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Secure Attachment to Mother and Children's Psychological Adjustment: The Mediating Role of Pet Attachment

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ABSTRACT



The objective of this study was to analyze the mediating role of a child's attachment to a pet dog relative to the child's attachment to their mother and their level of adjustment. A cross-sectional study was conducted with a convenience sample of 136 participants who owned one or more dogs (68 children: mean age = 9.01 years; 68 parents: mean age = 41.90 years). The children were asked to respond to items about their attachment to their mother and to their pet dog. The parents were asked to respond to items about their child's psychological adjustment. A mediation model was tested using the SPSS macro PROCESS; we hypothesized a mediating effect for a child's attachment to their pet dog on the relationship between the child's attachment to their mother and their psychological adjustment. The results showed that a child's attachment to their mother both directly ($c' = -0.242$, $p = 0.006$) and indirectly (indirect effect = 0.084, bootstrapped 95% CI = 0.003, 0.174) predicted their psychological adjustment, the indirect effect being via the child's attachment to their pet dog. Overall, our data support that secure attachment to the mother predicts positive psychological adjustment. A more secure attachment to the mother predicts less attachment to the dog, and this may indicate that a secure attachment to the mother saturates the child's emotional and support needs, resulting in less psychological need for the dog. In this situation, the dog does not need to compensate for deficiencies in the maternal attachment figure, resulting in less attachment of the child to the dog. Finally, our data support an association between attachment to a pet dog and psychological adjustment in middle childhood, indicating the potentially protective role of a relationship with a pet dog.


KEYWORDS

Attachment; children; dog; human-animal interaction; mother; pet

Parental Attachment and Child Development

According to attachment theory (Bowlby, 1969, 1973, 1982), when children perceive responsive and sensitive care, their caregiver becomes a secure base and a safe haven,

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and a secure sense of attachment is established (Brumariu et al., 2018). Moreover, in the context of secure attachment, children will more easily develop positive representations of themselves and of their relationships with others, internalizing positive and adaptive relational models. Conversely, children dealing with unresponsive parents may form insecure relationships in which the adult does not provide a secure foundation. They are also more likely to develop an insecure conception of attachment relationships. In contrast to secure children, insecure children generally avoid requests for comfort and closeness to the other and emphasize exploratory behaviors or, alternatively, intensify requests for closeness to ensure contact with caregivers (Ainsworth et al., 1972). Overall, research tends to show that secure attachment is a protective factor in children's socio-emotional and cognitive development (Badenes-Ribera et al., 2019; Brumariu & Kerns, 2010; Cooke et al., 2019; Coulombe & Yates, 2022; Kokkinos et al., 2019; Mares & McMahon, 2020).

Research has focused primarily on parents, and mothers in particular, as attachment figures. However, from the perspective of multiple attachments, particularly in middle childhood (Seibert & Kerns, 2009), the child may also form attachment relationships with other family figures, such as siblings and grandparents (Seibert & Kerns, 2009), or with nonparental figures outside the family, such as teachers and caregivers (Lin et al., 2021; Longobardi et al., 2021; Verschueren & Koomen, 2012). These people, in some cases, act vicariously to compensate for fragilities in the primary relationship with their parents, constituting an additional protective factor in the child's development (Quaglia et al., 2013; Verschueren & Koomen, 2012). Recent research has examined the possibility that children, like adults, may establish forms of attachment with nonhumans such as pets.

Children's Attachment to Pets and Their Psychological Wellbeing

Several authors suggest that children can develop an attachment to their pet (Hawkins & Williams, 2017; Meehan et al., 2017; Muldoon et al., 2019; Wanser & Udell, 2019; Wanser et al., 2020). The child can develop a strong emotional bond with their pet and turn to them as a secure base, receiving the security and stability that give the child the confidence to explore their environment. Pets can act as attachment figures, fulfilling needs for closeness, comfort, care, and protection (Hawkins & Williams, 2017). It appears that children are more likely to develop an attachment relationship with dogs, compared with other animals, and that they may have a greater impact on a child's psychological wellbeing than other types of animal (Muldoon et al., 2019). This is possibly because a dog is more likely to foster a sense of emotional reciprocity with the child and share an enjoyment of play (Muldoon et al., 2019).

