

Article

Children's and Adolescents' Pet Attachment, Empathy, and Compassionate Responding to Self and Others

Sandra Bosacki ^{1,*}, Christine Yvette Tardif-Williams ² and Renata P. S. Roma ¹¹ Department of Educational Studies, Brock University, St. Catharines, ON L2S 3A1, Canada² Department of Child and Youth Studies, Brock University, St. Catharines, ON L2S 3A1, Canada

* Correspondence: sbosacki@brocku.ca

Abstract: The research shows that children's and adolescents' attachments with pets play an important role in their social and emotional lives. However, little research exists on how children and adolescents show compassion toward themselves and others and how this caring ability relates to their attachment with pets. This study explored the relations among children's and adolescents' compassion, empathy, and attachment to their pets. Sixty-one Canadian youths aged 7–15.9 years ($M = 11.35$) participated in this study ($n = 38$ g, 23 b) and completed self-report questionnaires including the Lexington Attachment to Pets scale, subscale of Dispositional Positive Emotions, Self-compassion scale for children, and Bryant's Index of Empathy for Children and Adolescents (IECA). The results showed older adolescents were more likely than younger children to score high on cognitive and emotional dimensions of empathy and be less likely to feel alone and isolated. High levels of emotional pet attachment related to high levels of the ability to feel sad when witnessing others in distress and high levels of mindful, compassionate, and self-responding feelings of compassion for others. The results also showed that those participants who experienced intensified emotional attachment toward their pets (either current or in the past), were less likely to judge themselves in negative ways. Overall, our findings suggest that children's emotional attachments with pets relate to their ability to respond to themselves and others in kind and compassionate ways and not necessarily their ability to understand another person's emotions.

Keywords: children; pets; attachment; empathy; compassion

Citation: Bosacki, S.; Tardif-Williams, C.Y.; Roma, R.P.S. Children's and Adolescents' Pet Attachment, Empathy, and Compassionate Responding to Self and Others. *Adolescents* **2022**, *2*, 493–507. <https://doi.org/10.3390/adolescents2040039>

Academic Editor: Laura L. Hayman

Received: 25 October 2022

Accepted: 23 November 2022

Published: 29 November 2022

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1. Introduction

Children learn to care for themselves, other humans, and animals from an early age and this ability develops as they enter adolescence. However, little research exists on how children's and adolescents' abilities to understand the emotions of others and respond with compassion toward others and themselves relate to their ability to form emotional attachments with their pets. To address this gap in the literature, this study explored the relations among children's and adolescents' ability to respond in compassionate ways toward themselves and others, empathy, and attachment to their pets.

In late childhood and early adolescence, relationships with others become increasingly important—particularly with peers, as well as animals and pets [1,2] In tandem with the re-organization of social relationships, children's and adolescents' sense of self and identity becomes heightened as they become more concerned about evaluations from others [3]. Although studies show that intimate relationships with peers play critical roles in children's and adolescents' social-emotional and moral development [4–6], few studies explore how young people's relationships and self-cognitions link to their relationships with animals, particularly with their pets [1,7]. Studies also show how children learn from their relationships with animals including cognitively (e.g., making fine-grained distinctions between self and animal “other”), socially (e.g., in terms of interactions and play), and morally (e.g., nurturing and responsibility; [8]. However, few studies examine the

social-cognitive dimensions of children's relationships with pets and how such attachments influence one's feelings and thoughts toward oneself [1,9].

Past studies show children and adolescents with higher mindreading skills such as emotional recognition and perspective-taking also experience high levels of perceived quality of, and satisfaction with, relationships (e.g., lack of conflict, emotional warmth, and supportive relationships) with their siblings and friends [9–12]). However, to the best of our knowledge, researchers have yet to explore the relations among compassionate self-responding, the multi-dimensional aspects of empathy, and children's and adolescents' perceptions of their emotional attachments with their pets. Furthermore, with the exception of one study [13] that showed young adolescents with strong emotional attachments to pets showed a higher sense of self-esteem and autonomy, to date, there remains a lack of studies that specifically investigate the links between young people's pet attachments and their tendency to respond to others and themselves in compassionate and caring ways.

1.1. Relational-Developmental Approach to Self and Attachment Relations—Role of Pets

According to relational developmental approaches to attachment relations with others and emotional and social development [6], pets (e.g., dogs, cats, fish) can be a source of psychological support in a manner similar to close human others and attachments with primary caregivers [1]. Studies show that most pet owners often anthropomorphize their pets [14], and the anthropomorphization of pets has been found to be related to the perceptions of pets as a family member or friend [15]. In other words, children and adults often ascribe human characteristics, including emotions (e.g., my dog loves me) and cognitions (e.g., my dog understands me) to their pets. Viewing pets as human-like with distinct personalities may foster the perception of pets as close others and thus facilitate pet-human interactions that mirror human-human relations [1,9]. Thus, if children conceptualize their pets as a close friend, pets may satisfy some of their owners' psychological needs and support well-being, just as another person would [15].

