cyberball 4.0 game. Then, the tasks varied depending on participant's condition group. In the anthropomorphism group, participants were asked to think of a dog that they own or know well and pick from a list of 14 anthropomorphism traits those 3 that best describe the dog. In the positive distraction group, participants had to watch a set of 30 photos of dogs rated with positive valence and arousal. In the emotional connection group, participants were asked to write an autobiographical essay prime by reflecting on a positive experience they had with a dog or imagine a positive experience with a dog and elaborate on their feelings. Similarly, in

the control group, participants were asked to reflect on a positive experience and write about their best vacations. Next, all participants completed the UCLA Loneliness Scale and the BES. The order of presentation of tasks was fixed to ensure similarity across all conditions. The duration of the procedure was approximately 25-30 minutes. At the end, participants were given a debriefing statement, explaining the true purpose of the study (see Appendix F).

## Results

The effect of dog presentation on participants' loneliness levels was investigated with an ANCOVA analysis. The analysis revealed that pet attitude had a non-significant influence on loneliness. However, a significant effect was found between group and loneliness after controlling for pet attitude on loneliness, $F(3,138)=21.12$, $p<0.001$, partial $\eta^2=0.315$. In particular, participants in the anthropomorphism group experienced significantly less loneliness ($M=13.61$, $SD=15.94$, $p<0.001$) compared to the control group ($M=20.40$, $SD=17.97$). Correspondingly, participants in the positive emotional connection group felt significantly less lonely ($M=18.67$, $SD=13.94$, $p<0.001$) compared to the control group. Additionally, participants in the positive distraction group encountered significantly less loneliness ($M=14.59$, $SD=13.22$, $p<0.001$) compared to the control group. Nevertheless, no significant differences were found between the experimental conditions (see Table 2).

The effect of dog presentation on participants' empathy was explored using an ANCOVA analysis. The results revealed that pet attitude had a non-significant influence on empathy. Nevertheless, a significant effect was found between group and empathy after controlling for pet attitude on empathy, $F(3,138)=16.97$, $p<0.001$, partial $\eta^2=0.269$. In more details, participants in the anthropomorphism group experienced significantly more empathy ($M=63.60$, $SD=3.83$, $p<0.001$) compared to the control group ($M=57.23$, $SD=4.53$). Similarly, participants in the positive emotional connection group felt significantly more empathetic ($M=64.17$, $SD=3.41$, $p<0.001$) compared to the control group. Additionally, participants in

the positive distraction group encountered significantly more empathy ($M$=61.46, $SD$=5.16, $p$=0.001) compared to the control group. No significant differences were found between the experimental conditions (see Table 3).

Another ANCOVA analysis was conducted to assess the effect of dog presentation on affective empathy. The outcomes illustrated that pet attitude did not significantly influence affective empathy. On the other hand, there was a significant effect between group and affective empathy after controlling for pet attitude on affective empathy, $F$(3,138 )=18.51, $p$<0.001, partial $\eta^2$=0.287. More specifically, participants in the anthropomorphism group experienced significantly more affective empathy ($M$=31.70, $SD$=2.85, $p$<0.001) compared to the control group ($M$=27.06, $SD$=3.70). Similarly, participants in the positive emotional connection group felt significantly more affectively empathetic ($M$=32.53, $SD$=2.29, $p$<0.001) compared to the control group. Additionally, participants in the positive distraction group encountered significantly more affective empathy ($M$=31.11, $SD$=3.51, $p$<0.001) compared to the control group. Nevertheless, no significant differences were found between the experimental conditions (see Table 4).

Lastly, the effect of dog presentation on cognitive empathy was measured with an ANCOVA analysis. The results showed that pet attitude did not significantly influence cognitive empathy. In contrast, a significant effect was found between group and cognitive empathy after controlling for pet attitude on cognitive empathy, $F$(3,138 )=5.26, $p$<0.001, partial $\eta^2$=0.103. Particularly, participants in the anthropomorphism group experienced significantly more cognitive empathy ($M$=31.91, $SD$=2.08, $p$=0.013) compared to the control group ($M$=30.16, $SD$=2.45). Similarly, participants in the anthropomorphism group experienced significantly more cognitive empathy compared to the positive distraction group ($M$=30.35, $SD$=2.44, $p$=0.017). No other significant differences were found between the experimental conditions and the control group (see Table 5).

**Discussion**

The purpose of this study was to gain further knowledge and understanding on the effect of dog presentation on students' feelings of social exclusion and empathy. In more details, a between participants' design was used and one hypothesis and two research questions were formulated. The hypothesis expected that participants in all three dog conditions (anthropomorphism, positive emotional connection, and positive distraction) would feel significantly less lonely compared to the control group. Additionally, a research question was formed, questioning whether all three dog conditions (anthropomorphism, positive distraction, and positive emotional connection) would decrease loneliness at an equal or different degree. Moreover, a second research question investigated the effect of dog presentation (anthropomorphism, positive distraction, and positive emotional connection) on total empathy as well as on affective and cognitive empathy respectively, trying to identify possible differences between the dog presentation groups and the control group.

The hypothesis was confirmed, illustrating the beneficial effects of dog presentation in all three dog conditions (anthropomorphism, positive emotional connection, and positive distraction) on students' levels of loneliness. In particular, in the anthropomorphism group, participants were primed to anthropomorphize a dog by picking from a list of anthropomorphic traits those traits that best described the dog. The results revealed that participants in the anthropomorphism group experienced significantly less loneliness compared to the participants in the control group, irrespectively of participants' pet attitudes (see Figure 1). Overall, previous findings suggests that anthropomorphism, whether it occurs deliberately or spontaneously, can have buffering effect against social exclusion and feelings of loneliness (Brown et al, 2016; Epley et al., 2008a; McConnell et al., 2019; McConnell et al., 2011). Indeed, individuals have an internal need to maintain social connections; however when this need is disrupted; for instance in cases of social exclusion, they tend to compensate

by anthropomorphizing animals and products (Epley et al., 2008a; Mourey et al., 2017). Based on the theory of anthropomorphism, individuals anthropomorphize animals by attributing to them humanlike characteristics, motivations, intentions, or emotions (e.g. creative, shy, imaginative) as a way to compensate for social exclusion and thus feel less disconnected (Epley et al., 2007). A study conducted in 2008, evaluated whether social exclusion in individuals would lead them to create humanlike agents in their environment and anthropomorphize their pets (Epley et al., 2008a). The results revealed that socially excluded participants evaluated their pets as being significantly more socially supportive compared to the control group, by attributing to them humanlike traits (e.g. thoughtful, sympathetic, considerate) (Epley et al., 2008a; Epley et al., 2008b; Serpell, 2002). This indicates that socially rejected individuals are likely to anthropomorphize animals by giving them socially supportive human traits in order to recompense for social exclusion. Moving one step further, researchers have also examined whether individuals prefer people or nonhuman agents to alleviate feelings of social disconnection. The findings suggest that individuals who are rejected or ostracized by other people tend to avoid reconnection with those people and search connection with other groups (Maner et al., 2007). Consequently, other groups may be nonhuman agents such as animals that individuals may deliberately seek connection with (Epley et al., 2008a; Epley et al., 2008b). Indeed, the more similar the animals are perceived to be to humans (e.g pets), the more they increase the tendency on humans to infer that they have similar cognitive mental states (Eddy et al., 1993). In other words, people have an increased tendency to infer that pets experience the world in the same way that they experience it and thus act as socially supportive agents. The theory of anthropomorphism seems to apply not only for animals but also for robots and artificial intelligence products. Socially rejected participants tend to attribute anthropomorphic characteristics on products that they think they are alive as a way to satisfy social needs (Mourey et al., 2017). However,

such products can compensate only for a limited time social connections because in reality they are not alive and thus cannot provide genuine human interactions as animals do (Mourey et al., 2017).

Continuing with the confirmed hypothesis, in the positive emotional connection group, participants were primed to mentally have a positive emotional connection with a dog by elaborating on their feelings. The results revealed that participants in the positive emotional connection group experienced significantly less loneliness compared to the participants in the control group, irrespectively of participants' pet attitudes (see Figure 1). Indeed, research has found that people, who are closer to animals and have created an emotional connection, derive more psychological comfort and rely more on animals for social support compared to other people who might feel less close to animals (Brown et al., 2016;Meehan et al., 2017). Thus, sharing an emotional connection with an animal is able to sooth individuals' negative feelings caused by social rejection. Similarly, a study conducted with college students found that participants were more effectively able to reduce the pain caused from past social rejection experiences when they were writing about their pet compared to those in the control group, who were writing about the map of their campus (McConnell et al. 2011). This illustrates that individuals, who emotionally connect with animals, can experience less loneliness and offset feelings of social rejection. Nevertheless, research suggests that at least 6 months have to pass by in order for people to form proper pet-owner relationships and thus experience a connection (Bouma et al., 2020). A possible explanation of the results could come through the human-animal bond. The human-animal bond (HAB) is defined as "a mutually beneficial and dynamic relationship between people and other animals that is influenced by behaviors that are essential to the health and well-being of both and includes, but is not limited to, emotional, psychological, and physical interactions of people, other animals, and the environment" (as cited in Fine, 2010). Research

suggests that through HAB, individuals can benefit by improving their physical and mental health, reducing loneliness, depression, and stress and facilitating social interactions (Friedmann & Son, 2009). Indeed, a study with 293 high school students explored the relationship between HAB and loneliness and found that pet owners reported significantly less loneliness compared to non-pet owners and that HAB was inversely related to loneliness (Black, 2012). Consequently, having a relationship and an emotional connection with a pet can reduce feelings of loneliness and social rejection.