Given the impact that secure attachment has on a child's positive psychological development, it is important to consider the role of attachment to pets as a potentially protective factor in children's psychological wellbeing. The literature suggests that a strong attachment to a pet is associated with better psychological adjustment. By psychological adjustment, we refer to a degree of psychological wellbeing characterized by an individual's ability to adapt to changes in their environment by demonstrating the ability to cope with stressors and exhibit low levels of emotional distress and behavioral problems. Specifically, the literature suggests that stronger attachment to a pet is associated with

several factors: health benefits in emotional (e.g., less stress, less anxiety, higher self-esteem), social (e.g., increased social skills, social networks, social interaction, and social play behaviors), and cognitive (e.g., perspective taking skills and intellectual development) outcomes (Meehan et al., 2017; Purewal et al., 2017; Wanser & Udell, 2019). These studies have mainly focused on adult populations (Herzog, 2011; Rodriguez et al., 2020; Wanser & Udell, 2019). However, some data, predominantly from animal-assisted therapy interventions, seem to support the same trend in children (Purewal et al., 2017; Wanser & Udell, 2019). Children may perceive their dog as an unconditional source of love and as being non-judgmental and accepting (Wanser & Udell, 2019; Wanser et al., 2020).

Compared with other animals, dogs are more likely to elicit close relationships and respond to their owners' emotional signals (Payne et al., 2015). Pets appear to provide physical and emotional support to children, helping them with stress reduction, regulation of emotional states, and improved social competence (Hawkins & Williams, 2017; Purewal et al., 2017; Wanser & Udell, 2019). Both securely attached and insecure children report less stress when interacting regularly with dogs; however, less securely attached children may prefer a pet companion to a human owing to difficulties in interacting socially with peers and adults (Beetz et al., 2012). Furthermore, caring for a pet can increase a child's sense of efficacy and management of responsibility, positively influencing their self-esteem and self-concept (Bodsworth & Coleman, 2001; Vidović et al., 1999) and be associated with greater development of prosocial behaviors (Hawkins & Williams, 2017; Vidović et al., 1999). By offering social support and stimulating human social interactions, the presence of and attachment to a pet tends to reduce loneliness, with beneficial effects on anxiety levels and depressive feelings (Purewal et al., 2017; Wanser & Udell, 2019). Some evidence suggests that interaction with a therapy dog stimulates cognitive development and learning in children (Gee et al., 2021). Secure attachment to a pet can be significant for some populations of at-risk children, such as those who have experienced trauma or lived in deprived or violent contexts, reducing the negative impact of their adverse developmental experiences (Hawkins et al., 2019; Wanser & Udell, 2019).

Attachment to a Pet as Compensation for Low Human Attachment: A Possibility

A pet could therefore contribute to a child's psychological wellbeing and, in some situations, compensate for deficiencies that they have experienced in relationships with human attachment figures. When a child's needs for closeness, affection, comfort, and protection are frustrated in their relationship with human caregivers, they may develop a stronger attachment to a pet in order to satisfy those needs. Some evidence seems to support this hypothesis. Children growing up in single-parent families (Bodsworth & Coleman, 2001), without siblings (Westgarth et al., 2013), or in deprived areas (Westgarth et al., 2013) generally have a stronger attachment to their pets. Furthermore, in families with multiple children, the youngest child tends to report a stronger attachment to the dog (Westgarth et al., 2013). Furthermore, in a study on children who had experienced adverse developmental experiences, such as traumatic loss or abuse, reports of a secure attachment to a pet were four times more likely than a secure attachment to a human caregiver (Julius et al., 2010).

However, although theorists and researchers support the possibility that a pet can compensate for deficiencies in the human attachment figure, the relationship between attachment to a parent and level of attachment to a dog has been little explored, particularly during childhood and in non-clinical populations. Humans have a consistent preference order of attachment figures to whom they would relate when the attachment system is activated, and pets may be included in this hierarchy (Kurdek, 2009). A pet is often considered a member of the family and is able to provide special, non-judgmental, and unconditional emotional support (Meehan et al., 2017). Some evidence (Kurdek, 2008, 2009) indicates that young adults rate their pet as a possible safe haven in a high-stress situation. Although they rank their pets lower than some human figures, such as the mother, friends, and partners, as a safe haven they rate their pets more highly than their fathers and siblings. In addition, the stronger the attachment to the pet, the more likely it is that they will rate its position in the attachment hierarchy as high (Meehan et al., 2017). Children usually form stronger attachment bonds to their pets than adults do (Jalongo, 2018), and they may report less conflict and more satisfaction in their relationship with them than in their relationships with siblings (Cassels et al., 2017).