Similar to relational attachments with significant others ([16] as a dynamic emotional process between animal and child, studies show that children's and adolescents' pet attachments are also related to increased levels of socio-emotional abilities and well-being [1,9]. However, little is known about connections among children's and adolescents' compassionate responding to self and others, their empathy skills such as understanding others' emotions and their relationships with animals. Throughout later childhood and adolescence, youths become increasingly aware of cultural conceptions and judgements about the role of nature and animals in people's lives [17]. Given that young adolescents become increasingly sensitive to the judgements of others and grow in self-consciousness and self-doubt, such thinking may influence how they feel about themselves and others, as well as respond toward animals including their pets [18,19].

Researchers suggest that pets serve as a trusted source of emotional comfort and support within the family circle [1,20], and may feature strongly in their emotional lives. However, it remains unknown as to whether the emotional strength of this pet relationship supports (or hinders) them in their ability to respond to themselves and others in kind and compassionate ways. Although there is growing evidence of the potential psychosocial importance of adolescents' relationships with animals especially during older childhood and adolescence [7,9], the nature of emotional attachments to pets and how these might vary among different age groups during later childhood and adolescence, and between girls and boys, has received relatively little attention.

1.2. Empathy and Compassion in Children

Compassion and empathy are multi-dimensional, complex social-cognitive abilities that develop from relationships with others [21,22]. Developmental biosocial-cognitive theory highlights the importance of empathy and compassion to young people's socio-emotional adjustment [4,23–26]. For example, studies show that understanding other's thoughts and feelings (cognitive empathy) and feeling for another person in distress

(affective empathy), relates to positive social interactions and effective communication with others [27]. Regarding compassion for self and others, studies show how the ability to be mindful and kind to others and oneself relates to more positive social and emotional adjustment in older children and adolescents [22,28]. Across time, research shows that being more empathic in adolescence predicts higher empathy at the age of 35 years, as well as better self-reported communication skills and social competence. Such studies indicate that the identification of individual differences in empathy and compassion may help expose the mechanisms that underlie differences in socio-emotional functioning and abilities to form attachments with other living beings including animals.

1.3. Empathy and Compassion in Children—Links to Relationships with Pets

In particular, one study [29] shows that adults' secure attachment to their pets relates to their ability to have secure human relationships and to be able to show affective empathy and understand the emotions of others. Building on this study, our research explores if children's and adolescent's empathy and compassionate responding to self and others is associated with pet attachment. Given middle childhood and early adolescence is an important time for social-emotional development, identity, and relationship formation [1], this phase in development provides an opportunity to study the role of pet attachment in young people's lives. In addition, due to increased gender-role stereotypes in older childhood and early adolescence, studies show mixed findings about the role of gender in empathy, compassion and pet attachment. For example, some studies show girls score higher than boys on empathy and compassion for others [9], however it remains unclear if gender differences occur in the relations between children's attachment to pets and their ability to show compassionate responding to self and other.

1.4. Compassion, Empathy, and Social Functioning

Higher levels of compassionate self-responding are shown to relate to high levels of psychological functioning such as emotional well-being and personal happiness in adolescents and adults [22], but little is known about the role compassionate self-responding plays in children's and adolescents' lives and how they relate to other people and their pets. Given that the most children and adults perceive pets as a part of their family and attribute human characteristics to pets, attachments with pets should act in similar ways to human attachment in terms of empathy and compassion [9,30]. Although past studies show associations between compassion and concern for others and compassionate self-responding in adults [22,31], studies with youth are limited. For example, some studies show no relations between cognitive empathy or the ability to understand the emotions of others and self-compassion in adolescents and suggest more research is needed on this topic [32].

1.5. Unique Dimensions of Self-Compassion

Recent studies highlight the importance of the categorization of the items of self-compassion as a bipolar continuum with compassionate self-responding on one end (i.e., self-kindness, common humanity, and mindfulness) and the opposite side of the continuum includes uncompassionate responding (i.e., self-judgment, isolation, and over-identification) [22,33–35]. This bi-polar continuum represents compassionate and uncompassionate dimensions of responding to oneself and can be explained by the theory of social mentalities [1]. Other researchers also promote that compassionate (e.g., self-kindness) and uncompassionate self-responding (e.g., self-criticism) reflect different processes [1,22,36], though evidence exists showing that compassionate and uncompassionate self-responding may share the same neural circuit.

Studies show that higher levels of compassionate and mindful self-responding lead to an increase in adaptive psychological functions (such as self-care behavior; [37], and a reduction in maladaptive coping strategies, which can exert benefits for psychological functioning [22,31,38,39]. Such studies suggest that compassionate self-responding may

play a protective role in helping youth to care for themselves in times of distress and may help with psychological functioning [22].

