Hounds and Homesickness: The Effects of an Animal-assisted Therapeutic Intervention for First-Year University Students

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ABSTRACT Transitioning from high school to university can prove to be a formidable challenge for many first-year students, with many experiencing homesickness. Given that students who experience homesickness are more likely than their non-homesick cohorts to drop out of university, universities have a vested interest in supporting students during their first-year transition. Programs that provide opportunities for human–animal interactions on campus are gaining popularity as one way of increasing students’ wellbeing. The current study examined the effects of an 8-week animal-assisted therapy (AAT) program on first-year university students’ wellbeing. An initial feasibility study (n = 86) was conducted that provided opportunities for students to interact, in small groups, with trained therapy dogs and their volunteer handlers. Results indicated that this program reduced participants’ levels of homesickness and increased their satisfaction with life. An experimental study was then conducted utilizing a similar 8-week group AAT program. Participants (n = 44) were assigned to either a treatment condition (i.e., the AAT program) or to a no-treatment condition (akin to a wait-list control). At the end of the eight weeks, participants in the AAT program reported greater reductions in homesickness and greater increases in satisfaction with life than did those in the no-treatment condition. From beginning to end of the program, participants in the treatment group evidenced reductions in homesickness and increases in satisfaction with life and connectedness to campus, while participants in the no-treatment condition evidenced an increase in homesickness and no changes in satisfaction with life and connectedness to campus. Results of both the feasibility study and the experimental study support the use of AAT programs to increase the wellbeing of first-year university students experiencing homesickness.

Keywords: animal-assisted therapy, homesickness, post-secondary education, satisfaction with life, wellbeing
Funny enough, whenever I felt homesick, it was because I missed my own dog, not because I missed my parents or sister.” (Participant, feasibility study)

Moving away from home to attend university is often regarded as an exciting step in the transition from adolescence to young adulthood. Yet, for many students this transition presents a significant source of stress (Scoptelliti and Tiberio 2010; Terry, Leary and Mehta 2012; Thurber and Walton 2012), one that can exacerbate underlying issues for students, rendering them psychosocially vulnerable and at risk for failing to engage in their coursework and campus life, underperforming academically, and ultimately placing them at risk for dropping out altogether (Furr et al. 2001; Ward and Styles 2005; Eisenberg et al. 2007; Conley, Travers and Bryant 2013). Moreover, many first-year university students face the challenge of integrating into their new campus community while experiencing homesickness. Across studies, between 20% to 75% of students experience homesickness (Fisher, Murray and Frazer 1985; Brewin, Furnham and Howes 1989; Eurelings-Bontekoe, Brouwers and Verschuur 2000; Stroebe et al. 2002; ACHA 2013).

Homesickness is a complex condition, one that manifests when an individual leaves home, develops negative thoughts about his/her new environment, has negative emotions toward the transition itself, possesses obsessive thoughts about home, and develops physical and behavioral symptoms as a response to being homesick (Fisher 1989; Scoptelliti and Tiberio 2010). Thurber and Walton (2012) differentiate between “mild” and “intense” homesickness through varying degrees of preoccupying thoughts of home and associated objects of home; depressive and anxious symptoms; withdrawn behavior; and trouble focusing on tasks that are, in and of themselves, unrelated to home. In its mild form, homesickness can serve as a catalyst for developing coping skills and motivating healthy attachment to others (Thurber 1995; Hendrickson, Rosen and Aune 2010). An intense experience of homesickness, however, can lead to social isolation, withdrawal, and debilitation (Fisher 1989; Tochkov, Levine and Sanaka 2010).

The effects of homesickness are far-reaching. Not only can homesickness impede the integration of new students into the campus community, homesickness also negatively impacts students’ emotional, physical, and cognitive functioning (Shahmohammadi and Irannejad 2011). The emotional ramifications of homesickness may include students experiencing nervousness, anxiety, hopelessness, and increased tearfulness; while physical ramifications include changes and challenges in sleeping and eating habits. Cognitively, homesick students experience absentmindedness, poor memory, difficulty concentrating, and obsessive thinking (e.g., “When can I return home?”; Fisher and Hood 1987; Burt 1993). When combined with increased levels of stress, homesickness renders academically competent students at risk for underperforming (Akgun and Ciarrochi 2003; Pritchard and Wilson 2003).

