Research

‘Watson’ the wellness dog: Impact of a wellness dog on emotional wellbeing in undergraduate paramedicine students

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Abstract

Introduction

University life can be daunting, especially for those transferring directly from high school. Previous research has found higher education students are at increased risk of mental health issues than the general population. Paramedic students have the usual concerns regarding study, in addition to the potential to be exposed to confronting emergency medical situations during clinical placements. The study aim was to examine whether the presence of a wellness dog had any impact on paramedicine undergraduate students self-reported emotional wellbeing.

Methods

A wellness dog (named ‘Watson’) was available on alternating weeks for 15 minutes at the beginning of lectures for three individual units. Each unit corresponded to a different year group of paramedic undergraduate students. A brief emotional experience scale was completed at the beginning of each lecture. Comparisons were made between Watson being present versus absent to gauge differences in students’ emotional wellness. Focus groups were run at the end of semester to further explore perceptions of Watson’s impact on emotional wellbeing.

Results

A total of 89 participants were included in the study. Participant emotional wellbeing was found to be higher on ‘Watson present’ weeks compared to ‘Watson absent’ weeks ($p < 0.001$). Focus group data strongly supported Watson’s presence in clinical and non-clinical classes, improving self-reported wellbeing and cohort connectivity.

Conclusion

The presence of a wellness dog appears to have a beneficial impact on undergraduate paramedic students’ emotional wellbeing. Further research is required to explore whether the presence of a wellness dog affects physiological indicators of stress, attrition rates and class attendance.

Keywords:

brief emotional experience scale; therapy animals; allied health personnel; students; universities; mental health

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Introduction

University study can be extremely daunting, particularly for students enrolling directly out of high school (1). Perceived support, as well as academic and social engagement are all clearly defined factors that promote and impact on student retention (2). Without these protective systems in place, undue stress associated with weekly study commitments, assignments and exams often overwhelm students, who are developing their own personal resilience and support mechanisms (2). Previous research suggests exposure to therapy dogs at university is a cost-effective and easily accessible method that can reduce stress, improve memory consolidation and even lead to greater satisfaction with course enjoyment among students (3-5). The present study represents a pilot assessment of the use of a wellness dog for use in an undergraduate paramedicine course. We set out to examine if the presence of the wellness dog would have an impact on student emotional wellbeing when in class.

Background

Reports of using animal-assisted therapy possibly date back to 1792 by the Quaker Society of Friends York Retreat in England (6) and is used to promote mental health and wellbeing in a wide range of environments (7). Examples include occupational therapy practices (6), improving wellbeing and morale for nursing home residents, interventions for behavioural and psychological effects of dementia, assisting with depression and anxiety for people with clinical depression, and for symptom amelioration for post-traumatic stress disorder in military veterans (8).

Students can find the university experience a formidable challenge, especially if entering directly from high school (1). It is well established in the literature that university students typically report lower emotional wellbeing compared with the general public (9-13). In a response to stress experienced by university students, many campuses have begun investigating the benefits of animal-assisted therapy (1,4,5,7,14-16).

Multiple studies report on improvements in self-perceived stress and wellbeing (5,14,15,17) or homesickness and satisfaction with life (1), all showing statistically significant differences in self-reported measures. A randomised controlled trial (RCT) found even a brief 7 to 10 minute interlude with a therapy dog in the university library significantly reduced anxiety and stress using the Positive and Negative Affect Schedule, compared to a group shown pictures of animals, and a control group with no intervention (18). Another RCT determined a 20-minute session with a therapy dog reduced perceived stress, decreased attachment to home, decreased dislike of university and improved a sense of belonging with the university compared to the control group who independently studied for 20 minutes instead (3). At a university in the United Kingdom, 131 students were exposed to a 15-minute session with a therapy dog. Students completed a state anxiety inventory (state and trait)

and blood pressure test both before and after the intervention. Findings included a significant drop in systolic blood pressure and reductions in state anxiety (7). One interesting Canadian study indicated that exposure to a therapy dog may buffer the stress response to future stressors (4).