1.6. The Present Study

This cross-sectional study explored levels of self- and other-compassion, empathy, and pet attachment in typically developing children and adolescents. Following previous findings [9], the first aim was to investigate developmental and individual differences (e.g., as a function of age and gender) in the levels of empathy, compassion, and pet attachment. The second aim was to examine the links among the three variables (hereby distinguishing total self-compassion score and the different dimensions of self-compassion in terms of uncompassionate and compassionate responses to the self, as well as the three factors of empathy). Based on past studies that suggest positive relations among empathy, compassion, and attachment relations with primary caregivers [16,21], peers [40], and pets [9,41], we predicted that high levels of compassion for self and others would relate to high levels of empathic responding and understanding, and strong pet attachment. Based on past studies, we predicted that adolescents would score higher on empathy than younger children [21]. Finally, given the past mixed findings in terms of gender and age differences in compassion (self-other) [22] and pet attachment [42] our examination of age or gender differences in these variables remained exploratory.

2. Methods

2.1. Participants

This analysis involved a sample of 61 Canadian children and adolescents (38 girls; 23 boys; M age = 11.35, SD = 2.57, range = 7–15.9 years) from a middle to high socioeconomic status. All participants used English as their first language. As reported by the participants, the majority of the participants (80%) lived with a dog or cat at home, while 56% also had other pets including fish, rabbits, and reptiles, whereas 16.3% of participants reported that they currently did not live with any pets.

2.2. Procedures

As part of a larger study that involved self-report questionnaires and interviews on young people's moral reasoning and attachment to pets [43], the present paper focuses on the children's and adolescents' self-report questionnaires only. Upon receiving ethical clearance from the participating university ethics review board and informed written consents of parents and verbal assent from the youth participants, a team of graduate student researchers specifically trained to work with youth and their families on moral reasoning and pet attachment administered the questionnaires during individual sessions with the participants. Overall, the questionnaires required participants about 30 min to be completed. No child dropped out of the study. The participants were free to withdraw from the study at any time. Confidentiality was ensured to all the participants.

2.3. Measures

Lexington Attachment to Pets Scale (23 questions). We used the Lexington Attachment to Pets Scale (LAPS; ref. [44]) to measure the affectionate attachment relations between the children and their pet (if they currently have one or, if they did not have one currently, they completed this questionnaire in response to how they treated their pets in the past). This 23-item scale includes items such as "Quite often I confide in my pet" and "I love my pet because it never judges me". Each question is scored on a four-point scale from 0 = strongly disagree, to 3 = strongly agree, with two items being reverse scored. The total scores can vary from 23 to 115. The questions comprise one scale with a high coefficient (α = 0.93) and suggest that this is a reliable tool to measure aspects of children's and adolescents' attachment relations with companion animals.

Other Directed Compassion: Subset of the Dispositional Positive Emotion Scale (5 Questions.). This 5-point Likert-type 5-item scale (from 1 = strongly disagree to 5 = strongly agree)

(e.g., item, “It is important to care for people who need help.”) is used to assess children’s behaviors toward other humans in different contexts. The total scores can vary from 5 to 25, with an internal reliability coefficient of ($\alpha = 0.70$). The version used in our study was adapted to match the scale of [45] to ensure the items were child-friendly as the original version contained a 7-point Likert scale. [46] also found links between high levels of compassion for others and self with psychological well-being. Such findings suggest that this is a reliable tool to measure aspects related to behavior and attitudes of compassionate responding toward human beings.

The Self-Compassion Scale modified for Children (Ages 8–12) [45]. This 5-point Likert-type scale contained 12 items and asked children to rate how they feel toward themselves (e.g., “I try to be kind toward those things about myself I do not like.”) using a five-point scale ranging from 1 = never to 5 = always. The total scores can vary from 12 to 60 with an internal reliability coefficient of ($\alpha = 0.78$). This scale has been used in past studies with children ([22], and has been referred to as a reliable and valid tool to measure compassionate self-responding in children. Such findings suggest that this is a reliable tool to measure aspects related to compassionate behavior and attitudes toward oneself in children.

Bryant’s Index of Empathy for Children and Adolescents (IECA: 7). To reveal the complexity underlying the ability to feel “with” another person or empathy, researchers use three factors within the total empathy scale. For example, ref. [47] revealed a 19-item, three-factor structure that includes a cognitive factor (understanding feelings), referring to situations where the child understands others’ emotional states, and two affective factors. The first affective factor refers to feelings of sadness which reflects empathic concerns defined as a state in which the child feels “sorry for” the other as a result of perceiving his/her distress. The second affective empathy factor is tearful reaction, which reflects sympathy and emotional contagion or the emotional state as a direct result of perceiving the other person’s emotion. The combined cognitive and affective factors of empathy of IECA thus assesses the emotional responsiveness and cognitive insight.