Following the confirmed hypothesis, in the positive distraction group, participants were primed to positively distract themselves from social exclusion by seeing a set of dog photos. The results revealed that participants in the positive distraction group experienced significantly less loneliness compared to the participants in the control group, irrespectively of participants' pet attitudes (see Figure 1). The findings are in line with previous research suggesting that simple the mere presence of a dog is enough to reduce mental distress caused by social exclusion (Aydin et al., 2012; Brown et al., 2016). Similarly, socially excluded participants with the presence of a dog, reported significantly increased feelings of social acceptance, as well as higher levels of self-esteem, life satisfaction, and perceived meaning in life, compared to socially rejected participants without the presence a dog, irrespectively of pet ownership (Aydin et al., 2012). This indicates that just the presence of a dog is enough to help individuals effectively cope with feelings of social exclusion and feel less lonely. The findings can be further explained through the mechanism of distraction. In general, distraction is a cognitive avoidance strategy where "[the] individual actively directs attention away from the hurt feelings-provoking event toward an unrelated neutral or positive stimulus" (Riva, 2016). The benefit of distraction lies on the fact that the individual frees his/her mind from ruminating thoughts that could threat social belongingness (Kohl et al., 2013; Riva, 2016). In other words, distraction helps in bringing down negative emotions

without letting the person to think over the social exclusion event in a repetitive manner. Indeed, several studies suggest that distraction helps facilitate the negative feelings that occur during social rejection (Riva, 2016; Hales et al., 2016; Wesselmann et al., 2013). In particular, a study found that ostracized participants, who were distracted with a visual task, experienced less distress compared to the ostracized participants, who were allowed to ruminate (Wesselmann et al., 2013). Similarly, another study found that distraction lead to greater recovery of basic needs satisfaction on ostracized participants compared to participants who were allowed to ruminate (control group) (Hales et al., 2016). Consequently, animals can act as a positive distraction and help individuals effectively cope with the negative feelings caused by social exclusion.

Moving on with the first research question of whether all groups decreased loneliness at an equal or different degree, the results found no significant differences between the anthropomorphism group, the positive emotional connection group, and the positive distraction group. Significant differences were only present between the dog presentation groups (anthropomorphism, positive distraction, and positive emotional connection) and the control group respectively. This indicated that all dog presentation groups decreased loneliness equally effectively compared to the control group. Even though the majority of the literature suggests that animals reduce feelings of social exclusion and loneliness by providing social support through anthropomorphism (Epley et al., 2007; Epley et al., 2008a; Mourey et al., 2017), the present study found no significant differences between the three dog presentation groups. This could be explained from the fact that all three dog presentation groups may share some similar characteristics. For instance, in the anthropomorhism group, individuals tend to shift emotional and cognitive responses towards animals by attributing to them human mental states and emotions. This automatically may alter and/or create a relationship with an animal. Similarly, in the emotional connection group, participants have

also formed a connection and an attachment with a dog. In the same manner, in the positive distraction group, the presence of the dog was enough to reduce loneliness. Loneliness is a negative feeling and previous studies that have found that the mere presence of a dog is enough to decrease individuals' negative feelings and increase happiness (Ward et al., 2018). Indeed, in all three conditions, participants were exposed to the presence of a dog either mentally or through photographs. Consequently, the creation of positive feelings may have a mediating role against social exclusion, leading to an equal effectiveness. Thus, the processes that underlie dog presentation seems to be more complex and blended. Further research and replication studies are needed to verify the results. Possible differences between the groups could have been present if the sample size was bigger.

The second research question investigated the effect of dog presentation (anthropomorphism, positive distraction, positive emotional connection) on total empathy, as well as on affective and cognitive empathy respectively. In particular, results revealed that participants in the anthropomorphism group experienced significantly more empathy compared to the control group; regardless of participants' pet attitude (see Figure 2). Similarly, participants in the anthropomorphism group felt significantly more affective and cognitive empathy compared to the control group; despite participants' pet attitude (see Figure 3,4). This indicates that participants in the anthropomorphism group had an increased ability to both understand cognitively and experience in an affective manner the emotions of another person. Indeed, research suggests that based on the anthropomorphism theory, individuals tend to attribute human traits and mental states on animals, as well as find similarities with them and thus increase empathy towards them (Chan, 2012; Young, Aet al., 2018). In addition, researchers have found that based on relatedness, the more phylogenetically similar are the animals to the humans, the more empathy they elicit (Airenti, 2015; Harrison & Hall 2010; Westbury & Neumann, 2008). More specifically, dogs were

ranked as the third more phylogenetically close species to humans after humans and monkeys/chimps (Harrison & Hall 2010). This indicates that individuals experience dogs as being relatively close to humans and able to understand and communicate with them. Going into more depth, research has found that humans are able to generalize empathetic responses from animals to humans and vice versa (Angantyr et al., 2011; Thompson & Gullone, 2003). In other words, individuals can be equally empathetic on animals as they are on other humans and thus transfer feelings of empathy from animals to humans and from humans to animals respectively. Thus, the findings of this study could be explained through the notion that the attribution of mental states in a phylogenetically similar animal (dog) led participants to have increased levels of empathy compared to the control group and transfer the empathetic feelings from the dog to other individuals.

Continuing with the examination of the second research question, the results revealed that participants in the positive emotional connection group experienced significantly more empathy compared to the control group; regardless of participants' pet attitude (see Figure 2). Similarly, participants in the positive emotional connection group felt significantly more affective empathy compared to the control group; despite participants' pet attitude (see Figure 3,4). In terms of cognitive empathy, no significant findings were present. The specific findings could also be explained from the fact that in the positive emotional connection group, participants were asked to engage emotionally and in an affective manner with the dog rather than cognitively. Thus, affective empathy was activated more compared to cognitive empathy. In general, the findings could be further explained through the notion of human-animal bond and attachment. The majority of pet owners view their pets as friends (95%) or family members (87%), indicating an emotional connection and attachment with them (Walsh, 2009). In particular, humans tend to develop bonds and attachments with dogs similar to those of a mother-infant relationship through a set of positive and caring feelings

(Serpell, 2002). Indeed, research has found a positive relationship between animal attachment and empathy (Beck & Madresh, 2008; Daly & Morton, 2006; Daly & Morton, 2009; Khalid & Naqvi, 2016), illustrating the contribution of human-animal bond in greater feelings of empathy towards humans (Melson, 2003; Mueller, 2014; Taylor & Signal, 2005). For instance, owning pets in childhood predicts the development of empathy later in life, such as in adolescence and adulthood (Daly & Morton, 2009; Khalid & Naqvi, 2016). Lastly, gender plays a moderating role on the effect of pet attachment on empathy, showing that women score higher on empathy and pet attachment compared to men (Khalid & Naqvi, 2016).

Moving on with the second research question, the results revealed that participants in the positive distraction group experienced significantly more empathy compared to the control group (see Figure 2). Similarly, participants in the positive distraction group felt significantly more affective empathy compared to the control group (see Figure 3,4). In contrast, in terms of cognitive empathy, participants in the positive distraction group felt significantly less cognitive empathy compared to the participants in the anthropomorphism group. Participants' pet attitude did not affect the findings. The latter could be explained from the fact that having a dog as a distractor did not let the individuals to cognitively process empathy and thus the presence of the dog acted more on the emotional level and on affective empathy rather than on cognitive empathy. A number of studies have examined the role of dogs in the classroom setting and the advantages of their presence and have found that the mere presence of a dog is enough to increase empathy levels in students (Daly & Suggs, 2010; Hergovich et al., 2002; Terras & Olson, 2006). In more details, a study found that the presence of a dog in the classroom increased the levels of empathy on students compared to a control class by increasing the sensitivity of the students towards the needs and the moods of others (Hergovich et al., 2002). Similarly, the presence of a dog in the classroom with children diagnosed with severe emotional disorders illustrated better emotional stability and

increased empathy levels on students based on pre and post testing measures (Terras & Olson, 2006). Also, in another study, the majority of teachers rated that the presence of dog in the classroom contributed in the socio-emotional development and in increased empathy levels on children (Daly & Suggs, 2010). Consequently, the presence of a dog as a distractor can elicit feelings of empathy at an affective level on students.

The particular study had several strengths and actively contributed in the literature about social exclusion and animal assisted interventions for college students. This was the first study that was conducted within the context of a Greek population and analyzed the effects of dog presentation on feelings of social exclusion and empathy. Additionally, the population of this study was based on college students; something that contradicted the majority of the available research that have used primary or elementary school students (e.g. Cornell et al., 2013; Dake et al., 2003; Juvonen et al., 2000; Smokowski & Kopasz, 2005; Wentzel, 2017). Furthermore, it added new knowledge in the existing literature by exploring the effect of dogs on social exclusion, not only in terms of anthropomorphism but also in terms of other mechanisms such as positive emotional connection or positive distraction. Thus, the particular study used a different sample both in terms of culture and age and added value in the universal positive effect of dogs on humans' feelings of social exclusion and empathy.Lastly, it was the first study to my knowledge that examined a cause and effect relationship between dog presentation and empathy. The majority of the recent studies were based on correlational analyses (e.g. Arbour et al, 2009; Daly & Suggs, 2010; Hergovich et al., 2002; Sprinkle, 2008).

