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Social Support from Pets and Humans when Coping with Stress and Emotion:

The Role of Culture

A Thesis submitted in partial satisfaction of the
requirements for the degree Master of Arts
in Psychological & Brain Sciences

by

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by

Jiayi Wang

Abstract

Social Support from Pets and Humans when Coping with Stress and Emotion: The Role of Culture

By

Jiayi Wang

Previous research has shown that pets provide emotional benefits for human beings and thus are an indispensable part of human life. However, there is no research that particularly looks into the social support people receive during human-animal interaction in comparison with human-human interaction from a cultural psychology perspective. Previously, Asian Americans have been shown to use more implicit social support and less explicit social support than European Americans because Asian Americans have higher levels of relational concern (Kim et al., 2006). In the current study, I hypothesized that people mainly receive implicit social support from pets, and therefore, people with higher typical usage of implicit social support, lower typical usage of explicit social support, and higher level of relational concern will have less negative affect, less stress, and more positive affect after thinking of their pets versus their friends. On a group level, I hypothesized that Asian Americans (compared to European Americans) will have less negative affect, less stress, and more positive affect, after thinking of their pet versus their friend. In Study 1, we obtained results that were contradictory to our hypothesis within a sample of European and Asian/Asian American undergraduates. In Studies 2 and 3, we found partial support for our hypotheses

among European American pet owners recruited from an online platform (Mturk). Future investigation is necessary to fully uncover the social support people receive from pets in comparison with human partners across cultural orientations.

Anecdotes and research have demonstrated that pets provide a significant amount of social support for pet owners that can work as well as human partners (Turner et al., 2003; McConnell et al., 2011). However, previous research has yet to explore the type of social support humans receive during their interactions with pets, and how this social support relates to the support humans receive from close relationships with other human beings. This further raises a question of if this reception of social support changes across cultural backgrounds, and if so, how would this experience change in distinctive cultural backgrounds? It is important to disentangle and compare the support mechanism during human-human interactions and human-pet interactions, and discover if cultural orientations play a role in forming supportive relationships with pets.

To analyze the supportive interaction in people's relationships with their pet, I firstly look into the literature of human-pet interactions within psychological well-being contexts. Then I explore the definition of social support in social psychology through cultural differences in support seeking. Finally, I combine these two lines of thought to derive my research focus on the potential for pets to play different social support roles based on cultural contexts.

The Supportive role of Pets

In 1789, King Frederick of Prussia said: "A dog is a man's best friend." In modern society, adopting pets, living with them, and enjoying their company have become a common trend in people's life too. According to Statista (2022), in 2021, statistics show that around seventy percent of American families owned a pet, which is a twenty-five percent increase from the data in 1988. American people have been not only living with pets, but also keeping this hobby for the next generations and letting it grow further.

Why are human beings fascinated with their pets? Psychologists have been working to uncover the essence of human-animal relationships. Previously, abundant research has shown that pets can help humans reduce blood pressure under mental stress (Allen et al., 2001), motivate pet owners to generate more personal goals in life and increase their self-confidence in achieving these goals (Zilcha-Mano et al., 2012). Pet owners are also more likely to have better physical health, self-esteem and mental health conditions compared to non-owners (Raghunath et al., 2017). Scientific evidence indicates the benefit of living with pets, and pets' role as a safe haven and secure base for human beings. Pet therapy therefore has also been an indispensable part of psychological treatment (Zilcha-Mano et al., 2012).

Furthermore, pets' influences on human beings can be broader and stronger to a level that previous researchers have studied how they are compared to our human partners. In a correlational study, Turner and colleagues (2003) measured the mood of people who lived alone or with a partner, and with or without a pet, and they found that people who lived alone with cats had the least negative mood. Cat owners who lived with a partner had significantly more negative mood than cat owners who lived alone. People who lived alone without a cat had the most negative mood. They also found out that having a cat or a partner was related to reduced feelings of seclusion (Turner et al., 2003). Therefore, they concluded that cat ownership was associated with fewer bad moods and reduced feelings of seclusion, and cats and partners were equivalent in terms of reducing negative moods and feelings of seclusion. This finding suggests that the emotional buffer offered by pets is comparable to human partners, furthermore, when human partners and cats coexist simultaneously, human partners' power to decrease negative affect was not "particularly amplified" (Turner et al., 2003). Likewise, McConnell and colleagues (2011) conducted an experimental study to

directly compare the effect on social need fulfillment of thinking of a pet versus a best friend. This study discovered that thinking of a favorite pet can stave off the negative emotions associated with being rejected or excluded as effectively as thinking of a best friend, and pets indeed worked slightly better than best friends (McConnell et al., 2011).

Nevertheless, the role of pets in humans' life might differ depending on people's life contexts. For example, Garrity et al. (1989) demonstrated that for elderly pet owners with minimal confidant support, stronger pet attachment was linked with less depression and illness. However, for elderly people who had a high level of human social support, stronger pet attachment was associated with slightly greater illness, and no such association was found with the level of depression (Garrity et al., 1989). This indicates that pet ownership might be a form of useful social support for elderly people who do not have ample support from confidants, whereas with greater human social support, the effect of pet attachment decreases or disappears. This suggests that pets become more influential when people are not surrounded by a significant amount of support from other people. Therefore, from the perspective of pet owners, pets may act as compensation for other human partners, especially when there is limited support from other human partners.

Overall, research has demonstrated that pets provide a significant amount of social support for pet owners, which may work as well as human partners, and this type of social support could have varying effects for human beings. However, previous research has yet to explore specifically how humans receive social support from their interactions with pets, and how it is in comparison with the way humans receive social support from other human beings. Also, previous research has not asked the question if the social support people receive from pets changes across cultural orientations. It is important to disentangle the mechanism

of social support from pets and understand why people benefit from their relationship with pets in different ways, and whether this relationship would change in varied social contexts and cultures.

Social support across cultural contexts

There are two major types of social support that people often use: explicit social support and implicit social support. Explicit social support refers to the support people receive while addressing their major issues with others and actively looking for emotional support or coping strategies from others. Giving advice, instrumental aid, or emotional comfort to others are all seen as methods of explicit social support. Comparatively, Implicit social support refers to the social support experienced by other people's company or shared pleasant activities without explicitly mentioning the problems or issues (Taylor et al., 2007).

In addition, researchers have found that explicit social support is more commonly used by European Americans, whereas implicit social support is more likely to happen in Asians and Asian Americans' social contexts. Specifically, Asians and Asian Americans have more relational concerns that could discourage them from actively seeking explicit emotional support (Taylor et al., 2004; Kim et al., 2008). Taylor et al. (2004) explored different approaches Asians and Asian Americans and European Americans use in achieving social support. They suggested that in Asian cultural contexts, the concept of group harmony is highlighted and people tend to prioritize group harmony over their own issues or emotional needs. Consequently, Asians and Asian Americans tend not to risk "undermining harmony or making inappropriate demands on the group" by eliciting their social requirement to other group members (Taylor et al., 2004, p.355). Taylor et al. (2004) pointed out that Asians and Asian Americans emphasize group harmony and feel obligated to solve their own problems

independently. This may seem counterintuitive given that interdependent cultures—which includes many Asian cultures—tend to rely on each other more and connect with their family members or friends more than people in the independent cultures. However, the researchers noted that individuals from interdependent cultures may fear the social consequences of divulging their problems to their social network, and thus they seek to protect their relationships by avoiding disclosing their own issues. (Kim et al., 2006). Therefore, asking for other people’s help is more unusual and less common in interdependent cultures, such as Asian cultures, than in independent cultural contexts.

Hence, in Asian cultures, the benefit of social groups is emphasized so much that individuals would place their own personal needs in secondary positions, and minimize their own problems or demands for the purpose of group harmony. In this case, Asians are more likely to deal with their concerns alone to reduce the trouble they bring to the group, instead of reaching out to family members or friends explicitly for help. (Taylor et al., 2004). Taylor et al. (2004) also raised the possibility that Asians feel threatened by losing face (losing others’ respect) when they raise their own issues or emotional needs in front of other people, even when the others are close friends or family members. Due to their cultural backgrounds, Asians may expect each other to solve their own problems and follow the social norms that maintain group harmony. As a result, exhibiting their own social problems can be seen as negative, and it causes criticism that is harmful for their self-esteem and social image (Taylor et al., 2004). Accordingly, from an individual’s perspective, Asians would try their best to maintain peace and not lose face.

Therefore, Asian Americans were less likely to seek explicit social support, and implicit social support brings more psychological and physiological benefit to Asian

Americans. Distinctively, European Americans may be more open about their emotional needs to/with their friends and family, and consequently, they were more likely to seek explicit social support from other humans than Asian Americans, which also brings them more psychological and physiological benefit to them than implicit social support (Taylor et al., 2004; Taylor et al., 2007). Notably, this cultural difference is not due to different interpretations of stressors or negative emotions, as Mauss and colleagues found out that Asian Americans and European Americans did not differ in their physiological responses to anger, however, Asian Americans showed significantly less behavioral responses to anger than European Americans (Mauss et al., 2010). These results demonstrated that the cultural difference can change people's coping behaviors, but not their inner feelings and natural responses towards emotional events.

The role of pets in cross-cultural social support

After reviewing the cultural differences regarding social support among human beings, one might wonder if there could be cultural differences in receiving social support from pets, since pets also provide humans with significant social support (Allen et al., 2001; Raghunath et al., 2017). Interestingly, Asians' implicit approaches towards emotional support might not limit their interactions with their pets. In fact, my hypothesis is that Asian cultures may potentially lead them to embrace human-pet interactions greater than European people do.

Pets can only provide social support for people in an indirect way, such as keeping their owners company, playing with them or communicating with them through physical behaviors. The format of all these human-pet interactions is closer to the method of implicit social support than explicit social support, because implicit social support as well includes

the elements of keeping people company, and being there physically to support people instead of expressing any emotional comfort or raising specific issues (Taylor et al., 2007). Thus, it is reasonable to infer that the effect of human-pet interactions is more similar to the effect of implicit social support, which is more beneficial to Asians and Asian Americans (Taylor et al., 2007).

As a result, it is more likely for Asians and Asian Americans to seek out and receive social support from their pets because pets can partially satisfy their requirement for implicit social support. Moreover, there are many other theoretical reasons that could possibly contribute to the hypothesis that Asians and Asian Americans receive more emotional and mental benefits from staying with their pets.

Studies have shown that Asians have higher levels of relational concern compared to European Americans, and relational concern mediated cultural differences in seeking social support (Taylor et al., 2004). Because of their relational concerns in social interactions, Asians and Asian Americans are anxious about losing face (respect) and being looked down on, or rejected by other people, in which case they withdraw from openly reaching out to their family members or friends for help. Nevertheless, the nonjudgmental animals can be a fantastic compensation for Asians and Asian Americans to embrace. Pets are accepting, loyal, honest, affectionate and consistent, which are all the qualities that people need to feel loved and self-worth (Nebbe, 2001, as cited in Smolkovic et al., 2012). Therefore, In front of pets, Asians and Asian Americans don't have to hold concerns about losing face or being criticized for showing their weakness. Instead, they can enjoy the implicit type of supportive interactions between them and their pets. For example, they don't have to actively *ask* for pets' help, which is a significant signal in accordance with Asians and Asian Americans'

habit of implicit social support (Taylor et al., 2007). Pets stay with their owners and cheer them up, and give their owners company and social support all the time. In this way, Asians and Asian Americans eliminate the social cost of asking for help and receiving help from the beginning of human-pet interactions.

There is a gap that pets can fill in Asian Americans' social needs, where they have the same requirements for emotional support as European Americans do, but hesitate to ask for help from people around them. This is the time that Asian Americans can rely on their pets for help, since pets are perfect implicit social supporters who surround them in their houses. In other words, Asians and Asian Americans can leave the rest of the emotion-focused support that has not been satisfied fully through human-human interactions to human-pet interactions. By receiving emotional comfort from their lovely pets and obtaining problem-focused resources from other human beings, Asians and Asian Americans can achieve a balance between the benefits of human-human interactions and human-pet interactions in their own way.

On the other hand, European Americans do not hold as much relational concern as Asians and Asian Americans do, so they are more willing to approach other people for self-exposure and emotional conversations. Therefore, European Americans will openly talk about their emotional issues or difficulties with their family and friends, and pets can play a small role in this process. It is more straightforward and convenient for European Americans to connect with other human beings and receive explicit social support, instead of spending time with their pets without talking through their problems. Thus, the different ways European Americans and Asian Americans seek social support could result in a fundamental disparity in their approaches towards pets.

The Current Study

In the present study, we explored the social support people receive from pets in comparison with other human partners from a cultural psychological perspective. We tested whether Asian American participants' higher usage of implicit social support would lead to greater social support from their interactions with their pet versus their human partners and if European American participants' higher usage of explicit social support would lead to a reverse pattern, where they benefit more from interactions with other people. We also explored if relational concern is a significant moderator between the manipulation of friends and pets and people's emotions. To test these ideas, I conducted three studies in which I manipulated pet versus friend support by asking people to recall their typical activity with their pet or friend. I then measured their emotional responses and perceived stress level.

Overall, I hypothesized that among people who have higher levels of implicit social support and relational concerns, thinking of their pets could give them greater social support than thinking of their friends. Asian Americans have been shown to use more implicit social support and have higher levels of relational concerns (Kim et al., 2008). Therefore, I hypothesize that *on a group level*, Asian Americans (compared to European Americans) will have more positive affect, less negative affect, and less stress after thinking about their pet than thinking about their friend. Likewise, *on an individual difference level*, people with higher typical usage of implicit social support (and lower explicit support) and higher relational concerns will have more positive affect, less negative affect, and less stress after thinking about their pet versus their friend.

In Study 1, we recruited Asian American and European American pet owners through the undergraduate subject pool at University of California, Santa Barbara, to see if there was

a cultural difference in perceiving social support from pets versus friends. We modified the methodology from McConnell and colleagues' study (2011), partially changing their experimental manipulations. We primed participants with their current stressors, and asked them to write about their pets or friends or some regular life events as a control group for two minutes, and tested their emotions and perceived stress levels as dependent variables. We used cultural group (Asian vs. European American) as a moderator to determine if the effect of the social support manipulation differed across groups. In addition, we used levels of relational concern and typical usage of implicit and explicit social support as (continuous) moderators of the manipulation to determine if the impact of the manipulation (pet vs. friend vs. control) differed for people who typically rely on more implicit (vs. explicit) forms of support or those who typically worry (or do not worry) about relational harmony when seeking support.

In Study 2, we used a similar methodology but recruited European American participants through Amazon Mechanical Turk (Mturk). In this study, we focused on individual differences rather than cultural groups. Specifically, we examined the moderating role of relationship relational concerns and typical support (implicit and explicit social support) in moderating the effects of the support manipulation (friends vs. pets vs. control) when imagining stressors. The questionnaire was slightly different from Study 1 due to recruiting participants on different platforms.

In Study 3, we aimed to replicate the findings of Study 2 with a larger and more diverse sample. We excluded the control condition in the original study to emphasize the comparison between people's pets and friends.

Study 1

Method

Participants. We recruited 505 European American and Asian and Asian American participants through the SONA system, UCSB. While running the study on SONA, we asked for participants who are currently enrolled at the University of California, Santa Barbara, are under the age of 30, speak English, and have/had lived with a pet. In this way, we recruited participants who are pet owners without emphasizing pet ownership to participants. We also used the filter function on SONA system to recruit Asian Americans or European Americans. Among them, 28 participants answered ‘no’ to the filter question in the pet condition; 3 participants answered ‘no’ to the filter question in the friend condition; and 7 participants answered ‘no’ to the filter question in the control condition. Excluding these participants’ responses and incomplete responses, we had 459 participants. For analysis of cultural differences, we excluded the responses from participants who did not self-report as Asian/Asian American/European American/White or who self-reported as mixed raced, and we had a sample of 435 (41.6% Asians or Asian Americans, 58.4% European Americans). For analysis of individual responses, we used the full 459 responses. The characteristics were: ethnicity (39.4% Asians or Asian Americans, 55.3% European Americans, 5.3% Mixed race or other races), age ($M=19.50$, $SD=9.54$), gender (25% Male, 65.1% Female), living situation (4% Alone, 7.3% with family members, 73.5% with roommates, 5.5% with friends, 0.6% other). Among Asian participants, 66.9% were born in the U.S, 33.1% were not. Among European participants, 96.1% were born in the U.S., 3.9% were not.