Healthcare professionals (HCPs) experience higher levels of anxiety, stress and depression than the general public, which can impact on their health and work performance (18,19). A scoping review of paramedic students transitioning into the workforce identified common feelings of being 'out-of-depth', and suffering stress and anxiety (20). The need to mask emotions and learn to manage traumatic and distressing situations is especially challenging (20). Potentially, student paramedics can be exposed complex and chaotic situations during clinical placement and may be unprepared to manage their emotions. The benefits of animal-assisted therapy in this cohort are particularly valuable to explore.

The benefits of animal-assisted therapy have been investigated for other HCPs and HCP students. In one RCT, nursing students were allocated into one of four groups: dog therapy, mandala painting, music therapy and a control group (19). Psychological stress was measured using the State Anxiety Inventory (STAI), and the visual analogy scale (VASS). Physiological stress was measured using salivary biomarkers for cortisol and immunoglobulin A. Interventions were undertaken in everyday education, as well as just before exams. Anxiety and stress reduced for all intervention groups during everyday schooling. Self-reported stress did not reduce before exams, however, biomarkers all showed significantly reduced levels of stress (19). Similar studies have been conducted in practising HCPs and reported comparable findings (21,22). Both studies provided evidence that as little as 5 minutes interaction with a therapy dog produced statistically significant stress reductions (20,21).

No studies examine the impact animal-assisted therapy may have on paramedic students. These students not only have the usual hurdles to overcome with university transition, they also potentially have exposure to some confronting emergency medical situations. The purpose of this research was to examine whether the presence of a wellness dog, named 'Watson', had any impact on paramedicine students self-reported emotional wellbeing.

Methods

Participants

Prospective participants included on-campus students enrolled in the undergraduate Bachelor of Paramedical Science degree from Edith Cowan University in Perth, Western Australia. Students were required to be enrolled in one of three distinct units, each aligned with either the first (84 students), second (66 students) or third year (25 students) of study based on a standard course completion trajectory. Each unit had on-campus weekly lectures. Participants needed to have attended two

lectures with 'Watson present' and two lectures with 'Watson absent' to be included in the final analysis.

Intervention

Watson the wellness dog is a 1-year-old Labrador bred for service work by Career Dogs Australia. Career Dogs Australia supply high calibre working dogs to the service dog industry. Watson has been attending campus since he was 16 weeks old and is being trained specifically to work with paramedic students to reduce stress and anxiety during classes, practical workshops and assessments (Figure 1).

Watson attended classes every second week for 15 minutes; 10 minutes prior to the lecture commencement, exiting 5 minutes into the lecture. Consideration was given to students who may have a dog phobia, were scared of dogs or had allergies to dog dander. At no time were students forced to interact with Watson. All lecture rooms that were utilised were large, and Watson was on a lead under the control of the handler at all times. Should a student identify they were uncomfortable with Watson's presence, or that his presence exacerbated an allergy condition, they were advised to alert study investigators who would remove Watson to the exterior of the room. This was discussed with students during recruitment and outlined in the information letter. This did not happen throughout the study.

Measures

The Brief Emotional Experience Scale (BEES) (23) provides a succinct measure of emotional wellbeing. It comprises of three positive adjectives (happy, calm, confident) and three negative adjectives (worried, sad, afraid). Participants rate these adjectives on a scale of 1) not at all; 2) a little bit; 3) quite a bit; and 4) a lot. An overall emotional wellbeing score can be calculated by averaging across the positive adjectives to create a positive score, then averaging across the negative adjectives to create a negative score, then subtracting the negative score from the positive score to provide an overall score that can potentially range from +3 to -3, where a higher score indicates more positive emotional wellbeing (23). The BEES was completed by all students at beginning of each lecture over the course of the 13-week semester. The reliability and validity of the BEES survey

compared to similar emotional wellbeing instruments has been established in recent research (23).

Focus groups facilitated through video-conference were undertaken to further explore the effects of Watson's presence during lectures. Online videoconferencing was utilised due to COVID-19 restrictions. We used a phenomenological approach of commonality of lived experience. All three focus groups took place in the 3 weeks following semester completion, after exams were concluded. The questions guiding the semi-structured discussions are shown in Table 1.

Ethics

Ethics approval was granted by the Edith Cowan University Human Research Ethics Committee (ID:2020-01081).