The findings of this study can be used both in an educational and clinical setting in colleges to help bullies and victims combat feelings of social exclusion and enhance empathy. In the educational setting, dogs can be used as part of humane education programs and curriculums. Humane education can be defined as "a process that promotes compassion and

respect for all living things by recognizing the inter-dependence of people, animals and eco-systems" (Fraser et al., 2017). Consequently, humane education can be used in bullying prevention as a proactive program to enhance feelings of empathy and promote prosococial behavior on students (Nickerson et al., 2008; Noorden et al., 2015). Research suggests that there is a link between deficits in empathy and antisocial behavior in students, such as bullying, proposing empathy as a protective variable against aggressive behaviors on others (Hastings et al., 2000; Warden & MacKinnon, 2003). Moreover, it has been found that teaching children animal-directed empathy can be generalized also to human empathy (Angantyr et al., 2011; Arbour et al, 2009; Young, Aet al., 2018). This indicates that the inclusion of animals in the classroom can help students become more prosocial and empathetic towards others, combating possible aggressive behaviors. Indeed, several studies have proven that the addition of a dog in a classroom can increase students' attachment to pets, empathy, as well as social competence and cooperation with others in class (Daly & Morton, 2006; Daly & Suggs, 2010; Samuels et al., 2016; Warden & MacKinnon, 2003).  For instance, the presence of a dog in an elementary's school classroom increased students' sensitivity for the needs and the moods of other individuals compared to a control group without a dog (Hergovich et al., 2002). Thus, humane education programs can add the element of a dog during class time to teach students proper prosocial behaviors and empathy. Similarly, in the clinical setting, dogs could be used as part of animal assisted interventions together with school psychologists. Animal assisted interventions can be defined as goal oriented and structured interventions that intentionally include animals as part of the therapeutic process (Ng et al., 2019). Indeed, an increasing number of colleges have counseling centers as part of their facilities to support students with psychological difficulties and some have started employing animal-assisted interventions. For the time being, animal assisted interventions have mainly been used to reduce stress and anxiety on students before

the exams (Haggerty & Mueller, 2017; House, Neal & Backels, 2018). Nevertheless, they could be also used in prevention counseling programs to combat bullying by increasing empathy and reducing loneliness for bullies and victims respectively. For instance, a study conducted in elementary and middle school, assessed students' self-reports and teachers' observations in students' aggressive behaviors and empathy before and after their exposure to a rescued shelter dog (Sprinkle, 2008). The program consisted of eleven 45-min weekly sessions where a dog was present and children were taught to identify and practice prosocial behavior and empathetic understanding. The results revealed the effectiveness of dog therapy by increasing students' empathy and prosocial behaviors and decreasing aggression and violence compared to the control group (Sprinkle, 2008). Consequently, such programs can be implemented in the counseling centers of universities and colleges, either in an individual (one-on-one sessions with a dog) or in a group level (many students simultaneously with one or more dogs). Animal assisted interventions in combination with the help of a school psychologist could create opportunities for students to practice prosocial behavior (e.g. petting a frightened animal), consider the thoughts and the feelings of themselves and others (e.g. the feeling of dog and their classmates), and form valuable attachments and bonds (e.g. with the dog, the school psychologists, and other participants from the same program) that could act as a socially supportive network against social exclusion. In terms of facilities, a special area within the counseling center will be needed to be available for students to visit and to accommodate the needs of a dog (Barker et al., 2017; Trenton et al., 2017). Lastly, universities can use former stray dogs as therapy animals from local animal welfare organizations and thus increase awareness and create an animal friendly environment (Castellano, 2015).

Despite all the effort, there are some limitations and future research that need to be considered for this study. First of all, the sample size was small ($N=143$) for four groups and

therefore, the study needs to be replicated with a bigger sample in order to generalize the results with confidence. Moreover, the sample was not evenly balanced between males and females ($N_{males}$=51, $N_{females}$=90) and no gender differences were explored. However, it would be interesting for future research to assess whether males or females college students benefit more from the presence of dogs against events of social exclusion. Additionally, methodological limitations in terms of the design were the lack of manipulation check and control group for non-social rejection with Cyberball 4.0. In this study, it was taken for granted that Cyberball 4.0 induced feelings of social rejection to the participants based on the findings of previous research (Gerber & Wheeler, 2009; Williams & Jarvis, 2006; Zadro et al, 2004). Even though a recommendation would be to do a pre and post-test, before and after Cyberball 4.0, this entailed the danger for the participants to understand the purpose of the study and thus become biased on their answers. However, a replication of this study with a pre and post-test before and after Cyberball 4.0 would be advisable for the future. Moreover, there was no control group for non-social rejection condition due to the increased number of participants needed; something that was not feasible in this study due to time and availability constrains. Future research should also include a control group for the non-social rejection conditions to assess manipulation. Furthermore, due to Covid-19 pandemic, the whole experiment had to move online instead of being in the campus labs and having an actual interaction with a dog. This may possibly have compromised the results. Therefore, it is highly recommended that future research replicates this study with an actual dog to further add validity in the results. Lastly, the particular study explored only the effect of dogs on students' loneliness; however, future research needs to also assess the effect of other animals in comparison to dogs, such as cats, rabbits, or horses.

References

Adams, F. D., & Lawrence, G. J. (2011). Bullying victims: The effects last into college.

*American Secondary Education, 40*(1), 4–13.

Airenti, G. (2015). The cognitive bases of anthropomorphism: from relatedness to empathy.

*International Journal of Social Robotics*, *7*(1), 117–127.

https://doi.org/10.1007/s12369-014-0263-x

Albiero, P., Matricardi, G., Speltri, D., & Toso, D. (2009). The assessment of empathy in

adolescence: A contribution to the Italian validation of the "Basic Empathy Scale".

*Journal of adolescence*, *32*(2), 393–408.

https://doi.org/10.1016/j.adolescence.2008.01.001

Allen, K., Blascovich, J., Mendes, W. B., (2002). Cardiovascular reactivity and the presence

of pets, friends, and spouses: The truth about cats and dogs. Psychosomatic *Medicine,*

*64*(5), 727–739. doi:10.1097/01.psy.0000024236.11538.41

Angantyr, M., Eklund, J., & Hansen, E. M. (2011). A comparison of empathy for humans and

empathy for animals. *Anthrozoös, 24*(4), 369–377.

doi:10.2752/175303711x13159027359764

Arbour, R., Signal, T., & Taylor, N. (2009). Teaching kindness: The promise of humane

education. *Society and Animals*, *17*(2), 136–148.

Aydin, N., Krueger, J. I., Fischer, J., Hahn, D., Kastenmüller, A., Frey, D., & Fischer, P.

(2012). *"*Man's best friend:*"* How the presence of a dog reduces mental distress after

social exclusion. *Journal of Experimental Social Psychology, 48*(1), 446–449.

doi:10.1016/j.jesp.2011.09.011

Barker, S., Barker, R., & Schubert, C. (2017). Therapy dogs on campus: A counseling

outreach activity for college students preparing for final exams. *Journal of College*

*Counseling,20*(3), 278-288. doi:10.1002/jocc.12075

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal

attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497–

529.

Baumeister, R. F., Brewer, L. E., Tice, D. M., & Twenge, J. M. (2007). Thwarting the need to

belong: Understanding the interpersonal and inner effects of social exclusion. *Social

and Personality Psychology Compass, 1*(1), 506–520. doi:10.1111/j.1751-

9004.2007.00020.x

Baumeister, R. F., Twenge, J. M., & Nuss, C. K. (2002). Effects of social exclusion on

cognitive processes: Anticipated aloneness reduces intelligent thought. *Journal of

Personality and Social Psychology, 83*(4), 817–827. doi:10.1037/0022-3514.83.4.817

Beck, L., & Madresh, E. A. (2008). Romantic partners and four-legged friends: an extension

of attachment theory to relationships with pets. *Anthrozoos*, *21*(1), 43–56.

https://doi.org/10.2752/089279308X274056

Black, K. (2012). The relationship between companion animals and loneliness among rural

adolescents. *Journal of Pediatric Nursing*, *27*(2), 103–112.

https://doi.org/10.1016/j.pedn.2010.11.009

Blackhart, G. C., Nelson, B. C., Knowles, M. L., & Baumeister, R. F. (2009). Rejection

elicits emotional reactions but neither causes immediate distress nor lowers self-esteem:

A meta-analytic review of 192 studies on social exclusion. *Personality and Social

Psychology Review: An Official Journal of the Society for Personality and Social

Psychology, Inc*, *13*(4), 269–309. https://doi.org/10.1177/1088868309346065

Bouma, E. M. C., Vink, L. M., & Dijkstra, A. (2020). Expectations versus reality: Long-term

research on the dog–owner relationship. *Animals, 10*(5), 772.

doi:10.3390/ani10050772

Brockenbrough, K. K., Cornell, D. G., & Loper, A. B. (2002). Aggressive attitudes among victims of violence at school. *Education & Treatment of Children*, *25*(3), 273.