Procedure.

The study was in the form of a questionnaire. Participants completed the informed consent, and measurements in the sequence of the explicit and implicit social support scale,

current stressor, perceived stress, experimental manipulation, Positive and Negative Affect Schedule, perceived stress, relational concern, pet anthropomorphism, overall social support, and demographics. There was a debriefing form at the end of the study and participants received a code for their compensation for the study. Study materials appear in the Appendix.

Materials and Measures.

Explicit and Implicit social support Scale. We used the 15-item social support measurement adapted from Kim et al. (2006), which included eight items from the COPE scale, adapted from Carver (1997), measuring the typical usage of explicit social support (e.g., “I tried to get emotional support from friends or relatives.” “I talked to someone about how I felt.”) and six items measuring the typical usage of implicit social support (e.g., “I hung out with friends who did not know about the stressor.” “I tried to get strength by remembering those who need me and rely on me.”). Participants answered the extent to which they used these different ways of coping with stressors, from 1 (Not at all) to 5 (Very much). The average scores for the two subsections were calculated, and higher scores for each subsection indicated more tendency to use implicit or explicit social support (implicit social support: $M = 20.85$, $SD = 4.00$, $\alpha = .68$; explicit social support: $M = 28.52$, $SD = 6.55$, $\alpha = .89$). One question was excluded from the analysis because it was measuring distraction.

Current Stressor. Participants were asked to write about their current stressors in an open-ended question. This scale was adapted from the current stressor question used by Kim et al. (2006). The text provided to them was:

Most people encounter stressful events on a fairly regular basis. You might have relationship problems, financial difficulties, conflicts with family members, illness, job stressors, or school-related concerns. What is the greatest stressor you are

currently facing? Describe it briefly in the space below. Please write for 2 minutes and move on to the next question after 2 minutes.

Self-Assessment of the Stressor. Participants were asked to describe the nature of this stressful event by selecting one of the stressor's categories or specifying their own event. They were also asked to indicate the extent to which they feel about this event on a 4-item questionnaire (e.g., "This event is *stressful*" "I am able to successfully resolve this event."), from 1 (Not at all) to 7 (Very much) (Kim et al., 2006). The average score of two items ("This event is *stressful*" "This event is *negative*") was calculated, and the higher score represented a higher stress level ($M = 10.25$, $SD = 6.27$, $\alpha = .47$).

Manipulation. There are three experimental conditions in the study. Participants in the pet condition were asked if they have a pet (either with them or in their family), their pet's name, and what is something they typically do with their pet. Participants in the friend condition were asked if they have a friend at UCSB or in their hometown, and their friend's initials, and what is something they typically do with this friend. In the control condition, we asked participants if they bought anything last week (including food, clothes, or other things), what was the favorite thing they bought last week, and what they did with the favorite thing they bought. For each condition, participants were asked to write for two minutes. After two minutes, the online survey displayed the button to the next page and they could move on to the next questions.

Positive and Negative Affect Schedule. Participants' positive and negative emotions were measured through this twenty-item positive and negative affect schedule (e.g., Please indicate the extent you have felt this way over the past week: Excited; Distressed), from 1 (Very slightly or not at all) to 5 (Extremely). This scale is adapted from Watson, Clark and

Tellegen (1988). This scale has two subsections: positive emotion and negative emotion. Average scores of both subsections were calculated and turned into two measures: positive emotion and negative emotion; Higher scores indicated higher levels of emotions (Positive: $M = 28.77$, $SD = 8.14$, $\alpha = .90$; Negative: $M = 21.67$, $SD = 68.90$, $\alpha = .89$).

Perceived Stress. Participants' stress levels were measured through a nine-item perceived stress scale (e.g., "How much do you feel confident about your ability to handle your personal problems?" "How much do you feel nervous and 'stressed'?"), from 1 (Not at all) to 5 (Very much). These items were adapted from Cohen, Kamarck and Mermelstein (1983). Four items were reverse-coded, and the average scores of the perceived stress were calculated and turned into one measure of the perceived stress level. Higher scores indicated that participants feel more stressed ($M = 26.93$, $SD = 5.96$, $\alpha = .82$).

Relational Concern. Participants' level of relational concern was measured by an eleven-item relational concern scale (e.g., "If something were bothering me, I would not want to disrupt my social group by sharing it" "I'm concerned that if I tell the people I am close to about my problems, they would be hurt or worried for me."), from 1 (Not at all) to 5 (Very much), adapted from Kim et al. (2006). Average scores of these items were calculated and turned into one measure of the relational concern, and higher scores indicated higher levels of relational concern ($M = 30.15$, $SD = 9.70$, $\alpha = .91$).

Pet Anthropomorphism. Participants' level of pet anthropomorphism was measured through a seven-item pet anthropomorphism scale (e.g., "Please evaluate your pet using the following traits: Thoughtful; Sympathetic"), from 1 (Not at all) to 5 (Very much), adapted from Epley, Waytz and Cacioppo (2007, as cited in McConnell et al., 2011). Average scores of these items were calculated and turned into one measure of pet anthropomorphism, and the

higher scores indicated higher levels of pet anthropomorphism ($M = 27.07$, $SD = 6.74$, $\alpha = .61$).

Overall Support. Participants were asked to indicate the overall social support they received from their parents, siblings, closest friends, and their pet (e.g., “Please consider each of the relevant targets and indicate how much support you receive from each target: Parents”), on slider questions from 0 (Not at all) to 100 (A great deal).

Demographics. Participants’ living conditions, age, ethnicity, occupation, the highest level of education, perceived SES, nationality, and the type and quantity of their pets were recorded.

Results

Cultural Group Differences in the Impact of Friend vs. Pet Support

A series of 2 (Culture: Asian (Asians and Asian Americans) vs. European (Europeans and European Americans)) x 3 (Condition: Pet vs. Friend vs. Control) ANOVAs were conducted through SPSS to compare the interaction effect between experimental conditions and culture ($N=435$). Mixed raced participants were not included in the analyses. Positive affect, negative affect, and perceived stress level were used as dependent variables. Self-assessment of stress was used as a covariate for perceived stress because it measures people’s stress level before the manipulation, and by adding this covariate we can see the effect of the manipulation. Contrary to our hypothesis, there was no significant interaction between culture and experimental conditions on positive affect, $F(2,429) = .40$, $p = .67$, negative affect, $F(2,429) = .51$, $p = .60$, or perceived stress, $F(2,428) = .05$, $p = .95$.

There was a significant main effect of culture on positive affect, $F(1,429)=6.94$, $p<.01$. As shown in Table 1, on average, European participants reported significantly higher positive affect scores than Asian participants. There was no significant main effect of culture on negative affect, $F(1,429) =.51$, $p=.48$, or perceived stress, $F(1,428) =.72$, $p=.40$. There was also no significant main effect of experimental condition on positive affect, $F(2,429) =.80$, $p=.45$, negative affect $F(2,429) =.95$, $p=.39$, or perceived stress, $F(2,428) =1.51$, $p=.22$.

Table 1

Main effect of Condition and Culture on Positive Affect

	Asian			European		
	M	SD	N	M	SD	N
Pet	2.79	0.74	49	2.93	0.87	79
Friend	2.71	0.83	64	2.89	0.82	90
Control	2.77	0.71	68	3.07	0.83	85

Table 2

Main effect of Condition and Culture on Negative Affect

	Asian			European		
	M	SD	N	M	SD	N
Pet	2.08	0.83	49	2.14	0.93	79
Friend	2.23	0.78	64	2.12	0.75	90
Control	2.31	0.87	68	2.19	0.79	85

Table 3*Main effect of Condition and Culture on Perceived Stress*

	Asian			European		
	M	SD	N	M	SD	N
Pet	3.03	0.6	49	3.05	0.65	79
Friend	2.96	0.73	64	2.93	0.69	90
Control	3.05	0.54	68	3.02	0.70	85

To further analyze the reason that we did not find the expected interaction effect between culture and experimental conditions, we did an independent t-test to determine if our Asian/Asian American and European American students differed in ways that would be expected in terms of their typical usage of implicit social support, explicit social support (measured prior to the manipulation) and relational concerns (measured after the manipulation). Contrary to our expectations, Asians/Asian Americans were not higher in relational concerns, $t(444)=.70, p=.24$, and did not differ in their usage of implicit social support, $t(444)=-.33, p=.36$, and explicit social support, $t(444)=-1.22, p=.11$ (Table 4). Therefore, it appears that within our sample of undergraduate students, Asian/Asian-American and European Americans were similar to each other in their approaches to social support, which may explain why cultural groups did not moderate the effect of the manipulation. In the next set of analyses, I focused instead on individual differences in the cultural dimensions themselves.

Table 4

Differences between Asians/Asian Americans and European Americans on usage of implicit and explicit social support and relational concern

	Asian			European			df	t	p
	M	SD	N	M	SD	N			
Implicit	3.48	0.70	181	3.51	0.65	254	433	-.443	.329
Explicit	3.53	0.82	181	3.63	0.80	254	433	-1.21	.113
Relational Concern	2.77	0.88	181	2.72	0.89	254	433	.616	.269

Individual Differences in Responses to the Stressor

Next, I moved on to test my hypotheses on the individual level. We combined all the data with different ethnicities (N=459) and ran hierarchical regression analyses to examine how individual differences in typical support (explicit and implicit) and relational concerns predict emotional responses to the recalled stressor. Once again, dependent variables were negative affect, positive affect, and perceived stress. These analyses ignore (average over) the manipulation. Three sets of factors were explored: (a) implicit social support, (b) explicit social support, and (c) relational concern. The self-assessment of the stressor before manipulation was entered on step 1, the score of implicit social support was entered on Step 2, explicit social support on Step 3, and relational concern on Step 4.

For negative affect, on Step 1, self-assessment of the stressor before the manipulation explained 11.7% of the variance, $F(1,457) = 60.37, p < .001$. Self-assessment of the stressor before the manipulation was a significant covariate of negative affect. On step 2, implicit social support explained 0.1% of the variance, $F(1,457) = .65, p = .42$. Implicit social support

is not a unique predictor of negative affect. On Step 3, explicit social support explained an additional 0.1% of the variance, $F(1,456) = .64, p = .42$. Explicit social support is not a unique predictor of negative affect. On Step 4, relational concern explained an additional 15.1% of the variance, $F(1,455) = 80.92, p < .001$. Relational concern was a significant unique predictor; participants who had higher levels of relational concern were more likely to have negative affect.

Table 5

Hierarchical Regression Analysis Predicting Negative Affect

Variable	R ₂	ΔR ₂	β	sr ₂	r
<u>Step 1</u>	.117***	.117***			
Self-Assessment of Stress			.342***	.117***	.342***
<u>Step 2</u>	.117	.000			
Implicit			.002	.000	.038
<u>Step 3</u>	.123	.006			
Explicit			-.080	.006	-.028
<u>Step 4</u>	.217***	.095***			
Relational Concern			.369***	.095***	.359***

Note: $N = 184$. * $p < .05$, ** $p < .01$, *** $p < .001$.

For positive affect, on Step 1, self-assessment of the stressor before the manipulation explained 3.8% of the variance, $F(1,457) = 17.89, p < .001$. Self-assessment of the stressor before the manipulation was a significant covariate of positive affect. On step 2, implicit social support explained 8.6% of the variance, $F(1,457) = 43.18, p < .001$. Implicit social support is a unique predictor of positive affect. Participants who typically used more implicit social support were more likely to have positive affect. On Step 3, explicit social support explained an additional 0.6% of the variance, $F(1,456) = 3.04, p = .08$. Explicit social support is not a unique predictor of positive affect. On Step 4, relational concern explained an additional 2.7% of the variance, $F(1,455) = 13.77, p < .001$. Relational concern was a significant unique predictor. Participants who had higher levels of relational concern were less likely to have positive affect.

Table 6

Hierarchical Regression Analysis Predicting Positive Affect

Variable	R ₂	ΔR ₂	β	sr ²	r
<u>Step 1</u>	.038***	.038***			
Self-Assessment of Stress			-.194***	.038***	-.194***
<u>Step 2</u>	.137***	.100***			
Implicit			.317***	.100***	.294***
<u>Step 3</u>	.148*	.011*			
Explicit			.108*	.011*	.140*

<u>Step 4</u>	.159*	.011*			
Relational Concern			-.126*	.011*	-.131*

Note: $N = 184$. * $p < .05$, ** $p < .01$, *** $p < .001$.

For perceived stress, on Step 1, self-assessment of the stressor before the manipulation explained 19.3% of the variance, $F(1,457) = 109.12, p < .001$. Self-assessment of the stressor before the manipulation was a significant covariate of perceived stress. On Step 2, implicit social support explained an additional 0.2% of the variance, $F(1,456) = .98, p = .32$. Implicit social support was not a unique predictor of perceived stress. On Step 3, explicit social support explained an additional 0.2% of the variance, $F(1,455) = 1.10, p = .30$. Explicit social support was not a significant predictor of perceived stress. On step 4, relational concern explained an additional 9.9% of the variance, $F(1,454) = 63.93, p < .001$. Relational concern was a significant predictor; participants who had higher levels of relational concern were more likely to have perceived stress.

Table 7

Hierarchical Regression Analysis Predicting Perceived Stress

Variable	R ₂	ΔR ₂	β	sr ²	r
<u>Step 1</u>	.193***	.193***			
Self-Assessment of Stress			.439***	.193***	.342***
<u>Step 2</u>	.194	.002			
Implicit			-.042	.002	.038

<u>Step 3</u>	.196	.002			
Explicit			-.045	.002	-.028
<u>Step 4</u>	.296***	.099***			
Relational Concern			.378***	.099***	.359***

Note: $N = 184$. * $p < .05$, ** $p < .01$, *** $p < .001$.

These results suggest that relational concern was a significant predictor of perceived stress; Implicit social support and relational concern were significant predictors of positive affect; Relational concern was a significant predictor of negative affect.

Individual Differences in the Impact of Friend vs. Pet Support on responses to the stressor:

Moderated Regression Analysis

In the next analysis, I tested whether individual differences in support tendencies and relational concerns moderated the effect of the support manipulation (friend, pet, control) on emotional responses to the stressor. Moderated regression analyses were conducted using the Process macro in SPSS (Hayes, 2022). These analyses test the hypothesis that impact of friend versus pet support on people’s positive affect, negative affect, and perceived stress will be moderated by their typical usage of implicit social support, explicit social support, and their level of relational concern. Experimental condition was dummy coded into two variables: X1 (friend vs. pet) and X2 (control vs. pet). Self-assessment of stress before the manipulation was used as a covariate for all the DVs, because it measures participants’ stress levels before the manipulation. These analyses were conducted with the full sample, all ethnicities ($N=459$).

For negative affect, there was a significant interaction between relational concern and X1 (friend versus pet), $b=-.25$, $t(452)=-2.57$, $p=.01$, and a marginally significant interaction effect between relational concern and X2 (control versus pet) for negative affect, $b=-.19$, $t(452)=-1.88$, $p=.06$. As shown in Figure 1, when relational concern is low, participants reported significantly lower negative affect in the pet condition compared to both the control condition [$b=.35$, $t(452)=2.87$, $p<.01$] and the friend condition [$b=.31$, $t(452)=2.51$, $p=.01$]. However, When relational concern is high, there is no significant difference between the pet condition and friend condition [$b=-.14$, $t(452)=-1.15$, $p=.25$] or the pet condition and control condition [$b=.02$, $t(452)=.19$, $p=.85$]. Overall, these findings were not consistent with my hypothesis, which predicted that participants with *higher* level of relational concern will have less negative affect in the pet condition versus friend condition. Instead we see that participants with *lower* levels of relational concern show less negative affect after thinking about their pet compared to either their friend or the control condition.