Furthermore, homesick students are three times as likely to disengage and drop out of university than are students not suffering from homesickness (Burt 1993). This is in line with the “push-pull” theory of school disengagement, proffered by Jordan, Lara and McPartland (1994) and refined by Watt and Roessingh (1994). This theory holds that students can be actively pushed out of school (e.g., adverse experiences in school), fall out (e.g., via a lack of academic achievement, apathy toward studies, disillusioned with school completion), or be pulled out by internal factors within the student (e.g., homesickness). The potential for students to experience homesickness is impacted by the extent and ease with which new students integrate into their campus community and connect with others (Thurber and Walton 2012). Thus, in an effort to facilitate the integration and engagement of new students, and to reduce...
the likelihood that they will be pushed, pulled, or fall out of their studies, universities are increasingly seeking ways to help students mitigate stress and homesickness.

The post-secondary setting, however, is a complex social environment. First-year university students must negotiate multiple new relationships within a variety of new contexts within the campus setting. Not only are there formal social demands found within students’ required coursework (e.g., collaborative assignments), there are also informal demands that center on common and cooperative housing arrangements, communal dining, and organized social activities. Added to this are the establishment of new friends and friendship circles.

Although academic support for struggling students has long been in place (e.g., “writing centers” or “student support services” offices), and mental health support is usually available through a university’s Student Health Center, students stand to profit from access to less formal sources of support as well. Informal support is often assumed to be available through the plethora of clubs and associations on campus; however, the joining of such groups requires social negotiation, navigation, and contributions—formidable challenges for students feeling homesick and the compromised social confidence that often results.

The Current Study

The current study aimed to address the effects of a less formal source of support for students experiencing homesickness. It has been suggested that animal-assisted therapy (AAT) is particularly beneficial for individuals who are socially isolated or who have low social support (McNicholas and Collis 2000; Virues-Ortega et al. 2012). Moreover, dogs have been described as social lubricants or catalysts in daily life (McNicholas and Collis 2000; Wood, Giles-Corti and Bulsara 2005) and within therapeutic contexts (Hunt, Hart and Gomulkiewicz 1992; Richeson 2003; Tedeschi, Fitchett and Molidor 2005; see also Fine 2010 for a review). Meta-analyses of AAT studies reveal that those studies which utilized dogs had moderate to large effect sizes on the improvement of participants’ wellbeing (ds from 0.27 to 0.92; Nimer and Lunndahl 2007) and social functioning (ds from 0.36 to 2.15; Virues-Ortega et al. 2012). Therefore, an AAT approach using dogs was chosen as having strong potential to facilitate interpersonal connections among study participants and thus increase students’ wellbeing via a reduction in homesickness. It was hypothesized that participation in an AAT intervention designed for implementation within a campus setting would result in reduced levels of homesickness, increased levels of satisfaction with life, and increased levels of a sense of connectedness to the university campus.

Methods

To date, no AAT interventions have been designed, implemented, and studied that could be administered within a group setting to a large number of students within a university or campus setting (for a review of randomized controlled trials using canines, the reader is directed to Maujean, Pepping and Kendall 2015). Therefore, a feasibility study was first conducted in order to assess both the viability of such an effort and its potential for impacting students’ wellbeing by reducing students’ homesickness and increasing their satisfaction with life. For both the feasibility study and the subsequent main study, research ethics approval from both university human (H13-00139/H14-00474) and animal (A14-0134) care committees was obtained.

