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Understanding Associations Between Family Rejection, Human–Animal Interaction, and Mental Health Among LGBTQ+ Emerging Adults

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Abstract: Many LGBTQ+ emerging adults experience rejection from their family of origin. Family rejection is a stressor that contributes to worsened mental health for LGBTQ+ emerging adults. Supportive relationships with others can be an important protective factor for LGBTQ+ emerging adults as they cope with family rejection. The bond and interactions LGBTQ+ pet owners have with their pets may provide love, comfort, and support, similar to the relationship they may have with a human attachment figure. This quantitative study aimed to test pet attachment as a moderator of the association between family rejection and mental health in a sample of LGBTQ+ emerging adults. We collected survey data from 201 18–25-year-old LGBTQ+ pet owners living in the state of Virginia. After testing several moderation models using the PROCESS macro in SPSS, we found that pet attachment was not a significant moderator of the relation between family rejection and mental health symptoms (i.e., depression, anxiety, psychological distress). The findings suggest that pet attachment may not be a protective factor for LGBTQ+ emerging adults who experience family rejection, although these findings should be interpreted in light of the characteristics of our sample and limitations of the study. We recommend that future researchers explore alternative moderators or test these associations among LGBTQ+ individuals in other developmental periods.

Keywords: sexual minority; gender minority; parental rejection; pet attachment; companion animal; depression; anxiety; psychological distress

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1. Introduction

Rejection from the family of origin is a significant risk factor for poor health outcomes among LGBTQ+ young people [1–4]. The family of origin is defined through biological relations (e.g., biological parents, siblings) or legal relations (e.g., adopted parents, step-parents) [5]. This type of rejection often stems from family members' negative reactions to an individual's sexual orientation and/or gender identity or expression, mirroring societal stigma regarding sexual and gender identities. For many LGBTQ+ young people, families become a source of stress and discrimination which can compromise access to material resources and socioemotional support [2,6–8]. For example, qualitative research examining LGTBQ+ youths' experiences of rejection by parents and guardians suggests that youths experience increased heterosexism and cisgenderism from the members of their family after coming out, as well as increased arguments and conflict. Other experiences of negative family responses include increased control over the LGBTQ+ person's behaviors, isolation

from supportive relationships, abuse and neglect, silence and avoidance of LGBTQ+ topics, and the termination of young people's access to housing [9].

A growing body of research demonstrates that LGBTQ+ youths' experiences of rejection by family members can lead to negative mental health outcomes such as increased psychological distress and depression and anxiety symptoms [2,7,10]. Many LGBTQ+ youths report experiencing pain, disconnection from their families, and feeling stifled in the home as a result of cisgenderist and heterosexist familial attitudes and behaviors [7,9]. Notably, Ryan et al. [2] found that LGBTQ+ youths who experienced high levels of family rejection were 8.4 times more likely to report having attempted suicide and 5.9 times more likely to report high levels of depression compared to their LGBTQ+ peers who experienced little or no family rejection. Similarly, a study of LGBTQ+ university students found that participants who reported higher levels of family rejection were more than twice as likely to report moderate to severe psychological distress [11].

Despite these associations, not all LGBTQ+ young people who experience family rejection have compromised mental health. A robust finding in the literature is that positive and affirming social relationships promote well-being in the general population [12,13] as well as in other marginalized groups (e.g., individuals from racial/ethnic backgrounds) [7,14–16]. Indeed, prior research documents the protective role of social support (i.e., peers) in buffering the negative impact of parent/guardian rejection and other sexual and gender minority stressors (e.g., victimization, microaggressions) on mental health among LGBTQ+ emerging adults [7,17,18]. It is widely accepted that social relationships promote well-being and resilience to adversity through stress-buffering processes and concomitant social connections [12,19,20]. Social relationships can attenuate an individual's physiological and psychological response to stress in the context of adverse experiences such as discrimination and victimization [7,21,22]. Given that LGBTQ+ young people have a lower likelihood of receiving support from their families of origin, it is important to identify other supportive, stress-buffering social relationships that can be leveraged to foster positive coping and resilience in the population.

1.1. Human–Animal Interaction (HAI)

Many households in the United States (US) include pets such as dogs and cats. Indeed, dogs are the most common pet in the US, with 62 million households (44.6%) including at least one dog. Cats are the second most common pet with 37 million households (26%) sharing their home with at least one cat [23]. Pets have a special place in US homes; most owners consider their pets to be a part of the family [24–30], and many owners view their pets as children [31–34]. Evidence suggests that rates of living with a pet are comparable, if not higher, within LGBTQ+ populations [35] and several studies support that many LGBTQ+ individuals consider their pets to be a part of their family [5,36].