Given that the three-factor structure appears to be appropriate for children and supports the validity of the cognitive and affective components of the scale and the construct of empathy [48–50], we used the 22-item Bryant’s empathy index (English version). The total scores can vary from 22 to 88. To achieve better differentiation, following [50]’s indications (i.e., to avoid yes/no designs as they reduce the variability in responses), the scoring system was modified from the original scales’ yes/no responses to a 4-point Likert scale (1 = strongly disagree, 4 = strongly agree). The scale had a Cronbach’s alpha coefficient of 0.79, 95% Confidence Interval (CI) = 0.091–0.213, and a mean index of 65.14 ranging from 2 to item 19 to 3.79 to item 11.

Following past research [51], we used the 3 subscales to measure dimensions of empathy. The first factor included 9 items referring to comprehension of other people’s feelings (e.g., item 9: “Girls who cry because they are happy are silly”); the second factor consisted of 6 items related to emotions of sadness (e.g., item 12: “It makes me sad to see a boy who cannot find anyone to play with”); and finally, the third factor included 4 items concerning sympathetic attitudes and the reaction to other people’s emotions (e.g., item 19: “Seeing a girl who is crying makes me feel like crying”).

We followed the structure of the 3-factor model proposed by other researchers [47]. More specifically, we used understanding feelings (Factor 1, cognitive content in terms of understanding other people’s emotions), feelings of sadness (Factor 2, affective content in the form of feelings of sadness or concern for others), and tearful reaction (Factor 3, sympathetic reactions). Additionally, as in [47], their results showed that the following items did not load in any of the three identified factors: item 7 (“Even when I do not know why someone is laughing, I laugh too”), item 15 (“Grown-ups sometimes cry even when they have nothing to be sad about”), and item 22 (“I do not feel upset when I see a classmate being punished by a teacher for not obeying school rules”); accordingly, these items were not included from the analysis. To calculate the reliability of the subscales, we used data from the total sample. The internal consistency for the factor understanding of feelings (9

items) was 0.76, for the factor feelings of sadness (6 items) it was 0.83, and for the factor tearful reaction (4 items) it was 0.78. These values were higher than those obtained by past researchers: 0.56, 0.72, and 0.71, respectively [47].

3. Results

3.1. Descriptives and Mean Differences

To explore our first research question, which was to investigate developmental and individual differences among the main test variables, we first conducted preliminary analysis of the score distribution in terms of means, standard deviations, and range of variables. To explore for gender differences, we conducted *t*-tests among the main test variables (see Table 1). No significant differences were found. That is, girls and boys were more alike than different on measures of compassion for self and other, empathy, and attachment to pets.

Table 1. Descriptives and gender differences for main test variables.

	Gender	N	Mean	SD	t	Sig
Self-Compassion Self-Kindness Subscale	Male	20	3.35	0.81	−0.057	0.47
	Female	26	3.37	0.96		
Self-Compassion Self-Judgement Subscale	Male	20	2.50	1.10	−1.34	0.07
	Female	29	2.88	0.87		
Total Positive Self-Compassion Score Subscale	Male	19	21.47	4.33	0.35	0.50
	Female	24	21.00	4.51		
Total Negative Self-Compassion Score Subscale	Male	19	19.00	4.61	0.48	0.14
	Female	24	18.42	3.34		
Self-Compassion Common Humanity Subscale	Male	20	3.45	1.15	0.53	0.72
	Female	28	3.27	1.18		
Self-Compassion Isolation Subscale	Male	20	2.80	0.89	−0.787	0.49
	Female	28	3.00	0.85		
Self-Compassion Mindfulness Subscale	Male	19	3.74	0.89	0.56	0.84
	Female	28	3.59	0.89		
Self-Compassion Over-Identification Subscale	Male	20	3.23	0.98	0.75	0.16
	Female	28	3.04	0.77		
Index of Empathy for Children and Adolescents Total Mean Score	Male	23	2.89	0.33	−0.97	0.29
	Female	38	2.98	0.40		
Understanding Feelings	Male	18	28.44	4.11	0.51	0.84
	Female	36	27.83	4.16		
Feelings of Sadness	Male	19	20.95	3.06	0.58	0.44
	Female	37	20.41	3.62		
Tearful Reactions	Male	19	8.68	2.95	−0.52	0.80
	Female	37	8.73	3.21		
The Lexington Attachment to Pets Scale Total Score	Male	23	74.00	5.93	1.24	0.52
	Female	38	71.75	7.35		
The Dispositional Positive Emotional Scale Total Score	Male	23	22.09	1.55	1.03	0.15
	Female	38	21.48	2.56		
Years. Months (11.10)	Male	23	1.57	0.51	−0.10	0.84
	Female	38	1.58	0.50		

Given that a minority of the sample (16.3%) reported that they currently did not live with any pets, to compare groups of children with and without pets, *t*-tests were conducted on all test variables. The results showed that groups with and without pets did not differ on any of the test variables. Thus, we collapsed the two groups and included the total sample in our analyses.

