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The effects of facility dogs on burnout, job-related well-being, and mental health in paediatric hospital professionals

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Abstract

Aims and objectives: To examine the effect of working with a facility dog on paediatric healthcare professionals’ work-related burnout, job perceptions and mental health.

Background: Due to their roles caring for ill children and distressed families, paediatric healthcare professionals often experience substantial depression and burnout. According to prior research, facility dogs in children’s hospitals may provide significant benefits to paediatric patients. However, their potential effects on healthcare professionals have been minimally explored.

Design: A cross-sectional design was used in adherence to the STROBE checklist.

Method: Among 130 participants, $n = 65$ paediatric healthcare professionals working with a facility dog were compared to $n = 65$ control participants matched on age, gender identity, job position category and pet ownership. Hierarchical regression assessed the effect of working with a facility dog on standardised self-report measures of work-related burnout, job perceptions and mental health.

Results: For work-related burnout, working with a facility dog was associated with higher perceived personal accomplishment, but had no effect on emotional exhaustion. With respect to job perceptions, working with a facility dog was associated with more positive job descriptions and lower intention to quit, but not with perceptions about co-workers or workplace social support. Finally, in relation to mental health, working with a facility dog was associated with more positive emotions, better perceived mental health and less depression, but had no effect on anxiety.

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CONFLICTS OF INTEREST

None.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

Conclusion: Findings suggest that facility dogs may be related to several benefits for healthcare professionals' work-related burnout, job perceptions and mental health, but that they do not influence all components of these areas.

Relevance to clinical practice: The present research functions to inform personnel in paediatric hospitals with existing facility dog programmes on the scope of their effects, in addition to shaping the expectations of hospitals considering the addition of a facility dog programme.

Keywords

animal-assisted therapy; burnout; dogs; hospital; hospitals; job satisfaction; mental health; nursing staff; paediatric; personnel turnover; professional

1 | INTRODUCTION

There is a growing practice of incorporating therapy dogs into daily patient care, especially in paediatric hospitals. According to prior research, therapy dogs may provide significant benefits to paediatric patients' physical and mental health, including reduced fear, anxiety and perceived pain (e.g. Crossman et al., 2020; Lindström Nilsson et al., 2020). Some hospitals feature full-time therapy dogs, termed 'facility dogs', that work with paediatric healthcare professionals in goal-directed practices to improve the patient experience (Schilp, 2019).

Facility dogs have become increasingly common to fill unique roles alongside professionals in careers of service for their communities and the public (e.g. social workers, school counsellors, forensic interviewers, healthcare professionals; Shilp, 2019). These dogs are distinguished from therapy dogs in that they undergo extensive and rigorous training similar to that of a service dog. However, unlike a service dog's training for disability-related tasks to assist a specific individual with whom they are paired, facility dogs are trained to assist a number of community members with a range of needs (i.e. the clients or patients of the professional they are working alongside; Walsh et al., 2018). Workplaces that incorporate facility dogs include hospitals, medical centres, educational settings, police stations and courthouses (e.g. Barnett, 2019; Shilp, 2019; Spruin et al., 2020). Depending on the profession in which they will be engaged, facility dogs might be taught skills such as remaining discrete in court, resting their chin on a person's lap or moving delicately around medical equipment. In children's hospitals with facility dog programmes, these dogs are regularly present to augment medical interventions and interactions by offering distraction, comfort and motivation to patients.

While the primary purpose of many hospital facility dog programmes is to benefit the patients, an equally important population in contact with facility dogs is the team of healthcare professionals they work alongside. Healthcare professionals play a crucial role in the human experience and have great potential to influence the lives of many. However, healthcare professionals often experience chronic stress that puts them at risk for work-related burnout and poor mental health (Al Sabei et al., 2020; Ortega-Campos et al., 2019; Tawfik et al., 2018). Work-related burnout may lead to adverse effects spanning multiple facets of intra- and interpersonal health and well-being. On a community level,

burnout can have detrimental effects on professional and hospital functioning, such as inadequate job-performance (Lee et al., 2019), increased errors with detriments to patients and additional costs on the hospital due to absenteeism and turnover (Buckley et al., 2020). The development of strategies for reducing burnout is vital to the optimisation of hospital financial viability and patient care quality (Wei et al., 2020). For paediatric healthcare professionals specifically, evidence is limited regarding interventions to effectively reduce burnout and improve well-being (Buckley et al., 2020).

Prior research aimed at reducing these negative mental health outcomes among healthcare professionals has found that social support may play a critical role in buffering the adverse effects of burnout (Velando-Soriano et al., 2020). However, meaningful social support is not limited to human sources as emerging human–animal interaction research suggests that social support from dogs may have similar benefits. As it is applied to human–animal interactions, the social support theory suggests that dogs may be a unique source of non-judgmental companionship (Beetz, 2017). Additionally, the presence of a dog may result in more frequent and positive social exchanges with other people in one’s environment (Wood et al., 2007). In fact, dogs have been found to assist in facilitating conversations and establishing interpersonal connections (Beetz, 2017; Wells, 2019). Studies have found that adults with pet dogs report greater well-being compared to people without pet dogs, including less loneliness (Carr et al., 2020; Powell et al., 2019) and lower risk for depression after a social loss (Carr et al., 2020). There is also evidence that the social support provided by dogs may function as a mechanism for buffering stress (Beetz, 2017; Ein et al., 2018). In one pioneering study, female participants undergoing a stressful task showed less stress reactivity with their pet dog present than with a close friend present (Allen et al., 1991). This set the stage for continued research on the stress-reducing effects of social support from dogs, which has found evidence that the presence of an unfamiliar therapy dog may also confer stress-buffering benefits (e.g. S. B. Barker et al., 2010; Polheber & Matchock, 2014).