Attachment theory [37], traditionally used to help explain the deep emotional bond that develops between an infant and their primary caregiver, has been expanded to describe the close relationship between pets and their owners and the animals' abilities to provide a sense of security, safety, and decreased loneliness to their owners [38,39]. A growing body of research supports the premise that pets offer numerous benefits and that humans bond with pets in ways that are comparable with human–human attachment [29,40–45]. In addition, pets often provide social support by acting as catalysts for social interaction, as well as providing humans with feelings of emotional support and companionship [19,46]. Pets may be of particular benefit to youths who often view them as confidants and turn to them in times of adversity [47–50].

While it appears clear that many people are deeply attached to their pets, our understanding of the exact nature of the attachment continues to evolve. Recent research suggests that multiple factors are involved in the attachment between pets and their owners [51,52]. The Pet Attachment and Life Impact Scale (PALS) was created to help address previous limitations in the field regarding pet attachment [53] by asking participants about their attachment to their companion animal across four factors: love for and by their companion

animal, emotional regulation provided by bonds with their companion animal, personal growth derived from attachment to their companion animal, and negative impacts of living with their companion animal. This multifaceted approach to assessing pet attachment allows for a deeper understanding of how the pet–human attachment bond may impact owners, particularly those experiencing marginalization and identity-based stressors.

1.2. LGBTQ+ Emerging Adults and HAI

Recent studies suggest that attachment bonds and emotional comfort derived from relationships with pets (e.g., cats, dogs) may play an important role in risk and resilience among LGBTQ+ young people [54]. For example, one study found that seeking emotional comfort from a pet may buffer the association between exposure to victimization and self-esteem among LGBTQ+ emerging adults [55]. Similar findings about the supportive nature of the attachment bond have been reported for LGBTQ+ individuals exposed to identity-based microaggressions [56] and those experiencing family-based violence [57]. Given the frequency of exposure to family rejection and high rates of mental health challenges experienced by LGBTQ+ young people, it is important to explore whether pet attachment may buffer this association. The current study contributes to the literature by exploring how relationships with pets impact the association between family rejection and mental health in a sample of LGBTQ+ emerging adults. This area has yet to be explored in the literature.

1.3. Current Study

The current study aimed to test the moderating effect of three domains of pet attachment (i.e., love, emotional regulation, personal growth) on the association between family rejection and mental health outcomes (i.e., depression, anxiety, psychological distress). We hypothesized that family rejection would be positively associated with each mental health outcome. Furthermore, we hypothesized that each domain of pet attachment would mitigate this relationship, so that the relationship between family rejection and mental health would be weaker for those with a high attachment to their pet. A conceptual figure for the current study is displayed in Figure 1.

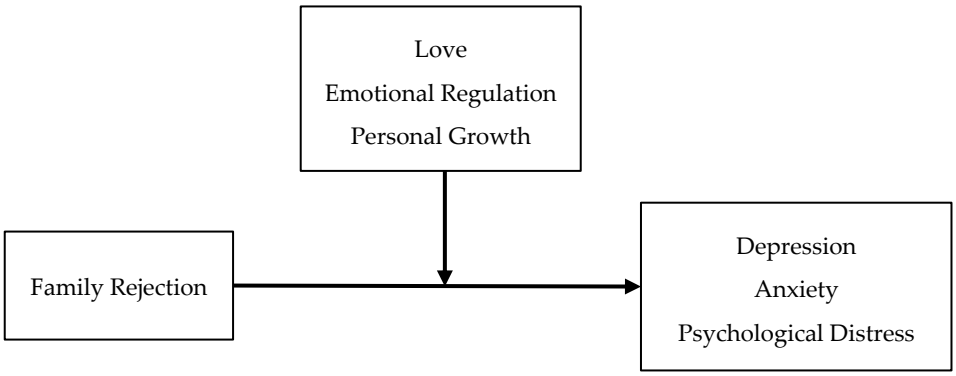

Figure 1. Conceptual model.

2. Materials and Methods

2.1. Participants

The data analyzed in the current study were collected as a part of a longitudinal study investigating the impact of living with a pet on the mental health and well-being of LGBTQ+ young adults living in two US states. This cross-sectional study uses Wave 1 data collected between April 2022 and May 2024 from participants living in Virginia. Individuals were eligible to participate in the study if they met the following inclusion criteria: (a) were between 18 and 25 years of age, (b) currently lived with a pet and had lived with that pet for at least one month, (c) self-identified as LGBTQ+, and (d) were able to understand written and spoken English. There were no additional exclusion criteria. Two participants

were removed from the sample due to missing data, yielding a final sample of 201 LGBTQ+ emerging adults. Demographic information for participants can be found in Table 1.