3.2. Correlational Analysis

3.2.1. Age and Compassion (Self- and Other), Empathy, and Pet Attachment

For our second research question, we conducted Pearson correlations to explore if there were any associations among the test variables (see Table 2). The findings showed

that with age, cognitive, and affective empathy increased such as understanding another person's feelings (cognitive empathy) ($r(59) = 0.31, p = 0.02$), sympathetic empathy or the ability to have tearful reactions ($r(59) = 0.35, p = 0.02$) to another person's distress, and the ability to show feelings of sadness ($r(59) = 0.24, p = 0.07$)—although this finding was marginally significant and suggests a trend. For dimensions of self-compassion, age related marginally to less feelings of isolation ($r(59) = -0.26, p = 0.07$). In contrast, no relations were found between age and positive dimensions of self-compassion ($r(59) = -0.13, p = 0.41$) or compassion for others. That is, the older children become and as they enter into adolescence, they were more likely to feel empathy and understand others' feelings, as well as be less likely to feel alone and isolated.

3.2.2. Compassion for Self and Other, Empathy, and Pet Attachment

To continue to explore our second research question, which was to investigate the associations among the main test variables, correlational analysis also showed that high levels of compassionate self-responding (self-kindness) was marginally linked to high levels of emotional empathy (feelings of sadness) ($r(59) = 0.29, p = 0.06$). High levels of compassion and concern for others related to marginally heightened feelings of sadness ($r(59) = 0.22, p = 0.05$), self-responding, or acting in kind and mindful ($r(59) = 0.40, p = 0.01$) ways toward oneself, as well as to high levels of pet attachment ($r(59) = 0.39, p = 0.00$). In contrast, high levels of attachment to animals related to low levels of uncompassionate self-responding such as self-judgment ($r(59) = -0.41, p = 0.01$). That is, the more attached a person was to an animal, the less likely they were to judge themselves in negative ways.

Regarding associations between compassion and the dimensions of empathy, the correlations in Table 2 show high levels of affective empathy (feelings of sadness) marginally related to high levels of self-kindness ($r(59) = 0.29, p = 0.06$), common humanity ($r(59) = 0.44, p = 0.00$), and mindfulness, ($r(59) = 0.47, p = 0.00$). For attachment to pets, high levels of attachment to pets related to high levels of compassionate self-responding including the dimension of mindfulness ($r(59) = 0.34, p = 0.02$), as well as the ability to feel compassion for others ($r(59) = 0.39, p = 0.00$). In terms of empathy, heightened levels of attachment with pets related to high levels of dimensions of affective empathy such as feelings of sadness ($r(59) = 0.44, p = 0.00$) and tearful reactions ($r(59) = 0.39, p = 0.00$), but not cognitive empathy or the ability to understand feelings ($r(59) = -0.03, p = 0.83$). That is, the more emotionally attached a child was to their pet, the more likely they were to be mindful and compassionate in responding to themselves, feel more compassion for others, and feel sad or tearful when they witnessed distress or sadness in others. No significant associations were found between levels of pet attachment and cognitive empathy, or the ability to understand and reason about another person's feelings.

Table 2. Correlations among main test variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Self-Kindness	-															
2. Self-Judgement	-0.51 ***	-														
3. Self-Compassion Scale	0.60 ***	-0.39 ***	-													
4. Positive Self Compassion	0.73 ***	-0.13	0.87 ***	-												
5. Negative Self Compassion	0.42 ***	-0.65 ***	0.80 ***	0.38 **	-											
6. Common Humanity	0.47 ***	-0.11	0.47 **	0.78 ***	0.14	-										
7. Isolation	-0.28 *	0.04	-0.61 ***	-0.42 ***	-0.65 ***	-0.23	-									
8. Mindfulness	0.48 ***	-0.21	0.71 ***	0.82 ***	0.38 **	0.46 ***	-0.33 **	-								
9. Over-Identification	-0.14	0.25 *	-0.61 ***	-0.32 **	-0.77 ***	-0.24	0.32 **	-0.36 **	-							
10. Index of Empathy	0.09	0.05	0.16	0.16	0.16	0.10	-0.37 **	0.29 *	-0.08	-						
11. Understanding Feelings	0.14	-0.20	0.25 *	0.16	0.34 **	0.14	-0.41 ***	0.25	-0.19	0.31 **	-					
12. Feelings of Sadness	0.29 *	-0.10	0.13	0.35 **	-0.11	0.44 ***	-0.11	0.47 ***	0.11	0.37 **	0.36 **	-				
13. Tearful Reactions	0.01	-0.17	-0.06	-0.07	-0.03	0.25	0.00	0.17	0.01	0.40 ***	0.30 **	0.47 ***	-			
14. Attachment to Pets	0.25	-0.41 ***	0.21	0.26	0.10	0.22	0.12	0.343 **	0.02	0.15	-0.03	0.44 ***	0.39 ***	-		
15. Disp. Positive Emotional	0.20	-0.02	0.23 *	0.45 ***	-0.03	0.31 **	-0.02	0.40 ***	0.01	0.11	0.22 *	0.56 ***	0.18	0.39 ***	-	
16. Age	0.18	-0.06	-0.09 *	-0.13	-0.03	0.00	-0.26 *	-0.11	0.24	0.41 ***	0.31 **	0.24 *	0.35 **	0.12	0.11	-