Table 8

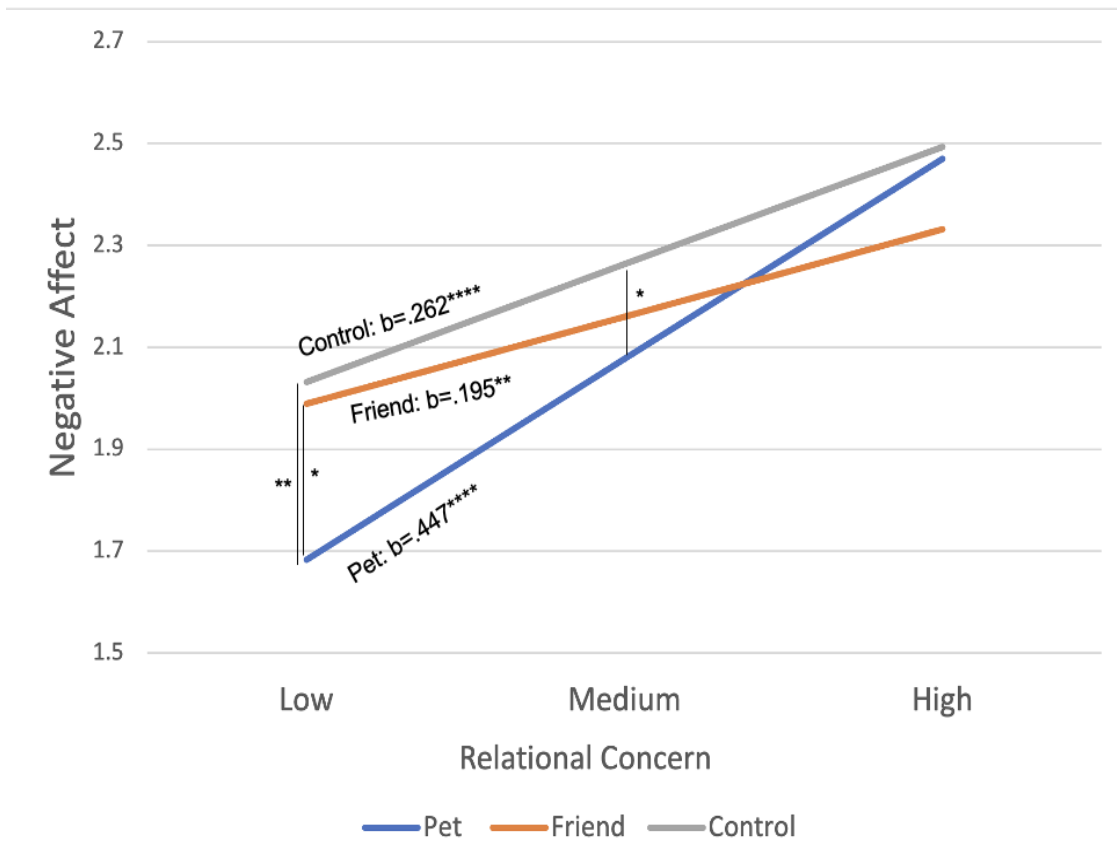
Moderated Regression Analysis on Negative Affect: Manipulation and Relational Concern

Effect	Estimate	SE	95% CI		p
			LL	UL	
Fixed effects					
Intercept	1.090	.156	.784	1.40	.0000
X1(Friend vs. Pet)	.084	.085	-.083	.251	.326
X2(Control vs. Pet)	.186	.085	.019	.353	.029
Relational Concern	.447	.075	.300	.594	.0000

Interaction with X1	-.253	.098	-.446	-.059	.011*
Interaction with X2	-.186	.099	-.380	.008	.061
Self-assessment of Stress	.192	.028	.137	.247	.0000

Figure 1

Moderated Regression: Support Manipulation by Relational Concern Predicting Negative affect



There was no significant interaction effect between relational concern and experimental condition for positive affect and perceived stress. There was also no significant

interaction between implicit and explicit social support and experimental condition for all the dependent variables.

Table 9

Moderated Regression Analysis on Negative Affect and Different Moderators, with self-assessment of stress as a covariate

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Pet	.147	.100	1.47	.143	-.050	.343
	Friend	-.019	.092	-.208	.835	-.200	.161
	Control	-.110	.094	-1.16	.245	-.294	.075
Explicit Social Support	Pet	-.156	.090	-1.73	.085	-.334	.022
	Friend	-.006	.076	-.082	.935	-.156	.143
	Control	-.096	.072	-1.33	.185	-.238	.046
Relational Concern	Pet	.447	.075	5.98	.0000****	.300	.594
	Friend	.195	.065	2.99	.003**	.067	.322
	Control	.262	.065	4.03	.0001****	.134	.389

Table 10

Moderated Regression Analysis on Positive Affect and Different Moderators, with self-assessment of stress as a covariate

	Condition	b	se	t	p	LLCI	ULCI
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Implicit Social Support	Pet	.524	.098	5.35	.0000*** *	.331	.716
	Friend	.300	.090	3.34	.0009***	.124	.477
	Control	.365	.092	3.96	.0001*** *	.184	.546
Explicit Social Support	Pet	.258	.092	2.80	.005**	.077	.440
	Friend	.106	.078	1.37	.173	-.047	.259
	Control	.170	.074	2.31	.021*	.025	.315
Relational Concern	Pet	-.121	.082	-1.48	.139	-.282	.039
	Friend	-.094	.071	-1.32	.188	-.233	.046
	Control	-.067	.071	-.939	.348	-.206	.073

Table 11

Moderated Regression Analysis on Perceived Stress and Different Moderators, with self-assessment of stress as a covariate

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Pet	-.078	.077	-1.02	.308	-.229	.073
	Friend	-.092	.070	-1.31	.191	-.231	.046
	Control	.040	.072	.551	.582	-.102	.181
Explicit Social Support	Pet	-.101	.069	-1.46	.146	-.237	.035
	Friend	.049	.058	.842	.400	-.065	.163

	Control	-.098	.055	-1.77	.077	-.206	.011
Relationa 1 Concern	Pet	.288	.058	5.00	.0000****	.175	.401
	Friend	.150	.050	2.99	.003**	.051	.248
	Control	.230	.050	4.61	.0000****	.132	.329

Regression analyses with European Americans and Asians/Asian Americans

Next, I ran the same hierarchical regression analyses and moderated regression analyses separately for Asian Americans (N=181) and European Americans (N=254) to see if the patterns are similar in different cultural groups.

European Americans. I first ran hierarchical regression analyses for European Americans. Using negative affect as a dependent variable, on Step 1, self-assessment of the stressor before the manipulation explained 8.4% of the variance, $F(1,252) = 23.05, p < .001$. Self-assessment of the stressor before the manipulation was a significant covariate of negative affect. On step 2, implicit social support explained 0.6% of the variance, $F(1,252) = 1.62, p = .21$. Implicit social support was not a unique predictor of negative affect. On Step 3, explicit social support explained an additional 0.1% of the variance, $F(1,251) = .14, p = .71$. Explicit social support was not a unique predictor of negative affect. On Step 4, relational concern explained an additional 12.1% of the variance, $F(1,250) = 34.63, p < .001$. Relational concern was a significant unique predictor; participants who had higher levels of relational concern were more likely to have negative affect.

Table 12

Hierarchical Regression Analysis Predicting Negative Affect

Variable	R ₂	ΔR ₂	β	sr ²	r
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<u>Step 1</u>	.084***	.084***			
Self-Assessment of Stress			.290***	.084***	.290***
<u>Step 2</u>	.086	.002			
Implicit			.043	.002	.080
<u>Step 3</u>	.086	.000			
Explicit			-.014	.000	.041
<u>Step 4</u>	.162***	.077***			
Relational Concern			.326***	.077***	.313***

Note: $N = 184$. * $p < .05$, ** $p < .01$, *** $p < .001$.

For positive affect, on Step 1, self-assessment of the stressor before the manipulation explained 2.8% of the variance, $F(1,252) = 7.18$, $p < .01$. Self-assessment of the stressor before the manipulation was a significant covariate of positive affect. On step 2, implicit social support explained 8% of the variance, $F(1,252) = 22.01$, $p < .001$. Implicit social support was a unique predictor of positive affect: Participants with higher typical usage of implicit social support were more likely to have positive affect. On Step 3, explicit social support explained an additional 1.7% of the variance, $F(1,251) = 4.82$, $p = .03$. Explicit social support was a unique predictor of positive affect: participants who had higher typical usage of explicit social support were more likely to have positive affect. On Step 4, relational concern explained an additional 3.8% of the variance, $F(1,250) = 10.99$, $p = .001$. Relational concern

was a significant unique predictor; participants who had higher levels of relational concern were less likely to have positive affect.

Table 13

Hierarchical Regression Analysis Predicting Positive Affect

Variable	R ₂	ΔR ₂	β	sr ²	r
<u>Step 1</u>	.028**	.028**			
Self-Assessment of Stress			-.166**	.028**	-.166**
<u>Step 2</u>	.123***	.095***			
Implicit			.311***	.095***	.283***
<u>Step 3</u>	.148**	.026**			
Explicit			.166**	.026**	.193**
<u>Step 4</u>	.166*	.018*			
Relational Concern			-.158*	.018*	-.179*

Note: N = 184. * $p < .05$, ** $p < .01$, *** $p < .001$.

For perceived stress, on Step 1, self-assessment of the stressor before the manipulation explained 20.2% of the variance, $F(1,252) = 63.91, p < .001$. Self-assessment of the stressor before the manipulation was a significant covariate of perceived stress. On Step 2, implicit social support explained a 0% of the variance, $F(1,251) = .03, p = .86$. Implicit social support was not a unique predictor of perceived stress. On Step 3, explicit social

support explained a 0% of the variance, $F(1,250) = .03, p = .86$. Explicit social support was not a significant predictor of perceived stress. On step 4, relational concern explained an additional 11% of the variance, $F(1,249) = 39.91, p < .001$. Relational concern was a significant predictor; participants who had higher levels of relational concern were more likely to have perceived stress.

Table 14

Hierarchical Regression Analysis Predicting Perceived Stress

Variable	R ₂	ΔR ₂	β	sr ²	r
<u>Step 1</u>	.202	.202			
Self-Assessment of Stress			.450	.203	.450
<u>Step 2</u>	.202	.000			
Implicit			.010	.000	.069
<u>Step 3</u>	.202	.000			
Explicit			.010	.000	.082
<u>Step 4</u>	.313	.110			
Relational Concern			.391	.110	.381

Note: N = 184. * $p < .05$, ** $p < .01$, *** $p < .001$.

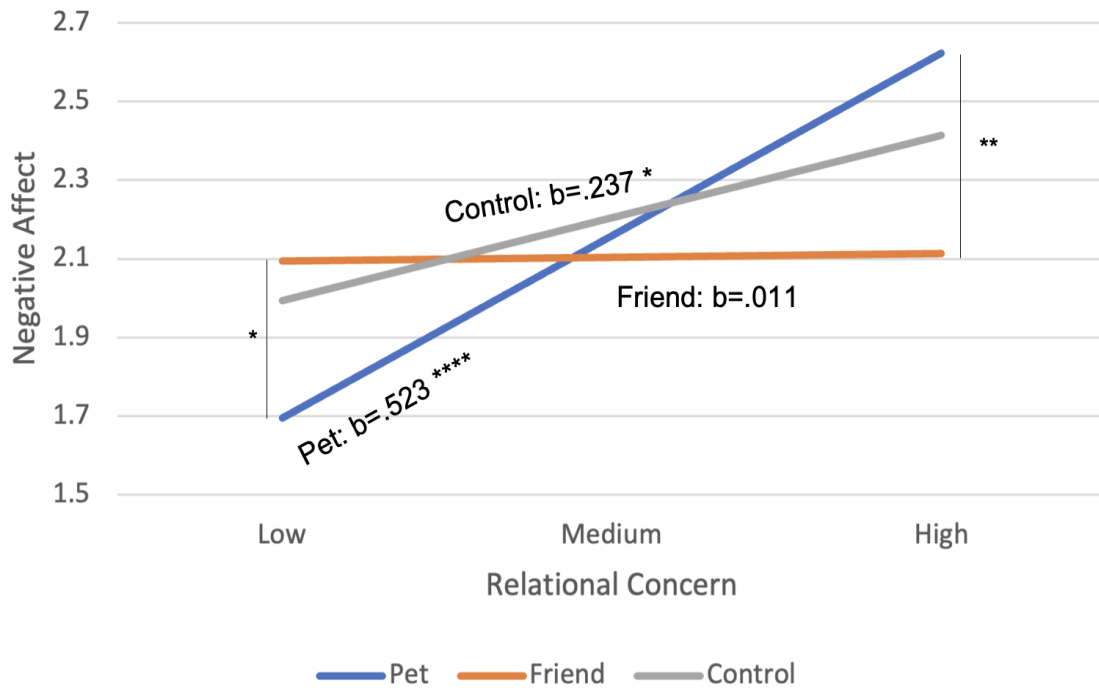
These results suggest that level of relational concern was a predictor of perceived stress for European American participants, which is the same as the results of all participants; Usage of implicit social support and explicit social support and relational concern were

predictors of positive affect, which has one more item (explicit social support) than the results of all participants; Relational concern was a predictor of negative affect, which is the same as all participants.

Next, I ran moderated regression analyses for European Americans (N=254). For negative affect, there was a significant interaction between relational concern and X1 (friend versus pet), $b=-.51$, $t(247)=-3.936$, $p=.0001$, and a significant interaction effect between relational concern and X2 (control versus pet), $b=-.29$, $t(247)=-2.15$, $p<.05$. When relational concern was low, negative affect in the friend condition was significantly higher than the pet condition, $b=.40$, $t(247)=2.48$, $p=.01$. When relational concern was high, negative affect in the friend condition was significantly lower than pet condition, $b=-.51$, $t(247)=-3.11$, $p<.01$; there was also no significant difference between pet condition and control condition, $b=-.21$, $t(247)=-1.25$, $p=.21$. This result did not support our hypothesis (See Figure 2).

Figure 2

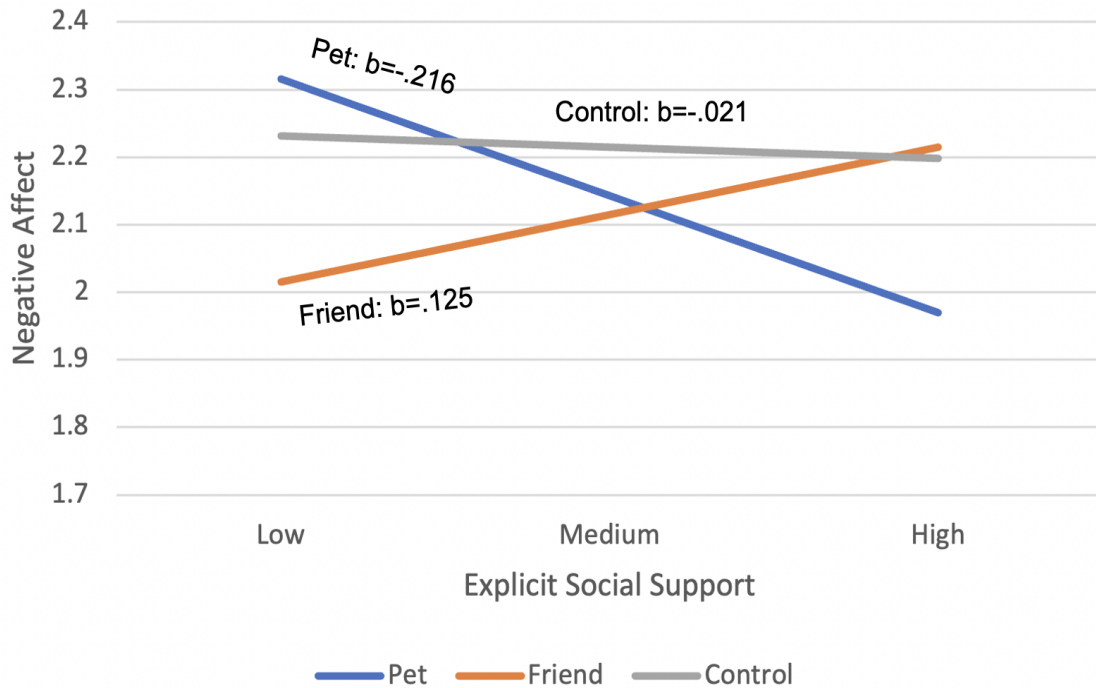
Moderated Regression: Support Manipulation by Relational Concern Predicting Negative affect



For negative affect, there was also a significant interaction between usage of explicit social support and experimental conditions (friend versus pet), $b = .34$, $t(247) = 2.14$, $p < .05$. This result did not support our hypothesis, which predicts that when the typical usage of explicit social support goes up, participants in the friend condition will have less negative affect than participants in the pet condition. Instead, we see that participants with *higher* typical usage of explicit social support have less negative affect in the pet condition than friend condition (See Figure 3).