Table 1. Demographic characteristics of the sample (n = 201).

Variable Name	Variable Categories	Frequency (n%)
Race/Ethnicity	Asian/Asian American	7 (3.5)
	Black/African American	20 (10.0)
	Latina/Latino/Latinx	9 (4.5)
	Multiracial/Mixed Race	43 (21.4)
	South Asian/Pacific Islander	2 (1.0)
	White and/or White Ethnic (Jewish, Italian, Irish, etc.)	118 (58.7)
Sexual Orientation	Gay	9 (4.5)
	Lesbian	30 (14.9)
	Bisexual	45 (22.4)
	Queer	26 (12.9)
	Straight/Heterosexual	1 (0.5)
	Pansexual	13 (6.5)
	Asexual	1 (0.5)
	Demisexual	1 (0.5)
	Multiple Identifications	75 (37.3)
Gender Identity	Agender	2 (1.0)
	Cisgender Man	14 (7.0)
	Cisgender Woman	75 (37.3)
	Genderfluid	6 (3.0)
	Genderqueer	8 (4.0)
	Nonbinary	23 (11.4)
	Transgender Man	20 (10.0)
	Not sure or questioning	8 (4.0)
	Prefer to self-describe	1 (0.5)
	Multiple Identifications	44 (21.9)
Current Student	No	59 (29.4)
	Yes	142 (70.6)
Disability	No (N/A)	100 (49.8)
	Physical disability	8 (4.0)
	Intellectual and/or developmental disability	10 (5.0)
	Mental disability	42 (20.9)
	Other	6 (3.0)
	Multiple selected	35 (17.4)
Socioeconomic Status	Lives comfortably	67 (33.3)
	Meet needs with a little left	89 (44.3)
	Just meet basic needs	41 (20.4)
	Do not meet basic expenses	4 (2.0)

Pet Type	**Lived with** [1]	**Primary Caretaker** [2]	**Pet as Family** [2]
Dog	106 (52.7)	60 (56.6)	104 (98.1)
Cat	131 (65.2)	97 (74.0)	125 (95.4)
Bird	8 (4.0)	3 (37.5)	7 (87.5)
Fish	4 (2.0)	4 (100.0)	3 (75.0)
Reptile	16 (8.0)	14 (87.5)	15 (93.8)
Rodent	14 (7.0)	14 (100.0)	13 (92.9)
Lagomorph	2 (1.0)	2 (100.0)	2 (100.0)
Other	6 (3.0)	5 (83.3)	6 (100.0)

[1] Participants were able to report information on a maximum of three pets. These categories are not mutually exclusive. [2] Percentages are based on total number of participants that lived with the specific pet type.

2.2. Procedures

This study was approved by the Virginia Commonwealth University's Institutional Review Board (HM#20023844). To recruit participants, printed flyers were displayed on community boards in local businesses (e.g., cafes, restaurants, shops) and street posts within Richmond, Virginia, and the surrounding cities. Virtual flyers were shared on social media and through local university listservs. All flyers contained a link to a screening survey, which assessed eligibility to participate. The study coordinator contacted eligible individuals to provide more information about the study and scheduled their appointment to complete the survey. Participants had the option of completing the survey in-person (at an office at the university) or via Zoom.

The procedure remained consistent across in-person or virtual appointments. At the beginning of the appointment, a research assistant verbally went through the consent form and obtained informed consent from the participant. Then, participants completed the survey on a university computer (in-person) or their own electronic device (virtual). The survey typically took participants less than one hour to complete. All participants were compensated with a $25 e-gift card to Target.

2.3. Measures

2.3.1. Family Rejection

Family rejection was assessed using seven items adapted from a scale previously used by Vanderwaal and colleagues [58]. The items ask participants to rate their agreement using a 5-point Likert scale to a set of statements about the behavior of their family toward their sexual orientation and/or gender identity. We adapted the measure by adding a question at the beginning to assess if they had disclosed their identity to their family and used branching logic to adjust the wording of the items for participants who had not come out to their family. Sample items include: "My family struggled/would struggle to accept my sexual orientation and/or gender identity", "My family used/would use demeaning language about my sexual orientation and/or gender identity after I came out to them", and "My family blamed/would blame me for any anti-LGBT+ mistreatment I receive".