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$; 1. Self-Compassion Self Kindness Subscale, 2. Self-Compassion Self Judgement Subscale, 3. Self-Compassion Scale, 4. Total Positive Self Compassion Score Subscale, 5. Total Negative Self Compassion Score Subscale, 6. Self-Compassion Common Humanity Subscale, 7. Self-Compassion Isolation Subscale, 8. Self-Compassion Mindfulness Subscale, 9. Self-Compassion Over-Identification Subscale, 10. Index of Empathy for Children and Adolescents Total Mean Score, 11. F1- Understanding Feelings (Index of Empathy for Children and Adolescents), 12. F2- Feelings of Sadness (Index of Empathy for Children and Adolescents), 13. F3- Tearful Reactions (Index of Empathy for Children and Adolescents), 14. The Lexington Attachment to Pets Scale Total Score, 15. The Dispositional Positive Emotional Scale Total Score, 16. Age in years.months.

4. Discussion

This study explored the associations between children's and adolescents' ability to show compassion toward themselves and others and their emotional attachments with their pets. Overall, the present findings partially supported our predictions in that they showed that young people's attachments with their pets related to kind, mindful, and compassionate ways of responding to oneself and others, as well as being less self-judgmental. Strong pet attachments also related to one's ability to feel sadness for others in distress, or to show affective empathy. In contrast to our predictions, no relations were found between pet-attachment and the ability to understand another person's feelings or show cognitive empathy. Regarding age differences, findings supported our predictions that adolescents were more likely than younger children to feel empathy in terms of feeling for another person in distress and understanding others' emotions. In addition, although we did not make specific predictions in terms of age or gender differences in compassion, or pet attachment, we found that compared to younger children, adolescents were also less likely to feel alone and isolated [5]. Regarding gender differences, the findings showed that girls and boys reported to be more alike than different in terms of their compassion and empathy skills and attachments with their pets. Outlined below, we discuss our main findings and contributions of our paper within the context of previous research findings. We end with a final note on limitations and implications for future research and education.

4.1. Compassionate Responding to Self and Others, Empathy, and Pet Attachment

The main findings of our study suggest that compassionate responding to self and others and feeling the emotions of others relates to higher levels of pet attachment. Furthermore, compassionate responding to self and others (feeling "with" another person, but also wanting to help that person feel better—show care and comfort to self/other) showed no relations to the cognitive dimensions of empathy or understanding the feelings of others. The findings from this study showed that children's and adolescent's pet attachment was related to compassionate self-responding such as being mindful and caring toward oneself. Such self-caring skills and social awareness may help young people to connect themselves emotionally with others and their pets that might, in turn, help to promote their well-being. Alternatively, young people's attachment with their pets may influence their ability to respond to themselves and others in kind and compassionate ways.

Such findings support past research that suggests compassion is a moral emotion that also incorporates intention to act in that the individual feels with and for another person and also tries to help the other person feel better if experiencing distress. Past studies on altruism or helping others to the detriment of your own needs is related to one's ability to feel compassion for another person [52]. That is, the ability to show compassion for others includes kindness and being mindful of another person [53]. Compassion for others also includes feelings of altruism or the need to help another over yourself. In terms of decision making, compassion for others can be determined by a cost-benefit analysis [52], in that the person decides based on moral reasoning skills if there is more personal cost or benefit to helping and being kind to others in distress.

Thus, our study found relations between high levels of compassionate self-responding and high levels of other-responding and supports studies that show links between compassionate self-responding and feeling concern and compassion for others [3,53]. Regarding the links between dimensions of empathy and compassion for self and others, our study showed that cognitive empathy was not related to dimensions of self-compassion, compassion for others, nor to pet attachment. Such findings support past research [32] that shows cognitive empathy and dimensions of self-compassion were unrelated. Our findings also support past studies that show compassion and empathy are interrelated concepts that may be influenced by other factors such as attachment levels with primary caregivers, friends as well as pets [9]. Moving beyond past studies on pet attachment and social-emotional skills in youth [9,23,54], our study shows novel findings in that it suggests that irrespective of

one's cognitive empathizing skills, links between self and other compassion may extend to one's emotional attachments with their pets.