In addition to their general stress-reducing effects, dogs may also affect stress and well-being in the workplace. In organisations that allow pet dogs, research has found that dog presence is associated with lower physiological and perceived stress at work (Barker et al., 2012; Hall et al., 2017). Dogs in the workplace have also been related to more positive perceptions of the work environment, increased communication among co-workers (Barker et al., 2012; Hall et al., 2017) and improved morale (Foreman et al., 2017). These observations of the benefits of dogs in the workplace have also been investigated specifically within the healthcare setting. A survey conducted before and after the implementation of a therapy dog visitation programme indicated that healthcare professionals reported a more positive work environment and improved clinic climate after programme implementation (Yordy et al., 2020). Further, a recent randomised trial found that emergency medicine healthcare professionals experienced lower self-reported stress after a 5-min break with a therapy dog compared with colouring (Kline et al., 2020). In an earlier study, it was demonstrated that just 5 min with a therapy dog could produce the same level of stress reduction among healthcare professionals as 20 min of quiet rest (Barker et al., 2005).

Despite promising initial findings on therapy dog interactions for reducing momentary stress, to our knowledge, there are no published empirical studies on the broader effects

of full-time facility dogs working with paediatric healthcare professionals. Thus, to begin filling this gap, the present study seeks to quantify the effects of working with a facility dog on several key areas of paediatric hospital professional functioning. We hypothesised that paediatric healthcare professionals working with facility dogs would report less work-related burnout, more positive job perceptions and better mental health than matched control participants working without facility dogs.

2 | METHOD

2.1 | Participants

The study sample included $N = 130$ paediatric healthcare professionals working in children's hospitals across the United States. Participants either worked directly with a facility dog (treatment group; $n = 65$) or did not work with a facility dog (control group; $n = 65$). Inclusion criteria for all participants included over 18 years of age and currently employed in a paediatric hospital. For the facility dog group, inclusion criteria consisted of working with a facility dog for at least 6 months prior to study participation. Participants were paired across groups based on four key matching characteristics. These characteristics included age (± 10 years), gender identity, pet ownership and job title category. Initial matching efforts also included number of years working in the profession (± 5 years), but this was later dropped as a matching criteria to recruit the final set of 4 control participants (thus, $n = 122$ or 94% of participants were matched on number of years working in the job position).

Sample demographics are reported in Table 1. The vast majority of participants identified as female (92%) and white (95%). The mean age was 37 years ($SD = 10.4$), and the mean time in present job position was 5 years and 8 months ($SD = 5$ years and 7 months). Ten position categories were used to describe participants' job titles, with most participants working in child-life (35%) or administration/managerial positions (38%), in addition to nurses, social workers, chaplains, physicians, therapists, psychologists, nursing administration and child-life-administration. The majority of participants were married or living with a significant other (64%), had children (55%) and had one or more pet dogs at home (65%).

All facility dogs were raised, trained and placed by the organisation Canine Assistants, a nonprofit service and facility dog provider located in Alpharetta, Georgia. Dogs were bred on-site at Canine Assistants and included Golden Retrievers, Labrador Retrievers, Goldendoodles, and mixes of the three. After an average of 18 months spent learning their specific skill-sets, facility dogs were eligible to be partnered with paediatric healthcare professionals. At least 6 months prior to study participation, paediatric healthcare professionals who had applied and been approved for the Canine Assistants programme travelled to the organisation's campus for a two-week partnering session. During these partnering sessions, healthcare professionals were matched with a facility dog, guided through exercises in bond-building and taught how best to work with their facility dogs in healthcare settings.

2.2 | Procedure

The research protocol was approved by the Purdue University Human Research Protection Program Institutional Review Board (IRB Protocol 1607017967) and by the Purdue Animal Care and Use Committee (PACUC Protocol 1702001541). The present study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement and checklist (von Elm et al., 2008; Supporting Information).

Potential participants were recruited with an initial mailed study packet that contained information about the study and \$10 as remuneration for reviewing the study details. A member of the research team then called potential participants to answer any questions about the study and obtain voluntary verbal informed consent. Consented participants then received an email with a link to complete an online survey, in which they verified their informed consent electronically prior to the first survey item. Participants were informed that their individual answers were confidential and that their responses would not be shared with Canine Assistants, their employers or anyone outside of the research team.

Participant recruitment was conducted in three phases. During phase 1, individuals were recruited directly from the provider Canine Assistants, including those who were previously placed with a facility dog or on the waitlist to receive a facility dog. In phase 2, participants with a facility dog were asked to recommend people working *without* a facility dog who were otherwise similar to themselves on the research team's key matching characteristics. During phase 3 of recruitment, a list was compiled with the characteristics required to complete matching for any remaining participants in the treatment group. Information was provided in ranges determined to sufficiently prevent the identification of any participants. This list and the study flyer were distributed widely to prior participants, affiliates of the research team and facility dog provider, and attendees of a national conference for healthcare professionals with facility dogs.

As part of a larger two-week study period (involving daily ecological momentary assessment), participants were asked to fill out an online survey with the opportunity for compensation of \$45. In total, 219 people (82%) consented to participate in the study. Of those who consented, 147 (67%) were eligible to participate. Of those who were eligible, 139 (95%) completed the study and 130 (88%) could be matched with another participant across groups. Data were collected between February 2018–March 2019.