Because the measure has not been validated yet, we tested the factor structure of the unidimensional measure by conducting a confirmatory factor analysis using a WLMSV estimator, as recommended for ordinal data [59,60], in R (version 4.4.1). Two items ask about language used by the family (i.e., using demeaning language and calling derogatory names). We used best standards for assessing model fit, including a chi-square/df ratio of less than three [61], CFI and TLI scores above 0.95 [62], and RMSEA and SRMR scores below 0.08 [63]. After removing the item related to derogatory names, the measure was overall a good fit for the data (χ^2 = 19, p = 0.025; χ^2/df = 2.11; CFI = 0.995; TLI = 0.991; RMSEA = 0.075, 90% CI [0.026, 0.165]; SRMR = 0.03). All factor loadings for the remaining six items were above 0.7. Additionally, the internal consistency of the 6 items was good (ω = 0.89). We proceeded with the six-item, unidimensional measure of family rejection for the analyses.

2.3.2. Mental Health Symptoms

The Brief Symptom Inventory (BSI; [64]) was utilized to assess participants' levels of anxiety, depression, and psychological stress symptoms. The BSI is a 53-item measure that can be categorized into 10 subscales. Depressive and anxiety symptoms were assessed via the BSI's depressive (6 items) and anxiety (6 items) symptoms subscales, which participants rank on a 5-point Likert scale. Participants indicated how frequently they experienced each item (e.g., "Feeling lonely", "Feeling hopeless about the future") in the past week ranging from 0 (not at all) to 4 (extremely). For all subscales, responses were averaged to compute a subscale score and internal consistency in our sample was good (depression ω = 0.87, anxiety ω = 0.85, psychological stress ω = 0.96).

2.3.3. Human–Animal Interaction

Three domains of HAI (love, emotion regulation, and personal growth) were measured using the Pet Attachment and Life Impact Scale (PALS; [53]). The PALS is a 35-item scale that assesses the impact pets have on the lives of their owners and the level of attachment pet owners report having with their pet [53]. This scale used a 5-point Likert scale that ranged from 'Not at all' to 'Very much'. The love subscale contains 17 items (e.g., "My pet is part of my family", "My pet gives me unconditional love") that reflect love for and by the companion animal. The personal growth subscale consists of five items (e.g., "My pet teaches me responsibility") that reflect the ways in which the bond with the pet has contributed to the individual's personal growth. The emotion regulation subscale includes nine items (e.g., "My pet calms me down") that capture how the individual may use interactions with their pet to regulate their own emotions. Items from each subscale were averaged together to yield a mean score. Internal consistency in our sample was appropriate for each subscale: love (ω = 0.83), emotion regulation (ω = 0.84), and personal growth (ω = 0.75).

2.3.4. Covariates

In each model, we included six control variables that had been associated with mental health in previous research. Age was measured via participant date of birth. Race and ethnicity were measured using a single item that allowed participants to select all that apply to how they saw their racial and ethnic identity; this item was dichotomized to categorize participants as identifying as white, non-Hispanic, or identifying with a racially or ethnically marginalized identity. Gender modality was measured by dichotomizing a variable asking participants to select all gender identities that applied to them to reflect whether participants identified as cisgender or with a gender minority identity. Disability status was measured using a single item asking individuals to select any disabilities they currently had, which was later dichotomized to having a disability versus not having a disability. Socioeconomic status was measured based on recommendations from Williams et al. [65] using one self-report item (i.e., "Considering your own income and the income from any other people who help you, how would you describe your overall personal financial situation?") with four response options: live comfortably, meet needs with a little left, just meet basic needs, and do not meet basic expenses.

Peer social support was measured using the 12-item Multidimensional Scale of Perceived Social Support (MSPSS; [66]). The scale measures social support derived from family ("I get the emotional help and support I need from my family"), friends ("I can count on my friends when things go wrong"), and significant other(s) ("There is a special person with whom I can share my joys and sorrows") across a 7-point Likert response scale. Response options range from strongly disagree to strongly agree. In the current study, we used an average score of perceived social support, with higher scores indicating higher levels of social support. Internal consistency of the MSPSS was excellent in the current sample (ω = 0.94).

2.3.5. Analysis Plan

All analyses were conducted using the PROCESS macro (version 4.3; [67]) in SPSS (version 29). Missing data were handled using listwise deletion, which removed two participants' data from the analyses. We ran nine separate moderation analyses, testing each domain of pet attachment (i.e., love, emotional regulation, personal growth) as the moderator of the association between family rejection and each mental health outcome (i.e., depression, anxiety, psychological distress). All moderation analyses included six covariates: race/ethnicity (dichotomized; 1 = White, non-Latinx, 0 = marginalized racial/ethnic identity), gender modality (dichotomized; 1 = gender minority, 0 = cisgender), peer social support (continuous), socioeconomic status (ordinal; 1 = do not meet basic expenses, 2 = just meet basic expenses, 3 = meet needs with a little left, 4 = lives comfort-

ably), disability status (dichotomized; 1 = disabled, 0 = does not have a disability), and age (continuous).