It is likely that, where there are no disrupted relationships, available human figures – parental figures, in particular – will be preferred by children over nonhuman figures such as pets. However, as mentioned, little is known about the relationship between the security resulting from attachment to the parent or from attachment to the pet in children in non-clinical samples. A recent Italian study (Longobardi et al., 2022) showed that children with dogs in their household presented with fewer psychological symptoms than peers living in dog-free households, while the children owning dogs reported less attachment to their caregivers than children not owning dogs. Longobardi and colleagues (2022) hypothesize that a dog is more likely to be adopted to keep a child company in households where the parents are busy working. This situation might result in a reduced perception of closeness to the parents, while the presence of the dog might compensate for feelings of loneliness and increase psychological wellbeing. However, these authors did not examine the children's attachment to the pet; they just determined the pet's presence or absence in the home environment. It is not clear whether the presence of a pet will automatically translate into a strong emotional bond between the child and the pet. However, the suggestions made by these authors remain interesting. If a dog can be an attachment figure, enabling the child to compensate for shortcomings in relation to human caregivers, conversely, it is possible that a perception of adequate security in the attachment to a human caregiver, particularly to the mother, may saturate the needs for proximity, care, and protection in the child, resulting in weaker attachment to the pet.

Aims and Hypotheses

The literature focuses mainly on the attachment of adults to their pets; there is little information on the attachment of children to their pets. This gap is particularly evident in Italy, where such research is almost non-existent. However, many families in Italy have pets, and the dog is the favorite pet of Italian families; it is estimated that around 27% of Italian households own a dog (ASSALCO-Zoomark, 2017). Therefore, considering the possible beneficial effects of attachment to a dog in relation to a child's psychological

wellbeing, it is important to study it and in those cultures that have been little investigated, if at all.

Furthermore, little is known about the relationship between attachment to a caregiver, particularly the mother, and the quality of a child's attachment to a pet dog. It is possible that secure attachment to the mother and greater attachment to a dog may both contribute to a child's positive psychological adjustment. However, it is possible that attachment to a dog is increased when a lesser sense of security is derived from the attachment relationship with the mother. Thus, the relationship with the dog can compensate for possible deficits in the relationship with the main caregiver and represents a protective factor for the child's psychological wellbeing. Following this idea, we hypothesized that the perception of greater security in the attachment relationship with the mother is associated with better psychological adjustment in the child (H1). In addition, we hypothesized that a secure attachment relationship with the mother is associated with lower attachment to the dog (H2). Finally, we hypothesized that higher levels of attachment to the dog are associated with better psychological adjustment (H3).

Methods

Ethical Considerations

The research proposal obtained the approval of the Ethics Committee of the University of Turin: protocol number 47503. Informed consent was obtained from all participants in the study.

Participants and Procedure

Eighteen veterinary practices were contacted by e-mail and asked to participate in the project. The veterinarians made the study known to their clients. They suggested that their clients participate and gave them a flyer with key information about the study. On the days of stated availability, the researcher went to the veterinary practice and personally talked about the objectives of the research, asked about willingness to participate, provided an information sheet, and asked for informed consent from all individuals who wished to participate in the study and who met the required characteristics (parents with middle-aged children and pet dogs). A total of 155 potential participants were approached. Nineteen of them declined to participate (response rate: 87.8%). All participants gave informed consent for the research.

The convenience sample was composed of 136 participants from northern Italy (68 children and 68 parents) who owned a dog or dogs and who agreed to take part in the study without compensation. The children (64.7% female) had a mean age of 9.01 years ($SD = 1.31$, $min = 7$, $max = 11$), and most were Italian (98.5%). The parents (70.6% female) had a mean age of 41.90 years ($SD = 5.81$, $min = 29$, $max = 54$), and most were Italian (95.6%).

Questionnaire Design

Participants completed a survey that was divided into two sections. The first section asked for background information: current age, biological sex, and nationality. The second

section consisted of self-report measures related to attachment to the pet dog, attachment to parents, and children's adjustment.