Figure 3

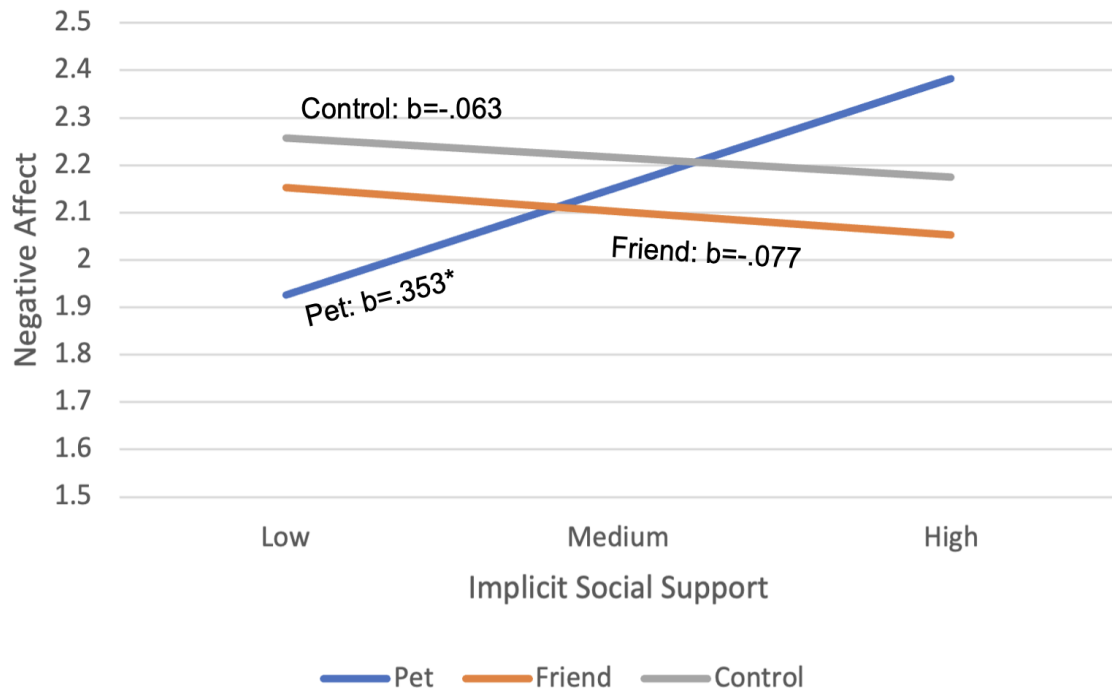
Moderated Regression: Support Manipulation by typical usage of Explicit Social Support Predicting Negative affect



For negative affect, there was a significant interaction between usage of implicit social support and experimental conditions (friend versus pet), $b = -.43$, $t(247) = 2.14$, $p < .05$. There was a significant interaction between usage of implicit social support and experimental conditions (control versus pet), $b = -.42$, $t(247) = -2.17$, $p < .05$. These results did not support our hypothesis, which predicts that as the typical usage of implicit social support goes up, participants in the pet condition will have less negative affect than participants in the friend condition. Instead, we see that participants with *higher* typical usage of implicit social support had less negative affect in the friend condition than the pet condition (See Figure 4).

Figure 4

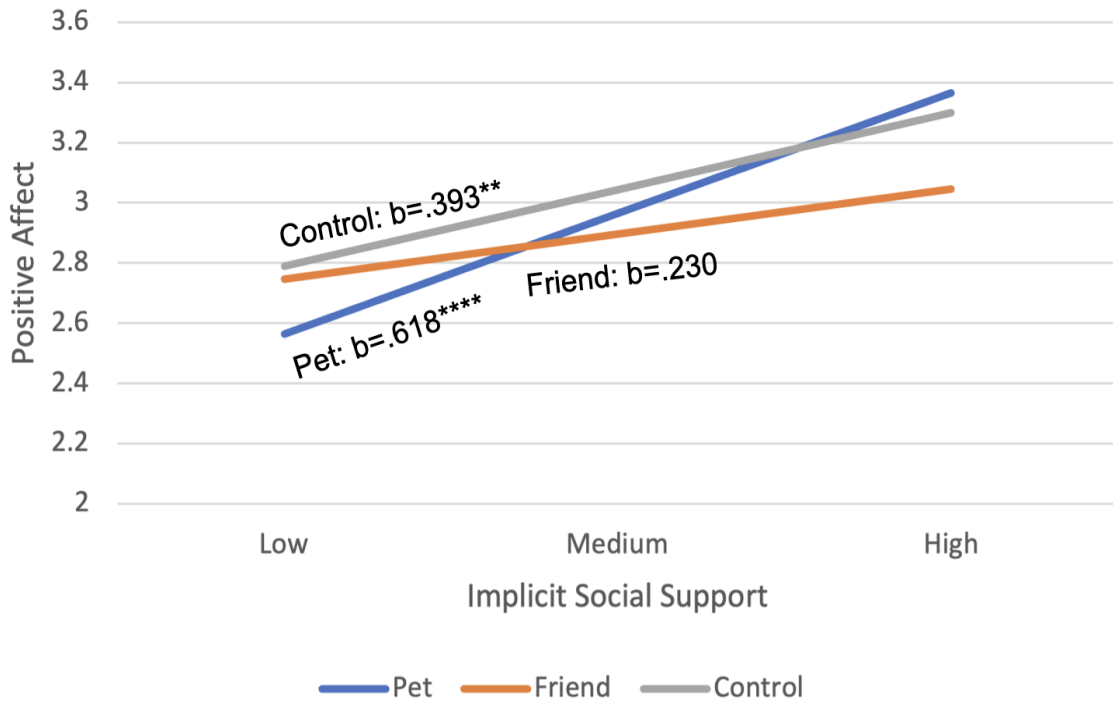
Moderated Regression: Support Manipulation by typical usage of Implicit Social Support Predicting Negative affect



For positive affect, there was a significant interaction between usage of implicit social support and experimental conditions (friend versus pet), $b=-.39, t(247)=-1.98, p<.05$. This result supported our hypothesis: For participants with *higher* typical usage of implicit social support, those in the pet condition had more positive affect than those in the friend condition (See Figure 5).

Figure 5

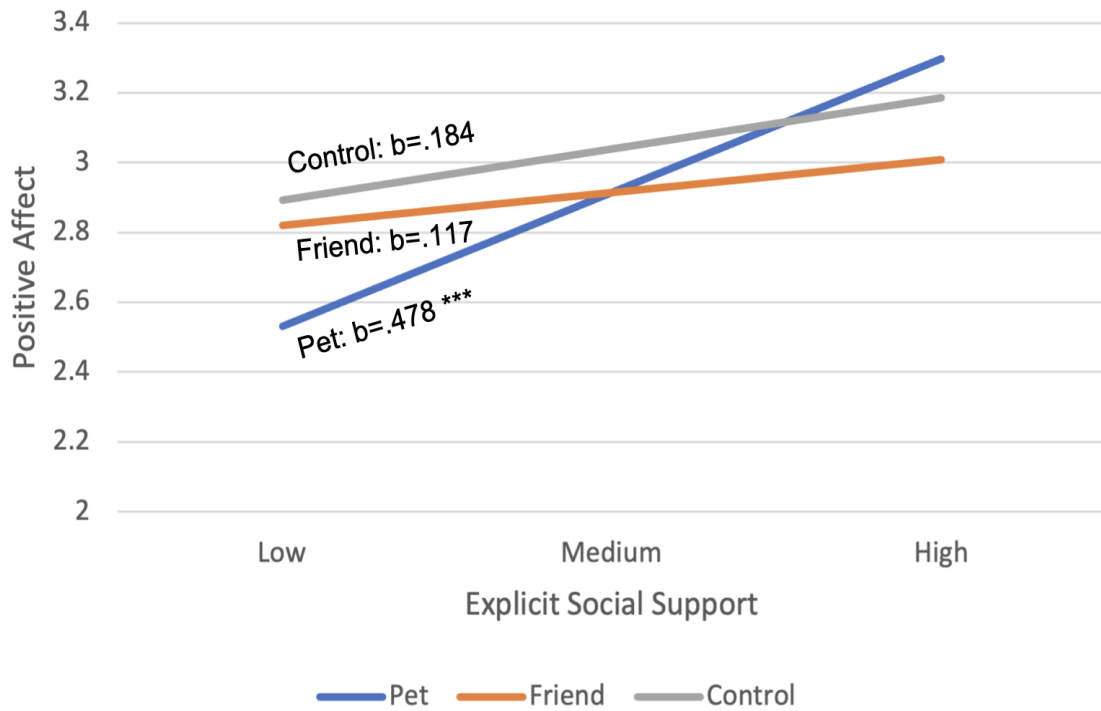
Moderated Regression: Support Manipulation by typical usage of Implicit Social Support Predicting Positive affect



For positive affect, there was a significant interaction between usage of explicit social support and experimental conditions (friend versus pet), $b = -.36$, $t(247) = -2.21$, $p < .05$. This result did not support our hypothesis, which predicts that for participants with *higher* typical usage of explicit social support, they will have more positive affect in the friend condition than the pet condition. Instead, we see that participants in the pet condition had more positive affect than the friend condition as the level of explicit social support went up (See Figure 6).

Figure 6

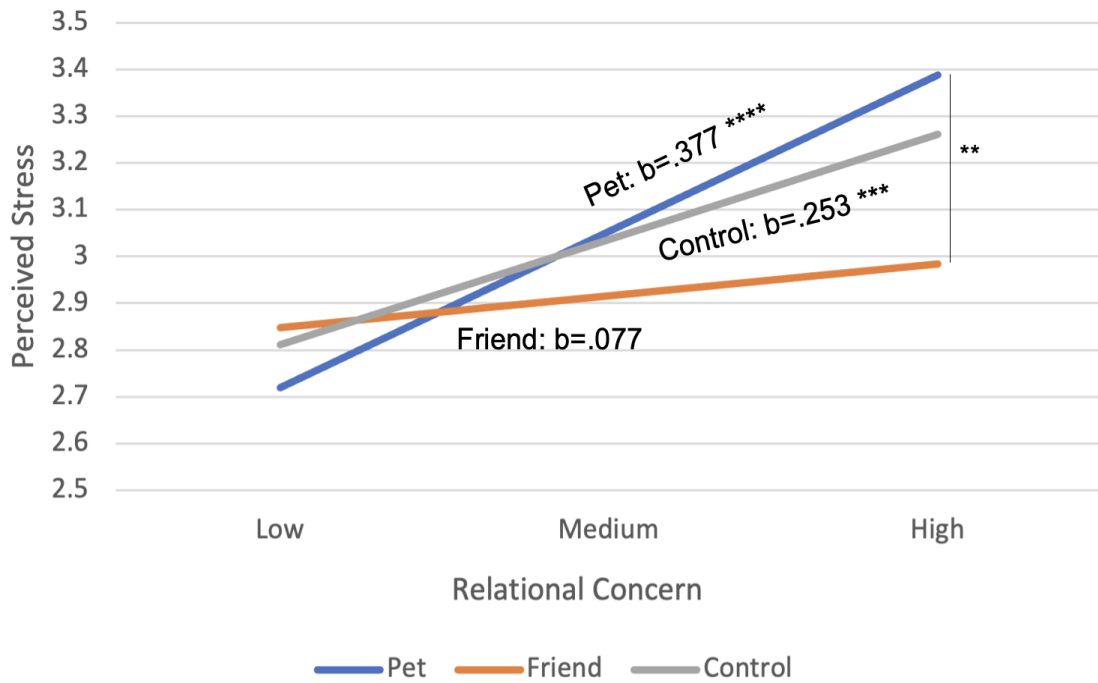
Moderated Regression: Support Manipulation by typical usage of Explicit Social Support Predicting Positive affect



For perceived stress, there was a significant interaction between relational concern and experimental conditions (friend versus pet), $b = -.30$, $t(247) = -3$, $p < .01$. When relational concern was low and medium, there was no significant difference in perceived stress level in all conditions. However, When relational concern was high, the perceived stress in the pet condition was significantly higher than in the friend condition, $b = -.41$, $t(247) = -3.22$, $p < .01$. This result did not support our hypothesis, which predicts that participants with *higher* relational concern will have less perceived stress in the pet condition than the friend condition. Instead, we see that participants with *higher* relational concern had more perceived stress in the pet condition than the friend condition.

Figure 7

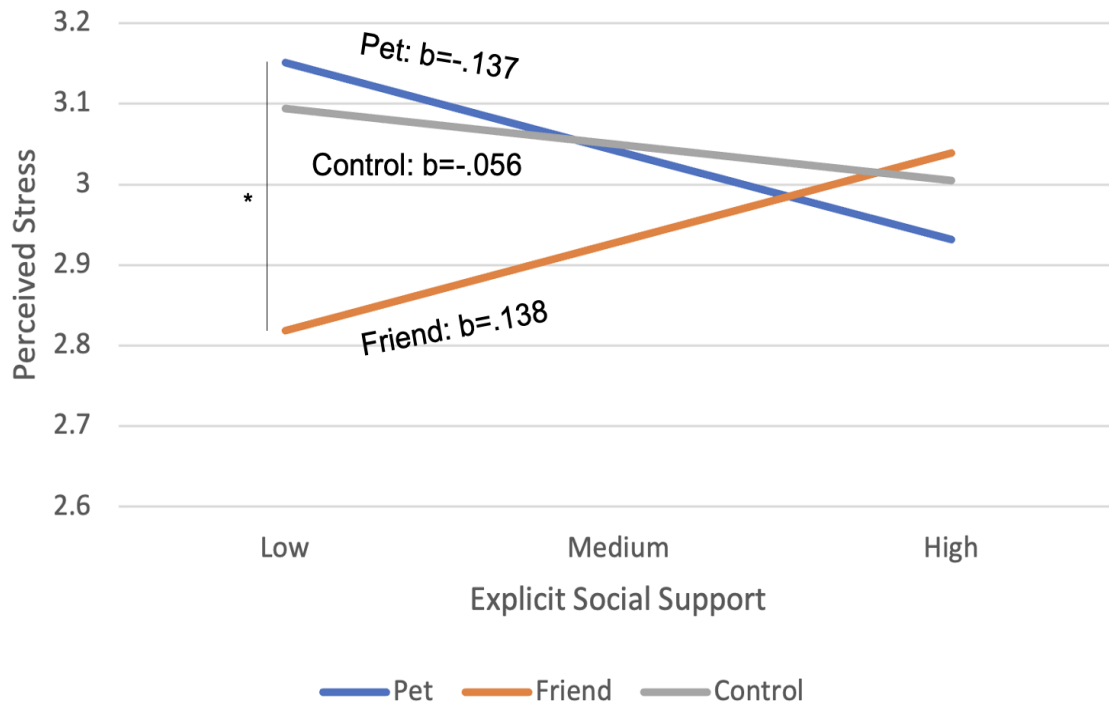
Moderated Regression: Support Manipulation by Relational Concern Predicting Perceived Stress



For perceived stress, there was also a significant interaction between experimental conditions (friend versus pet) and usage of explicit social support, $b=.28$, $t(247)=2.24$, $p<.05$. When usage of explicit social support was low, perceived stress in pet condition was significantly higher than friend condition, $b=-.33$, $t(247)=-2.48$, $p<.05$. When usage of explicit social support was medium and high, there was no significant difference in perceived stress in all conditions. This result did not support our hypothesis, which predicts that participants with *lower* typical usage of explicit social support will have less perceived stress in the pet condition than the friend condition. Instead, we see that participants with *lower* typical usage of explicit social support had less perceived stress in the friend condition than the pet condition.

Figure 8

Moderated Regression: Support Manipulation by typical usage of Explicit Social Support Predicting Perceived Stress



In summary, there were seven significant moderated regression for European Americans' responses. Among them, six of the significant results do not support our hypothesis, but the other one supports our hypothesis.