We conducted a post hoc power analysis using G*Power software (version 3.1; [68]) based on an alpha level of 0.05 and a sample size of 201 participants. This power analysis found that we had adequate power to detect medium (f^2 = 0.15, power = 0.998) and large (f^2 = 0.02, power = 1.00) effects.

3. Results

3.1. Bivariate Correlations

Bivariate correlations between all variables can be found in Table 2. Family rejection had a weak positive association with depression and psychological distress, but was not significantly related to anxiety. Family rejection was also positively related to emotional regulation and personal growth through pet attachment, and negatively related to social support from friends. There was a weak positive association between all domains of pet attachment and psychological distress. Additionally, love from pet attachment was positively associated with anxiety, and emotional regulation from pet attachment was positively associated with anxiety and depression.

Table 2. Intercorrelations, means, frequencies, standard deviations, and percentages of constructs of interest (n = 201).

Variable	1	2	3	4	5	6	7	8	9
1. Age	--								
2. Friend Support	0.060	--							
3. Family Rejection	−0.043	−0.215 **	--						
4. Love	0.111	0.027	0.080	--					
5. Emotion Regulation	0.004	−0.015	0.230 **	0.750 **	--				
6. Personal Growth	0.010	0.006	0.159 *	0.657 **	0.757 **	--			
7. Depression	−0.196 **	−0.243 **	0.222 **	0.129	0.191 **	0.133	--		
8. Anxiety	−0.227 **	−0.082	0.090	0.167 *	0.163 *	0.093	0.556 **	--	
9. Psychological Distress	−0.174 *	−0.202 **	0.271 **	0.246 **	0.267 **	0.235 **	0.730 **	0.727 **	--
Mean	21.64	5.72	2.58	4.48	3.81	3.99	1.74	1.81	1.17
Standard Deviation	2.08	1.17	1.10	0.44	0.81	0.79	0.83	0.82	0.63

* $p < 0.05$, ** $p < 0.01$.

3.2. Love Moderation Results

We ran three analysis models that tested love experienced within the pet attachment bond as a moderator of the association between family rejection and mental health symptoms. The results of all moderation analyses can be found in Table 3.

Table 3. Moderation analyses (n = 201).

Dependent Variable	Model	ΔR^2	F	b	t	p
Depression	family rejection × love	0.0004	0.09	−0.04	−0.31	0.76
	family rejection × emotional regulation	0.0003	0.07	0.02	0.26	0.79
	family rejection × personal growth	<0.0001	0.005	−0.004	−0.07	0.95
Anxiety	family rejection × love	<0.0001	0.01	0.01	0.09	0.93
	family rejection × emotional regulation	0.002	0.54	0.05	0.73	0.46
	family rejection × personal growth	0.004	0.79	0.06	0.89	0.37
Psychological Distress	family rejection × love	0.002	0.40	−0.05	−0.64	0.53
	family rejection × emotional regulation	0.001	0.23	−0.02	−0.48	0.63
	family rejection × personal growth	0.0002	0.04	−0.01	−0.21	0.84

The model that included depression as the dependent variable was a good fit for the data and explained 19% of the variance in depression [$F(9, 191) = 4.91$, $p < 0.001$]. In this model, depression was negatively associated with age [$b = -0.08$, $t(191) = -3.06$, $p = 0.003$], social support from friends [$b = -0.11$, $t(191) = -2.35$, $p = 0.02$], and socioeconomic status [$b = -0.18$, $t(191) = -2.50$, $p = 0.01$]. Neither family rejection [$b = 0.10$, $t(191) = 1.97$, $p = 0.05$) nor love [$b = 0.21$, $t(191) = 1.68$, $p = 0.09$] were significantly associated with depression. Love

was not a significant moderator of the association between family rejection and depression [$F(1, 191) = 0.09$, $t(191) = -0.31$, $p = 0.76$).