Analysis

Quantitative data was analysed using paired samples t-tests to compare differences between mean BEES scores for 'Watson present' and 'Watson absent' study weeks. For each individual participant we created a 'Watson present' BEES score by averaging across the weeks when Watson was present, and a 'Watson absent' BEES score by averaging across weeks when Watson was absent. A coding protocol was utilised to identify key themes for qualitative data obtained from focus group discussions. Data was manually coded independently by two researchers (LH, MH). Inter-rater reliability was 100%.

Results

Quantitative data

A total of 175 students completed at least one BEES survey over the course of the semester. However, 86 cases were excluded as they did not attend enough classes to obtain two 'Watson present' and two 'Watson absent' scores. The exclusion amount was higher than anticipated due to disruption caused by the COVID-19 pandemic. There were no significant differences for age ($p=0.40$), gender ($p=0.45$), or year of study ($p=0.41$) between those that were and were not included in the final analysis suggesting missing data was missing completely at random. The

Figure 1. Watson the wellness dog

final sample comprised of 89 students (mean age = 22.9 years, 61% female). On average, these students attended 6.8 weeks (SD = 1.65) out of the 12 weeks examined.

Impact of Watson's presence on overall BEES scores

As shown in Figure 2a there appears a trend across weeks that when the wellness dog is present, there is an overall higher average level of wellbeing in the class. Participant emotional wellbeing (ie. BEES score) was found to be higher when Watson was present compared to when Watson was absent; paired $t(130) = 4.38$, $p < 0.001$, $d = 0.46$ (Figure 2b). The 'Watson present' score was larger than the 'Watson absent' score for 63% of participants.

Qualitative data

A total of 12 students participated in three focus groups following the end of semester. Six students were enrolled in a first-year unit, five in a second-year unit and one was enrolled in a third-year unit. Mean age of participants was 21.3 years, and seven of 12 participants were female.

All focus group participants were positive about Watson attending lectures and everyone believed he aided in alleviating stress and anxiety for students. Participants unanimously agreed Watson enhanced their sense of belongingness at university and/or in the course and wanted more involvement with him on campus. Table 1 lists the questions, main themes and some participant quotes.

Discussion

This study aimed to assess the extent exposure to a wellness dog during lectures would have on student paramedic emotional wellbeing. This was assessed utilising a brief emotional wellbeing survey at the beginning of each lecture. Participants' emotional wellbeing was higher when Watson was present in class compared to days when Watson was absent. Two-thirds

of participants' emotional wellbeing scores were larger during lectures when Watson was present. Additionally, at the end of semester two 2020, online focus groups were undertaken to further explore student opinions on Watson's presence on campus. The improved emotional wellness found in the longitudinal survey results were supported by participant feedback during focus group discussions, where students unanimously agreed that Watson was beneficial to their emotional wellbeing and enjoyed his attendance during lectures.

Previous research has determined psychological distress is elevated in university students comparative to the general population, with ~19% estimated to have a mental health problem and 67% reporting subsyndromal symptoms (13). Furthermore, HCPs have increased stress, anxiety and depression from the general populace (18,19). This indicates that paramedic students not only have the usual stressors of university life, but increased potential for mental health issues from their chosen profession as well. The presence of Watson improved the self-reported mood in the participating students, with participants reporting his presence during lectures is beneficial. Participants felt he made attending lectures more enjoyable although it has not been determined whether his presence actually improved attendance, which is deserving of further investigation. Many felt Watson acted as an 'ice-breaker' creating increased opportunities for communication between peers and lecturers, which in turn improved students' sense of belonging within the course and the wider university community. Multiple studies have found the beneficial influence of 10 to 15 minutes exposure to therapy animals on students' mental health (3,7,18,19,21,22), and one study suggested exposure to therapy animals may act as a buffer to future stressors (4). The long-term effects of exposure to wellness animals needs further research.