Table 15

Moderated Regression Analysis on Negative Affect and Different Moderators, with self-assessment of stress as a covariate

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Pet	.353	.144	2.46	.015*	.070	.636
	Friend	-.077	.130	-.593	.554	-.332	.179
	Control	-.063	.127	-.501	.617	-.313	.186
Explicit	Pet	-.216	.125	-1.72	.086	-.463	.031

Social Support	Friend	.125	.098	1.27	.205	-.069	.319
	Control	-.021	.105	-.203	.839	-.229	.186
Relationa l Concern	Pet	.523	.098	5.37	.0000****	.331	.715
	Friend	.011	.088	.120	.905	-.163	.184
	Control	.237	.091	2.59	.010*	.057	.416

Table 16

Moderated Regression Analysis on Positive Affect and Different Moderators, with self-assessment of stress as a covariate

	Conditio n	b	se	t	p	LLCI	ULCI
Implicit Social Support	Pet	.618	.145	4.27	.0000****	.333	.903
	Friend	.230	.131	1.76	.080	-.027	.487
	Control	.393	.127	3.08	.002**	.142	.644
Explicit Social Support	Pet	.478	.129	3.71	.0003***	.225	.732
	Friend	.117	.101	1.16	.248	-.082	.316
	Control	.184	.108	1.70	.091	-.029	.397
Relationa l Concern	Pet	-.210	.108	-1.94	.054	-.424	.003
	Friend	-.071	.098	-.720	.472	-.263	.122
	Control	-.164	.102	-1.61	.108	-.364	.036

Table 17

Moderated Regression Analysis on Perceived Stress and Different Moderators, with self-assessment of stress as a covariate

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Pet	-.004	.112	-.037	.971	-.225	.217
	Friend	-.060	.101	-.593	.554	-.260	.140
	Control	.094	.099	.951	.343	-.101	-.289
Explicit Social Support	Pet	-.137	.097	-1.42	.157	-.328	.053
	Friend	.138	.076	1.82	.070	-.012	.287
	Control	-.056	.081	-.692	.490	-.216	.104
Relational Concern	Pet	.377	.075	5.04	.0000*** *	.230	.524
	Friend	.077	.068	1.14	.257	-.056	.210
	Control	.253	.070	3.61	.0004***	.115	.392

Asian/Asian Americans. For Asians and Asian Americans (N=181), I ran hierarchical regression analyses for positive affect, negative affect and perceived stress

For perceived stress, on Step 1, self-assessment of the stressor before the manipulation explained 16.5% of the variance, $F(1,179) = 35.33$, $p < .001$. Self-assessment of the stressor before the manipulation was a significant covariate of perceived stress: participants who had higher stress before the manipulation were more likely to have perceived stress after the manipulation. On Step 2, implicit social support explained 0.8% of

the variance, $F(1,178) = 1.76, p = .19$. Implicit social support was not a unique predictor of perceived stress. On Step 3, explicit social support explained 1.1% of the variance, $F(1,177) = 2.46, p = .12$. Explicit social support was not a significant predictor of perceived stress. On step 4, relational concern explained an additional 7.1% of the variance, $F(1,176) = 16.86, p < .001$. Relational concern was a significant predictor; participants who had higher levels of relational concern were more likely to have perceived stress.

Table 18

Hierarchical Regression Analysis Predicting Perceived Stress

Variable	R ₂	ΔR ₂	β	sr ²	r
<u>Step 1</u>	.165***	.165***			
Self-Assessment of Stress			.406***	.165***	.406***
<u>Step 2</u>	.173	.008			
Implicit			-.091	.008	-.065
<u>Step 3</u>	.184	.011			
Explicit			-.110	.011	-.086
<u>Step 4</u>	.256***	.071***			
Relational Concern			.330***	.071***	.317***

Note: $N = 184$. * $p < .05$, ** $p < .01$, *** $p < .001$.

For positive affect, on Step 1, self-assessment of the stressor before the manipulation explained 8.8% of the variance, $F(1,179) = 17.32, p < .001$. Self-assessment of the stressor

before the manipulation was a significant covariate of positive affect: participants who had higher stress before the manipulation were less likely to have positive affect. On Step 2, implicit social support explained an additional 13.5% of the variance, $F(1,178) = 30.84$, $p < .001$. Implicit social support was a unique predictor of positive affect: participants who had higher usage of implicit social support were more likely to have positive affect. On Step 3, explicit social support explained 0.1% of the variance, $F(1,177) = .30$, $p = .58$. Explicit social support was not a significant predictor of positive affect. On step 4, relational concern explained an additional 0.2% of the variance, $F(1,176) = .51$, $p = .48$. Relational concern was not a significant predictor.

Table 19

Hierarchical Regression Analysis Predicting Positive Affect

Variable	R ₂	ΔR ₂	β	sr ₂	r
<u>Step 1</u>	.088***	.088***			
Self-Assessment of Stress			-.297***	.088***	-.297***
<u>Step 2</u>	.223***	.135***			
Implicit			.368***	.135***	.348***
<u>Step 3</u>	.224	.001			
Explicit			.037	.001	.088
<u>Step 4</u>	.226	.002			
Relational Concern			-.058	.002	-.050

Note: $N = 184$. * $p < .05$, ** $p < .01$, *** $p < .001$.

For negative affect, on Step 1, self-assessment of the stressor before the manipulation explained 15.6% of the variance, $F(1,179) = 33.15, p < .001$. Self-assessment of the stressor before the manipulation was a significant covariate of negative affect: participants who had higher stress before the manipulation were more likely to have negative affect. On Step 2, implicit social support explained an additional 0.2% of the variance, $F(1,178) = .46, p = .5$. Implicit social support was not a unique predictor of negative affect. On Step 3, explicit social support explained 1.4% of the variance, $F(1,177) = 2.89, p = .09$. Explicit social support was not a significant predictor of negative affect. On step 4, relational concern explained an additional 11.1% of the variance, $F(1,176) = 27.29, p < .001$. Relational concern was a significant predictor: participants who had higher level of relational concern were more likely to have negative affect.

Table 20

Hierarchical Regression Analysis Predicting Negative Affect

Variable	R ₂	ΔR ₂	β	sr ²	r
<u>Step 1</u>	.156***	.156***			
Self-Assessment of Stress			.395***	.156***	.395***
<u>Step 2</u>	.158	.002			
Implicit			-.047	.002	-.022
<u>Step 3</u>	.172	.014			

Explicit Social Support	Pet	-.063	.141	-.446	.656	-.340	.215
	Friend	-.186	.123	-1.51	.133	-.429	.057
	Control	-.113	.104	-1.08	.280	-.319	.093
Relationa l Concern	Pet	.358	.119	3.00	.003**	.122	.593
	Friend	.398	.100	3.98	.0001****	.201	.596
	Control	.229	.099	2.31	.022*	.034	.425

Table 22

Moderated Regression Analysis on Positive Affect and Different Moderators, with self-assessment of stress as a covariate

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Pet	.421	.132	3.19	.002**	.161	.682
	Friend	.411	.120	3.42	.0008***	.174	.648
	Control	.364	.128	2.85	.005**	.112	.616
Explicit Social Support	Pet	.140	.135	1.04	.301	-.126	.406
	Friend	.036	.118	.304	.761	-.197	.269
	Control	.140	.100	1.40	.164	-.058	.337
Relationa l Concern	Pet	.027	.123	.218	.828	-.216	.270
	Friend	-.090	.103	-.873	.384	-.294	.114
	Control	.040	.102	.387	.699	-.162	.242

Table 23

Moderated Regression Analysis on Perceived Stress and Different Moderators, with self-assessment of stress as a covariate

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Pet	-.057	.112	-.511	.610	-.279	.164
	Friend	-.135	.102	-1.33	.187	-.337	.066
	Control	.050	.109	-.459	.647	-.264	.165
Explicit Social Support	Pet	-.024	.106	-.228	.820	-.234	.186
	Friend	-.109	.093	-1.18	.242	-.293	.074
	Control	-.124	.079	-1.57	.119	-.279	.032
Relational Concern	Pet	.148	.093	1.59	.114	-.036	.332
	Friend	.228	.078	2.92	.004**	.074	.382
	Control	.187	.077	2.42	.017*	.034	.340

Discussion

The hypothesis that there is a cultural difference in the way Asian Americans and European Americans receive social support from pets is not sufficiently supported. While comparing the responses from European Americans with Asian Americans, we find that European Americans had higher scores on positive affect than Asian Americans, however, there was no significant difference in people's scores on typical usage of implicit social

support, explicit social support and relational concerns. This result is in contrast with Kim et al.'s (2008) conclusion, which demonstrated that Asian Americans tend to use implicit social support more and European Americans tend to use explicit social support more. The failure to replicate this cultural difference from the previous study may be due to the fact that we recruited undergraduate college students in University of California, Santa Barbara only, where international students are 14.4% of the total population. Specifically, in our study, 84% of the participants were born in the U.S., consequently, they are more likely to grow up in the American culture more than Asian cultures or European cultures. We conclude that there is a limitation in our sampling method that may prevent us from accessing multicultural responses.

The hypothesis that the effect of experimental manipulation will be stronger among those with higher typical usage of implicit social support, lower usage of explicit social support and higher relational concern was not supported. There were no significant interactions involving explicit or implicit support in the full sample, and although there was a significant interaction with relational concerns, the pattern of means was opposite of what we predicted – people with *lower* relational concerns reported less negative affect when thinking about their pets than when thinking about their friends or in the control condition, but this effect disappeared when the level of relational concern was high. This is opposite of what was expected – we predicted that thinking about pets would be especially helpful for those with high relational concerns. In addition, among European Americans only, people with *higher* relational concerns reported higher perceived stress after thinking about their pets than their friends or control condition. Again, this is opposite of what we predicted. According to our hypothesis, when relational concern increase, people should feel less stressed after

approaching pets more than friends. The moderated regression analyses with usage of explicit social support similarly showed conflicting patterns from our hypothesis. This reverse pattern appeared both in the European American sample and the whole study sample, except for the Asian/Asian American sample. These results indicate that there still could be cultural differences between Asians and Asian Americans and others, although the cultural differences that we expected did not show.

Nonetheless, the moderation analysis with usage of implicit social support, using positive affect as a dependent variable, showed a result that was aligned with our hypothesis. When usage of implicit social support increased from low to high, we can see participants' positive affect in the pet condition increased, and eventually outperformed the friend condition. This result suggests that the more implicit social support people tend to use in life, the more happiness they are receiving from interaction with pets. This effect only showed in the European American sample.

In conclusion, there were inconsistent results from the data analysis, especially from the European American sample. We infer that it might be related to the fact that the sample size was not large enough when we separated the European Americans and Asian Americans from the general sample. Additionally, 73.5% of the participants we recruited indicated that they were living with roommates when they participated in the study. Since participants on SONA were all UCSB current undergraduate students, it is very likely that the majority of them are living in dorms with roommates and being away from home and pets at home. Hence, writing about pets reminded them more of a distant memory than close interactions or attachment with their pets. At the same time, undergraduate students who lived with roommates around school were closer to their roommates, classmates and other human

friends and had more access to human-human interactions than most of the adults outside the dorm settings. Lastly, for college students, it is less likely that they would have the experience of raising a pet themselves and building a strong connection with their pet, as much as their parents do. The primary caretaker of pets may be the type of pet owners we want to look for in our study. Thus, we decided to recruit more participants on Amazon Mturk and keep analyzing human-animal interaction.

Another potential limitation in the study is that the control condition asked participants to think about something they bought recently, and it might have caused participants to be happier rather than being neutral.

Study 2

With the limitations of participants' demographics in Study 1, we also wanted to conduct the study on adults who are working, and who are more likely to live with a pet. In this case, their response could be more reflective of typical pet owners' relationship with their pets, and friends. We started with recruiting European Americans on Mturk, and we planned to recruit more Asian participants from Asian countries in the future.

Method

Participants. We collected data from 426 participants altogether from launching the study two times on the Amazon Mechanical Turk and gave participants \$1.5 each for compensation. Participants were European American people who were also pet owners. Among them, 23 of the participants answered 'no' to the "Do you have a close friend?" question, and 10 answered 'no' to the "Do you have a pet?", and 10 answered 'no' to "Did you do something immediately after waking up this morning?". In total, 73 responses were dropped due to not fulfilling the filter questions or providing partial responses. We analyzed

353 full responses, and the sample characteristics were the following: ethnicity (100% European Americans, with 0.6% Mixed race), age ($M=43.46$, $SD=11.89$), gender (39.7% Male, 58.9% Female), living situation (20.4% Alone, 68.3% with family members, 3.1% with roommates, .6% with friends, 7.6% Other). Among these participants, 98% were born in the U.S, 2% were not.

Procedure.

Similar to the content and procedure of Study 1, this study provided participants with informed consent, and scales in the sequence of *The Explicit and Implicit social support Scale* (implicit social support: $M = 20.55$, $SD = 4.51$, $a=.74$; explicit social support: $M = 26.63$, $SD = 7.46$, $a=.92$), current stressor, Self-Assessment of the stressor, experimental manipulation, *positive and negative affect schedule* (positive: $M = 30.72$, $SD = 8.51$, $a=.91$; negative: $M = 14.63$, $SD = 6.66$, $a=.92$), perceived stress ($M = 23.88$, $SD = 7.57$, $a=.90$), relational concern ($M = 29.96$, $SD = 10.32$, $a=.92$), pet anthropomorphism, overall support level, and demographics. At the end of the study, there was a debriefing form for participants to know the real purpose of the study. The manipulation was slightly different from Study 1, and the scales for other measurements were the same as in Study 1. (See the Appendix for the manipulation.)

Manipulation. Different from Study 1, the control condition asked participants to describe what they did immediately after waking up this morning, and what they did in the morning, and what is something they typically do after waking up in the morning. Questions in the pet condition and friend condition were framed to fit the participants on Mturk. In the pet condition, the filter question was asked as “Do you have a pet?” In the friend condition,

the filter question was asked as “Do you have a close friend?” (See Appendix for exact wording.)

Results

Effect of Manipulation on DVs: one-way ANOVAs

Three one-way between subjects ANOVAs were conducted to compare the effect of manipulation on positive affect, negative affect, and perceived stress in the pet, friend, and control conditions. There was no significant effect of the manipulation on positive affect, $F(2,350)=1.01, p=.37$. There was not a significant effect of the manipulation on negative affect, $F(2,350)=.57, p=.57$. There was no significant effect of manipulation on perceived stress, $F(2,350)=.80, p=.45$. The results suggest that there is no significant effect of the manipulation on three dependent variables.

Table 24

Main effect of Manipulation on Negative Affect, Positive Affect and Perceived Stress

	N	Negative Affect		Positive Affect		Perceived Stress	
		M	SD	M	SD	M	SD
Pet	122	1.41	.60	3.16	.84	2.63	.77
Friend	107	1.50	.71	3.03	.79	2.59	.87
Control	124	1.44	.62	3.03	.90	2.73	.90

Individual Differences in Typical Support and Relational Concerns.

Next, a series of hierarchical regression analysis was conducted to examine individual difference predictors of people’s negative affect, positive affect, and perceived stress.

For negative affect, on Step 1, self-assessment of the stressor before the manipulation explained 0.7% of the variance, $F(1,351) = 2.56, p = .11$. Self-assessment of the stressor before the manipulation was not a significant covariate of negative affect. On Step 2, implicit social support explained an additional 0.4% of the variance, $F(1,350) = 1.58, p = .21$. Implicit social support was not a unique predictor of negative affect. On Step 3, explicit social support explained 0% of the variance, $F(1,349) = .03, p = .86$. Explicit social support was not a significant predictor of negative affect. On step 4, relational concern explained an additional 2.5% of the variance, $F(1,348) = 8.96, p < .01$. Relational concern was a significant predictor: participants who had higher level of relational concern were more likely to have negative affect.

Table 25

Hierarchical Regression Analysis Predicting Negative Affect

Variable	R ₂	ΔR ₂	β	sr ²	r
<u>Step 1</u>	.007	.007			
Self-Assessment of Stress			.085	.007	.085
<u>Step 2</u>	.012	.004			
Implicit			-.067	.004	-.067
<u>Step 3</u>	.012	.000			
Explicit			.010	.000	-.011
<u>Step 4</u>	.037**	.025**			

Relational Concern	.182**	.025**	.135**
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Note: $N = 184$. * $p < .05$, ** $p < .01$, *** $p < .001$.

For positive affect, on Step 1, self-assessment of the stressor before the manipulation explained 0.4% of the variance, $F(1,351) = 1.55, p = .21$. Self-assessment of the stressor before the manipulation was not a significant covariate of positive affect. On Step 2, implicit social support explained an additional 17.6% of the variance, $F(1,350) = 75.32, p < .001$. Implicit social support was a unique predictor of positive affect: participants who had higher usage of implicit social support were more likely to have positive affect. On Step 3, explicit social support explained 3.5% of the variance, $F(1,349) = 15.36, p < .001$. Explicit social support was a significant predictor of positive affect: participants who had higher usage of explicit social support were more likely to have positive affect. On step 4, relational concern explained 0% of the variance, $F(1,348) = .19, p = .66$. Relational concern was not a significant predictor.