2.3 | Measures

Participants completed the online survey via the website Qualtrics. Survey items included demographic characteristics (Table 1), pet and facility dog (when applicable) descriptor items, open-ended questions, and standardised measures of work-related burnout, job perceptions and mental health. Number of items, scoring and Cronbach's α (i.e. reliability and internal consistency within the measure) are listed for each measure in Table 2.

2.3.1 | Work-related burnout

Maslach burnout inventory (MBI): emotional exhaustion: On the MBI subscale for emotional exhaustion (Maslach et al., 1997), each item asks participants to indicate how

often they experience the given statement on a scale of zero (never) to six (every day). Items are reverse scored such that higher scores indicate a better outcome (i.e. less emotional exhaustion). Both subscales of the MBI have strong psychometric properties and have been widely used in healthcare professions.

Maslach burnout inventory (MBI): personal accomplishment: The MBI subscale for personal accomplishment (Maslach et al., 1997) also asks participants to indicate how often they experience the given statement for each item, using the same scale of zero (never) to six (every day). Higher scores indicate greater perceptions of personal accomplishment.

2.3.2 | Job perceptions

Job-related depression–enthusiasm scale (JRDES): The JRDES (Warr, 1990) is a theoretically based and validated measure (Laguna et al., 2017), designed to assess mental well-being directly related to the participant’s job. Participants are asked to rate from 1 (never)–5 (all of the time), for the past few weeks, how much of the time their job has made them feel each of the listed emotions. Higher scores indicate better outcomes (i.e. lower job-related depression and higher job-related enthusiasm).

Job descriptive index (JDI): people on your present job.: The JDI was used to assess perceived interpersonal quality of the work environment via the People on Your Present Job subscale (Smith et al., 1969). Each item asks participants to indicate whether a given adjective describes the people they work with. Response options are ‘Yes’, ‘No’ and ‘?’, with ‘?’ always being scored as one. In positively worded items, ‘Yes’ is scored as three and ‘No’ is scored as zero, whereas in negatively worded items, ‘Yes’ is scored as zero and ‘No’ is scored as three. Higher scores indicate more positive descriptions of people at the job.

Job in general (JIG): Designed to accompany subscales of the JDI, the Job in General (JIG) scale is a global measure of how people feel about their jobs the majority of the time (Ironson et al., 1989). Each item asks participants to indicate whether a given adjective describes their job. The JIG uses the same response options and is scored in the same manner as the JDI subscale above. Higher scores indicate more positive global descriptions of one’s job.

Workplace social support: Perceived social support at work was assessed as an average of co-worker support, supervisor support and organisational support (3 items each; Yoon & Thye, 2000). Participants are asked to select how much they agree or disagree with statements ranging from 1 (strongly disagree)–5 (strongly agree). Higher average scores indicate greater perceived support.

Anticipated turnover scale (ATS): The ATS quantifies a person’s intention to voluntarily terminate their current employment (Mowday et al., 1984). This scale has been used extensively with healthcare professionals (Kim & Kao, 2014), and it has good validity and reliability. Each item provides the participant with a statement about the possibility of quitting their current position and asks them to indicate how much they agree with the statement. Higher scores indicate less possibility of quitting one’s job position.

Turnover intention scale (TIS-6): The TIS-6 is a concise measure of participants' plans to stay in their current job position (Bothma & Roodt, 2013). Each item asks the participant to indicate to which degree they experience the listed thought or feeling about staying or leaving their job. Higher scores indicate greater intention to leave.

2.3.3 | Mental health

PROMIS short-form v1.0: depression and anxiety: The Patient-Reported Outcomes Measurement Information System (PROMIS) was developed by the National Institute of Health (NIH) as a precise and accurate measurement of patient-reported health status for physical, mental and social well-being to be compared across studies (Cella et al., 2010). PROMIS measures in the present study included Depression v1.0 adult short-form (8a) and Anxiety v1.0 adult short-form (8a) administered in English via unassisted online self-report. Items in both instruments ask the participant to rate how often they experienced the listed feeling in the prior seven days, with response options on a scale of one (never) to five (always). Raw scores were converted to measure-specific T-scores using the conversion tables published in the PROMIS Adult Profile Scoring Manual with a population mean of 50 and standard deviation of 10. Higher scores indicate more anxiety or worse depression, respectively. Both short-form instruments were found to have superior reliability and validity (Schalet et al., 2016).

PROMIS global health v1.2: mental health: Another PROMIS measure, the PROMIS Scale v1.2-Global Mental Health adult short-form (2a), was included to assess participants' overall perceptions of their mental health. This scale first asks participants to rate their general mental health, mood and ability to think, followed by their general satisfaction with social activities and relationships. Response option categories range from 1 (excellent)–5 (poor). Raw scores were converted to measure-specific T-scores using the conversion tables published in the PROMIS Global Health Scoring Manual. Higher scores represent worse mental and social health. This measure of mental health has been found to have good validity and reliability (Hays et al., 2017).

Scale of positive and negative experience (SPANE): This validated scale was used to assess a participant's socio-emotional well-being and affect range, with subscales for positive and negative feelings (Diener et al., 2010). Items ask the participant to rate how often they experienced the listed feeling over the past 4-week period, on a scale of one (very rarely or never) to five (very often or always). Higher scores indicate greater valence of emotion (i.e. more positive or more negative). Affect balance score was calculated by subtracting negative affect score from the positive affect score.