Brown, C. M., Hengy, S. M., & McConnell, A. R. (2016). Thinking about cats or dogs provides relief from social rejection. *Anthrozoös, 29*(1), 47–58. doi:10.1080/20414005.2015.1067958

Çalışkan, Z., Evgin, D., Bayat, M., Caner, N., Kaplan, B., Öztürk, A., & Keklik, D. (2019). Peer bullying in the preadolescent stage: Frequency and types of bullying and the affecting factors. *Journal of Pediatric Research*, *6*(3), 169–179. https://doi-org.acg.idm.oclc.org/10.4274/jpr.galenos.2018.26576

Camodeca, M., Goossens, F. A., Terwogt, M. M., & Schuengel, C. (2002). Bullying and victimization among school-age children: Stability and links to proactive and reactive aggression. *Social Development*, *11*(3), 332–345.

Carney, A. G., & Merrell, K. W. (2001). Bullying inschools: Perspectives on understanding and preventing an international problem. *School Psychology International, 22,* 364–382.

Caspi, A. (2000). The child is father of the man: personality continuities from childhood to adulthood. *Journal of Personality and Social Psychology*, *78*(1), 158–72.

Castellano, J. (2015). Pet therapy is a nearly cost-free anxiety reducer on college campuses. Retrieved fromhttp://www.forbes.com/sites/jillcastellano/2015/07/06/pet-therapy-is-a-nearly-cost-free-anxiety-reducer-on-college-campuses/#36535044737d

Chan, A. (2012). Anthropomorphism as a conservation tool. Biodiversity and Conservation, *21*, 1889–1892. https://doi.org/10.1007/s10531-012-0274-6

Chapell, M. S., Hasselman, S. L., Kitchin, T., Lomon, S. N., MacIver, K. W., & Sarullo, P. L. (2006). Bullying in elementary school, high school, and college. *Adolescence*, *41*(164), 633–48.

Chow, R. M., Tiedens, L. Z., & Govan, C. L. (2008). Excluded emotions: The role of anger in antisocial responses to ostracism. *Journal of Experimental Social Psychology, 44*(3), 896–903. doi:10.1016/j.jesp.2007.09.004

Cornell, D., Gregory, A., Huang, F., & Fan, X. (2013). Perceived prevalence of teasing and bullying predicts high school dropout rates. *Journal of Educational Psychology*, *105*(1), 138–149.

Costa, P.T. and McCrae, R.R. (1992). *Revised NEO Personality Inventory and NEO Five-Factor Inventory Professional Manual*. Odessa, FL: Psychological Assessment Resources, Inc.

D'Ambrosio, F., Olivier, M., Didon, D., & Besche, C. (2009). The basic empathy scale: A French validation of a measure of empathy in youth. *Personality and Individual Differences, 46*(2), 160-165. doi:10.1016/j.paid.2008.09.020

Dake, J. A., Price, J. H., & Telljohann, S. K. (2003). The nature and extent of bullying at school. *Journal of School Health*, *73*(5), 173–80.

Daly, B., & Morton, L. L. (2006). An investigation of human-animal interactions and empathy as related to pet preference, ownership, attachment, and attitudes in children. *Anthrozoös, 19*(2), 113–127. doi:10.2752/089279306785593801

Daly, B., & Morton, L. L. (2006). An investigation of human-animal interactions and empathy as related to pet preference, ownership, attachment, and attitudes in children. *Anthrozoös, 19*(2), 113–127. https://doi.org/10.2752/089279306785593801

Daly, B., & Morton, L. L. (2009). Empathic differences in adults as a function of childhood and adult pet ownership and pet type. *Anthrozoos*, *22*(4), 371–382. https://doi.org/10.2752/089279309X12538695316383

Daly, B., & Suggs, S. (2010). Teachers' experiences with humane education and animals in the elementary classroom: Implications for empathy development. *Journal of Moral Education, 39*(1), 101–112. doi:10.1080/03057240903528733

DeWall, C. N., & Baumeister, R. F. (2006). Alone but feeling no pain: Effects of social exclusion on physical pain tolerance and pain threshold, affective forecasting, and interpersonal empathy. *Journal of Personality and Social Psychology, 91*(1), 1–15. doi:10.1037/0022-3514.91.1.1

Eddy, T. J., Gallup, G. G., & Povinelli, D. J. (1993). Attribution of cognitive states to animals: anthropomorphism in comparative perspective. *Journal of Social Issues*, *49*(1), 87–101. https://doi.org/10.1111/j.1540-4560.1993.tb00910.x

Eisenberger, N. I., Jarcho, J. M., Lieberman, M. D., & Naliboff, B. D. (2006). An experimental study of shared sensitivity to physical pain and social rejection. *Pain, 126*(1), 132–138. doi:10.1016/j.pain.2006.06.024

Epley, N., Akalis, S., Waytz, A., & Cacioppo, J. T. (2008a). Creating social connection through inferential reproduction: Loneliness and perceived agency in gadgets, gods, and greyhounds. *Psychological Science*, *19*(2), 114–120.

Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: A three-factor theory of anthropomorphism. *Psychological Review, 114*(4), 864–886. doi:10.1037/0033-295x.114.4.864

Epley, N., Waytz, A., Akalis, S., & Cacioppo, J. T. (2008b). When we need a human: Motivational determinants of anthropomorphism. *Social Cognition, 26*(2), 143–155. https://doi.org/10.1521/soco.2008.26.2.143

Erlanger, E. A. C., & Tsytsarev, S. V. (2012). The relationship between empathy and personality in undergraduate students' attitudes toward nonhuman animals. *Society & Animals, 20*(1), 21–38. doi:10.1163/156853012x614341

Farrington, D. P., & Ttofi, M. M. (2009). School-Based programs to reduce bullying and victimization. *Campbell Systematic Reviews, 5*(1), i–148. doi:10.4073/csr.2009.6

Fine, A. H. (2010). Handbook on animal-assisted therapy: Theoretical foundations and guidelines for practice (3rd ed.). Elsevier/Academic.

Fraser, H., Taylor, N., & Signal, T. (2017). Young people empathising with other animals: Reflections on an Australian RSPCA humane education program. *Aotearoa New Zealand Social Work*, *29*(3), 5–16. https://doi.org/10.11157/anzswj-vol29iss3id384

Gerber, J., & Wheeler, L. (2009). On being rejected: A meta-analysis of experimental research on rejection. *Perspectives on Psychological Science: A Journal of the Association for Psychological Science*, *4*(5), 468–488. https://doi.org/10.1111/j.1745-6924.2009.01158.x

Gerber, J., & Wheeler, L. (2009*). On being rejected: A meta-analysis of experimental research on rejection. *Perspectives on Psychological Science, 4*(5), 468–488. doi:10.1111/j.1745-6924.2009.01158.x

Gini, G., Albiero, P., Benelli, B., & Altoè Gianmarco. (2007). Does empathy predict adolescents' bullying and defending behavior? *Aggressive Behavior*, *33*(5), 467–476. https://doi.org/10.1002/ab.20204

Haggerty, J., & Mueller, M. (2017). Animal-assisted stress reduction programs in higher education. *Innovative Higher Education,42*(5-6), 379-389. doi:10.1007/s10755-017-9392-0House, L., Neal, C., & Backels, K. (2018). A doggone way to reduce stress: An animal assisted intervention with college students. *College Student Journal,52*(2), 199-204.

Hales, A. H., Wesselmann, E. D., & Williams, K. D. (2016). Prayer, self-affirmation, and distraction improve recovery from short-term ostracism. *Journal of Experimental Social Psychology*, *64*, 8–20. https://doi.org/10.1016/j.jesp.2016.01.002

Harrison, M. A., & Hall, A. E. (2010). Anthropomorphism, empathy, and perceived

communicative ability vary with phylogenetic relatedness to humans. *Journal of Social,*

*Evolutionary, and Cultural Psychology, 4*(1), 34-48.

http://dx.doi.org/10.1037/h0099303

Haslam, N., Bain, P., Douge, L., Lee, M., & Bastian, B. (2005). More human than you:

Attributing humanness to self and others. *Journal of Personality and Social*

*Psychology, 89*(6), 937–950. doi:10.1037/0022-3514.89.6.937

Hastings, P. D., Zahn-Waxler, C., Robinson, J., Usher, B., & Bridges, D. (2000). The

development of concern for others in children with behavior problems. *Developmental*

*Psychology*, *36*(5), 531–546. https://doi.org/10.1037/0012-1649.36.5.531

Hergovich, A., Monshi, B., Semmler, G., & Zieglmayer, V. (2002). The effects of the

presence of a dog in the classroom. *Anthrozoös, 15*(1), 37–50.

https://doi.org/10.2752/089279302786992775

House, L., Neal, C., & Backels, K. (2018). A doggone way to reduce stress: An animal

assisted intervention with college students. *College Student Journal,52*(2), 199-204.

Hubbard, J. A. (2001). Emotion Expression Processes in Children's Peer Interaction: The

Role of Peer Rejection, Aggression, and Gender. *Child Development, 72*(5), 1426–

1438. doi:10.1111/1467-8624.00357

Hymel, S., & Swearer, S. M. (2015). Four decades of research on school bullying: An

introduction. *American Psychologist, 70*(4), 293–299. https://doi.org/10.1037/a0038928

Iossi S., M., Pereira, B., Mendonça, D., Nunes, B., & Oliveira, W. (2013). The involvement

of girls and boys with bullying: An analysis of gender differences. *International*

*Journal of Environmental Research and Public Health, 10*(12), 6820–6831.

doi:10.3390/ijerph10126820

Jolliffe, D., & Farrington, D. P. (2006). Development and validation of the basic empathy

    scale. *Journal of Adolescence*, *29*(4), 589–611.