Table 26

Hierarchical Regression Analysis Predicting Positive Affect

Variable	R ₂	ΔR ₂	β	sr ²	r
<u>Step 1</u>	.004	.004			
Self-Assessment of Stress			-.066	.004	-.066
<u>Step 2</u>	.181***	.176***			
Implicit			.420***	.176***	.420***
<u>Step 3</u>	.215***	.035***			

Explicit			.196***	.035***	.308***
<u>Step 4</u>	.216	.000			
Relational Concern			.024	.000	-.079

Note: $N = 184$. * $p < .05$, ** $p < .01$, *** $p < .001$.

For perceived stress, on Step 1, self-assessment of the stressor before the manipulation explained 9.6% of the variance, $F(1,351) = 37.47, p < .001$. Self-assessment of the stressor before the manipulation was a significant covariate of perceived stress: participants who had higher stress before the manipulation were more likely to have perceived stress after the manipulation. On Step 2, implicit social support explained 4.3% of the variance, $F(1,350) = 17.47, p < .001$. Implicit social support was a unique predictor of perceived stress: participants who had higher usage of implicit social support were less likely to have perceived stress. On Step 3, explicit social support explained 0.8% of the variance, $F(1,349) = 3.39, p = .07$. Explicit social support was not a significant predictor of perceived stress. On step 4, relational concern explained an additional 5% of the variance, $F(1,348) = 21.52, p < .001$. Relational concern was a significant predictor; participants who had higher levels of relational concern were more likely to have perceived stress.

Table 27

Hierarchical Regression Analysis Predicting Perceived Stress

Variable	R ₂	ΔR ₂	β	sr ²	r
<u>Step 1</u>	.096***	.096***			
Self-Assessment of Stress			.311***	.097***	.311***

<u>Step 2</u>	.134***	.043***			
Implicit			-.207***	.043***	-.209***
<u>Step 3</u>	.140	.008			
Explicit			-.096	.008	-.145
<u>Step 4</u>	.188***	.050***			
Relational Concern			.257***	.050***	.251***

Note: $N = 184$. * $p < .05$, ** $p < .01$, *** $p < .001$.

These results suggest that level of relational concern and usage of implicit social support were predictors of perceived stress, which has one more predictor (implicit social support) than the results of Study 1; Usage of implicit social support and explicit social support were predictors of positive affect, which is different from various results of Study 1; Relational concern was a predictor of negative affect, which is the same as the results of Study 1.

Moderation by Typical Support and Relational Concern.

Furthermore, a series of regression analysis was conducted through Process in SPSS using the three experimental conditions as the independent variable, usage of implicit social support, explicit social support and level of relational concerns as moderators (one at a time), and stress levels, positive affect and negative affect as dependent variables. Self-assessment of the stressor before the manipulation was used as a covariate.

The results showed for negative affect, the interaction between relational concern and experimental conditions (friend versus pet) was significant, $b=.22$, $t(346)=2.39$, $p<.05$. The interaction between relational concern and experimental conditions (control versus pet) was significant, $b=.18$, $t(346)=2.14$, $p<.05$. Among people with low and medium level of relational concern, negative affect in three conditions were not significantly different. Among people with higher level of relational concern, negative affect in friend condition was significantly higher than pet condition, $b=.32$, $t(346)=2.63$, $p<.01$. Negative affect in the control condition was marginally higher than in the pet condition too, $b=.20$, $t(346)=1.75$, $p=.08$. There were no other significant interactions.

Figure 9

Moderated Regression: Support Manipulation by Relational Concern Predicting Negative Affect, Study 2

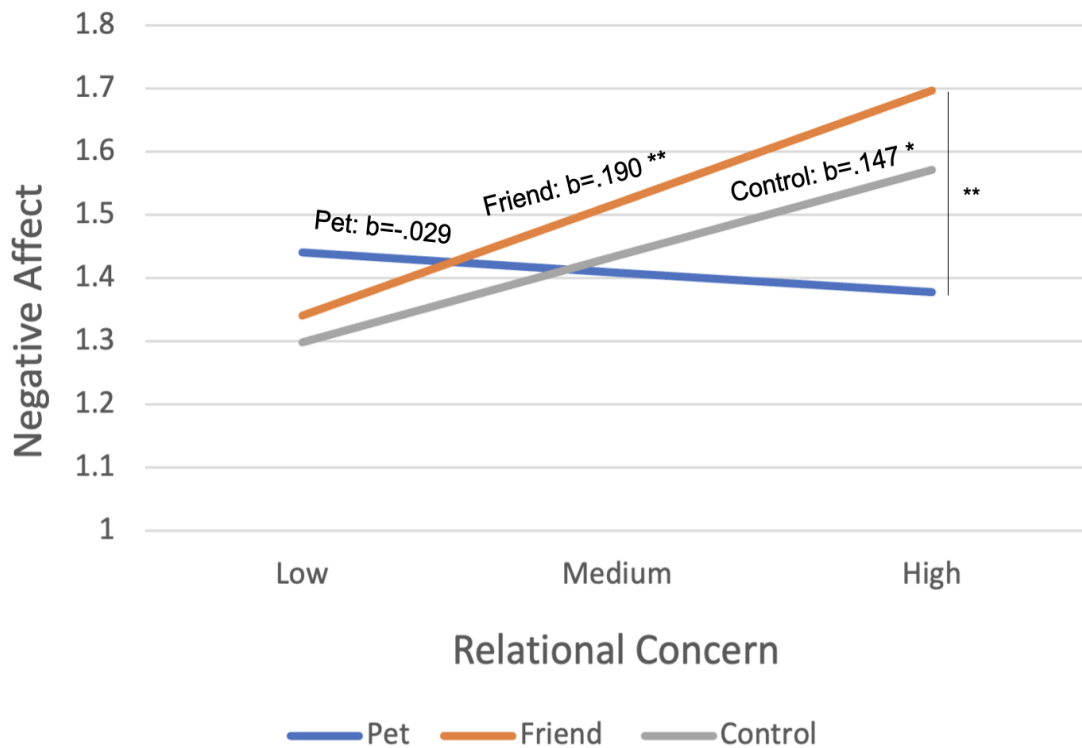


Table 28*Moderated Regression Analysis on Negative Affect: Manipulation and Relational Concern*

Effect	Estimate	SE	95% CI		p
			LL	UL	
Fixed effects					
Intercept	1.132	.170	.798	1.466	.0000
X1(Friend vs. Pet)	.110	.085	-.056	.276	.195
X2(Control vs. Pet)	.026	.081	-.134	.186	.749
Relational Concern	-.034	.061	-.153	.086	.580
Interaction with X1	.224	.094	.040	.408	.017
Interaction with X2	.180	.084	.015	.345	.033
Self-assessment of Stress	.048	.028	-.006	.102	.083

Table 29*Moderated Regression Analysis on Negative Affect and Different Moderators, with self-assessment of stress as a covariate*

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Pet	-.077	.081	-.948	.344	-.236	.082
	Friend	.010	.099	.101	.920	-.186	.206
	Control	-.083	.071	-1.18	.240	-.222	.056

Explicit Social Support	Pet	.080	.065	1.23	.220	-.048	.207
	Friend	-.091	.077	-1.17	.241	-.243	.061
	Control	-.042	.058	-.733	.464	-.156	.071
Relationa l Concern	Pet	-.034	.061	-.554	.580	-.153	.086
	Friend	.190	.071	2.67	.008**	.050	.331
	Control	.146	.058	2.52	.012*	.032	.260

Table 30

Moderated Regression Analysis on Positive Affect and Different Moderators, with self-assessment of stress as a covariate

	Conditio n	b	se	t	p	LLCI	ULCI
Implicit Social Support	Pet	.490	.097	5.07	.0000*** *	.300	.680
	Friend	.479	.119	4.04	.0001*** *	.246	.713
	Control	.481	.084	5.71	.0000*** *	.315	.647
Explicit Social Support	Pet	.383	.081	4.74	.0000*** *	.224	.542
	Friend	.188	.096	1.95	.053	-.002	.377
	Control	.273	.072	3.79	.0002***	.131	.414
Relation al Concern	Pet	-.060	.081	-.746	.456	-.219	.098
	Friend	.058	.095	.617	.538	-.128	.244

Control	-.175	.077	-2.27	.024*	-.326	-.023
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Table 31

Moderated Regression Analysis on Perceived Stress and Different Moderators, with self-assessment of stress as a covariate

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Pet	-.193	.099	-1.95	.051	-.388	.001
	Friend	-.075	.122	-.617	.538	-.314	.164
	Control	-.353	.086	-4.09	.0001****	-.522	-.183
Explicit Social Support	Pet	-.156	.081	-1.93	.055	-.314	.003
	Friend	-.107	.096	-1.11	.268	-.296	.083
	Control	-.145	.072	-2.01	.045*	-.286	-.003
Relational Concern	Pet	.157	.075	2.10	.037*	.010	.305
	Friend	.345	.088	3.93	.0001****	.173	.518
	Control	.192	.072	2.69	.008**	.052	.333

Discussion

Our hypothesis that people with higher levels of relational concern will have less negative affect after thinking of their pet versus their friend was supported by the result of Study 2. The moderation analysis from Study 2 shows that as relational concern increased, people had significantly less negative affect in the pet condition than both friend condition

and control condition. This result aligns with our hypothesis that for people with higher levels of relational concern, they will benefit more emotionally from interacting with pets than friends because they don't have to worry about how their behavior would impact their relationships with pets, as they do with other humans. In this case, pets make people feel less negative than other human beings.

There were no other inconsistent, significant results from the moderation analyses of Study 2, which gave us a clear idea that European American participants had less negative affect after thinking about their pets than their friends, when the relational concern was high; when relational concern was low, European American participants did not differ emotionally after thinking about their pets or their friends.

This result is different from study 1, where we found complicated patterns regarding the hypotheses from European American participants who were college students, mostly living with roommates, and very likely away from their pets at home. However, in study 2, participants were mainly middle-aged adults who lived with their family members and very likely their pets at the same time. The disparity in demographic information could potentially result in the differing study results.

The result of study 2 shows how feelings and attitudes during human-human interaction, such as relational concern, could influence and decide negative emotion people have during human-pet interaction. It also demonstrates that it is possible for pets to provide greater emotional support for some people more than others, due to people's level of relational concern during human-human interactions.

Study 3

In Study 2, the significant moderated interaction supported part of the hypothesis at the individual level, demonstrating that people with higher levels of relational concern will have less negative affect after thinking about their pet versus their friend. Therefore, in Study 3, we wanted to replicate Study 2 to provide another test of the hypothesis at the individual level. Do people who have higher levels of relational concern, higher usage of implicit social support, and lower levels of explicit social support have less negative affect and less stress after thinking of their pet versus their friend? Since the hypothesis is at the individual level, in Study 3, we recruited Americans who were pet owners through Amazon Mturk and included all the ethnicities in the United States. In Study 2, we found a significant difference between pet condition and friend condition, and we did not find any significant effects with the control condition. Therefore, in Study 3, we eliminated the control condition from the study and focused on analyzing the difference between pet condition and friend condition.

Method

Participants. A G power Analysis was performed to calculate the sample size for Study 3, using the R square number and R square change from the significant interactions in Study 2. I calculated the effect size f square from R square number and R square change number, based on the rule of thumb formula. I used 0.05 as the alpha level, and 0.8 for power. The number of tested predictors is 1: interaction. The total number of predictors is 3: interaction, the independent variable, and the moderator. The power analysis gives us the total number of 367, and we recruited 400 participants in case some of them answered ‘no’ to the filter questions. We moved the filter questions to the end of the survey, in the block of demographics, and we aimed for selecting participants who answered ‘yes’ to both of the questions: Do you have a close friend? Do you have a pet? We also inserted one attention

check question in the middle of the study. We recruited American pet owners through Amazon Mturk and collected 401 data. After checking the filter questions and attention check question, we had 397 responses, and the characteristics were the following: ethnicity (2.3% American Indian or Alaska Native, 8.6% Asian/Asian American, 8.6% Black/African American, 8.3% Hispanic/Latino, 0.5% Native Hawaiian or Pacific Islander, 79.6% White/European American, with 0.5% Other), age ($M=40.41$, $SD=12.97$), gender (38.3% Male, 58.7% Female), living situation (19.4% Alone, 66.8% with family members, 5.5% with roommates, 3.3% with friends, 5% Other). Among these participants, 97.2% were born in the U.S, 2.8% were not.

Procedure.

The study is still in the form of a questionnaire. Participants completed the informed consent first and responded to scales in the sequence of the explicit and implicit social support, relational concern, experimental manipulation, Positive and Negative Affect Schedule, perceived stress scale, Covid-related questions, and demographics. There is a debriefing form at the end of the study and participants received a code to get their compensation for the study.

We used the same scales from Study 2 for *Explicit and Implicit social support Scale* (implicit social support: $M = 20.48$, $SD = 4.88$, $a=.78$; explicit social support: $M = 26.16$, $SD = 7.94$, $a=.94$), manipulation, *positive and negative affect schedule* (positive: $M = 29.47$, $SD = 9.27$, $a=.92$; negative: $M = 14.01$, $SD = 6.55$, $a=.93$), perceived stress ($M = 22.57$, $SD = 8.21$, $a=.90$), relational concern ($M = 31.77$, $SD = 10.25$, $a=.92$), pet anthropomorphism, overall support level, and demographics.

We moved the filter questions “Do you have a pet?” in the pet condition and “Do you have a friend?” in the friend condition to the demographic part of the survey. For perceived stress scale, we added “right now” to the beginning of each question to emphasize that we are testing participants’ state stress level. We also removed the current stressor and self-assessment of the stressor questions, because adding the self-assessment of stressor as a covariate in the regression analysis does not really change the result from Study 1, and 2.

Covid-related questions. To analyze if people’s social life and choices have changed a lot throughout the pandemic period, we added three questions about the influence of Covid on people’s social life. We asked participants if they are working remotely or in person, how much they have been socializing with people since the pandemic started, and if they adopted a pet since the pandemic. These questions are in the form of multiple-choice questions, from 1(Remotely), 2(In person) or 3(Hybrid), to 1(Much less than before the pandemic) to 5(Much more than before the pandemic), to 1(Yes), 2(No).

Results

Effects of the Manipulation. Independent sample t-tests were conducted to compare the effect of the manipulation on positive affect, negative affect, and perceived stress. For positive affect, there was no significant difference between the pet condition ($M=2.93$, $SD=.96$) and friend condition ($M=2.97$, $SD=.90$); $t(395)=.46$, $p=.64$. For negative affect, there was no significant difference between the pet condition ($M=1.40$, $SD=.68$) and friend condition ($M=1.39$, $SD=.62$); $t(395)=-.036$, $p=.97$. For perceived stress, there was no significant difference between the pet condition ($M=2.59$, $SD=.89$) and friend condition ($M=2.44$, $SD=.92$); $t(395)=-1.67$, $p<0.1$. There is no significant main effect of manipulation.

Table 32

Main effect of Manipulation on Negative Affect, Positive Affect and Perceived Stress

	N	Negative Affect		Positive Affect		Perceived Stress	
		M	SD	M	SD	M	SD
Pet	202	1.40	.68	2.93	.96	2.59	.89
Friend	195	1.39	.62	2.97	.90	2.44	.92

Individual Differences in Typical Support and Relational Concerns. For negative affect, on Step 1, implicit social support explained 0.1% of the variance, $F(1,395) = .46$, $p = .50$. Implicit social support was not a unique predictor of negative affect. On Step 2, explicit social support explained an additional 0.7% of the variance, $F(1,394) = 2.82$, $p = .09$. Explicit social support was not a unique predictor of negative affect. On Step 3, relational concern explained an additional 10.1% of the variance, $F(1,393) = 44.52$, $p < .001$. Relational concern was a significant unique predictor. Participants who had higher levels of relational concern were more likely to have negative affect.

Table 33

Hierarchical Regression Analysis Predicting Negative Affect

Variable	R ₂	ΔR ₂	β	sr ²	r
<u>Step 1</u>	.001	.001			
Implicit			-.034	.001	-.034
<u>Step 2</u>	.008	.007			
Explicit			-.089	.007	-.091

<u>Step 3</u>	.109***	.101***		
Relational Concern			.384***	.101***
				.304***

Note: $N = 184$. * $p < .05$, ** $p < .01$, *** $p < .001$.