The children were asked to respond to two self-report measures: the Security Scale (SS; Kerns et al., 1996) and the Dog Attachment Questionnaire (DAQ; Archer & Ireland, 2011). The parents were asked to respond to one measure: the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; Italian version: Tobia et al., 2011)

Security Scale

The SS is a self-report measure composed of 15 items that are scored on a 4-point Likert scale. It uses Harter's (1982) "Some kids ... Other kids ..." format. The SS assesses children's perceptions of security in parent-child relationships in middle childhood and in early adolescence. The items specifically capture three aspects of secure relationships as perceived by children: (a) the extent to which they consider the caregiver to be empathetic and helpful; (b) the tendency to rely on the caregiver in times of stress; and (c) the ease and interest in communicating with the caregiver. The children were asked to respond to the items of the SS in relation to their mother. The total score was calculated as the sum of the items. Higher scores reflect a more secure attachment to the mother. In the present study, the scale's reliability was adequate ($\alpha = 0.74$, $\omega = 0.78$).

Dog Attachment Questionnaire

The DAQ is a self-report questionnaire consisting of 35 items that are scored on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). It measures the degree of attachment to a pet dog. The items assess the importance of the dog in the person's life (e.g., the dog is frequently in their thoughts, it forms a part of their sense of identity), its use as a secure base, reactions to caring for the dog, and separation reactions when the dog is lost. The DAQ was modified to make it simpler and more child friendly. The modification consisted of removing seven items from the original questionnaire (8, 20, 23, 29, 32, 34, and 35; see online supplemental material). In particular, questions that were less age-appropriate (e.g., Question 34 "Extra care is taken to ensure my dog is well taken care of whilst on holiday" and Question 20 "Having a dog means you cannot do what you want to") were removed. The total score was calculated as the sum of the items. The higher the score, the stronger the attachment to the pet dog. In the present study, the reliability of the scale was adequate ($\alpha = 0.75$, $\omega = 0.82$).

The Strengths and Difficulties Questionnaire

The SDQ consists of 25 items scored on a 3-point Likert scale (0 = not true, 1 = partially true, 2 = absolutely true). It is a well-validated behavioral screening questionnaire developed by using factor analyses and the nosological concepts that underpin the International Statistical Classification of Diseases and Related Health Problems (World Health Organization, 1993) and the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994) classifications of childhood psychopathology. Parents were asked to think about their child's behavior in the previous month and to respond to the statements. The items refer to the positive or negative characteristics of children's behavior and assess four negative dimensions of children's emotional and behavioral characteristics (Emotional Problems, Conduct Problems, Hyperactivity/Inattention, and

Peer Relationship Problems) and one positive dimension (Prosocial Behavior). For this study, we calculated the SDQ total difficulty score, which is a measure of children's negative behavioral characteristics (sum of Emotional Problems, Conduct Problems, Hyperactivity/Inattention, and Peer Relationship Problems). The total score was calculated as the average of the items. In the present study, the scale's reliability was adequate ($\alpha = 0.72$, $\omega = 0.74$).

Data Analysis

All analyses were performed using SPSS Version 26 for Windows, and tests (two-tailed) were interpreted assuming a significance level of 5% ($\alpha = 0.05$). First, an exploratory analysis was conducted to assess the normality of the data: skewness and kurtosis statistics were calculated. There is no consensus on an acceptable level of non-normality, but data can be considered normal if skewness is between -2 and $+2$ and kurtosis is between -7 and $+7$ (Finney & DiStefano, 2006). Table 1 shows that only one of the variables – dog attachment – had a skewness of more than 2.00 ($Sk = -2.36$). Thus, the data had an acceptable normal distribution (Finch et al., 1997). Then, descriptive statistics and bivariate correlations were calculated for the variables under consideration.

Last, a model was hypothesized using the observed variables to examine the relationship between attachment to the mother and the child's adjustment (measured as total SDQ score) as mediated by the child's attachment to the pet dog (see Figure 1).

The hypothesized model was then tested using the SPSS macro PROCESS (Hayes, 2013). PROCESS facilitates the analysis of direct effects, indirect effects, standard errors, and confidence intervals, based on the distribution obtained with the percentile bootstrapping method. The bootstrapping does not assume the normality or symmetry of the sampling distribution of the indirect effect and has been shown to be among the better methods for detecting mediated effects in small samples (Fritz et al., 2012; Hayes & Scharkow, 2013). Current approaches to testing for mediation involve the calculation of confidence intervals (CIs) for estimating the indirect effect. When the CI does not include zero, the indirect effect is declared statistically significant. A statistically significant indirect effect provides evidence that the effect of the independent variable on the result is mediated by other variables.

Table 1. Bivariate correlations and descriptive statistics of the variables measured in the study.