Jolliffe, D., & Farrington, D. P. (2006). Examining the relationship between low empathy and

    bullying. *Aggressive Behavior*, *32*(6), 540–550. https://doi.org/10.1002/ab.20154

Juvonen, J., Nishina, A., & Graham, S. (2000). Peer harassment, psychological adjustment,

    and school functioning in early adolescence. *Journal of Educational Psychology*, *92*(2),

    349–359.

Kohl, A., Rief, W., & Glombiewski, J. A. (2013). Acceptance, cognitive restructuring, and

    distraction as coping strategies for acute pain. *The Journal of Pain*, *14*(3), 305–315.

    https://doi.org/10.1016/j.jpain.2012.12.005

Kurdi, B., Lozano, S., & Banaji, M. R. (2016). Introducing the Open Affective Standardized

    Image Set (OASIS). *Behavior Research Methods, 49*(2), 457–470. doi:10.3758/s13428-

    016-0715-3

Lang, P.J., Bradley, M.M., & Cuthbert, B.N. (2008). *International affective picture system*

    *(IAPS): Affective ratings of pictures and instruction manual. Technical Report A-8.*

    University ofFlorida, Gainesville, FL.

Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an

    interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social*

    *Psychology, 68*(3), 518–530. doi:10.1037/0022-3514.68.3.518

MacDonald, G., & Leary, M. R. (2005). Why does social exclusion hurt? The Relationship

    between social and physical pain. *Psychological Bulletin, 131*(2), 202–223.

    doi:10.1037/0033-2909.131.2.202

Maner, J. K., DeWall, C. N., Baumeister, R. F., & Schaller, M. (2007). Interpersonal relations

    and group processes - does social exclusion motivate interpersonal reconnection?

Resolving the "porcupine problem". *Journal of Personality and Social Psychology*, *92*(1), 42.

McConnell, A. R., Brown, C. M., Shoda, T. M., Stayton, L. E., & Martin, C. E. (2011). Friends with benefits: On the positive consequences of pet ownership. *Journal of Personality and Social Psychology*, *101*(6), 1239–1252. https://doi.org/10.1037/a0024506

McConnell, A. R., Lloyd, E. P., & Buchanan, T. M. (2017). *Animals as friends: Social psychological implications of human-pet relationships.* In M. Hojjat & A. Moyer (Eds.), *The psychology of friendship* (p. 157–174). Oxford University Press.

McConnell, A. R., Paige Lloyd, E., & Humphrey, B. T. (2019). We are family: Viewing pets as family members improves wellbeing. *Anthrozoös, 32*(4), 459–470. doi:10.1080/08927936.2019.1621516

Meehan, M., Massavelli, B., & Pachana, N. (2017). Using attachment theory and social support theory to examine and measure pets as sources of social support and attachment figures. *Anthrozoos, 30* (2), 273-289. https://doi.org/10.1080/08927936.2017.1311050

Melson, G. F. (2003). Child development and the human-companion animal bond. *American Behavioral Scientist*, *47*(1), 31–39.

Mitsopoulou, E., & Giovazolias, T. (2015). Personality traits, empathy and bullying behavior: A meta-analytic approach. *Aggression and Violent Behavior*, *21*(C), 61–72. https://doi.org/10.1016/j.avb.2015.01.007

Modecki, K. L., Minchin, J., Harbaugh, A. G., Guerra, N. G., & Runions, K. C. (2014). Bullying prevalence across contexts: A meta-analysis measuring cyber and traditional bullying. *Journal of Adolescent Health, 55*(5), 602–611. doi:10.1016/j.jadohealth.2014.06.007

Mourey, J. A., Olson, J. G., & Yoon, C. (2017). Products as pals: Engaging with

    anthropomorphic products mitigates the effects of social exclusion. *Journal of*

    *Consumer Research*, *44*(2), 414–431.

Mueller, M. K. (2014). Is human-animal interaction linked to positive youth development?

    initial answers. *Applied Developmental Science*, *18*(1), 5–16.

    https://doi.org/10.1080/10888691.2014.864205

Nesdale, D., & Lambert, A. (2007). Effects of experimentally manipulated peer rejection on

    children's negative affect, self-esteem, and maladaptive social behavior. *International*

    *Journal of Behavioral Development, 31*(2), 115–122. doi:10.1177/0165025407073579

Ng, Z., Morse, L., Albright, J., Viera, A., & Souza, M. (2019). Describing the use of animals

    in animal-assisted intervention research. *Journal of Applied Animal Welfare Science :*

    *JAAWS*, *22*(4), 364–376. https://doi.org/10.1080/10888705.2018.1524765

Nickerson, A. B., Mele, D., & Princiotta, D. (2008). Attachment and empathy as predictors of

    roles as defenders or outsiders in bullying interactions. *Journal of school psychology*,

    *46*(6), 687–703. https://doi.org/10.1016/j.jsp.2008.06.002

Noorden, T. H. J., Haselager, G. J. T., Cillessen, A. H. N., & Bukowski, W. M. (2015).

    Empathy and involvement in bullying in children and adolescents: A systematic review.

    *Journal of Youth and Adolescence*, *44*, 637–657.

Olweus, D. (2013). School bullying: Development and some important challenges. *Annual*

    *Review of Clinical Psychology*, *9*(1), 751–780. https://doi.org/10.1146/annurev-clinpsy-

    050212-185516

Papatsimouli, M., Skordas, J., Lazaridis, L., Michailidi, E., Saprikis, V., & Fragulis, G.F.

    (2019). Cyberbullying and traditional bullying in Greece: An empirical study. ArXiv,

    abs/1904.07188.

Pateraki, L., & Houndoumadi, A. (2001). Bullying among primary school children in Athens, Greece. *Educational Psychology, 21*(2), 167–175. doi:10.1080/01443410020043869

Peterson, J., & Ray, K. (2006). Bullying and the gifted: Victims, perpetrators, prevalence, and effects. *Gifted Child Quarterly*, *50*(2), 148–168.

Riva, P. (2016). Emotion regulation following social exclusion: Psychological and behavioral strategies. In P. Riva & J. Eck (Eds.), *Social exclusion: Psychological approaches to understanding and reducing its impact* (pp. 199–225). Springer International Publishing. https://doi.org/10.1007/978-3-319-33033-4_10

Rivers, I. (2000). Social exclusion, absenteeism and sexual minority youth. *Support for Learning, 15*(1), 13–18. doi:10.1111/1467-9604.00136

Russell, D. W. (1996). UCLA loneliness scale (version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment*, *66*(1), 20–40.

Russell, D., Peplau, L. A., & Ferguson, M. L. (1978). Developing a measure of loneliness. *Journal of Personality Assessment, 42*(3), 290–294.

Salmivalli, C., Lagerspetz, K., Björkqvist, K., Österman, K. & Kaukiainen, A. (1996).Bullying as a group process: Participant roles and their relations to social status within a group. *Aggressive Behavior, 22*, 1-15.

Samuels, W. E., Meers, L. L., & Normando, S. (2016). Improving upper elementary students' humane attitudes and prosocial behaviors through an in-class humane education program. *Anthrozoös, 29*(4), 597–610. https://doi.org/10.1080/08927936.2016.1228751

Sapouna, M. (2008). Bullying in Greek Primary and Secondary Schools. *School Psychology International, 29*(2), 199–213. doi:10.1177/0143034308090060

Scheithauer, H., Hayer, T., Petermann, F., & Jugert, G. (2006). Physical, verbal, and relational forms of bullying among German students: Age trends, gender differences, and correlates. *Aggressive Behavior*, *32*(3), 261–275. https://doi.org/10.1002/ab.20128

Serpell, J. (2002). Anthropomorphism and anthropomorphic selection—Beyond the "cute

    response". *Society and Animals. 10*, 437-454. 10.1163/156853002320936926.

Smith, P. K. & Shu, S. (2000).What good schools can do about bullying: Findings from a

    survey in English schools after a decade of research and action. *Childhood, 7*(2), 193–

    212. doi:10.1177/0907568200007002005

Smokowski, P. R., & Kopasz, K. H. (2005). Bullying in school: an overview of types, effects,

    family characteristics, and intervention strategies. *Children & Schools*, *27*(2), 101–110.

Sprinkle, J. E. (2008). Animals, empathy, and violence. *Youth Violence and Juvenile Justice,*

    *6*(1), 47–58. doi:10.1177/1541204007305525

Tani, F., Greenman, P. S., Schneider, B. H., & Fregoso, M. (2003). Bullying and the big five:

    A study of childhood personality and participant roles in bullying incidents. *School*

    *Psychology International*, *24*(2), 131–46.

Taylor, N., & Signal, T. D. (2005). Empathy and attitudes to animals. *Anthrozoös, 18*(1), 18–

    27. https://doi.org/10.2752/089279305785594342

Templer, D.I., Salter, C.A., Dickey, S., Baldwin, R., & Veleber, D.M. (1981).The

    construction of a pet attitude scale. *The Psychological Record*, *31*, 343-348.