2.4 | Data analysis

A power calculation was not conducted a priori due to the convenience sampling required of this study, wherein there was a fixed maximum sample size in the study population (i.e. working with one facility dog provider). Thus, we recruited as many participants as possible until the population available had been exhausted. To determine post hoc power, we conducted a power analysis to detect a medium effect size ($d = 0.5$), which yielded a sample size of $N = 120$ across two groups ($n = 60$ per group). Preliminary analyses were

conducted to test for demographic differences between groups using *t* tests for continuous variables and chi-squared for categorical variables. Due to the racial and ethnic homogeneity of the sample, comparisons could not be made between specific racial and ethnic categories. However, based on the role that minority status may play in mental health and job-related well-being (Boateng et al., 2019), this variable was not excluded and was recoded into a dichotomous variable for minority (Hispanic or Latino, Black or African American, Asian Indian, American Indian or Alaska Native, when selected in any combination with or without the category White) or non-minority (White, when selected as the only racial/ethnic category) status. Relationship status was similarly recoded into a dichotomous variable for single (single, never married/divorced/separated/widowed) or in a relationship (married/living with my partner or significant other, not married).

A series of hierarchical regression models were conducted to determine the effect of working with a facility dog on work-related burnout, job perceptions and mental health. Models were conducted with all potential explanatory covariates included to account for as much explained variance in mental health-and job-related outcomes as possible. Continuous demographic covariates included age, number of children and time in job position. Dichotomous (1/0) demographic covariates included gender identity, relationship status, pet dog ownership and minority racial/ethnic status. All demographic variables were entered in the first step of models, while study group (facility dog or control group) was entered as a second step. Dependent variables were survey measure scores calculated at the scale and sub-scale levels.

From each model, R^2 was used to estimate the proportion of outcome variance explained by the included independent variables. Thus, the R^2 change between the first and second model for each outcome was used to estimate the proportion of variance uniquely explained by the addition of the facility dog, over and above what could be explained by demographic variables. Subsequent F-statistics and p-values, from the corresponding F tests for each model, were used to determine whether R^2 values for proportion of explained variance were significant. If the F-change was significant, the addition of the facility dog in the second model significantly improved the proportion of variance explained for that outcome. Taken together, where the outcome (i.e. measures of work-related burnout, job perceptions, mental health) was different between the control group and the facility dog group, F-statistics were used to indicate what that difference was related to. The first model indicated how much of the outcome difference was related to participant demographics. The second model indicated, beyond what was related to demographics, how much of the outcome difference was related to the facility dog.

Effect sizes were calculated as Cohen's *d* values, with the cut-off values of 0.2 for small, 0.5 for medium and 0.8 for large effects (Cohen, 1992). Analyses were conducted using IBM SPSS Statistics version 26.

3 | RESULTS

3.1 | Preliminary analyses

Group-specific descriptive statistics for demographic covariates are shown in Table 1. Due to participant matching, there were no significant differences in age, gender identity, pet ownership status and job position category across groups. Although a small portion of the sample ($n = 8$) had not been matched for time in job position, the majority of the sample (94%) was matched on this characteristic and a t test showed no significant difference between groups. There were no significant differences between groups in the unmatched characteristics of race/ethnicity, relationship status, children or dog-specific pet ownership. Correlations between covariates were found to be primarily weak ($r = .30$), with a moderate correlation between age and time in job position ($r = .60$). Analyses were conducted to test the assumptions of normality, linearity, multicollinearity and homoscedasticity for each model. All assumptions were satisfied, except for the assumption of normality for the JDI and JIG measures. Because the present sample size provided adequate robustness to the test (Schmidt & Finan, 2018), authors proceeded without meeting the assumption of normality for JDI and JIG measures. Implications of this are further discussed in the limitations. Group mean comparisons and Cohen's d effect sizes for each measure are shown in Table 2. Hierarchical regression model results are shown in Table 3.

3.2 | Work-related burnout

3.2.1 | Maslach Burnout Inventory: Emotional exhaustion—In regression model 1, demographic characteristics explained a significant amount of variance in emotional exhaustion ($p < .001$). The addition of facility dog presence in model 2 made no significant contribution ($R^2 = 0.00$). There was no significant association between working with a facility dog and emotional exhaustion. Facility dog presence or absence was only related to a 0.05 standard deviation difference in model adjusted means, and the effect size of this difference was minimal ($\beta = 0.05$, $p = .513$, $d = 0.08$).

3.2.2 | Maslach Burnout Inventory: Personal accomplishment—The variance in personal accomplishment was not significantly explained by demographic characteristics in regression model 1 ($p = .955$). After the addition of facility dog presence in model 2, there was a significant increase in explained variance with a 16% change in the coefficient of determination ($R^2 = 0.16$). Results showed a significant association between facility dog presence and personal accomplishment, such that participants working with a facility dog reported greater perceived accomplishment at work than participants in the control group. Compared to the control group, participants with a facility dog scored 0.42 standard deviations higher for personal accomplishment, with a large effect size ($\beta = 0.42$, $p < .001$, $d = 0.91$).

3.3 | Job perceptions

3.3.1 | Job-Related Depression–Enthusiasm Scale (JRDES)—Demographic characteristics in model 1 significantly explained a portion of the variance in job-related depression and enthusiasm ($p = .016$). Explained variance was increased by the addition of facility dog presence in model 2 with a 6% change in the coefficient of determination (R^2

= 0.06). Thus, working with a facility dog was a significant predictor of greater job-related enthusiasm and less job-related depression, such that participants with a facility dog scored 0.24 standard deviations higher than the control group with a moderate effect size ($\beta = 0.24$, $p = .005$, $d = 0.48$).

3.3.2 | Job Descriptive Index (JDI): People on your present job—Variance in the JDI subscale for perceptions of people at participants' jobs was not explained by demographic characteristics in model 1 ($p = .188$) and the addition of facility dog presence in model 2 did not show a significant change ($R^2 = 0.01$). There was no significant association between working with a facility dog and perceptions about people at work. Comparing facility dog and control groups, the model adjusted mean difference was only 0.12 standard deviations and the effect size was small ($\beta = 0.12$, $p = .197$, $d = 0.22$).