	<i>M</i>	<i>SD</i>	Range	Skew	Kur	1	2	3	4	5
1. Mother attachment	49.92	6.48	29–60	-1.35	2.18	–				
2. Dog attachment	110.39	18.95	34–131	-2.36	6.41	-0.19 (<i>n</i> = 66)	–			
3. Child's adjustment	12.74	3.77	6–21	0.69	-0.22	-0.28* (<i>n</i> = 60)	-0.19 (<i>n</i> = 61)	–		
4. Child's age	9.01	1.31	7–11	0.01	-1.11	-0.09 (<i>n</i> = 66)	-0.04 (<i>n</i> = 67)	-0.04 (<i>n</i> = 61)	–	
5. Child's gender	–	–	–	–	–	-0.01 (<i>n</i> = 66)	0.19 (<i>n</i> = 67)	0.11 (<i>n</i> = 61)	-0.04 (<i>n</i> = 67)	–
6. Mother's age	41.90	5.81	29–54	0.14	-0.68	0.13 (<i>n</i> = 66)	0.06 (<i>n</i> = 67)	0.04 (<i>n</i> = 61)	0.28* (<i>n</i> = 68)	0.04 (<i>n</i> = 67)

Note: Skew = Skewness, Kur = Kurtosis. Children's gender: female (0), male (1). * $p < 0.05$.

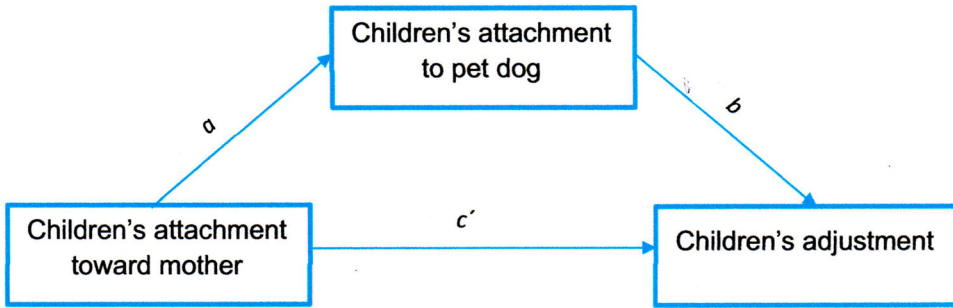


Figure 1. Model hypothesized: mediating effect of children's attachment to pet dog on the relationship between children's attachment to mother and children's adjustment. The letters a , b , and c' denote each hypothesized path and represent unstandardized regression coefficients between the variables connected by the arrow. The child's attachment to their mother predicts the child's attachment to their pet dog by the path denoted by a ; the child's attachment to their pet dog (mediator) predicts the child's adjustment through the path denoted by b . The letter c' shows the relationship between the child's attachment to their mother (predictor) and the child's adjustment (outcome) when the child's attachment to their pet dog (mediator) is also included in the model.

Results

Descriptive Statistics and Correlations

Table 1 presents descriptive statistics and bivariate correlations among the variables under consideration. As expected, attachment to the mother was related to child psychological adjustment ($r = -0.28$, $p = 0.030$), supporting the hypothesis that perceptions of greater security in the attachment relationship with the mother are associated with fewer child adjustment difficulties. Following Cohen's (1988) effect-size criteria, this correlation coefficient can be interpreted as reflecting a low–medium relationship.

The Mediating Role of Attachment to Pet Dog

To test hypothesis 2, a mediation analysis was conducted; the unstandardized regression coefficients are represented by a , b , c , and c' . As expected, the bootstrap results indicated that the indirect path for attachment to the mother (indirect effect = 0.084, bootstrapped $SE = 0.044$, 95% $CI = 0.003, 0.174$) was statistically significant, thus fully confirming the hypothesis. The indirect effect can be interpreted as expressing a small but relevant relationship. In addition, the total effect of attachment to the mother on child's adjustment was negative and statistically significant ($c = -0.186$, $SE = 0.084$, $t = -2.224$, $p = 0.030$). This means that children who rated themselves as strongly attached to their mothers scored lower on their adjustment, confirming hypothesis 1. Moreover, attachment to the mother was negatively associated with attachment to the pet dog ($a_{unstandardized} = -0.985$, $SE = 0.429$, $t = -2.298$, $p = 0.025$, 95% $CI = -1.843, -0.127$), indicating that stronger attachment to the mother was associated with weaker attachment to the pet dog. Also, attachment to the pet dog was negatively associated with child adjustment ($b_{unstandardized} = -0.057$, $SE = 0.025$, $t = -2.292$, $p = 0.026$, 95% $CI = -0.106, -0.007$), indicating that higher attachment to the pet dog was associated with fewer child