Terras, K. & Olson, M. (2006). The value of a dog in a classroom of children with severe

    emotional disorders. *Anthrozoos: A Multidisciplinary Journal of the Interactions of*

    *People & Animals, 19,* 35-49. 10.2752/089279306785593919.

Thompson, K. L., & Gullone, E. (2003). Promotion of empathy and prosocial behaviour in

    children through humane education. *Australian Psychologist*, *38*(3), 175–182.

Trenton, A., Clark, C., Crowell, V., Duffy, K., Green, M., McEwen, S., Wrape, A., &

    Hammonds, F. (2017). The mental health benefits of having dogs on college campuses.

    *Modern Psychological Studies,22*(2).

Twenge, J. M., Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Bartels, J. M. (2007). Social exclusion decreases prosocial behavior. *Journal of Personality and Social Psychology, 92*(1), 56–66. doi:10.1037/0022-3514.92.1.56

Walsh, F. (2009). Human-animal bonds I: the relational significance of companion animals. *Family Process*, *48*(4), 462–80. https://doi.org/10.1111/j.1545-5300.2009.01296.x

Wang, J., Iannotti, R. J., & Nansel, T. R. (2009). School bullying among adolescents in the United States: Physical, verbal, relational, and cyber. *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine*, *45*(4), 368–75. https://doi.org/10.1016/j.jadohealth.2009.03.021

Wang, J., Iannotti, R. J., Luk, J. W., & Nansel, T. R. (2010). Co-occurrence of victimization from five subtypes of bullying: Physical, verbal, social exclusion, spreading rumors, and cyber. *Journal of Pediatric Psychology, 35*(10), 1103–1112. doi:10.1093/jpepsy/jsq048

Ward, G. E., Collins, H. K., Coren, S., Chen, F. S., Klaiber, P., & Owens, R. L. (2018). Petting away pre-exam stress: The effect of therapy dog sessions on student well-being. *Stress & Health: Journal of the International Society for the Investigation of Stress*, *34*(3), 468–473. https://doi-org.acg.idm.oclc.org/10.1002/smi.2804

Warden, D., & MacKinnon, S. (2003). Prosocial children, bullies and victims: An investigation of their sociometric status, empathy and social problem-solving strategies. *British Journal of Developmental Psychology*, *21*(3), 367–385.

Wentzel, K. R. (2017). *Peer relationships, motivation, and academic performance at school.* In A. J. Elliot, C. S. Dweck, & D. S. Yeager (Eds.), *Handbook of competence and motivation: Theory and application* (p. 586–603). The Guilford Press.

Wesselmann, E. D., Ren, D., Swim, E., & Williams, K. D. (2013). Rumination hinders recovery from ostracism. *International Journal of Developmental Science, 7* , 33–39.

Westbury, H. R., & Neumann, D. L. (2008). Empathy-related responses to moving film

stimuli depicting human and non-human animal targets in negative circumstances.

*Biological Psychology*, *78*(1),66–74. https://doi.org/10.1016/j.biopsycho.2007.12.009

Williams, K. D., & Jarvis, B. (2006). Cyberball: A program for use in research on

interpersonal ostracism and acceptance. *Behavior Research Methods, 38*(1), 174–180.

doi:10.3758/bf03192765

Wolke, D., Woods, S., Stanford, K., & Schulz, H. (2001). Bullying and victimization of

primary school children in England and Germany: Prevalence and school factors.

*British Journal of Psychology (London, England : 1953)*, *92*(Pt 4), 673–696.

https://doi.org/10.1348/000712601162419

Young, A., Khalil, K. A., & Wharton, J. (2018). Empathy for animals: A review of the

existing literature. *Curator: The Museum Journal, 61*(2), 327–343.

doi:10.1111/cura.12257

Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a

computer is sufficient to lower self-reported levels of belonging, control, self-esteem,

and meaningful existence. *Journal of Experimental Social Psychology*, *40*(4), 560–567.

Zych, I., Ttofi, M. M., & Farrington, D. P. (2019). Empathy and callous-unemotional traits in

different bullying roles: A systematic review and meta-analysis. *Trauma, Violence &

Abuse*, *20*(1), 3–21. https://doi.org/10.1177/1524838016683456

Table 1

*Frequency Distributions, Means and Standard Deviations for Demographic Variables*

|  | Frequencies | N | Mean | SD |
| --- | --- | --- | --- | --- |
| Age |  | 143 | 23.76 | 4.16 |
| Biological Sex |  |  |  |  |
| Male | 35.7% | 51 |  |  |
| Female | 62.9% | 90 |  |  |
| Not Wish to Respond | 1.4% | 2 |  |  |
| Undergraduate School |  |  |  |  |
| Business & Economics | 36.4% | 52 |  |  |
| Liberal Arts & Sciences | 42% | 60 |  |  |
| Fine & Performing Arts | 4.2% | 6 |  |  |
| Non-Applicable | 17.5% | 25 |  |  |
| Graduate School |  |  |  |  |
| Counseling & Psychotherapy | 10.5% | 15 |  |  |
| Educational Psychology | 4.9% | 7 |  |  |
| Organizational Psychology | 2.8% | 4 |  |  |
| Advertising Communications | 1.4% | 2 |  |  |
| Public Relations | 1.4% | 2 |  |  |
| Digital Communications | 2.8% | 4 |  |  |
| TESOL | 0.7% | 1 |  |  |
| Data Science | 2.1% | 3 |  |  |
| Non-Applicable | 73.4% | 15 |  |  |
| Currently Have/Had a Pet |  |  |  |  |
| Yes | 88.1% | 126 |  |  |
| No | 11.9% | 17 |  |  |

Table 1 (continue)

*Frequency Distributions, Means and Standard Deviations for Demographic Variables*

|  | Frequencies | N | Mean | SD |
|---|---|---|---|---|
| Kind of Pet |  |  |  |  |
| Dog | 67.1% | 96 |  |  |
| Cat | 48.3% | 69 |  |  |
| Bird | 16.1% | 23 |  |  |
| Rabbit | 6.3% | 9 |  |  |
| Fish | 18.2% | 26 |  |  |
| No pet | 11.9% | 17 |  |  |
| Other | 8.4% | 12 |  |  |
| Owning a Pet |  |  |  |  |
| Less than 6 months | 9.8% | 14 |  |  |
| More than 6 months | 78.3% | 112 |  |  |
| No pet | 11.9% | 17 |  |  |

Table 2

*One-Way ANCOVA Analysis of Dog Presentation (Group) on Loneliness*

| Source | df | F | p | $\eta^2$ |
|---|---|---|---|---|
| Covariates | | | | |
| Pet Attitude | 1 | 0.066 | 0.798 | 0.000 |
| Group | 3 | 21.12 | 0.000 | 0.351 |
| Error | 138 | | | |

Table 3

*One-Way ANCOVA Analysis of Dog Presentation (Group) on Empathy*

| Source | df | F | p | $\eta^2$ |
|---|---|---|---|---|
| Covariates | | | | |
| Pet Attitude | 1 | 0.034 | 0.855 | 0.000 |
| Group | 3 | 16.97 | 0.000 | 0.269 |
| Error | 138 | | | |

Table 4

*One-Way ANCOVA Analysis of Dog Presentation (Group) on Affective Empathy*

| Source | df | F | p | $\eta^2$ |
|---|---|---|---|---|
| Covariates | | | | |
| Pet Attitude | 1 | 0.006 | 0.937 | 0.000 |
| Group | 3 | 182.260 | 0.000 | 0.287 |
| Error | 138 | | | |

Table 5

*One-Way ANCOVA Analysis of Dog Presentation (Group) on Cognitive Empathy*

| Source | $df$ | $F$ | $p$ | $\eta^2$ |
|---|---|---|---|---|
| Covariates | | | | |
| Pet Attitude | 1 | 0.202 | 0.654 | 0.001 |
| Group | 3 | 5.266 | 0.002 | 0.103 |
| Error | 138 | | | |

*Figure 1. Summary of the mean values of loneliness on anthropomorphism, positive distraction, positive emotional connection and control group.*

*Figure 2. Summary of the mean values of empathy on anthropomorphism, positive distraction, positive emotional connection and control group.*