3.3.3 | Job in General (JIG)—Demographic characteristics in model 1 significantly explained a portion of the variance in the JIG scale for participants' perceptions of their jobs overall ($p = .032$). Explained variance was increased by the addition of facility dog presence in model 2 with a 6% change in the coefficient of determination ($R^2 = 0.06$). Thus, working with a facility dog was a significant predictor of better perceptions about the job overall, with a group difference of 0.25 standard deviations and a large effect size ($\beta = 0.25$, $p = .004$, $d = 0.57$).

3.3.4 | Workplace Social Support—Variance in participants' perceived social support at work was not explained by demographic characteristics in model 1 ($p = .057$), and the addition of facility dog presence in model 2 did not show a significant change ($R^2 = 0.02$). There was no significant association between working with a facility dog and perceived social support at work. Although effect size was moderate, the model adjusted mean difference was only 0.16 standard deviations ($\beta = 0.16$, $p = .074$, $d = 0.31$).

3.3.5 | Anticipated Turnover Scale (ATS)—The variance in participants' plans to leave their job was not significantly explained by demographic characteristics in regression model 1 ($p = .232$). After the addition of facility dog presence in model 2, there was a significant increase in explained variance with a 6% change in the coefficient of determination ($R^2 = 0.06$). Results showed a significant association between facility dog presence and anticipated turnover, such that participants working with a facility dog reported less anticipation of leaving their jobs than participants in the control group. With a group difference of 0.24 standard deviations, there was a moderate effect size ($\beta = 0.24$, $p = .006$, $d = 0.47$).

3.3.6 | Turnover Intention Scale (TIS-6)—The variance in participants' intentions to quit their jobs was not significantly explained by demographic characteristics in regression model 1 ($p = .131$). After the addition of facility dog presence in model 2, there was a significant increase in explained variance with a 7% change in the coefficient of determination ($R^2 = 0.07$). Results showed a significant association between facility dog presence and turnover intention, such that participants working with a facility dog reported less intentions to quit their jobs than participants in the control group. Compared to the

control group, participants with a facility dog scored 0.27 standard deviations lower for turnover intention, with a large effect size ($\beta = -0.27$, $p = .002$, $d = -0.50$).

3.4 | Mental health

3.4.1 | PROMIS: Depression—Demographic characteristics in model 1 significantly explained a portion of the variance in depression ($p = .051$). Explained variance was increased by the addition of facility dog presence in model 2 with a 4% change in the coefficient of determination ($R^2 = 0.04$). Thus, working with a facility dog was a significant predictor of less depression, such that participants with a facility dog scored 0.20 standard deviations lower than the control group with a moderate effect size ($\beta = -0.20$, $p = .025$, $d = -0.40$).

3.4.2 | PROMIS: Anxiety—In regression model 1, demographic characteristics explained a significant amount of variance in anxiety ($p = .014$). The addition of facility dog presence in model 2 made no significant contribution ($R^2 = 0.01$). There was no significant association between working with a facility dog and less anxiety. Comparing the facility dog and control groups, the model adjusted mean difference was only 0.12 standard deviations and the effect size was small ($\beta = -0.12$, $p = .186$, $d = -0.20$).

3.4.3 | PROMIS: Mental health—Demographic characteristics in model 1 significantly explained a portion of the variance in overall mental health ($p = .011$). Explained variance was increased by the addition of facility dog presence in model two with a 4% change in the coefficient of determination ($R^2 = 0.04$). Working with a facility dog was a significant predictor of better overall mental health, with a group difference of 0.21 standard deviations and a moderate effect size ($\beta = -0.21$, $p = .017$, $d = -0.47$).

3.4.4 | Scale of Positive and Negative Experience (SPANE): Positive affect—Demographic characteristics in model 1 significantly explained a portion of the variance in positive affect ($p = .001$). Explained variance was increased by the addition of facility dog presence in model 2 with a 8% change in the coefficient of determination ($R^2 = 0.08$). Thus, working with a facility dog was a significant predictor of more positive affect. Facility dog presence was associated with greater positive affect, with a difference of 0.29 standard deviations and a large effect size ($\beta = 0.29$, $p < .001$, $d = 0.62$).

3.4.5 | Scale of Positive and Negative Experience (SPANE): Negative affect—Demographic characteristics in model 1 significantly explained a portion of the variance in negative affect as well ($p = .001$). Explained variance was increased by the addition of facility dog presence in model 2 with a 3% change in the coefficient of determination ($R^2 = 0.03$). Thus, working with a facility dog was also a significant predictor of less negative affect, with a group difference of 0.18 standard deviations and a moderate effect size ($\beta = -0.18$, $p = .031$, $d = -0.30$).

3.4.6 | Scale of Positive and Negative Experience (SPANE): Balanced affect—On the final measure, demographic characteristics in model 1 significantly explained a portion of the variance in affect balance ($p < .001$). Explained variance was increased by

the addition of facility dog presence in model 2 with a 7% change in the coefficient of determination ($R^2 = 0.07$). Working with a facility dog was a significant predictor of better affect balance, such that groups differed by 0.27 standard deviations with a large effect size ($\beta = 0.27, p = .001, d = 0.53$).

4 | DISCUSSION

The goal of the present study was to evaluate the effects of facility dogs on paediatric healthcare professionals' work-related burnout, job perceptions and mental health. A cross-sectional design compared a treatment group who worked with facility dogs to a matched control group using standardised self-report measures. Findings were mixed, with specific areas showing significant relationships with working with a facility dog and others showing no differences between groups. The nuanced variances within these study findings indicate facility dogs may have differing effects on specific aspects of job-related and overall well-being.