Feasibility Study

Twelve volunteer dog handlers (85% female; age $M = 48.12$, $SD = 13.16$; prior experience $M = 2.16$ years, $SD = 1.91$) and their therapy dogs (77% female; age $M = 5.97$, $SD = 2.24$)
were recruited from an outside agency with the support of the agency's director. Prior to the commencement of the study, volunteer dog handlers attended an orientation session in which they were instructed about the study’s protocols. This included clarifying expectations around the management of dogs (e.g., identification of the dog while on campus, minimizing interactions with other dogs while in sessions, etc.) and information on how to use open-ended prompts to engage students in discussions (e.g., “Tell me about your experience so far on-campus”).

First-year university students who self-identified as homesick were recruited as participants for the feasibility study via email (n = 86, age: M = 19.48, SD = 0.72, range: 18–22 years; 82.1% female). Participants were informed that they would be participating in an 8-week dog therapy program consisting of weekly 45-minute sessions. All participants completed a pre-intervention measure of homesickness and life satisfaction (see Measures section below for complete description). (Participants also completed several other measures as part of a different study, but only those measures relevant to the current study are reported herein.)

Therapy sessions were purposely scheduled for Friday afternoons because, for many homesick students, this marks the beginning of an especially lonely trajectory heading into the weekend. Participants were randomly assigned to a dog and handler in groups of three or four. The first 30 minutes of each session consisted of small group interactions between participants and their assigned dog and handler; the last 15 minutes was free time for participants to visit with any of the dogs. Thus, at each of the eight weekly sessions, participants were in constant interaction with one or more dogs and handlers (all twelve dogs and handlers were present at each session), and with fellow participants. Implementation fidelity was monitored during each of the eight sessions by the first author and an undergraduate research assistant trained in animal therapy. Gerstner and Finney’s (2013) guiding principles for measuring implementation fidelity were followed and included safeguarding: 1) program differentiation (encouraging proximity to dogs and hands-on contact between students and their assigned dog); 2) adherence (ensuring specific features of the intervention were upheld such as maintaining the dog-to-student ratio); and 3) exposure (monitoring the duration of each intervention session). The weekly participation rate of student participants was tracked through a sign-in attendance sheet; attendance rate was 91% across the 8-week program.

At the end of the eight weeks, all participants again completed the measures of homesickness and life satisfaction. Paired t-tests revealed a large effect size (Morris and DeShon 2002; Lakens 2013) on reducing feelings of homesickness (t(84) = 5.46, p < 0.001; d = 0.59, 95%CI [0.39, 0.78]) and a medium effect size on increasing satisfaction with life (t(85) = 3.99, p < 0.001; d = 0.43, 95%CI [0.28, 1.06]).

Researchers have called for more empirically rigorous AAT studies (i.e., experimental methodology using treatment and control conditions; Nimer and Lundahl 2007; McCardle et al. 2011; Maujean, Pepping and Kendall 2015). Therefore, given the promising findings from the feasibility study, we next conducted an 8-week experimental study wherein participants were assigned to either the treatment condition or to a no-treatment “wait-list” condition.

**Main Study**

In order to provide therapy dogs and handlers for not only the current study, but also for an in-development “drop-in” program for students, dogs and handlers were assessed and certified by the first author and his research team (see Appendix 1 for assessment criteria). The development of an “in-house” pool of therapy dogs and volunteer handlers, thus increasing variability in the dogs
and handlers participating in the weekly sessions over the course of the 8-week program. A total of 20 volunteer dog handlers (95% female, age $M = 42.79$, $SD = 23.71$; prior experience $M = 3.71$ years, $SD = 2.64$) and their therapy dogs (55% female, age $M = 5.76$, $SD = 3.93$) participated in the main study.

In the feasibility study, participants suggested reducing overcrowding in sessions and increasing access to a variety of dogs as ways to improve the overall experience. Therefore, in the main study, only a limited number of participant spots were made available (i.e., approximately half the number of the feasibility study) and student participants were randomly assigned for each session to a different volunteer handler and dog. Flyers were posted in on-campus student residences to recruit first-year students who self-identified as homesick. Participants ($n = 44$; age $M = 18.30$, $SD = 0.54$, range 17.11–20.03 years; 81.8% female) signed up for one of two information session time-slots. Time-slots were then assigned to be either the treatment condition ($n = 22$) or the no-treatment condition ($n = 22$; which was akin to a wait-list control). The groups did not differ on mean age or ratio of male to female participants. Students were blind to condition upon signing up for the study.