*Figure 3. Summary of the mean values of affective empathy on anthropomorphism, positive distraction, positive emotional connection and control group.*
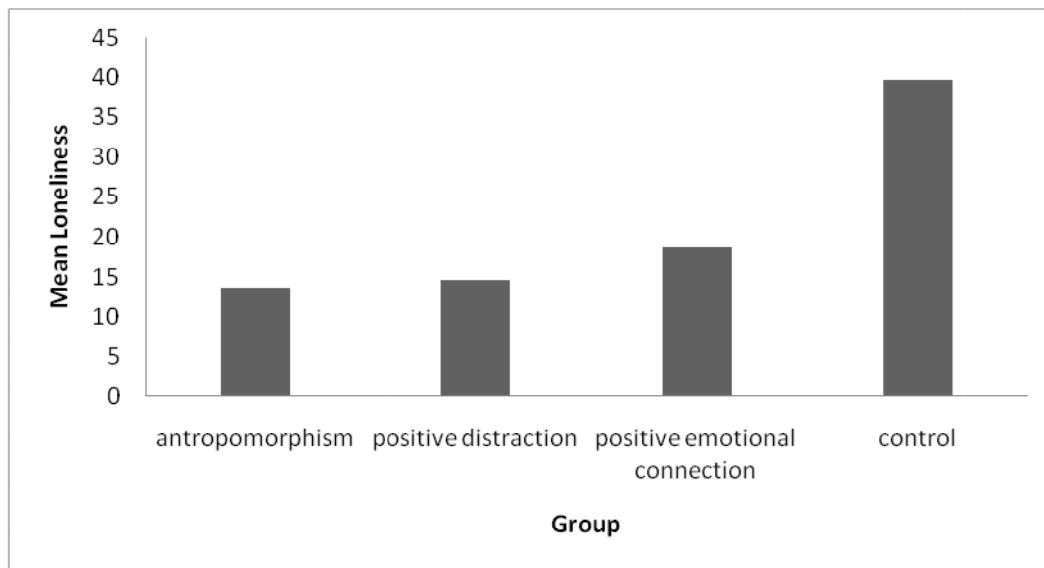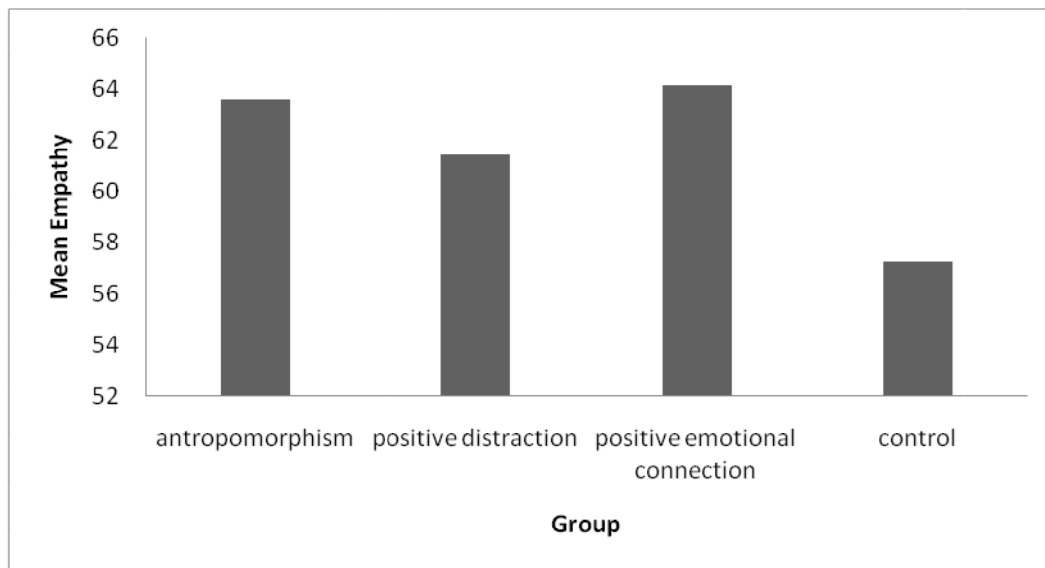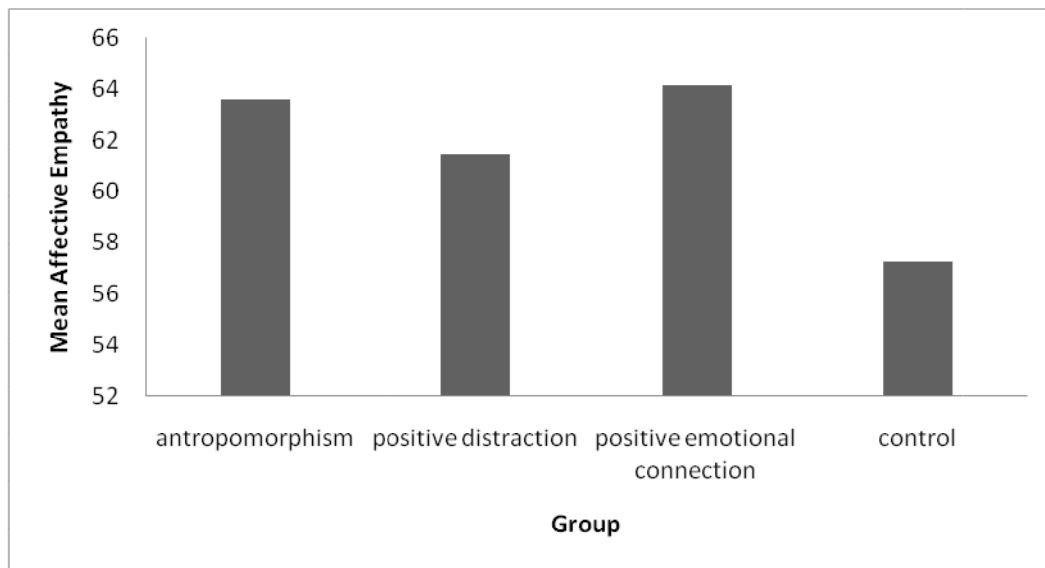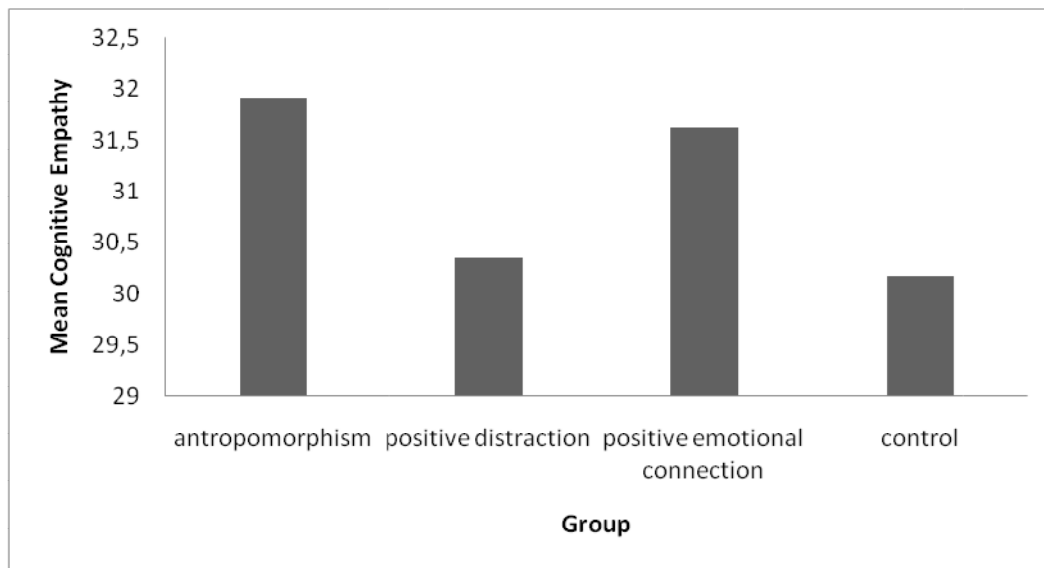
*Figure 4. Summary of the mean values of cognitive empathy on anthropomorphism, positive distraction, positive emotional connection and control group.*

Appendix A

**Demographic Information**

**Instructions:** Please find below a few demographic questions, answer by filling the space provided or by ticking the appropriate category.

1. How old are you? (e.g. 25 years) _____

2. What is your biological sex?

a)Male

b) Female

c) Do not wish to respond

3. What is your current level of education?

a) Undergraduate / Bachelor degree          b) Graduate / Master's degree

4. Under which school is your Undergraduate major?

 a) School of Business and Economics (e.g. Accounting, Economics, Finance, Management, Marketing)

b) School of Liberal Arts and Sciences (e.g. Communication, English Literature, Environmental Studies, History, International Relations and European Affairs, Philosophy, Sociology, Psychology, Information Technology)

c) School of Fine and Performing Arts (e.g. Music, Theatre Arts, Art History, Graphic Design, Visual Arts)

d) Non applicable

5. In which program are you enrolled in your graduate studies?

 a) Psychology (e.g. MS in Counseling Psychology & Psychotherapy, MA in Applied Educational Psychology, MS in Organizational Psychology)

b) Communication (e.g. MA in Advertising Communications, MA in Strategic Communication & Public Relations, MA in Digital Communication & Social Media)

c) Applied Linguistics (e.g. MA in Teaching English to Speakers of Other Languages (TESOL))

d) Data Science (e.g. MS in Data Science)

e) Non-applicable

6. Do you have or had a pet(s)?

a) Yes

b) No

7. What kind of pet(s) do you have or had in the past? (please circle <u>all</u> answers that apply to you)

a) Dog

b) Cat

c) Bird

d) Rabbit

e) Fish

f) Other

g) No pet


8. For how long do you have or had the pet?

a) Less than 6 months

b) More than 6 months

c) No pet

Appendix B

**The Pet Attitude Scale**

**Instructions:** Below there are a number of statements relating to pets. Please read each statement carefully, and use the scale below to indicate the degree to which you personally agree or disagree with what it is stated. There is no right or wrong answer.
(1=Strongly Disagree, 7=Strongly Agree)

| | | Strongly Disagree | Moderately Disagree | Slightly Disagree | Unsure | Slightly Agree | Moderately Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. | I really like seeing pets enjoy their food. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | My pet means more to me than any of my friends. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | I would like a pet in my home. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | Having pets is a waste of money. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | Housepets add happiness to my life (or would if I had one). | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | I feel that pets should always be kept outside. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. | I spent time every day playing with my pet (or I would if I had one). | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. | I have occasionally communicated with my pet and understood what it was trying to express. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. | The world would be a better place if people would stop spending so much time caring for their pets and started caring more for other human beings instead. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. | I like to feed animals out of my hand. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. | I love pets. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. | Animals belong in the wild or in zoos, but not in the home. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. | If you keep pets in the house you can expect a lot of damage to the furniture. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. | I like housepets. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. | Pets are fun but it's not worth the trouble of owning one. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. | I frequently talk to my pet. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. | I hate animals. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. | You should treat your housepets with as much respect as you would a human member of your family. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Appendix C