In addition, we examined both the groups of children: those who currently lived with a pet and those that had lived with pets in the past, but at the current time of completing the questionnaire did not have a pet. Our comparative analyses found that the two groups did not differ in terms of compassion, empathy, or attachment to their pet, which suggests that having a pet may influence one's ability to have compassion for themselves even when they do not currently live with a pet. As many children experience the loss of many pets throughout their childhood and adolescence, this finding is important as it suggests perhaps the experience of living with a pet may continue to serve as an emotional benefit for the child, even when they do not live with a pet currently, as they may be in transition between pets. Furthermore, how children and adolescents think and feel about pet loss, their decision to adopt a new pet (or not), and their re-attachment with a new pet remain unstudied. Such studies may be useful as many individuals live with multiple pets over their life [55,56], and experience the life and death of at least one pet.

Our findings are correlational and, although they do not predict directionality, they highlight the links among compassion, affective empathy, and pet attachment. Our findings also support studies that suggest that compassion and empathy may influence pet attachments [16] or, vice versa, that pet attachments may influence empathic skills and the ability to show compassion to self and others. Thus, future longitudinal research needs to continue to explore the developmental pathways of complex interrelations among empathy, compassionate responding to self and others, and attachments with pets, particularly during the transition between children and adolescence.

Regarding developmental differences, in support of past findings that show cognitive and moral skills increase over time [40], the present findings showed that empathic responding to others increased, especially understanding and responding to another person's feelings (cognitive and emotional empathy). The only age difference in compassion was that of self-compassion in terms of feeling less isolated and alone as one gets older. Such findings suggest that as children transition to adolescence, peer relationships may increase in frequency and quality and thus may lead to less feelings of isolation and loneliness [5,9]. In this study, we did not find relations between age and young people's pet attachment and this result suggests that developmental changes in children's pet attachment remains to be explored. For example, studies that show as children become older they may be less likely to care for or interact with animals [2,57].

In terms of gender differences, in this study, the girls and boys were more alike than different on compassion for self and others, empathy, and attachment to pets. Such findings support the gender X generation theory that suggests that, as children age, roles within the family such as caring for pets are influenced by gender-role stereotypes [49,54]. Thus, perhaps in our study, the older girls were more likely than older boys to care for pets or vice versa, but given the relatively small sample, we were unable to explore this possibility.

Our findings demonstrate support for the notion that the act of caring for pets should be viewed as "gender-neutral" [20]. However, findings from the present study contradict past studies that show girls are more likely to show strong attachments to pets, as well as care more for pets than boys [7,9,58]. Future research should continue to explore the interactions among age and gender and how they influence the relations between compassion and animal attachment, as gender-sensitive and developmentally appropriate educational programs are necessary to help promote compassion and pet attachment across all gender orientations [59].

4.2. Compassion, Empathy, and Pet-Attachment

Our findings showed that high levels of compassionate responding to oneself related to higher levels of attachment with pets. Although no significant associations were found between the total empathy score and attachment with pets, when multiple dimensions of empathy were explored, high levels of attachment with pets related to high levels of

emotional empathy (feeling sad) and tearful reactions (more attached to pet, more likely to understand emotions and be tearful when see others feeling sad). In contrast, there were no significant associations found with cognitive empathy or the ability to understand another person's feelings. The findings showed that high levels of compassionate self-responding linked to high levels of emotional empathy (feelings of sadness). In contrast, high levels of uncompassionate self-responding linked to high levels of cognitive empathy. High levels of feeling compassion and concern for others related to high levels of feelings of sadness and tearful reaction.

High levels of affective empathy (feelings of sadness) related to high levels of self-kindness and common humanity, mindfulness, and attachment with animals. High levels of attachment to pets related to high levels of compassion for self and others, but no relations with empathy. Regarding dimensions of uncompassionate self-responding, such as feelings of isolation, over-identification, and self-judgement, it was negatively related to high levels of pet attachment and high levels of compassionate self-compassion (particularly the ability to be mindful when responding to yourself) related to high levels of feeling compassion for others and pet-attachment. Pet attachment and compassion for self and others related to only the affective dimensions of empathy, not the cognitive dimension of empathy, or the ability to understand emotions in others.