Participants were told that they would be participating in an 8-week dog therapy program consisting of weekly 45-minute sessions. Participants in the treatment condition were told that their sessions would begin the following week. Participants in the no-treatment “wait-list” condition were informed that their sessions would begin in eight weeks’ time. These participants were instructed to go about their daily routine as usual; they were also instructed to not participate in any dog therapy programs offered on campus during this time period. All participants completed pre-intervention measures of homesickness, satisfaction with life, and connectedness to campus (see Measures section below for details).

As with the feasibility study, therapy sessions were scheduled for Friday afternoons. In response to feedback from participants in the feasibility study, rather than assign students to the same dog and handler team for each session, each week students were randomly assigned to a different dog and handler. Consistent with the feasibility study, student participants were assigned to dogs and handlers in groups of three or four. The first 30 minutes of each session consisted of small-group interactions between participants and their assigned dog and handler; the last 15 minutes was free time for participants to visit with any of the dogs. Thus, as in the feasibility study, at each of the eight weekly sessions, participants were in constant interaction with one or more dogs and their handlers, and with fellow participants. Consistent with the feasibility study, 12 therapy dogs and handlers were present at each weekly therapy session. Additionally, weekly random assignment of students to group, dog, and handler helped to mitigate the influence of any one dog and handler over the course of the program. Weekly participation rate was tracked through a sign-in attendance sheet; attendance rate was 86% across the 8-week program. At the end of the program, all participants (in both the treatment group and in the no-treatment group) again completed the measures of homesickness, satisfaction with life, and connectedness to campus. Participants in the no-treatment condition then had the option of participating in the 8-week program beginning the following week. All no-treatment condition participants accepted this offer and subsequently attended the 8-week AAT program.

Measures: 1) Homesickness: One item from McAndrew’s (1998) Measure of Rootedness was used to assess homesickness. This item (i.e., “I frequently feel homesick”) is rated on a 5-point scale, ranging from 1 (Disagree a lot) to 5 (Agree a lot). The measure was originally
validated using samples of undergraduates, with the “homesickness” item correlating with satisfaction ratings of home/family life ($r = 0.21, p < 0.05$). The use of a single item to assess a global construct that is unambiguous has been recommended in general (Wanous and Reichers 1996; Zimmerman et al. 2006), and advocated for in assessing homesickness (Fisher and Hood 1987, 1988).

2) Satisfaction with Life: The widely used Satisfaction with Life Scale (SWL; Diener et al. 1985) was utilized. This 5-item measure assesses global subjective wellbeing and has proven to be a valid and reliable measure in a diverse range of age groups (Pavot and Diener 2009), with Cronbach’s $\alpha$ ranging from 0.83 to 0.87 ($\alpha$s in the current study were 0.82 (pre) and 0.84 (post). Items (e.g., “In most ways my life is close to the way I want it to be”) are rated on a 5-point scale, ranging from 1 (Disagree a lot) to 5 (Agree a lot).

3) Connectedness to Campus: A one-item question, “How connected do you feel to the campus?” was used to assess this construct. The item was rated on a 5-point scale, ranging from 1 (Not at all) to 5 (Extremely). A one-item measure of connectedness has been effectively used in previous research (e.g., Mashek, Cannaday and Tangney 2007); moreover, as noted above, the use of a single item to assess a global construct that is unambiguous has been recommended in general (Wanous and Reichers 1996; Zimmerman et al. 2006).