adjustment problems. The mediation analysis indicated that attachment to the pet dog partially mediated the relationship between attachment to the mother and the child's adjustment. When testing for these mediating variables, the initial negative relationship between attachment to the mother and the child's adjustment difficulties remained statistically significant ($c'_{unstandardized} = -0.242$, $SE = 0.085$, $t = -2.868$, $p = 0.006$, 95% CI = $-0.412, -0.073$). The tested model was statistically significant ($F_{(2, 57)} = 5.283$, $p = 0.008$). The presented model explains 15.6% ($R^2 = 0.156$) of the variability in the children's adjustment scores.

Discussion

The aim of this study was to investigate some characteristics of the quality of the attachment relationship between children and their dogs. Specifically, we investigated whether the quality of the relationship with dogs was negatively related to children's adjustment difficulties and whether it could be a mediator in the relationship between maternal attachment and children's adjustment. To achieve this goal, we formulated and examined three hypotheses.

The first hypothesis concerns whether the attachment relationship with the mother is associated with better psychological adjustment. The results suggest that children's reported security in the child–mother relationship is related to better child psychological adjustment. Along these lines, perceived security in the child–mother relationship was found to be associated with fewer emotional, behavioral, and hyperactivity problems and fewer problems in peer relationships. Our data are supported by previous literature that show that secure attachment to the mother is a protective factor in the child's psychological adjustment, positively influencing several developmental domains during childhood (Badenes-Ribera et al., 2019; Brumariu, 2015; Brumariu & Kerns, 2010). In a close and responsive relationship, the child learns effective coping strategies and adaptive self-regulatory competencies that allow them to approach challenges more confidently and manage stressful situations effectively, thereby promoting better adaptation (Cooke et al., 2019). Secure children usually internalize prosocial, caring, and respectful patterns, and together with their better emotional and behavioral regulation skills, they are likely to be accepted by their peers, thereby increasing their sense of wellbeing (Booth-Laforce et al., 2006; Coulombe & Yates, 2022; Granot & Mayseless, 2001).

The second hypothesis suggests that a secure attachment relationship with the mother is associated with lower attachment to the pet dog. In this study, the results indicate that a child who reports a secure attachment to their mother tends to report a lower attachment to their dog. Given these data, it could be hypothesized that attachment to the dog is less strong when the basic needs for safety, security, and support are met in the relationship with a human caregiver. In this sense, the child might form a stronger attachment to the dog if their emotional needs for support, closeness, and protection are not met in the relationship with a human caregiver. A positive and secure relationship with the mother may satiate the child's emotional needs, which is associated with a lower attachment to the dog and thus a lower dependence on the pet as a caregiver. Although both adults and children recognize a pet as a possible safe haven in times of stress, their preference remains for significant human figures, such as the mother and friends (Kurdek,

2008; 2009). However, the stronger the attachment to the dog, the higher in the attachment hierarchy it is ranked (Meehan et al., 2017).

The third hypothesis was about the relationship between attachment to the dog and children's psychological adjustment. Specifically, it was hypothesized that a stronger attachment to the dog is associated with greater psychological wellbeing. First, the results showed that stronger attachment to a dog is associated with better psychological adjustment in the child, as has been reported in previous literature (Hawkins & Williams, 2017; Longobardi et al., 2022; Purewal et al., 2017; Wanser & Udell, 2019), although research on the potential psychophysical benefits of a relationship with a pet has focused mainly on adults rather than children. For the latter, most studies appear to have been conducted with disadvantaged children and adolescents or those in clinical settings, rather than in the general child population (Purewal et al., 2017; Wanser & Udell, 2019). An Italian study (Longobardi et al., 2022) examined a non-clinical sample and showed that the presence of a pet can contribute to children's psychological adjustment: a dog can provide social and emotional support to the child and reduce stress, anxiety, and feelings of loneliness (Bodsworth & Coleman, 2001; Vidović et al., 1999). By caring for their pets, children may also feel more successful, increasing their self-esteem. In addition, interaction with dogs may facilitate emotion regulation (Hawkins & Williams, 2017; Wanser & Udell, 2019), elicit prosocial behaviors, and stimulate social interactions with people (Hawkins & Williams, 2017; Vidović et al., 1999).