The model that included anxiety as the dependent variable was also a good fit for the data, explaining 15% of the variance in anxiety [$F(9, 191) = 3.64$, $p > 0.001$]. In this model, love was significantly and positively associated with anxiety [$b = 0.31$, $t(191) = 2.42$, $p = 0.02$]. Family rejection was not significantly associated with anxiety [$b = -0.003$, $t(191) = -0.05$, $p = 0.96$]. Age was the only covariate that was significantly associated with anxiety [$b = -0.09$, $t(191) = -3.44$, $p = 0.001$]. Love was not a significant moderator of the association between family rejection and anxiety [$F(1, 191) = 0.01$, $t(191) = 0.09$, $p = 0.93$].

Similarly, the model that included psychological distress as the dependent variable was a good fit for the data and explained 28% of the variance in psychological distress [$F(9, 191) = 8.21$, $p > 0.001$]. In this model, psychological distress was significantly and positively associated with both family rejection [$b = 0.08$, $t(191) = 2.22$, $p = 0.03$] and love [$b = 0.31$, $t = 3.35$, $p = 0.001$]. Gender [$b = 0.18$, $t(191) = 2.21$, $p = 0.03$] and disability status [$b = 0.26$, $t(191) = 3.06$, $p = 0.003$] were both positively associated with psychological distress, meaning that those who identified as gender minorities or disabled experienced higher psychological distress. Age [$b = -0.05$, $t(191) = -2.84$, $p = 0.005$] and socioeconomic status [$b = -0.16$, $t(191) = -3.06$, $p = 0.003$] were both negatively associated with psychological distress. Again, love was not a significant moderator of the association between family rejection and psychological distress [$F(1, 191) = 0.40$, $t(191) = -0.64$, $p = 0.53$].

3.3. Emotional Regulation Moderation Analyses

We ran three analysis models that tested using the pet for emotional regulation as a moderator of the relation between family rejection and mental health symptoms. We found that the model that included depression as the dependent variable was a good fit for the data and explained 19% of the variance in depression [$F(9, 191) = 5.02$, $p < 0.001$]. In this model, neither family rejection [$b = 0.09$, $t(191) = 1.69$, $p = 0.09$] nor emotional regulation [$b = 0.13$, $t(191) = 1.92$, $p = 0.06$] were significantly associated with depression. Depression was negatively associated with age [$b = -0.08$, $t(191) = -2.86$, $p = 0.004$], social support from friends [$b = -0.11$, $t(191) = -2.38$, $p = 0.02$], and socioeconomic status [$b = -0.16$, $t(191) = -2.12$, $p = 0.04$]. Emotional regulation was not a significant moderator of the association between family rejection and depression [$F(1, 191) = 0.07$, $t(191) = 0.26$, $p = 0.79$].

Similarly, the model that included anxiety as the dependent variable was also a good fit for the data, explaining 14% of the variance in anxiety [$F(9, 191) = 3.37$, $p > 0.001$]. There were no significant associations between anxiety and family rejection [$b = -0.01$, $t(191) = -0.23$, $p = 0.82$] or emotional regulation [$b = 0.13$, $t(191) = 1.77$, $p = 0.08$]. Age was the only covariate that was significantly related to anxiety [$b = -0.09$, $t(191) = -3.15$, $p = 0.002$]. Emotional regulation did not significantly moderate the association between family rejection and anxiety [$F(1, 191) = 0.54$, $t(191) = 0.73$, $p = 0.46$].

The model including psychological distress as the dependent variable was a good fit for the data and explained 27% of the variance in psychological distress [$F(9, 191) = 7.68$, $p > 0.001$]. Family rejection was not significantly associated with anxiety [$b = 0.07$, $t(191) = 1.89$, $p = 0.06$], but emotional regulation was positively associated with anxiety [$b = 0.14$, $t(191) = 2.79$, $p = 0.01$]. Again, psychological distress was positively associated with gender [$b = 0.20$, $t(191) = 2.40$, $p = 0.02$] and disability [$b = 0.26$, $t(191) = 3.06$, $p = 0.003$]. Psychological distress was also negatively associated with age [$b = -0.05$, $t(191) = -2.39$, $p = 0.02$] and socioeconomic status [$b = -0.14$, $t(191) = -2.57$, $p = 0.01$]. Emotional regulation was not a significant moderator of the association between family rejection and psychological distress [$F(1, 191) = 0.23$, $t(191) = -0.48$, $p = 0.63$].