Results

Quantitative Analyses

We conducted gain-score $t$-test analyses in order to examine differences between the treatment group and the no-treatment group in reduction of homesickness and increases in satisfaction with life and connectedness to campus, from pre- to post-intervention. When assignment is not based on the pretest, and when groups are not equivalent at baseline (as can occur in small sample sizes, even in randomized designs), $t$-tests comparing mean differences in gain scores are recommended (Allison 1990; Maxwell and Delaney 1990; Maris 1998; Rogosa 1988; Oakes and Feldman 2001; Fitzmaurice, Laird and Ware 2004) (see Table 1 for descriptive statistics).

First, we compared reduction in homesickness between the treatment group and the no-treatment group. Analysis revealed a large effect size ($d = 0.96, 95\% CI [0.72, 1.26]$) for greater reduction in homesickness for the treatment group ($M = -0.48, SD = 0.79$) compared with the no-treatment group ($M = 0.27, SD = 0.77$) ($t_{(40)} = -3.118, p = 0.003$). We then compared gains in satisfaction with life. Analysis evidenced a medium effect size ($d = 0.45,$

Table 1. Descriptive statistics for main study pre- and post-intervention measures by condition.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Condition</th>
<th>Treatment Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homesickness</td>
<td>Pre</td>
<td>$M = 2.52, SD = 0.91$</td>
<td>$M = 2.41, SD = 0.96$</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>$M = 1.95, SD = 0.61$</td>
<td>$M = 2.68, SD = 0.96$</td>
</tr>
<tr>
<td>Satisfaction with Life</td>
<td>Pre</td>
<td>$M = 15.45, SD = 7.54$</td>
<td>$M = 19.45, SD = 4.11$</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>$M = 16.60, SD = 7.88$</td>
<td>$M = 19.00, SD = 3.98$</td>
</tr>
<tr>
<td>Connected to Campus</td>
<td>Pre</td>
<td>$M = 2.36, SD = 0.79$</td>
<td>$M = 2.64, SD = 0.85$</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>$M = 2.75, SD = 0.85$</td>
<td>$M = 2.77, SD = 0.75$</td>
</tr>
</tbody>
</table>
95%CI [0.18, 0.75]) for greater increase in satisfaction with life for the treatment group ($M = 1.14, SD = 2.47$) compared with the no-treatment group ($M = -0.45, SD = 4.33$) ($t_{(42)} = 1.497, p = 0.142$). Lastly, with regard to connectedness to campus, analysis revealed that although a small effect size ($d = 0.31, 95\% CI [0.03, 0.62]$) was revealed for greater increase in connectedness to campus for participants in the treatment group ($M = 0.40, SD = 0.68$) compared with the no-treatment group ($M = 0.14, SD = 0.94$), the $p$ value was large ($t_{(40)} = 1.031, p = 0.309$). We also ran analyses controlling for gender. Effect sizes were not impacted, and gender did not appear to moderate the relationship between the AAT program and the gain score differences in homesickness, life satisfaction, or connectedness to campus ($ps > 0.05$).

**Qualitative Analyses**

Upon completion of the feasibility study, a focus group discussion was held to complement the quantitative findings (Sagoe 2012). Using stratified random sampling, 20% of participants were invited to participate in a post-intervention focus group discussion ($n = 17$). Students were open and candid about their experience in the 8-week AAT program. The discussion was audiorecorded and transcribed; a trained research assistant also took notes during this session. Following protocols outlined by Wong (2008) and Basit (2003), content analysis was used to identify the prevalent themes or perspectives emerging from participants’ contributions during the focus group. This process involved: 1) identifying individual comments found within transcriptions; 2) categorizing each of the transcribed comments into thematic clusters or categories; and 3) identifying the thematic categories most representative of participants’ insights and contributions arising within the focus group.

Three prevalent themes emerged from this discussion. First, participants reported that the AAT sessions felt like home. For example: “I felt like I’m sitting in my living room at home, chatting with friends who brought their puppies,” and “Eventually, I felt as if the group I was with was like one big family, we were all going through the same thing in terms of school and workload.”