The current results also show that compassion for self and others (feeling "with" another person, but also wanting to help that person feel better—show care and comfort to self/other) is not the same as cognitive empathy or understanding another person's emotions. Such findings support research that suggests self-compassion and empathy are complex multidimensional constructs that need to be more deeply explored in terms of social context and social partners (including pets) [52]. The present study's findings are unique and contribute to the literature on moral emotions and cognition such as compassion and attachment [21]. That is, the present study shows how motivations to care for self and others are independent skills that relate differently to children's attachments to pets. Our findings also support research on the complexity of morality in children and adolescents that shows that one's moral thoughts and feelings are not necessarily connected to one's moral behaviors [40]. That is, the ability to understand another person's emotions may not necessarily indicate how a person will treat her/himself or another person or animal with kindness and compassion.

4.3. Implications

This study reinforces the importance of exploring children's perceptions of their relationships with their pets and how they feel and care about themselves and others. In addition, the present findings suggest that children and adolescents may benefit from humane education programs that target particular dimensions of compassionate self-responding and empathy rather than emotion recognition and other broad social skills. For example, the present findings suggest the need for educators to combine Social-Emotional Learning (SEL) [60,61], with mindful compassionate programs to further extend curricula beyond basic social skills and emphasize how caring for animals helps children to learn how to be kind and care for themselves [37,62,63]. As such, a balanced approach is needed—one that involves developmentally appropriate educational programs that focus on the promotion of mindfulness and compassion toward the self and others (humans, animals, and nature). Future researchers and educators need to collaborate to co-create this balanced approach as the overall goal of any educational or intervention program is to promote a child's sense of emotional well-being and social awareness [63,64].

Our findings highlight the need for SEL programs to further add to the importance of social (interpersonal) and self-skills (intrapersonal) and emphasize that caring for animals as emotional beings helps children to learn how to be kind and care for themselves, which in turn helps to promote overall emotional well-being. More focus is needed on the importance of self-processes, especially in terms of compassionate responding to oneself

and self-care. Such skills may serve as coping strategies to help youth deal with stressful situations within learning contexts with one's peer relations [11,65,66].

4.4. Limitations

In sum, our study suggests that the associations among children's empathic skills, feelings of compassion for self and others, and their pet attachments. However, despite the novel contributions of our study, the findings need to be interpreted with caution due to the following limitations. First, the majority of our measures were self-reported, which may have increased the likelihood of participant bias due to social desirability. Second, within the construct of psychosocial adjustment, other factors besides compassion and empathy may have influenced children's attachment to pets such as their ability to regulate their emotions. Third, the majority of the sample was derived from a mainly Euro-Canadian, English-speaking population within a middle-class SES. Fourth, this study was a cross-sectional, correlational study and thus we could not investigate causality or the directionality of relations among the key variables. Future research should include more longitudinal studies that explore children within a more diverse sample. Finally, the sample size precluded finer-grained analyses such as the exploration of two-way interactions between child gender and pet types.

Overall, future studies need to unpack the tangled and knotted connections among the dimensions of compassion, empathy, and attachment to pets in children. Moreover, more research is needed to further explore these complex connection changes during adolescence and emerging adulthood. In sum, our findings show that a child's relationships with animal-companions may be more tightly connected to their feelings of kindness and caring toward oneself, which is crucial for well-being and overall psychosocial adjustment. Such connections may help children connect with themselves emotionally rather than focus on social relationships and cater to the needs of others to the detriment of oneself.

5. Conclusions

Despite these limitations, this study highlights that, irrespective of gender, children's and adolescents' perceptions of their emotional relationships with their pets relates to how they feel and care about themselves and others. Overall, the key finding of the present study is that young people's attachment with pets is associated with compassionate self- and other-responding, but not necessarily with understanding the emotions of others. Theoretically, our findings emphasize the utility of applying a relational developmental perspective to research on well-being and relationship quality in studies of human-pet relations. In practical terms, our findings hint at the importance of young people's pet attachments during the planning and implementation of humane education that promotes mindfulness and compassion directed to self and other. Such findings may provide inspiration to educators who wish to develop curriculum programs that aim to help children to develop kind and compassionate relationships with themselves, as well as with significant humans and animals in their lives.

Author Contributions: Conceptualization, S.B., C.Y.T.-W., R.P.S.R.; methodology, S.B., C.Y.T.-W., R.P.S.R.; formal analysis, S.B., R.P.S.R.; resources, S.B., C.Y.T.-W., R.P.S.R.; writing—original draft preparation, S.B.; writing—review and editing, C.Y.T.-W., R.P.S.R.; supervision, C.Y.T.-W., S.B.; project administration, C.Y.T.-W., S.B. All the authors have read and agreed to the published version of the manuscript. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Our research received ethical clearance from the participating university office of research ethics (the REB file # is #16-040).

Informed Consent Statement: Our research received the written informed consent of the parents of participants, and verbal assent of the youth participants.

Data Availability Statement: The data described in this manuscript are available upon request of the authors.

Conflicts of Interest: The authors of this manuscript declare that there are no conflict of interest.

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