3.4. Personal Growth Moderation Analyses

Similar to the previous analyses, we ran three analysis models to test personal growth experienced from pet attachment as a moderator in the relations between family rejection and mental health. In the model with depression as the dependent variable, the model

was a good fit for the data and explained 18% of the variance [$F(9, 191) = 4.76$, $p > 0.001$]. Neither family rejection [$b = 0.10$, $t(191) = 1.90$, $p = 0.06$] nor personal growth [$b = 0.10$, $t(191) = 1.37$, $p = 0.17$] were significantly associated with depression. Three of the covariates were significantly related with depression: age [$b = -0.08$, $t(191) = -2.88$, $p = 0.004$], social support from friends [$b = -0.11$, $t(191) = -2.31$, $p = 0.02$], and socioeconomic status [$b = -0.18$, $t(191) = -2.42$, $p = 0.02$]. Personal growth was not a significant moderator of the association between family rejection and depression [$F(1, 191) = 0.005$, $t(191) = -0.07$, $p = 0.95$].

The model that included anxiety as a dependent variable was also a good fit for the data, explaining 13% of the variance in anxiety. Similarly to above, there were no significant associations between anxiety and family rejection [$b = 0.004$, $t(191) = 0.07$, $p = 0.94$] or personal growth [$b = 0.06$, $t(191) = 0.78$, $p = 0.44$]. Anxiety was negatively related to both age [$b = -0.08$, $t(191) = -3.12$, $p = 0.002$] and socioeconomic status [$b = -0.15$, $t(191) = -2.02$, $p = 0.04$]. Personal growth was not a significant moderator of the association between family rejection and anxiety [$F(1, 191) = 0.79$, $t(191) = 0.89$, $p = 0.37$].

The model that included psychological distress as the dependent variable was a good fit for the data and explained 26% of the variance in psychological distress [$F(9, 191) = 7.57$, $p > 0.001$]. In this model, there was a positive association between psychological distress and family rejection [$b = 0.08$, $t(191) = 2.08$, $p = 0.04$] and personal growth [$b = 0.14$, $t(191) = 2.69$, $p = 0.01$]. Both gender [$b = 0.18$, $t(191) = 2.17$, $p = 0.03$] and disability [$b = 0.26$, $t(191) = 3.13$, $p = 0.002$] were negatively related to psychological distress. Psychological distress was positively associated with age [$b = -0.05$, $t(191) = -2.45$, $p = 0.02$] and socioeconomic status [$b = -0.05$, $t(191) = -2.45$, $p = 0.02$]. Personal growth was not a significant moderator of the relation between family rejection and psychological distress [$F(1, 191) = 0.04$, $t(191) = -0.21$, $p = 0.84$].

4. Discussion

This study aimed to assess the moderating effect of pet attachment on the association between exposure to family rejection and mental health symptoms among a sample of LGBTQ+ emerging adults. Based on findings from previous studies demonstrating the potential benefits of social support and strong bonds with pets for LGBTQ+ individuals, we hypothesized that high pet attachment would act as a protective factor for LGBTQ+ emerging adults by attenuating the harmful association between family rejection and mental health symptoms. However, our hypotheses were not supported by the findings from this study.

There are a number of potential reasons why the three domains of pet attachment (love, emotion regulation, and personal growth) did not significantly moderate the association between family rejection and mental health symptoms. One explanation may be related to the developmental period of our sample. Emerging adulthood is a developmental period that is marked by increasing independence [69] and is a time in which many individuals leave their family home, often to attend university or live independently. The majority of our sample (approximately 71%) identified as university students and may not be living with their family. It is possible that pet attachment may act as a buffer only in situations where both the individual and the pet live in the same home as the rejecting family members. While evidence suggests that LGBTQ+ emerging adults may see their pet as a source of emotional comfort during times of stress [56], if the individual and/or their pet is living in a different location than the rejecting family member(s), the human–pet attachment bond may not be as useful of a coping tool. Future research should consider investigating these relations among LGBTQ+ emerging adults or youths who are living in the same home as their family members. Furthermore, many of our participants lived with multiple species of pets (35%); therefore, we were unable to examine how pet type (e.g., dog, cat, other species) may have changed the role of pet attachment in the association between family rejection and mental health symptoms. There is some evidence that suggests levels of pet attachment may vary across different species of pets; for example, some researchers suggest that dog

owners experience greater attachment to their pet than cat owners or those who live with other species [70,71]. Future research might consider recruiting a sample of LGBTQ+ pet owners that is stratified by pet type to be able to assess whether interacting with particular species of pets may provide more protective benefits to LGBTQ+ individuals experiencing family rejection or other forms of identity-based stress.