Fiocco and Hunse (4) found objective physiological measures of stress as determined by electrodermal activity were better able to detect stress in participants than self-reported measures

Figure 2. (a) Participant BEES score distributions across weeks of semester (b) Participant BEES scores when Watson was present versus absent

Table 1. Focus group questions, key themes and example quotations

Question	Theme	Relevant quotes
How did you enjoy the unit this semester?		<p>"I don't like loads of people and Watson made it easier and gave me a different focus"</p> <p>"... [Watson] really helped me a lot and on my journey, the week of the suicide topic was really hard as my friend had killed himself the week before"</p>
Was there any part of the unit this semester you found particularly stressful?	COVID-19 Going online Harder unit Tests and exams	<p>"Struggled at first due to semester 1 and covid [online learning], less of a connection particularly with first years, so it felt strange to be back on campus"</p> <p>"In the first weeks everyone seemed awkward – we hadn't really met because of COVID but stress reduced over the weeks"</p>
Did you feel like there was a strong sense of community amongst you and your peers this semester?	Friends from previous units and workshops	<p>"Not in the beginning but it improved over the weeks and in the end, we were bouncing ideas, sharing experiences...I felt I could talk to peers"</p> <p>"Everyone just clicks as you get further and further into the degree"</p>
Were there any factors this semester that aided in alleviating your study-related stress?	Watson Not having exams Being able to chat to lecturers Study groups	<p>"Going back to uni[versity] was really stressful. Watson was a stepping-stone for it being more comfortable"</p> <p>"Being able to talk to the lecturers"</p> <p>"Watson was a good help... good teaching, it sounds pretty cliché, but it does really help"</p>
Were there any factors this semester that enhanced your sense of University and/or course belongingness this semester?	Watson All in the same situation with COVID University events	<p>"Watson walking around campus was great, being able to stop and chat with [the owner] and others that were there"</p> <p>"Online is hard, it's harder to communicate online, it made me more appreciative of having opportunities in person, Watson really helped with the first stage"</p>
What did you think about Watson the wellness dog's attendance at lectures?	Calming Welcome distraction Helps connect everyone	<p>"Definitely something we have above other uni[versities]'... my family in the US and NZ can't believe it and follow him on Instagram"</p> <p>"It's so simple and helps us in ways we probably don't realise"</p> <p>"I think he has had a lot to do with my significant increase in grades this year, I feel calmer and want to come to class – I have a rise of 20% [in grades]"</p> <p>"I didn't really see him... I never really had him on our side of the room. He'd just walk around... I think I patted him like once... I had more interaction with him walking round campus than I did in class"</p>
Do you believe that Watson attendance at lectures aided in alleviating stress and anxiety for you this semester?	Yes x 12	<p>"I had debilitating anxiety and was seeing a psych and taking medication, COVID made it worse. I was so nervous coming to uni[versity] and found it really scary. Watson really really helped, especially when I was triggered by content or situations. Watson would come and chill with me. It was nice to see him, super comforting"</p> <p>"I used to be scared of dogs. I first met Watson in a workshop and was really wary, now I enjoy him being around"</p> <p>"It didn't change my attendance because I prefer in person lectures and I live on campus, so lectures are a four-minute walk. But just having Watson there made a big difference. Often you would walk in and just thinking about exams, assignments and your schedule, as soon as you even look at him you would just forget about everything and focus on him"</p> <p>"Dogs can read emotions, they know when you are having a bad day, they nudge you or lift your hand"</p>
Would you suggest Watson's ongoing involvement in University activities moving forward?	Yes x 12	<p>"Having a dedicated dog for our classes does make you feel like you belong – they do look after you"</p> <p>"Something we used to connect and talk about"</p> <p>"Watson became something we looked forward to"</p>
In what ways do you feel Watson would make the most impact for students?	On campus more In workshops Having 1:1 time	<p>"With units that have heavy hard content, having him in class will change everyone's mood and help a lot"</p> <p>"In clinical assessments he is very therapeutic, before exams and assessments as well as after would really help"</p> <p>"Having 6-day workshops is tough, having Watson around throughout the time helps us to connect, destress and clear our minds"</p> <p>"Seeing Watson online really helped as I got to see him when I wasn't on campus, the social media is a really good thing and helps us stay connected"</p> <p>"Dog might get sensory overload – so a different therapy dog on alternate days to Watson. Also, different dogs have different personalities and may be attracted to different students"</p> <p>"More 1-1 time with Watson rather than sharing him with the entire class"</p>