Within the framework of work-related burnout, working with a facility dog was associated with greater feelings of personal accomplishment at work. This is consistent with quotes from facility dog handlers describing how rewarding it can be to see patients and families benefitting from the facility dog (Barnett, 2019). Further, anecdotes regarding quicker rapport building with patients when working with a facility dog (Barnett, 2019) imply that the facility dog might allow for better connections and communications with paediatric patients. Many of the participants in the present study were child-life specialists whose job is to help hospitalised children cope with healthcare-related stress, pain and fear in developmentally appropriate ways. It seems likely that faster rapport and better connections with patients, as catalysed by the facility dog, would augment success in the role of a child-life specialist. This is consistent with findings that, after visiting with a therapy dog, paediatric patients described healthcare professionals as friendly and as making their hospital stays easier (Lindström Nilsson et al., 2020). On the other hand, there was no significant relationship between working with a facility dog and burnout in terms of perceived emotional exhaustion. Paediatric healthcare professionals working with facility dogs may still be seeing the same number of patients on a daily basis, if not more (Barnett, 2019). Therefore, it may be possible that these individuals experience just as much emotional exhaustion as their counterparts without facility dogs.

With respect to job perceptions, working with a facility dog was significantly associated with more positive descriptions of one's job, greater job-related enthusiasm and less job-related depression. Working with a facility dog was also associated with less intention to leave one's job and greater plans to stay in one's current position. This replicates similar findings from dogs in the workplace that suggest higher work-related morale (Foreman et al., 2017), better mood at work (Hall et al., 2017), and greater job satisfaction (Barker et al., 2012). Further, these findings may also be related to observations of less absenteeism and fewer sick days in workplaces where dogs are permitted (Wilkin et al., 2016). One explanation for these effects could be connected to lower stress levels at work when a dog is present (Barker et al., 2012). Specific to facility dogs, anecdotes from paediatric healthcare professionals have described feeling less anxious and being in a better mood when the

facility dog is at work as well as feeling comforted by the facility dog's presence (Barnett, 2019). Finally, as paediatric healthcare professionals working with a facility dog were found to feel more accomplished at work, there could be connections between greater enthusiasm about going to work and lower chances of wanting to leave a job in which they are feeling accomplished.

There were no significant associations between working with a facility dog and reported feelings about co-workers or perceived support at work. This suggests that healthcare professionals with a facility dog do not feel any more positive about their co-workers than those who do not work with a facility dog. This finding is partially misaligned with the social support theory of human–animal interaction (Beetz, 2017; Wells, 2019), as perceived workplace support could have been an indicator for facility dogs acting as social catalysts between co-workers. This is also a stark contrast from several studies on dogs in the workplace that describe improved communication (Barker et al., 2012), greater social cohesion and more positive interactions among co-workers in workplaces where dogs are present (Foreman et al., 2017). Within the healthcare setting, anecdotal reports on facility dogs have also described positive culture changes within the unit (Barnett, 2019) when dogs have been present. Although the present findings do not suggest that the social support theory is in action through improved co-worker relations or hospital atmosphere, they do not rule out the possibility that the social support theory might be occurring through facility dogs providing direct companionship (Beetz, 2017; Wells, 2019).

Finally, working with a facility dog was significantly associated with better self-reported mental health in terms of more positive affect regarding recent experiences, less depression, less negative affect and better perceptions of mental health. This suggests that paediatric healthcare professionals working with a facility dog may have better mental health than paediatric healthcare professionals without a facility dog in the form of feeling more positively overall. These findings are aligned with prior research, suggesting that short interactions with a therapy dog can result in improved mood (Grajfoner et al., 2017) and fewer depressive symptoms (Souter & Miller, 2007). However, there was no significant relationship between working with a facility dog and self-reported anxiety. Based on extensive literature describing stress reductions observed from human–dog interactions (Barker et al., 2010; Ein et al., 2018; Polheber & Matchock, 2014), this was an unexpected null finding. This could be in part due to the nature of the measure, as the PROMIS Anxiety scale is more commonly used to measure clinical levels of anxiety in response to targeted interventions. Because participants in the present sample did not score in the range of clinical anxiety, it is possible that the selected measure was not sensitive to specific sub-clinical changes within the sample. Further, this null finding could be related to some of the challenges described by paediatric healthcare professionals working with a facility dog. For example, one recurring theme in quotes about working with a facility dog is that the dog is always in high demand around the hospital. In response, the healthcare professional working with the facility dog must learn to manage frequently being stopped in the hallways and receiving more requests for the dog's presence than can be accommodated (Barnett, 2019). Anecdotes such as these suggest that working with a facility dog may add to the already high responsibilities of paediatric healthcare professionals, which might counteract any anxiety-reducing effects of human–animal interaction with the anxiety of higher work

demands (e.g. Al Sabei et al., 2020; Buckley et al., 2020). It may be informative, in future research, to investigate sources of anxiety and make more specific distinctions between workplace anxiety and general anxiety.

4.1 | Future directions

Based on preliminary evidence for higher patient ratings of nursing communication after therapy dog interaction (Harper et al., 2015), it is speculated that the presence of a facility dog may also allow for greater rapport and improved interpersonal relationships with patients and their families. Evidence for this might suggest that the mechanism of social support in working with a facility dog takes place not through changes to pre-existing relationships with co-workers, but through new connections with patients and families. Thus, one future step in exploring the effects of facility dogs on healthcare professionals is to assess healthcare professionals', patients' and families' perceptions of provider–patient relationships. An assessment of provider–patient relationships may also reveal more about the difference in healthcare professionals' perceived accomplishment at work. As positive correlations have been found between paediatric nurses' perceptions of personal accomplishment and families' satisfaction with patient care (Buckley et al., 2020), a potential for better connections with patients and families when working with a facility dog may play a role in greater feelings of accomplishment.