For positive affect, on Step 1, implicit social support explained 9.2% of the variance, $F(1,395) = 40.09, p < .001$. Implicit social support was a unique predictor of positive affect; participants who typically used more implicit social support were more likely to have positive affect. On Step 2, explicit social support explained an additional 1.5% of the variance, $F(1,394) = 6.77, p = .01$. Explicit social support was a unique predictor of positive affect. Participants who typically used more explicit social support were more likely to have positive affect. On Step 3, relational concern explained an additional 0.2% of the variance, $F(1,393) = .77, p = .38$. Relational concern was not a significant unique predictor.

Table 34

Hierarchical Regression Analysis Predicting Positive Affect

Variable	R ₂	ΔR ₂	β	sr ²	r
<u>Step 1</u>	.092***	.092***			
Implicit			.304***	.092***	.304***
<u>Step 2</u>	.107**	.015**			
Explicit			.131**	.015**	.217**
<u>Step 3</u>	.109	.002			
Relational Concern			-.051	.002	-.058

Note: $N = 184$. * $p < .05$, ** $p < .01$, *** $p < .001$.

For perceived stress, on Step 1, implicit social support explained an additional 2.8% of the variance, $F(1,395) = 11.34, p < .001$. Implicit social support was a unique predictor of perceived stress. Participants who used more implicit social support were less likely to have perceived stress. On Step 2, explicit social support explained an additional 5.5% of the variance, $F(1,394) = 23.85, p < .001$. Explicit social support was a significant predictor of perceived stress. Participants who used more explicit social support were less likely to have perceived stress. On Step 3, relational concern explained an additional 11.6% of the variance, $F(1,393) = 56.97, p < .001$. Relational concern was a significant predictor. Participants who had higher levels of relational concern were more likely to have perceived stress.

Table 35

Hierarchical Regression Analysis Predicting Perceived Stress

Variable	R ₂	ΔR ₂	β	sr ₂	r
<u>Step 1</u>	.028***	.028***			
Implicit			-.167***	.028***	-.167***
<u>Step 2</u>	.083***	.055***			
Explicit			-.249***	.056***	-.277***
<u>Step 3</u>	.199***	.116***			
Relational Concern			.412***	.116***	.385***

Note: N = 184. * $p < .05$, ** $p < .01$, *** $p < .001$.

These results suggest that level of relational concern, usage of implicit social support and explicit social support were predictors of perceived stress, which has more predictors

than both the results of Study 1 and Study 2; Usage of implicit social support and explicit social support were predictors of positive affect, which is the same as the result of Study 2, but different from the results of Study 1; Relational concern was a predictor of negative affect, which is the same as the results of Study 1 and Study 2.

Moderation by Typical Support and Relational Concern. Then, I ran the moderated regression analysis with relational concern, usage of implicit social support and explicit social support as moderators of the manipulation, and perceived stress, negative affect and positive affect as dependent variables. I found no significant interactions in the moderated regression analyses, which was inconsistent with the pattern we saw in the previous study.

Figure 10

Moderated Regression: Support Manipulation by Relational Concern Predicting Negative Affect, Study 3

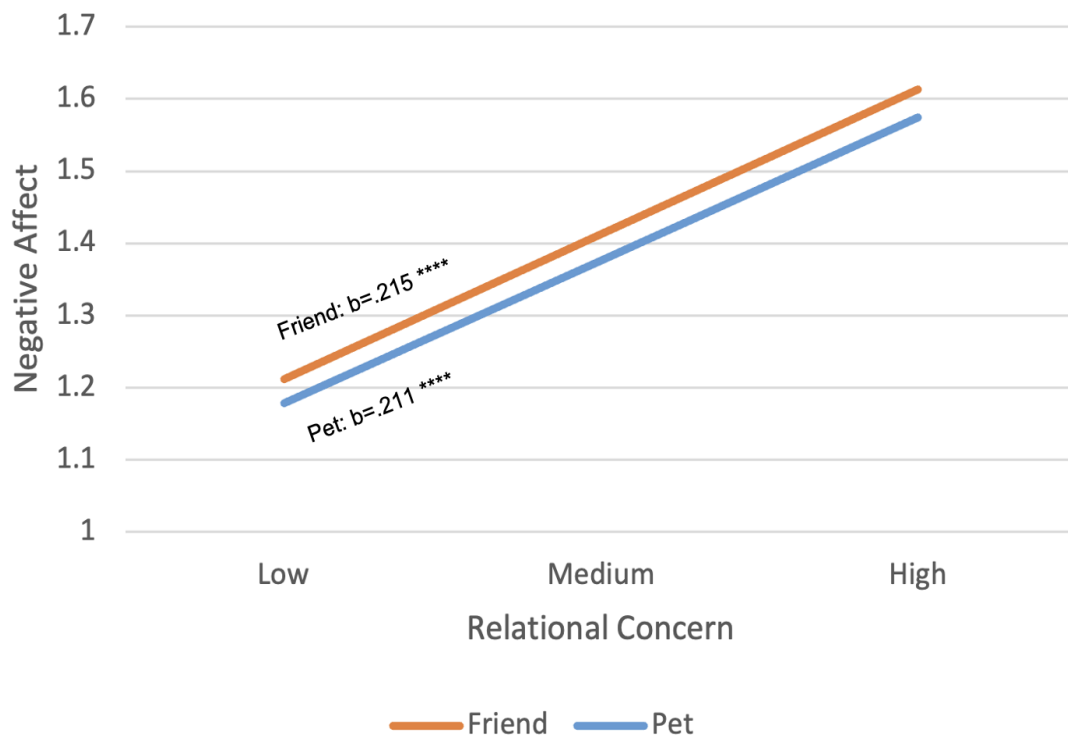


Table 36*Moderated Regression Analysis on Negative Affect: Manipulation and Relational Concern*

Effect	Estimate	SE	95% CI		p
			LL	UL	
Fixed effects					
Intercept	1.41	.045	1.32	1.50	.0000
Manipulation(Friend: 0; Pet:1)	-.037	.063	-.160	.087	.558
Relational Concern	.215	.047	.123	.306	.0000
Interaction	-.0031	.067	-.135	.129	.963

Table 37*Moderated Regression Analysis on Negative Affect and Different Moderators*

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Friend	-.055	.060	-.925	.356	-.173	.062
	Pet	.001	.066	.013	.990	-.129	.130
Explicit Social Support	Friend	-.104	.046	-2.25	.025*	-.194	-.013
	Pet	-.014	.047	-.290	.772	-.106	.079
Relationa l Concern	Friend	.215	.047	4.61	.0000****	.123	.306
	Pet	.211	.049	4.36	.0000****	.116	.307

Table 38

Moderated Regression Analysis on Positive Affect and Different Moderators

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Friend	.308	.082	3.77	.0002***	.147	.468
	Pet	.474	.090	5.28	.0000*** *	.298	.651
Explicit Social Support	Friend	.277	.065	4.28	.0000*** *	.150	.404
	Pet	.127	.066	1.92	.055	-.003	.257
Relational Concern	Friend	-.098	.070	-1.40	.161	-.236	.039
	Pet	-.010	.073	-.137	.891	-.153	.133

Table 39

Moderated Regression Analysis on Perceived Stress and Different Moderators

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Friend	-.161	.082	-1.96	.050*	-.323	.0002
	Pet	-.262	.090	-2.90	.004**	-.440	-.084
Explicit Social Support	Friend	-.258	.062	-4.15	.0000****	-.380	-.135
	Pet	-.245	.063	-3.87	.0001****	-.370	-.120
Relational Concern	Friend	.404	.063	6.43	.0000****	.281	.528
	Pet	.333	.066	5.09	.0000****	.205	.462

Regression analyses with European Americans

In Study 2, we used European Americans and found a significant pattern with relational concern. Therefore, I separated the European Americans only (N=290) from the general population and ran the same regression analyses again. This time, I found a significant interaction with explicit social support and a marginally significant interaction with relational concern that is similar to the results of Study 2.

For negative affect, the interaction between usage of explicit social support and manipulation was significant, $b=.17$, $t(286)=2.25$, $p<.05$. When explicit social support was low, the negative affect for pet condition was significantly lower than friend condition, $b=-.23$, $t(286)=-2.27$, $p<.05$, but when explicit social support was medium or high, the differences between two conditions were not significant (see Figure 11). This result supports our hypothesis.

Figure 11

Moderated Regression: Support Manipulation by typical usage of Explicit Social Support Predicting Negative Affect, Study 3

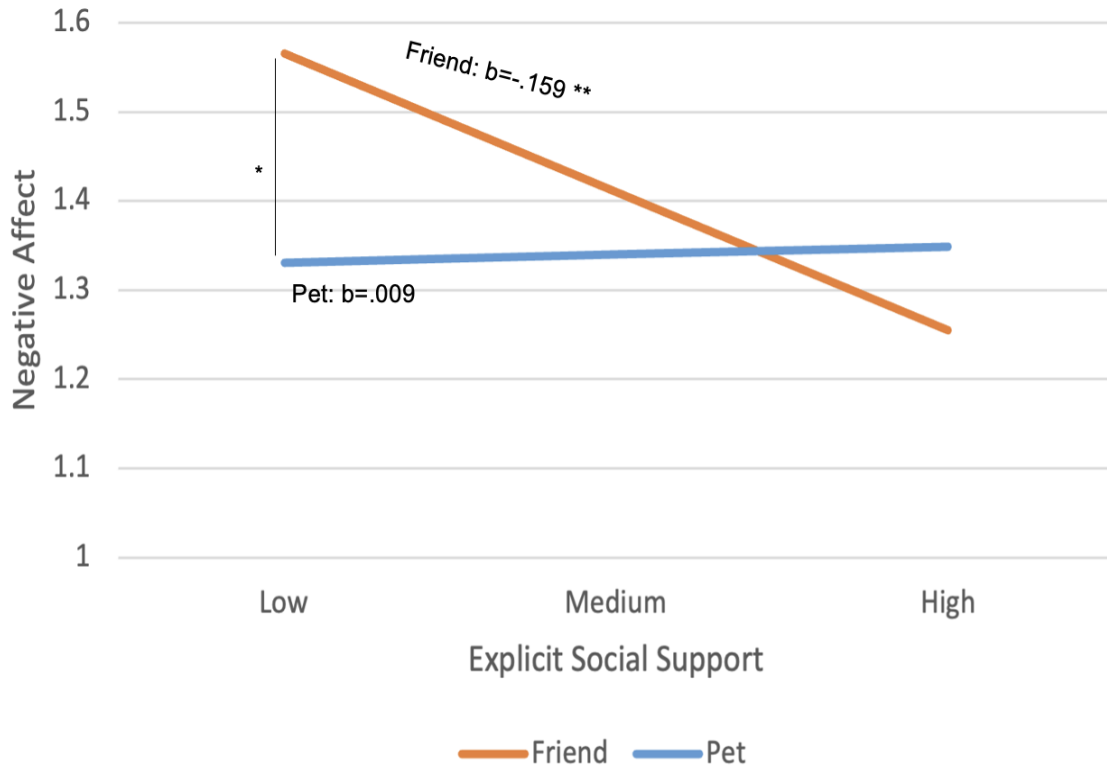


Table 40

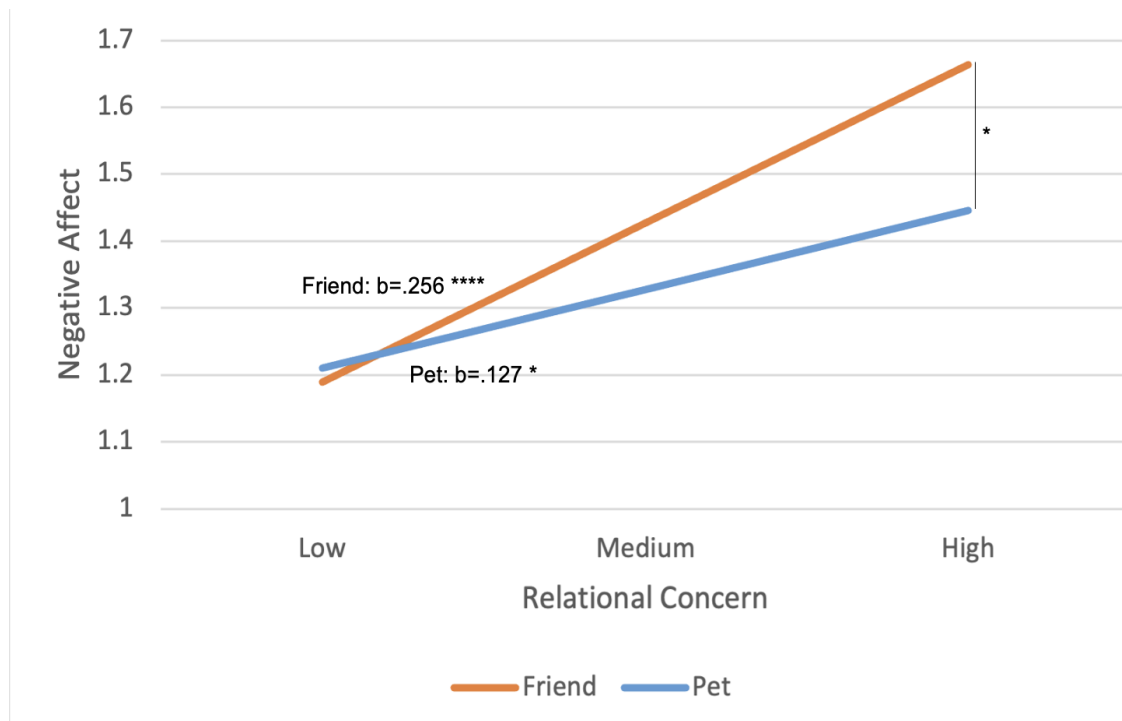
Moderated Regression Analysis on Negative Affect: Manipulation and Explicit Social Support

Effect	Estimate	SE	95% CI		p
			LL	UL	
Fixed effects					
Intercept	1.41	.052	1.31	1.51	.0000
Manipulation(Friend: 0; Pet:1)	-.070	.073	-.214	.073	.335
Relational Concern	-.159	.053	-.263	-.055	.003
Interaction	.168	.074	.021	.314	.025

For negative affect, the interaction between relational concern and experimental conditions was marginally significant, $b=-.13$, $t(286)=-1.68$, $p<0.1$. When relational concern was high, negative affect for pet condition was significantly lower than the friend condition, $b=-.22$, $t(286)=-2.18$, $p<.05$; when relational concern was medium or high, the differences between two conditions were not significant (see Figure 12). This result supports our hypothesis.

Figure 12

Moderated Regression: Support Manipulation by Relational Concern Predicting Negative Affect, Study 3



In summary, there were two significant moderated regression for European Americans' responses, and they both supported our hypothesis. The significant interaction with relational concern also aligned with the result pattern we found in study 2.

Table 41

Moderated Regression Analysis on Negative Affect: Manipulation and Relational Concern

Effect	Estimate	SE	95% CI		p
			LL	UL	
Fixed effects					
Intercept	1.43	.051	1.33	1.53	.0000
Manipulation(Friend: 0; Pet:1)	-.099	.071	-.239	.041	.164
Relational Concern	.256	.054	.151	.362	.0000
Interaction	-.129	.077	-.280	.022	.094

Table 42

Moderated Regression Analysis on Negative Affect and Different Moderators

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Friend	-.090	.063	-1.42	.157	-.214	.035
	Pet	.020	.070	.291	.771	-.117	.158
Explicit Social Support	Friend	-.159	.053	-3.00	.003**	-.263	-.055
	Pet	.009	.052	.172	.863	-.094	.112
Relational Concern	Friend	.256	.054	4.77	.0000****	.151	.362
	Pet	.127	.055	2.32	.021*	.019	.235

Table 43

Moderated Regression Analysis on Positive Affect and Different Moderators

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Friend	.270	.088	3.07	.002**	.097	.444
	Pet	.438	.097	4.50	.0000*** *	.247	.630
Explicit Social Support	Friend	.263	.077	3.43	.0007***	.112	.413
	Pet	.084	.076	1.10	.272	-.066	.233
Relational Concern	Friend	-.109	.082	-1.33	.183	-.271	.052
	Pet	.056	.084	.670	.503	-.108	.220

Table 44

Moderated Regression Analysis on Perceived Stress and Different Moderators

	Condition	b	se	t	p	LLCI	ULCI
Implicit Social Support	Friend	-.251	.092	-2.73	.007**	-.432	-.070
	Pet	-.160	.102	-1.57	.117	-.360	.040
Explicit Social Support	Friend	-.350	.076	-4.63	.0000****	-.498	-.201
	Pet	-.198	.075	-2.65	.0086**	-.346	-.051
Relational Concern	Friend	.479	.076	6.28	.0000****	.329	.629
	Pet	.302	.078	3.88	.0001****	.149	.455

Discussion

Results of Study 3 did not support our hypothesis when we analyzed the full sample. However, we found support for our hypotheses among European American participants (similar to Study 2). We propose that these differences may be related to the diverse population in the United States and their distinctive way of using social support. Human-human interaction is divergent in cross-cultural contexts, such as individualists' emphasis on the concept of independent self, whereas collectivists rely on the interdependent self and close relationships more (Markus & Kitayama, 1991).