**UCLA Loneliness Scale**

**Instructions:** Below there are a number of statements relating to yourself. Read the statements carefully and indicate how often each statement is descriptive of you. There is no right or wrong answer.
C indicates "I often feel this way"
S indicates "I sometimes feel this way"
R indicates "I rarely feel this way"
N indicates "I never feel this way"

1. I am unhappy doing so many things alone.                                    O S R N

2. I have nobody to talk to.                                                    O S R N

3. I cannot tolerate being so alone.                                           O S R N

4. I lack companionship.                                                        O S R N

5. I feel as if nobody really understands me.                                  O S R N

6. I find myself waiting for people to call or write.                          O S R N

7. There is no one I can turn to.                                              O S R N

8. I am no longer close to anyone.                                            O S R N

9. My interests and ideas are not shared by those around me.                   O S R N

10. I feel left out.                                                           O S R N

11. I feel completely alone.                                                   O S R N

12. I am unable to reach out and communicate with those around me.            O S R N

13. My social relationships are superficial.                                   O S R N

14. I feel starved for company.                                               O S R N

15. No one really knows me well.                                              O S R N

16. I feel isolated from others.                                              O S R N

17. I am unhappy being so withdrawn.                                          O S R N

18. It is difficult for me to make friends.                                   O S R N

19. I feel shut out and excluded by others.                                   O S R N

20. People are around me but not with me.                                     O S R N

Appendix D

**Basic Empathy Scale**

**Instructions:** Below there are a number of statements relating to your relationship with your friends. Read each statement and then circle the most appropriate number, indicating how much you agree or disagree with. There is no right or wrong answer.
(1=Strongly Disagree, 5=Strongly Agree)

| | | Strongly Disagree | | Neutral | | Strongly Agree |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1. | My friends' emotions don't affect me much. | 1 | 2 | 3 | 4 | 5 |
| 2. | After being with a friend who is sad about something, usually feel sad. | 1 | 2 | 3 | 4 | 5 |
| 3. | I can understand my friend's happiness when she/he does well at something. | 1 | 2 | 3 | 4 | 5 |
| 4. | I get frightened when I watch characters in a good scary movie. | 1 | 2 | 3 | 4 | 5 |
| 5. | I get caught up in other people's feelings easily. | 1 | 2 | 3 | 4 | 5 |
| 6. | I find it hard to know when my friends are frightened. | 1 | 2 | 3 | 4 | 5 |
| 7. | I don't become sad when I see other people crying. | 1 | 2 | 3 | 4 | 5 |
| 8. | Other people's feelings don't bother me at all. | 1 | 2 | 3 | 4 | 5 |
| 9. | When someone is feeling 'down' I can usually understand how they feel. | 1 | 2 | 3 | 4 | 5 |
| 10. | I can usually work out when my friends are scared. | 1 | 2 | 3 | 4 | 5 |
| 11. | I often become sad when watching sad things on TV or in films. | 1 | 2 | 3 | 4 | 5 |
| 12. | I can often understand how people are feeling even before they tell me. | 1 | 2 | 3 | 4 | 5 |
| 13. | Seeing a person who has been angered has no effect on my feelings. | 1 | 2 | 3 | 4 | 5 |
| 14. | I can usually work out when people are cheerful. | 1 | 2 | 3 | 4 | 5 |
| 15. | I tend to feel scared when I am with friends who are afraid. | 1 | 2 | 3 | 4 | 5 |
| 16. | I can usually realize quickly when a friend is angry. | 1 | 2 | 3 | 4 | 5 |
| 17. | I often get swept up in my friends' feelings. | 1 | 2 | 3 | 4 | 5 |
| 18. | My friend's unhappiness doesn't make me feel anything. | 1 | 2 | 3 | 4 | 5 |
| 19. | I am not usually aware of my friends' feelings. | 1 | 2 | 3 | 4 | 5 |
| 20. | I have trouble figuring out when my friends are happy. | 1 | 2 | 3 | 4 | 5 |

Appendix E

## Informed Consent Form

Please take your time and read this consent form carefully.

**Purpose of the study**
My name is Nasia Filippopoulou and you are invited to participate in a study aiming to examine students attitudes towards pets in relation to some additional personality measures. This study is conducted as part of my Thesis Dissertation for the MA in Applied Educational Psychology under the supervision of Dr. Nega and Dr. Armaos. This research study has been reviewed and approved by the Institutional Review Board of The American College of Greece.

**Procedure**
If you decide to participate in this study, you will be asked to answer some general demographic questions (e.g. gender, age, major), some questions about your relationship with your pet, play an online game, complete a pet task and reply to questions about yourself and your relationship with your friends. The whole procedure is expected to last approximately 25 minutes.

**Potential risks / Benefits**
Participation in this study does not entail any known risks. However, if you might feel any discomfort during the procedure, you are allowed to withdraw at any moment. By participating in this study, you will be able to reflect on yourself on specific topics and thus gain a personal insight. Additionally, you will gain the experience of participating in scientific study and know that you have contributed to the potential advancement of knowledge in the field of psychology.

**Anonymity / Confidentiality**
For those who decide to participate, anonymity is assured as you will not be asked to provide any personal or identifying information. There is no code number that can be connected back to your name either directly or through a coded list. Results will be reported only as summative. All material will be securely stored while only me and the supervisor will have access to it.

**Voluntary participation / Right to withdraw**
Participation is voluntary and you are free to deny participation or terminate the procedure at any time, without giving any reasons for your withdrawal. In this case, the information you have provided will be excluded from the study.

If you have any questions about the study or wish to receive a copy of the results, feel free to contact me via e-mail at a.filippopoulou@acg.edu, or the supervisors Dr. C. Nega (cnega@acg.edu).

**Statement of Consent**
By following the link below, you are indicating that you have read and understand the information provided above, that you are over 18, that you willingly agree to participate, that you understand that you may withdraw your consent at any time and discontinue participation without penalty, and that you are not waiving any legal claims.

Appendix F

**Debriefing Form**

Dear participant,

Thank you for participating in this study. The aim of this study is to investigate the effect of dog presentation on social exclusion and empathy on graduate and undergraduate students. Previous research has found that animals have a buffering effect on social exclusion and thus alleviate feelings of loneliness by providing socially supportive anthropomorphism. Additionally, literature suggests that animals enhance people's empathy, which is an important trait against bullying. Consequently, the specific study explores the effect of dogs in terms of anthropomorphism, positive distraction and emotional connection on feelings of social exclusion and loneliness. Also, it investigates the effect of dog presentation on affective and cognitive empathy.

For this study, you were asked to complete three scales, one social rejection task and one pet task. The scales were the Pet Attitude Scale that measures personal attitudes on pets, the UCLA Loneliness Scale that measures subjective feelings of loneliness and social exclusion, and the Basic Empathy Scale that measures affective and cognitive empathy. Moreover, for the social rejection task, you were asked to play an online game named Cyberball 4.0 designed to induce an intense rejection from others. Finally, you were asked to do a pet task depending on the condition group, which varied from giving human traits to dogs (anthropomorphising condition), to viewing positive photos of dogs (positive distraction condition) or writing a positive and emotionally experience with a dog (emotional connection condition) or writing about the best vacation (control condition). The actual purpose of the study and the examined variables were not disclosed to you at first in order to allow you to complete the experiment based on your experiences and not on preconceptions.

I kindly request not to reveal the information provided here to other people who might participate, until 15th of October when I expect to have completed the collection of data for my study. If you have any questions or if you wish to obtain a summary of the overall findings, please feel free to contact me at a.filippopoulou@acg.edu or my supervisors Dr. C. Nega (cnega@acg.edu), after 31th of October when I would have completed all analyses.

Please contact the Institutional Review Board at the American College of Greece (irb@acg.edu) about your rights in this research or for questions, concerns, suggestions, complaints that are not being addressed by the research team, or in case of research-related harm.

In case you experienced any unanticipated negative outcomes from participating in this study, you might contact the following sites for support, where their services are offered free of charge.

For ACG students: Counseling Center at the American College of Greece, Tel: 210-6009800 (ext.1080, 1081)
For all participants: Psy-Diktyo (Ψ-Δίκτυο), http://psy-diktyo.gr/

If you are interested to learn more about the topic, please find below some indicative sources:

McConnell, A. R., Paige Lloyd, E., & Humphrey, B. T. (2019). We are family: Viewing pets as family members improves wellbeing. *Anthrozoös, 32(4), 459–470.* doi:10.1080/08927936.2019.1621516

Brown, C. M., Hengy, S. M., & McConnell, A. R. (2016). Thinking about cats or dogs provides relief from social rejection. *Anthrozoös, 29(1), 47–58.* doi:10.1080/20414005.2015.1067958

**THANK YOU AGAIN FOR YOUR PARTICIPATION!!!!**