4.2 | Limitations

The present study provides early empirical evidence for the effects of facility dogs on paediatric healthcare professionals, but it is not without limitations that should be considered in future research. Data-specific limitations include low internal consistency (Cronbach's $\alpha = 0.33$) for SPANE Balanced Affect and the unsatisfied assumption of normality for JDI and JIG scales. The low internal consistency suggests that the SPANE may not have accurately measured affect balance in the sample, which could have created inaccurate regression estimates for this measure. The unsatisfied assumption of normality in small samples can bias estimates of standard error and heighten the risk of inflated significance in the results. However, in adequately sized samples such as this, the risk of biased estimates in outcome transformations may be greater than risks associated with violations of the normality assumption (Schmidt & Finan, 2018). Thus, it is unlikely that the unsatisfied assumption of normality for JDI and JIG scales influenced their interpretations, but the possibility cannot be entirely ruled out. Limitations in the study design include the lack of randomised group assignment, which prevents results from being interpreted with any determination of causality. Additionally, there is likely to be participant self-selection bias within the sample. By recruiting from only one facility dog provider, training methods and organisational requirements are held constant within the sample, but generalisability is subsequently restricted. Generalisability is also limited by the inclusion of personnel in *paediatric* hospitals only, as there may be differing effects in adult hospitals or other healthcare settings. As most participants with facility dogs and control participants in the sample worked in separate hospitals (or at least in separate units), it was not possible to determine whether positive effects are related to the facility dogs themselves, or to broader hospital differences. For example, it is possible that some common characteristics of hospitals that house facility dog programmes may be contributing to lower work-related

burnout. Thus, it may be beneficial in future research to assess additional hospital-related measures such as absenteeism and staff performance as well as including a greater number of hospitals to investigate whether the present findings may be replicated or supported. Finally, changes over time cannot be determined from a cross-sectional design. Future longitudinal research is recommended to assess within-participant changes before and after being partnered with a facility dog.

5 | CONCLUSION

In conclusion, findings from this project suggest the potential for facility dogs in paediatric hospitals to benefit healthcare professionals. This study found that, compared to the control group, those working with a facility dog reported less work-related burnout, more positive job perceptions and better mental health. Specifically, benefits were observed in the form of greater perceived accomplishment, more positive feelings about work, less depression and more positive affect overall. This provides information on the possible benefits of facility dog programmes, such as staff-specific facility dog interventions for job-related well-being. The results of this project also indicated that working with a facility dog had no significant effects on emotional exhaustion, feelings about co-workers, perceived workplace support and anxiety. Areas without significant group differences provide information on the boundaries of facility dog influences.

6 | RELEVANCE TO CLINICAL PRACTICE

Results indicated that working with a facility dog had significant positive effects on burnout, job-related perceptions and mental health among paediatric healthcare professionals. This suggests potential value in facility dog interventions to improve staff job-related and personal well-being. Additionally, non-significant findings suggest the specificity of facility dog influences. These findings may inform hospitals with existing facility dog programmes on how they can maximise the applicability and reach of their programmes. Results may also inform hospitals considering the possibility of adding a facility dog programme on what to expect, such that the anticipated role of a facility dog remains proportionate to the empirical evidence. Thus, observed effects from this study have the potential to benefit the healthcare industry through enhancing healthcare professionals' well-being while also setting realistic expectations for both existing and future facility dog programmes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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What does this paper contribute to the wider global clinical community?

- According to prior research, facility dogs, or specially trained full-time therapy dogs, can benefit hospitalised children and their families. The present research suggests that facility dogs are also benefitting the healthcare professionals they work alongside.
- Compared to a matched control group, paediatric healthcare professionals working with a facility dog reported less work-related burnout, better job-perceptions and better functioning in most areas of mental health.
- Results provide preliminary evidence of an intervention that may enhance healthcare professionals' well-being while also setting realistic expectations for both existing and future facility dog programmes.

Sample characteristics

TABLE 1

	Control (n = 65)		Facility Dog (n = 65)		Group Difference	
	M	SD	M	SD	t	p
Age	37.53	8.97	37.48	10.44	-	-
Time in job position (years)	4.25	4.45	5.08	4.76	-1.017	.311
	n	%	n	%	χ^2	p
Gender identity						
Male	5	7.69	5	7.69	-	-
Female	60	92.31	60	92.31		
Relationship status						
Married	31	47.69	41	63.07	8.013	.155
Living with partner	7	10.77	4	6.15		
Single, never married	17	26.15	18	27.69		
Separated	2	3.08	0	0.00		
Divorced	7	10.77	2	3.08		
Widowed	1	1.54	0	0.00		
Race/Ethnicity						
White	59	90.77	64	98.46	7.203	.206
Hispanic or Latino	2	3.08	0	0.00		
Black or African American	2	3.08	0	0.00		
Asian Indian	2	3.08	0	0.00		
American Indian or Alaska Native	0	0.00	1	1.54		
Children						
Yes	29	44.62	29	44.62	-	-
No	36	55.38	36	55.38		
Pet dog						
Yes	42	64.62	43	66.15	0.034	.854
No	23	35.38	22	33.85		

Note: Group difference test statistics are omitted for characteristics matched across groups (age, gender identity) and for unmatched characteristics found to be identical across groups (children). In all cases where a participant selected multiple options for race/ethnicity, the selections were for one minority race/ethnicity and White. These participants are recorded once in the table, each under their selected

minority race/ethnicity. No participants reported gender identity in the category of *other or prefer not to answer*. No participants reported race/ethnicity in the categories of *Asian, Native Hawaiian or Pacific Islander*, or *Prefer not to answer*.