When we analyzed European Americans (only) in this sample, we found results that were consistent with our hypotheses and that replicated that pattern of findings in Study 2 (which focused on European Americans). The significant result for negative affect was not completely replicated, and we think it may be due to the decreased European American sample size in Study 3. Whereas, we found a significant pattern related to people's typical usage of explicit social support. People who had lower usage of explicit social support, reported less negative affect after thinking about their pet than their friend, and this effect disappeared when the usage of explicit social support increased. This result partially supported our hypothesis that people with lower usage of explicit social support will receive more social support from their pets, since pets tend to provide implicit social support, which is in contrast with explicit social support. However, the hypothesis with implicit social support was not directly supported by our data, and the hypotheses with other dependent variables, such as positive affect and perceived stress, were not supported by the data from study 3.

General Discussion

In three studies, we recruited participants from two platforms, SONA and Mturk, and found inconsistent results with the hypotheses. We hypothesized that among people who have higher levels of implicit social support and relational concerns, thinking of their pets could give them greater social support than thinking of their friends. *On a group level*, Asian Americans (compared to European Americans) will have more positive affect, less negative affect, and less stress after thinking about their pet than thinking about their friend. Likewise, *on an individual difference level*, people with higher typical usage of implicit social support (and lower explicit support) and higher relational concerns will have more positive affect, less negative affect, and less stress after thinking about their pet versus their friend.

In study 1, we recruited college students from UCSB and did not find cultural differences among Asian American participants and European American participants, on a group level. On an individual level, most of the significant results we found are contradictory to our hypothesis, except for one. Therefore, our results from study 1 did not support our hypothesis that people with higher level of relational concern, usage of implicit social support and lower usage of explicit social support have less negative affect, stress and more positive affect after thinking of their pet versus their friend.

From Study 2 and 3, we found significant results among European American participants on Amazon Mturk, however, we were not able to find the same result among diverse American participants. Study 2 and exploratory analyses from Study 3 on European Americans supported the hypothesis that European Americans with higher levels of relational concern have less negative affect after thinking of their pet versus their friend. This finding aligns with the previous research that indicates pets could reduce people's negative emotions as well as human partners, or even slightly better than human partners (McConnell et al.,

2011) through relational concern as a moderator. Previously, research has shown that relational concern is a factor that could discourage people from actively seeking explicit emotional support and lead to more typical usage of implicit social support among Asians and Asian Americans (Kim et al., 2008; Taylor et al., 2004). Our studies present the possibility that relational concern could discourage people from seeking social support from other people, and result in seeking social support from pets among European Americans.

Overall, our studies show that pets could possibly be this safe haven for people who have great concern about interacting with other people. Our results did not support the direct relationship between more typical usage of implicit social support and more positive human-pet interactions. However, the analyses with relational concern show the connection between human-human interactions and human-pet interactions: with higher relational concern within human-human interactions, Europeans are more likely to benefit from thinking of their pets. Furthermore, the analysis with typical usage of explicit social support from study 3 also shows that with lower levels of using explicit social support among human-human interactions, Europeans benefit from thinking of their pets more than of their friends.

The inconsistent results from SONA and Mturk participants may be due to the differences in participants' demographics, particularly living situation and their relationship with their pet. College students are mainly living in a different situation from the majority of adults in the society, because they mostly live in student dorms and interact with other similar-aged students much more than other people. Additionally, college dorms usually do not allow pets. Therefore, it is likely that college students are receiving more social support from other human partners than their pets in general, since they live with roommates and away from their hometown and pets. Nevertheless, participants on Mturk, with a mean age

around 40, are more likely to be the typical pet owners we are looking for. More than 60% of them lived with family members, and around 20% of them lived alone, so pets could be either a part of their family or a significant company when they were alone at home. These participants were more likely to be the primary caretaker of pets and build a strong relationship with their pet. Thus, their responses to the survey are different from college students' responses.

The failure to replicate the result of Study 2 in Study 3 for American citizens as a whole is a noteworthy phenomenon. We were able to find a similar pattern for European Americans in Study 3 to Study 2, which suggests that European Americans may have a different way of interacting with pets or human partners from other ethnicities in the U.S. Besides human-human interactions, human-pet interaction could also be influenced by cultural habits and ideology, and lead to divergent human-pet connections. Lowrey (2020) pointed out that in Europe, dogs are more seen and allowed to stay in public space than in the United States, and dog owners are less likely to socialize with other people while walking their dogs. Lowrey (2020) indicated that dogs may be put into stressful situations when their owners stop walking and start socializing with other people and dogs, but interacting with other pet owners and their pets is a social norm in the United States. More literature review and analysis could be considered to discover the cultural differences between European pet owners and other pet owners .

We were not able to find cultural differences in Study 1, which leaves space for potential replications on Asians and Asian Americans. This will be an important step for us to test the hypothesis on a group level, which could demonstrate the effect of typically used social support type on people's relationship with their pet on a larger scale. Due to the

limitations we ran into Study 1, it might be helpful to recruit Asians from Asian countries or Asian Americans who are earlier generations of immigrants in the United States to analyze the cultural differences further. Thus, racial/cultural group differences in the impact of pet versus friend support remains to be tested in future studies using samples of Asian individuals who are more strongly identified with the Asian cultural heritage.

Our studies explored the relationship between people's habitual social support type across cultures and how it is related to human-pet interactions, since pets provide particular types of support for people. Besides emotional support, instrumental support is also a common type of support pets can give people, such as police dogs. While giving people instrumental support, pets can also give people emotional support to some degree, and it will be an interesting direction for researchers to investigate. In our study, we aimed for the emotional support pets provide people, but it will be helpful if we could distinguish the emotional support from instrumental support in our study more.

In the future, it will be helpful to replicate Study 3 to fully understand the different patterns between European Americans and diverse Americans. It will also be helpful to recruit participants from Asian culture and compare its results with European Americans and Americans'. At the same time, the significant pattern with typical usage of explicit social support that did not emerge in Study 2, but in Study 3, is worthy of further exploration and replication. Furthermore, we hope to contribute our results to the pet therapy field and promote better interactions and connections between human beings and pets. After all, interacting with other people, and other animals, are important steps for all of us.

References

- Allen, K., Shykoff, B. E., & Izzo, J. L. (2001). Pet Ownership, but Not ACE Inhibitor Therapy, Blunts Home Blood Pressure Responses to Mental Stress. *Hypertension*, *38*, 815-820.
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, *4*, 92-100.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of health and social behavior*, *24*(4), 385–396.
- Garrity, T. F., Stallones, L. F., Marx, B. M. & Johnson, T. P. (1989). Pet Ownership and Attachment as Supportive Factors in the Health of the Elderly, *Anthrozoös*, *3*:1, 35-44, DOI: 10.2752/089279390787057829
- Hayes, A. F. (2022). Introduction to Mediation, Moderation, and Conditional Process Analysis, Third Edition: A Regression-Based Approach. Guilford Press Publications.
- Kim, H. S., Sherman, D. K., Ko, D., & Taylor, S. E. (2006). Pursuit of comfort and pursuit of harmony: Culture, relationships, and social support seeking. *Personality and Social Psychology Bulletin*, *32*(12), 1595-1607. DOI: [10.1177/0146167206291991](https://doi.org/10.1177/0146167206291991)
- Kim, H. S., Sherman, D. K., & Taylor, S. E. (2008). Culture and social support. *American Psychologist*, *63*(6), 518–526. <https://doi.org/10.1037/0003-066X>
- Lowrey, S. (2020, March 27). What we can learn from European Dog Culture. *The New York Times*. <https://www.nytimes.com/2020/03/27/smarter-living/dog-training-behavior.html>
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*(2), 224–253.

<https://doi.org/10.1037/0033-295X.98.2.224>

Mauss, I. B., Butler, E. A., Roberts, N. A., & Chu, A. (2010). Emotion Control Values and Responding to an Anger Provocation in Asian-American and European-American Individuals. *Cognition & emotion*, 24(6), 1026–1043.

<https://doi.org/10.1080/02699930903122273>

McConnell, A. R., Brown, C. M., Shoda, T. M., Stayton, L. E., & Martin, C. E. (2011). Friends with benefits: on the positive consequences of pet ownership. *Journal of personality and social psychology*, 101(6), 1239–1252.

<https://doi.org/10.1037/a0024506>

Raghunath, D., Rathore, D., Shukla, H., Bilaye, N., Sahu, N., Gupta, N., & Sharma, K. (2017). A Comparative Study of Pet Owners and Non-Pet Owners to find out the Difference between their Physical, Mental, and Social Well-Being. *Annals of Community Health*, 5, 9-13.

Smolkovic, I., Fajfar, M. and Mlinaric, V. (2012). Attachment to pets and interpersonal relationships: Can a four-legged friend replace a two-legged one? *Journal of European Psychology Students*, 3(1), 15–23. <http://doi.org/10.5334/jeps.ao>

Statista. (2022, Mar 3). Pet ownership in the U.S. Retrieved April 15, 2022, from

https://www.statista.com/topics/1258/pets/#topicHeader__wrapper

Taylor, S. E., Sherman, D. K., Kim, H. S., Jarcho, J., Takagi, K., & Dunagan, M.S. (2004). Culture and social support: who seeks it and why? *Journal of personality and social psychology*, 87(3), 354–362. <https://doi.org/10.1037/0022-3514.87.3.354>

Taylor, S. E., Welch, W. T., Kim, H. S., & Sherman, D. K. (2007). Cultural differences in the impact of social support on psychological and biological stress responses.

Psychological science, 18(9), 831–837. <https://doi.org/10.1111/j.1467-9280.2007.01987.x>

Turner, D. C., Rieger, G & Gyax, L. (2003). Spouses and cats and their effects on human mood, *Anthrozoös*, 16(3), 213-228, DOI: 10.2752/089279303786992143

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of personality and social psychology*, 54(6), 1063–1070. <https://doi.org/10.1037//0022-3514.54.6.1063>

Zilcha-Mano, S., Mikulincer, M., & Shaver, P. R. (2012). Pets as safe havens and secure bases: The moderating role of pet attachment orientations. *Journal of Research in Personality*, 46(5), 571–580. <https://doi.org/10.1016/j.jrp.2012.06.005>

Appendix

How Do You Cope?

Please read each of the following statements and indicate how much you used each of the following ways of coping with the stressor on a 5-point scale with 5 = very much and 1 = not at all.

- ___ i ___ 3. I reminded myself of those who love and care for me.
- ___ e ___ 6. I tried to get emotional support from friends or relatives.
- ___ e ___ 8. I talked to someone about how I felt.
- ___ i ___ 12. I hung out with friends who did not know about the stressor.
- ___ e ___ 15. I got help and advice from other people.
- ___ e ___ 18. I talked to someone who could do something concrete about the problem.
- ___ e ___ 21. I asked for comfort and understanding from someone.
- ___ e ___ 25. I talked to someone to find out more about the situation.
- ___ i ___ 29. I spent time with people who are close to me without talking about the stressful event.
- ___ i ___ 32. I tried to relax with people who are close to me without bringing up the stressful event.
- ___ e ___ 34. I tried to get advice or help from other people about what to do.
- ___ i ___ 37. I tried to get strength by remembering those who need me and rely on me.
- ___ i ___ 41. I reflected on close relationships I have.
- ___ e ___ 43. I discussed my feelings with someone.

Note: "i" = implicit support, "e" = explicit support.

Current Stressor

Most people encounter stressful events on a fairly regular basis. You might have relationship problems, financial difficulties, conflicts with family members, illness, job stressors or school related concerns. What is the greatest stressor you are currently facing? Describe it briefly in the space below. Please write for 2 minutes and move on to the next question after 2 minutes.

Self-Assessment of the Stressor

What is the nature of your stressful event? (Choose one that is most relevant)

Choices: Family relationship; Friend relationship; Romantic relationship; Academic; Health; Financial; Job; Future; Other (Please specify)

Please indicate the extent to which each statement below describes your stressor.

This event is *stressful*.

This event is *negative*.

I feel responsible for this event.

I am able to successfully resolve this event.

Manipulations

Study 1

Pet Condition

- Do you have a pet (either with you or in your family)? Yes/No
- What's your pet's name?
- What is something you typically do with your pet? Please write for at least 2 minutes. This will be timed.

Friend Condition

- Do you have a friend at UCSB or at your hometown?
- Who is one of your friends? Please write out the initials of this friend here.
- What is something you typically do with this friend? Please write for at least 2 minutes. This will be timed.

Control Condition

- Did you buy anything last week (including food, clothes or other things)? Yes/No
- What is the favorite thing you bought last week?
- What is something you did with the favorite thing you bought last week? Please write for at least 2 minutes. This will be timed.

Study 2

Pet Condition

- Do you have a pet? Yes/No
- What's your pet's name?
- What is something you typically do with your pet? Please write for at least 2 minutes. This will be timed.

Friend Condition

- Do you have a close friend?
- Who is one of your close friends? Please write out the initials of this friend here.
- What is something you typically do with this friend? Please write for at least 2 minutes. This will be timed.

Control Condition

- Did you do something immediately after waking up this morning? Yes/No
- What did you do after waking up this morning?
- What is something you typically do after waking up in the morning? Please write for at least 2 minutes. This will be timed.

Study 3

Pet Condition

- What's your pet's name?
- What is something you typically do with your pet? Please write for at least 2 minutes. This will be timed.

Friend Condition

- Who is one of your close friends? Please write out the initials of this friend here.
- What is something you typically do with this friend? Please write for at least 2 minutes. This will be timed.

Positive and Negative Affect Schedule

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested				
2. Distressed				
3. Excited				
4. Upset				
5. Strong				
6. Guilty				
7. Scared				
8. Hostile				
9. Enthusiastic				
10. Proud				
11. Irritable				
12. Alert				
13. Ashamed				
14. Inspired				
15. Nervous				
16. Determined				
17. Attentive				
18. Jittery				
19. Active				
20. Afraid				

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts right now. In each case, you will be asked to indicate by circling how much you feel in a certain way.

- | | | | | |
|------------|---|---|---|-----------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | | | | Very much |
1. Right now, how much do you feel confident about your ability to handle your personal problems?
 2. Right now, how much do you feel that you are unable to control the important things in your life?
 3. Right now, how much do you feel nervous and “stressed”?
 4. Right now, how much do you feel that you are on top of things?
 5. Right now, how much do you think you are able to control irritations?
 6. Right now, how much do you feel that difficulties are piling up so high that you could not overcome them?
 7. Right now, how much do you feel that you can not cope with all the things that you have to do?
 8. Right now, how much do you feel angry because of things that are outside of your control?
 9. Right now, how much do you feel that things are going your way?

Relational Concern

- | | 1 | 2 | 3 | 4 | 5 |
|--|---|---|---|---|---|
|--|---|---|---|---|---|
- Not at all Very much
1. I'm concerned that if I tell the people I am close to about my problems, they would be hurt or worried for me.
 2. If something were bothering me, I would not want to disrupt my social group by sharing it.
 3. I can save face by solving my problems myself.
 4. If I discuss my problems with the people I am close to, it makes it a bigger problem than if I keep it to myself.
 5. I would rather not tell the people I am close to my problems because they would blow them out of proportion.
 6. To preserve the happiness of my peer group, I try to keep my problems to myself.
 7. The people I am close to would be ashamed if I made my problems known to others.
 8. I don't want to ask for support for my problems because people might judge me negatively because of my problems.
 9. I would be embarrassed to share my problems with the people I am close to.
 10. I wouldn't want to make the people I am close to feel stressed about my problems.
 11. I would rather keep my problems to myself than risk criticism from the people I am close to.