such as a questionnaire. Self-reported measures are subject to a number of factors including participants personality or response bias (4). Therefore, it may be possible that Watson's presence might additionally have a positive physiological impact – not just improved emotional wellbeing – which wasn't assessed in this study. Non-invasive objective measures of stress such as electrodermal activity, salivary cortisol or blood pressure would be useful to support self-reported wellness in future investigations. Another study concerning student nurses exposed to 15-minute sessions with a therapy dog during normal teaching periods, found biomarkers (cortisol and immunoglobulin A) indicated physiological stress reduction along with self-reported reductions in psychological stress using STAI and VASS scales (19). During exam periods, no psychological reduction in stress was reported, however physiological reductions in stress biomarkers were still detected (19).

Due to the nature of the participants chosen profession (ie. paramedicine), some exposure to dogs is expected. Watson provided students with limited previous exposure who were uncomfortable around dogs an opportunity to familiarise themselves with a placid animal. Any student who had a dog phobia was able to alert researchers and lecturers at any point in time, and Watson would have been removed from the room. While this never occurred, several students took this as an opportunity to become acquainted or desensitise themselves to dogs in a safe environment. One participant remarked they had been afraid of dogs and was initially wary of Watson, however, they now enjoy being around him (Table 1).

O'Keeffe (2) has identified enhancing a student's sense of belonging contributes to improving attrition rates in higher education institutions, and has advised attrition risk factors include physical and psychological health issues, ethnicity and socioeconomic status (2). Given the current COVID-19 climate where student retention rates are adversely impacting on university enrolments (24), it is important for universities and faculties to provide supportive and welcoming environments for students. Many participants in this study viewed Watson as the university's mascot and appreciated the effort the university was making to look after the mental health of their students. It was felt Watson should appear in more classes, in clinical workshops, before and after exams as well as being generally seen around campus. One student remarked there was a need for a second dog to give students more access while allowing each dog enough time out.

Watson's impact on class attendance and the long-term buffer effect of exposure to a wellness dog should be explored. To support participants self-reported emotional wellbeing responses, an objective measure of stress (such as salivary cortisol) could additionally be included in the analysis. Consideration is being given to including Watson in clinical teaching scenarios. During clinical simulations, Watson could be used as a patient's therapy/blind assistance dog, or Watson could be a 'regular' dog concerned for his owner's health.

Perhaps the sentiment that best sums up Watson's presence on campus is a remark made from a participant at the end of the first focus group. As the discussions were all online (where possible), the researchers organised for Watson to make a virtual appearance at the end of the session. When Watson appeared with his owner, the facilitator was busy putting Watson into view for all the participants to see. One student observed:

"I don't know if you noticed them [the other participants] as well, but as soon as he popped up, everyone smiled."

Limitations

This investigation is subject to certain limitations. Due to COVID-19 restrictions the research project was forcibly scaled down resulting in Watson attending less classes with more students (ie. lectures rather than tutorials) than originally intended, a less conducive environment for Watson to roam the class. This perhaps limited his exposure to students who chose to sit further from the front of the podium. Another limitation was the research was limited to within-subject comparisons, with no control group receiving zero Watson exposure during the semester. This meant only differences in weekly self-perceptions could be compared, as opposed to the impact of Watson's presence over the course of an entire semester. While outside the scope of the present study, this provides an avenue for future research.

A strength of this research, and a major point of difference with other similar investigations, is that Watson is staff owned and part of the university 'team' as opposed to an external agency being employed to bring dogs in. The familiarity of Watson being on campus since a young puppy and being a pillar of Edith Cowan University's community does not compare to an external agency providing a service with a range of dogs or even a regular one. Watson attends university graduations and other major events and is a well-known personality on campus, with a strong following on social media.

Conclusion

This small-scale investigation provides evidence that the presence of a wellness dog has a positive influence on undergraduate paramedic students self-reported wellbeing. As university students are at heightened risk of mental health issues compared to the general population, it is important this aspect of student life is supported by higher education institutions. The provision of a wellness dog contributes to students' overall improved mental health, aided communication and helped provide a sense of belonging within the university community.

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Competing interests

The authors declare no competing interests. Each author of this paper has completed the ICMJE conflict of interest statement.

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