Additionally, it is possible that pet attachment plays a different role in the association between family rejection and mental health. Although many studies discuss secure attachment to humans as a protective factor for LGBTQ+ people experience stress [72,73], it is possible that attachment bonds may benefit the mental health of LGBTQ+ people in other ways. Attachment theory states that individuals may use their secure attachment bond as a coping mechanism to regulate their emotions and cope with adversity [37]. Rather than considering pet attachment as a buffer that influences the strength of the relationship between family rejection and mental health, it is possible that pet attachment may be a mediator in this association. One study conducted with LGBTQ+ emerging adults found that HAI was a mediator of the association between LGBQ-specific microaggressions and personal hardiness, a form of resilience [56]. Specifically, researchers found that exposure to microaggressions was positively associated with HAI which, in turn, was positively associated with personal hardiness. It is possible that associations between family rejection, pet attachment, and mental health may act in a similar manner; LGBTQ+ emerging adults who experience family rejection may seek out interactions with the pet they are closely attached with to cope with this stressor, thus reducing mental health symptoms. The results of our bivariate analysis suggest that family rejection is positively associated with some domains of pet attachment. Due to the cross-sectional nature of the current data, we are not able to test these hypotheses. The testing of alternative models, including these variables, warrants greater exploration in future research.

Although the moderation analyses were non-significant, the results of the bivariate analyses are also important to consider in light of previous research. Notably, we found that family rejection was only weakly associated with depression and psychological distress, and was not significantly associated with anxiety. This contradicts previous research, which has consistently linked exposure to family rejection to mental health symptoms [2,7,10]. It is possible there are characteristics of this sample that led them to be less affected by, or better able to cope with, rejection from their family members. Indeed, the average scores for depressive symptoms, anxiety symptoms, and psychological distress were low in our sample. Additionally, associations between family rejection and mental health outcomes have not been studied among an LGBTQ+ sample that exclusively lived with pets; prior research has also found similar non-significant results between family stressors and mental health among other pet-owning samples [74]. Future studies might consider comparing LGBTQ+ pet-owning samples with LGBTQ+ individuals who do not live with pets to assess if the presence of a pet in the household may serve as a protective factor for LGBTQ+ young adults. In general, our study highlights that family rejection is a complex stressor and there may be many factors that contribute to its association with mental health. In addition, our study supports the growing body of research that suggests that the impact of pets is not always positive, nor the same, for all individuals [36,75–77]. In a practical clinical sense, therefore, it is important to recognize that the impact of pets on LGBTQ+ emerging adults is nuanced and individualized; unique to each person based on their pet, their attachment, and numerous other factors that must be accounted for.

Additionally, we found that pet attachment was positively associated with anxiety and symptoms and psychological distress. It is important to emphasize that this study is cross-sectional; we were unable to determine whether strong attachment to pets predicts mental health symptoms, or whether individuals who experience mental health challenges are more likely to become highly attached to their pet. Other cross-sectional studies have found similar positive relations between pet ownership and attachment and worse mental health outcomes [22,78]. More research is needed to explore how the stressors associated with pet ownership, such as financial difficulties [79] or caregiving stress [26], could have a

harmful effect on mental health within this population. Longitudinal study designs may be particularly useful in studying these associations, to determine causal relationships between HAI and mental health.

Limitations

The results of this study should be considered in light of a few limitations. Our measure of family rejection asked individuals to consider rejection experienced by the family as a whole, rather than individual family members. This is an important consideration, given evidence that individuals may simultaneously experience support from some members of their family and rejection from others [80]. Additionally, we did not collect information on how often participants interacted with their family members or if participants were currently living with their family, which may have impacted the association between family rejection and mental health symptoms. We utilized convenience sampling to recruit participants which may have impacted how representative our sample was of the overall population. Based on the demographics of Virginia [81], our study was under-representative of some racial and ethnic groups (e.g., Latinx and Asian individuals). Further, the small number of participants who identified within each marginalized racial and ethnic group required us to dichotomize our race/ethnicity variable. This study only collected data from emerging adults; it is possible that pet attachment may be more salient in other developmental periods, such as adolescence or childhood. Finally, our sample size was too small to adequately detect small effects. These findings should be replicated with larger, representative samples.

5. Conclusions

The findings of this study have important implications for future HAI research with LGBTQ+ emerging adults. Researchers may consider exploring the associations between these variables among LGBTQ+ individuals in other developmental stages, such as adolescence. It is possible that pet attachment may play a protective role for LGBTQ+ adolescents who are currently living at home with non-affirming family members. Additionally, given the findings from McDonald et al. [56], it may be interesting to explore other models that include pet attachment as a mediator in the relation between family rejection and mental health outcomes, as well as outcomes of positive development. Our study also highlights the importance of longitudinal research in this area to assess causal relationships. Although our moderation analyses were non-significant, it is clear from the results of our bivariate analyses and previous research, that the relationships that LGBTQ+ emerging adults have with their pets are important and warrant further research.

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