Second, in line with previous research noting that dogs can act as social lubricants (Hunt et al. 1992; McNicholas and Collis 2000; Richeson 2003; Wood, Giles-Corti, and Bulsara 2005; Tedeschi, Fitchett, and Molidor 2005), participants felt that the dogs were nonjudgmental and helped to facilitate interactions with other students. For example: “I am kind of shy and antisocial because I was bullied when I was 14 and came to Canada alone. But people and the dogs in the program have brought me warmth and happiness and made me think that talking to new friends is not a thing to be afraid of” and “This program was great because it gave you a nice relaxing environment and brought you closer with other students at the university—just by allowing you to spend time with an adorable dog!”

The third theme that emerged was that students felt as though they belonged to a community. For example: “The large group of us slowly became a community, talking about the ongoing experiences of our week was a great way to de-stress,” and “It was comforting to know that I had a place to go on campus where people knew my name.”

Upon completion of the 8-week program, all participants in both the feasibility study and in the treatment condition of the main study answered the open-ended question “What did participating in this study mean to you?” Overwhelmingly, participants viewed their participation in the 8-week AAT program as positive, thus corroborating the increases in wellbeing (via reduction in homesickness and increase in satisfaction with life) evidenced in the quantitative analyses. For example:
This seriously changed my view on university life and made my outlook on life away from home different in a positive way.

I always looked forward to it and left feeling better than when I came in.

I am a very ambitious person, trying to work hard everyday and I couldn’t imagine how I could relieve my stress until I attended the dog sessions.

It’s been a great stress reliever and a nice way to take a break from the stressful university workload that I’m still getting used to!

It also got me out of my room and out of bed (where I would otherwise be on a Friday afternoon), so it made me feel healthier. There’s something very soothing about petting an animal.

Additionally, comments such as the following support our supposition that joining formal social groups is difficult for students experiencing homesickness, and that a more informal setting (such as the current study’s 8-week AAT intervention) may be more efficacious in establishing social relationships:

It took the pressure off socializing with others.

Fridays are days I got to interact with new friends that I would have otherwise never would have met!

I could just relax and be with other people. Also, I was able to meet new people and become rather good friends with more than one person.

Not only did it give me the opportunity to play with a dog but it gave me a chance to meet new people who I could talk to about how my life/school is going.

Table 2. Summary of findings for feasibility study and main study.

<table>
<thead>
<tr>
<th>Study</th>
<th>Test</th>
<th>DV</th>
<th>Condition</th>
<th>Effect Size</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feasibility</td>
<td>Paired t-test</td>
<td>HS</td>
<td>n/a</td>
<td>(d = 0.59)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SWL</td>
<td>n/a</td>
<td>(d = 0.43)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Main</td>
<td>Gain score t-test</td>
<td>HS</td>
<td>Tx vs. Ctrl</td>
<td>(d = 0.96)</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SWL</td>
<td>Tx vs. Ctrl</td>
<td>(d = 0.45)</td>
<td>0.142</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ctc</td>
<td>Tx vs. Ctrl</td>
<td>(d = 0.31)</td>
<td>0.309</td>
</tr>
</tbody>
</table>

HS: Homesickness; SWL: Satisfaction with Life; CtC: Connectedness to Campus; Tx: Treatment group; Ctrl: Control group.

Discussion

Results supported our hypotheses that participation in the 8-week canine AAT program would increase students’ wellbeing via a reduction in homesickness and an increase in satisfaction with life. Within-group analyses evidenced that participants in the feasibility study reported a reduction in homesickness and an increase in satisfaction with life from the start of the program to the end of the program. Between-group analyses of the main study revealed that, on average, participants in the treatment group reported a greater reduction in homesickness and a greater increase in satisfaction with life compared with the no-treatment group (see Table 2 for a summary of findings from the feasibility study and the main study).
It is important to note that, compared with effect sizes of AAT studies involving dogs on wellbeing (ds from 0.27 to 0.92; Nimer and Lundahl 2007), the effect sizes of participation in our group-based, 8-week AAT program are in the mid-to-upper-range, with ds from 0.31 to 0.96. These effect sizes are also, for the most part, larger than the average effect size of positive psychology interventions on wellbeing (ds from 0.20 to 0.34; Bolier et al. 2013).