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TABLE 2

Measure characteristics, Cronbach's alpha in the sample and group differences

	# Items	Scoring	Cronbach's α	Control		Facility Dog		Cohen's d
				M (SD)	M (SD)	M (SD)	M (SD)	
Work-related burnout								
MBI: Emotional Exhaustion	9	Sum: 0–54	0.93	42.63 (10.79)	43.52 (10.84)			0.08
MBI: Personal Accomplishment	8	Sum: 0–48	0.79	46.02 (6.42)	50.75 (3.65)			0.91
Job perceptions								
Job-Related Depression and Enthusiasm	6	Sum: 6–30	0.85	25.74 (3.90)	27.40 (3.00)			0.48
JDI: People in Your Present Job	18	Sum: 0–54	0.88	43.25 (8.76)	45.00 (7.06)			0.22
Job in General	18	Sum: 0–54	0.81	46.45 (9.78)	50.86 (4.86)			0.57
Workplace Social Support	9	Average	0.83	3.65 (0.70)	3.87 (0.69)			0.31
Anticipated Turnover	12	Average	0.87	4.74 (1.37)	5.32 (1.07)			0.47
Turnover Intention	6	Average	0.87	2.65 (0.79)	2.28 (0.67)			-0.51
Mental health								
PROMIS: Depression	8	Manual T-score	0.93	48.75 (7.78)	45.80 (6.84)			-0.40
PROMIS: Anxiety	8	Manual T-score	0.89	54.38 (7.11)	53.02 (6.22)			-0.20
PROMIS: Global Mental Health	2	Manual T-score	0.75	38.00 (6.16)	34.94 (6.96)			-0.47
SPANIE: Positive Affect	6	Sum: 6–30	0.84	23.26 (3.94)	25.46 (3.15)			0.62
SPANIE: Negative Affect	6	Sum: 6–30	0.91	14.66 (3.95)	13.43 (3.27)			-0.34
SPANIE: Balanced Affect	12	Sum: -24 to 24	0.33	8.60 (7.21)	12.03 (5.53)			0.53

Note: Cronbach's α shows good reliability for a measure if it is greater than 0.8, and adequate reliability for a measure if it is greater than 0.7 (Tavakol & Dennick, 2011).

Abbreviations: JDI, Job Descriptive Index; MBI, Maslach Burnout Inventory; PROMIS, Patient-Reported Outcomes Measurement Information System; SPANIE, Scale of Positive and Negative Experience.

Hierarchical regression for cross-sectional group comparison of participants with facility dogs versus matched controls

TABLE 3

	Model 2: Demographics + facility dog							
	Model 1: Demographics			Specific Effects of facility dog				
	F	R ²	F	R ²	β	95% CI	F	R ²
Work-related burnout								
MBI: Emotional Exhaustion	4.70***	0.21	4.15***	0.22	0.05	-2.35 to 4.68	0.43	0.00
MBI: Personal Accomplishment	0.30	0.02	3.34**	0.18	0.42***	2.83 to 6.65	24.26***	0.16
Job perceptions								
Job-Related Depression and Enthusiasm	2.58*	0.13	3.43***	0.19	0.24**	0.53 to 2.91	8.25**	0.06
JDI: People on Your Present Job	1.46	0.08	1.50	0.09	0.12	-0.96 to 4.64	1.69	0.01
Job in General	2.29*	0.12	3.23**	0.18	0.25**	1.33 to 6.68	8.76**	0.06
Workplace Social Support	2.03	0.10	2.21*	0.13	0.16	-0.02 to 0.46	3.25	0.02
Anticipated Turnover	1.35	0.07	2.23*	0.13	0.24**	0.18 to 1.05	7.87**	0.06
Turnover Intention	1.64	0.09	2.77**	0.16	-0.27**	-0.66 to -0.15	9.89**	0.07
Mental health								
PROMIS: Depression	2.08*	0.11	2.52**	0.14	-0.20*	-5.44 to -0.37	5.13*	0.04
PROMIS: Anxiety	2.66**	0.13	2.56**	0.15	-0.12	-3.81 to 0.75	1.77	0.01
PROMIS: Global Mental Health	2.76**	0.14	3.24**	0.18	-0.21*	-5.00 to -0.50	5.84*	0.04
SPANIE: Positive Affect	3.67***	0.17	5.21***	0.26	0.29***	1.00 to 3.36	13.37***	0.08
SPANIE: Negative Affect	4.02***	0.19	4.22***	0.22	-0.18*	-2.51 to -0.12	4.75*	0.03
SPANIE: Balanced Affect	4.68***	0.21	5.82***	0.28	0.27***	1.42 to 5.57	11.13***	0.07

Note: For Block 1 of each model $df=(7, 122)$ and for Block 2 of each model $df=(1, 121)$. $N=130$. F is the primary metric for determining whether there was a difference in the outcome measure uniquely related to facility dog presence or absence, above and beyond any difference that was related to participant demographics.

Abbreviations: CI, Confidence Interval; JDI, Job Descriptive Index; MBI, Maslach Burnout Inventory; PROMIS, Patient-Reported Outcomes Measurement Information System; SPANIE, Scale of Positive and Negative Experience.

* $p < .05$,

** $p < .01$,

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