These findings highlight the mediating role of attachment to the pet dog between maternal attachment and infant psychological adjustment. Consistent with previous research (Hawkins & Williams, 2017, 2019; Jalongo, 2018; Wanser & Udell, 2019; Wanser et al., 2020; Westgarth et al., 2013), the data show that stronger attachment to a dog may compensate for unmet needs for closeness, security, and emotional and social support in the relationship with the parent; it therefore may be a protective factor in the psychological adjustment of these children. The emotional support, sense of protection, and closeness that a dog can provide to a child are important, especially for children experiencing critical moments in their family, such as traumatic loss, parental conflict, and victimization (Beetz et al., 2012; Parish-Plass, 2008).

Limitations, Future Directions, and Practical Implications

Our results, of course, must be read in the context of the various limitations of the study. Firstly, our sample is a convenience sample from north-west Italy. Therefore, the generalizability of the results is limited; future studies should consider more representative samples. Moreover, we focused on children in middle childhood; future studies could compare children and adolescents at different developmental stages. Our study is cross-sectional and therefore precludes the possibility of studying the relationship between constructs in terms of linear causality. Therefore, longitudinal studies are needed to learn how attachment relationships with dogs develop over time and how long and when a dog becomes a family member. This information would provide a better picture of the development and stability of attachment relationships than would a single measurement.

In addition, self-report measures were used to assess the outcomes (i.e., children's attachment to their mother, children's attachment to their pet dogs, and children's psychological adjustment), which are susceptible to response bias. Factors such as social desirability and text comprehension may have influenced the outcomes. On a positive note, the self-report instruments used in the present study had adequate psychometric properties. However, in future studies, other instruments (e.g., direct observation of behaviors) or external observers could be used to measure the variables of interest.

Another limitation is the small effect found in our study: smaller effects are at risk of being due to artifact rather than the process under study. In these cases, an assessment of potential confounding variables could be crucial. Unfortunately, the present study did not analyze family dynamics, such as single-parent or two-parent families and sibling status, which might have influenced attachment scores (e.g., children in single-parent families and younger children are more attached to their pets; Bodsworth & Coleman, 2001; Westgarth et al., 2013), or the possibility that children who were weakly attached to their mothers were not represented, which could have aided in the interpretation of the results. Therefore, it is necessary to conduct replication studies that account for potential confounding variables to determine whether or not there is a mediated effect between attachment to the mother and children's psychological adjustment via attachment to the dog.

Finally, our study considered only secure attachment to the mother. Not only has previous research focused primarily on the mother as the main attachment figure, but biological and cultural factors make the mother figure the main source of attachment for the child from the earliest moments of life. However, future studies should also include measures of attachment to the father or to non-family figures, such as peers and teachers. Furthermore, considering that the father and mother, depending on the quality of their relationship with the child, may influence different developmental domains, it would be interesting to extend the knowledge about the possible impact of attachment to parents and dogs into other developmental domains. In this research, we focused on the child's psychological adjustment as a general measure of psychological wellbeing. Future studies could examine more specific aspects, such as quality of life, cognitive, emotional, and relational development. Finally, considering that the type of animal and the quality of relationship with it may have cultural influences, and considering that the expression of the attachment bond may also have cultural variations, future studies should examine the same variables in different cultural contexts or by making cross-cultural comparisons.

Conclusion

Ultimately, our data suggest that both security in the attachment relationship with the mother and a stronger attachment to the dog could be protective factors for child development, associated with better psychological adjustment. A dog may provide a compensatory attachment figure when a child perceives a less secure attachment to their mother, which helps meet the child's needs for security and support.

Some practical considerations can be derived from our study. It is important to promote a good bond with one's pets because it can strengthen the psychological

wellbeing of children, especially when there are critical problems in the relationship between child and parent. To develop a stronger attachment to the dog, direct contact with pets and their caring behavior should be promoted by encouraging children to take care of their dogs (e.g., grooming them, brushing them, taking them for walks), taking responsibility for them, and spending time with them (Hawkins & Williams, 2017). However, excessive attachment to a dog might prompt caregivers working with a child to extend their observations to the quality of the child–parent relationship. If appropriate, an attachment-focused intervention could be initiated to promote better psychological adjustment in the child.

Disclosure Statement

The authors declare that they have no competing interests.

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