Qualitative results supported the quantitative findings; participants commented on the positive impact that the AAT program had on their emotions and attitude toward campus life. Consistent with previous research demonstrating that dogs appear to act as a social lubricant, participants also commented on how the therapy dogs in the program helped to facilitate new friendships that otherwise would not have been made. Thus, the program showed promise in meeting our aim to provide a less formal source of social support for students compared with university clubs or associations. Indeed, an informal source of support, such as our AAT program, appeared to be sorely needed. Many students pleaded to be admitted to the study over the course of the semester.

Limitations
Like all studies, ours was not without limitations. This study relied on self-report measures of wellbeing (i.e., homesickness, satisfaction with life, connectedness to campus). Future studies could include data collection from a variety of sources external to the participants (e.g., peer reports, dormitory supervisor observations).

In both the feasibility study and the main study, students self-selected to participate in the study. Self-selection can produce biased, confounding results when the respondents/participants in a study are not representative of the larger target population, or when participants expect an intervention to be effective. Given that our target population was students who self-identified as homesick, and that many first-year students lamented having missed the notice calling for participants for the feasibility study and asked to be admitted to the study, it is possible that our samples were not entirely representative of our target population (i.e., first-year university students self-identifying as homesick). However, additional flyers posted in first-year campus residences and around campus could have helped to provide greater awareness of the studies. Expectancy results could be mitigated in future studies by refraining from describing the AAT program as an intervention specifically to reduce homesickness. Additionally, filler measures could be included in the set of pre-intervention measures in order to further disguise the intent of the study.

Although participants were blind to condition when signing up for one of the two information sessions, participants were not randomly assigned to condition. As noted, condition assignments were determined after sign-ups were complete. It is possible that there were inherent or systematic biases in participants’ selection of one information session over the other. Given that the initial information sessions which participants signed up for were scheduled back-to-back, it is unlikely that such biases occurred; nonetheless, future studies should involve true random assignment of participants to condition.

In both the feasibility and the main study, volunteer therapy-dog handlers were trained to engage students in discussions about their campus experiences. This may have presented a confound to the program’s results by making the effects of the handler and the effects of interaction with the dogs hard to disentangle. This possible confound was, in part, mitigated by weekly random assignment of participants to different therapy dogs and their handlers (thus de-emphasizing the influence of any one handler). Our studies were based on the premise...
that dogs facilitate social interactions; thus the engagement of the handlers with participants was, to some extent, inherent to the program’s design. However, future studies could compare an AAT program that encouraged handler interaction with participants directly with an AAT program wherein handlers were not encouraged to engage in discussion with participants, or to limit their discussions to non-campus experiences.

Lastly, utilizing a larger sample size in future studies would enhance the reliability of the current study’s findings. Nonetheless, despite these limitations, notable findings with medium to large effect sizes were demonstrated in increasing participants’ wellbeing; moreover, consistency in effect sizes for homesickness and satisfaction being with life were evidenced between the feasibility and the main study.

**Future Directions and Implications of the Current Study**

Additional studies employing randomized controlled trials are needed to further attest to the positive effects of AAT programs on students’ wellbeing (Maujean, Pepping and Kendall 2015). Additionally, varying the dosage of treatment is an area that merits investigation. For example, examining results of a “drop-in” program could help to determine the number and frequency of sessions that are most efficacious. Longitudinal studies could be conducted wherein participants are tracked throughout the course of a school year. Impact on grades, attrition from classes and university, and a broad assessment of wellbeing (e.g., physical health, nuanced aspects of psychological/emotional wellbeing such as hope, optimism, and meaning in life) could be assessed.

Theoretical developments within positive psychology argue that people differ in their motivations to undertake activities (which in turn predicts sustained interest and effort) and in their responsiveness to positive experiences as a result of factors such as person–activity fit (Lyubomirsky and Layous 2013). Future studies could utilize a measure of self-concordant motivation (Sheldon and Lyubomirksy 2006) or person–activity fit to pre-assess the appropriateness of an AAT program for individuals; moderation effects could also be examined. Future studies could also be conducted comparing the efficacy of an AAT program with other types of interventions aimed at reducing homesickness and/or increasing wellbeing.

Universities increasingly recruit students from well beyond their immediate geographic area and see their student body comprised of local, regional, national, and international students. Students adjusting to the independence of living away from home and to life within the context of a dormitory, where high social demands are commonplace, frequently need support to combat feelings of homesickness. As noted previously, homesick students are three times as likely to disengage and drop out of university than are students not suffering from homesickness (Burt 1993). Student attrition is associated with a significant economic cost to universities and colleges. For example, within a Canadian context and for students enrolled in community colleges, the cost to an institution for each first-year student not continuing to his or her second year was estimated to be $4,230 (Grayson and Grayson 2003). Indeed, Bean and Hossler (1990) argues that “... a student who stays with the institution for four years generates the same income [for the institution] as four new students who leave after one year” (as cited in Grayson and Grayson, p. 9). Thus, post-secondary institutions have a vested interest in retaining students.

The integration of a group AAT program on university campuses, such as the 8-week program in this study, represents one promising proactive way to combat homesickness in students and increase their overall wellbeing. Furthermore, the 8-week program may be a
viable way to mitigate attrition rates of students and its associated economic costs to universities. Further studies, such as those suggested above, are necessary to augment the current study’s findings that hounds can indeed alleviate students’ homesickness and increase their satisfaction with life.

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Conflicts of Interest
The authors declare there are no conflicts of interest.

References
Hounds and Homesickness: The Effects of an Animal-assisted Therapeutic Intervention…


Appendix 1. Assessment criteria for therapy dogs and handlers.

In lieu of using a checklist and rating scales to determine the suitability of a dog for inclusion in this study, a holistic assessment approach was used. Holistic assessment allowed evaluators to determine an overall “impression of suitability” or match between the temperament and skills of the dog and his/her handler and the demands of working in a busy and public setting with multiple students. To increase the accuracy of our assessment, four evaluators (i.e., individuals who had prior experience working with and training dogs) were asked to assess each dog and handler. Dogs and handlers visited a series of stations set up to assess dog obedience/behaviour, handler management, approachability, and reaction to new stimuli. All four evaluators had to be in agreement to accept a dog and his/her handler for participation in the study. The following protocol was followed to ensure suitability and to ultimately certify dogs and handlers for participation in Experiment 2 of this study.

Prescreening

Potential volunteers were prescreened prior to having their dog assessed for suitability. Done via email or in a phone interview, potential volunteers were asked: What draws you to do this sort of volunteer work? Describe your dog and why you think your dog might be a good fit for this study.

Preliminary Assessment

**Handler Assessment Criteria:**
1. Suitability and interest in working with psycho-socially vulnerable university students.
2. Ability to manage dog in a public setting / Ability to use proactive management skills.
3. Ability to read dog’s cues around comfort, discomfort, stress, and excitement.
4. Ability to use open-ended prompts with students (e.g., “Tell me about your experience at the university so far”) versus trying to solve students’ problems.

**Dog Assessment Criteria:**
1. Observations of behaviour in busy public settings.
2. Startle reflex and response to new stimuli.
3. Approachability / Willingness to interaction with others.
4. Attachment to handler.
5. Biddability/Compliance to handler requests.
6. Inter-dog compatibility.

Secondary Assessment

Dogs and handlers who were recommended by evaluators for participation in the study were invited to a mock session in which the study intervention conditions were created, allowing evaluators to further assess dogs and handlers within a real-world and contextualized setting. This mock session consisted of volunteer university students interacting in small groups with dogs and their handlers. Holistic impressions were then compared across all four evaluators and dogs and handlers receiving unanimous favourable ratings were welcomed into the study.