College Campus Cat
Exploring PetPace smartcollar data and survey data to measure physiology & physical activity

Delanoeije, J., Pendry, P., Moons, C. P. H., & Peeters, E. H. K. A.

@delanoeijejoni   joni.delanoeije@kuleuven.be

BACKGROUND

What about cats in the current dog-dominated field of AAIs?

▸ Is there potential for cat initiatives? (Delanoeije et al., 2020)

1. **Any risks or benefits for cat well-being?**

2. **Can we use smart wearables to study this?**

In the current study, we studied a **campus cat** who joins his owner, a university employee, to work.

(1) Physical activity & stress different on campus days vs. days cat stays at home?

(2) Stress measured by smartcollar different from owner-reported stress?
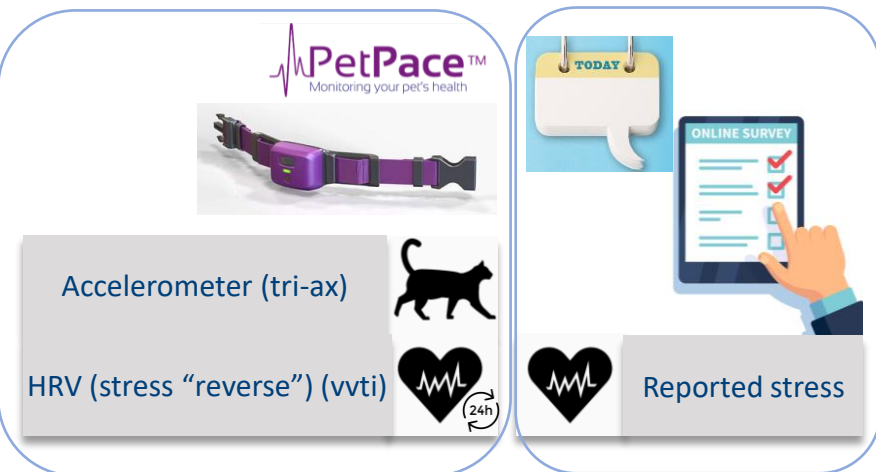
METHOD

Oct-Dec 2020 ▸ **Combination daily aggregated smartcollar & daily owner-reported survey data**

Physical activity — Accelerometer (tri-ax)

Stress — HRV (stress "reverse") (vvti) — Reported stress

▸ PetPace smartcollar **used in dogs** (Belda et al. 2018; Gunter et al., 2019; Höglin et al., 2021; Kaplun et al., 2019; Ortmeyer et al., 2018; Ortmeyer & Katzel, 2020); current study **the first (?) in cat**

▸ "Today, how would you describe your cat's stress level (mental or physical tension)?" (1-item; 1-5 Likert)

RESULTS

(1) Campus days (n=3) vs. home days (n=52) (smartcollar measures):

(Mann-WU=96.5, p=.92)

(Mann-WU=26.0, p<.05)

(2) Smartcollar HRV vs. owner-reported stress:

(Kendall's τb=.18, p=.16)

THUS (1) + (2):
▸ Lower stress on campus days
▸ Smartcollar and owner reports differ

WANT TO KNOW MORE?

http://tinyurl.com/catcampus | 6 min. video presentation

http://campuscat.be | http://jonidelanoeije.com

College campus cat: Exploring PetPace-collar data and survey data to measure physiology and physical activity

Joni Delanoeije[1,2*], Patricia Pendry[3], Els H. K. A. Peeters[4], Christel P. H. Moons[5]

[1] *FEB Antwerp Campus & Work and Organisation Studies, Faculty of Economics and Business, KU Leuven, Leuven, Belgium*
[2] *Sustainable Development, HIVA Research Institute for Work and Society, KU Leuven, Leuven, Belgium*
[3] *Human Development, College of Agricultural, Human and Natural Resource Sciences, Washington State University, U.S.*
[4] *SALTO Research Group Agro- and Biotechnology, Odisee University of Applied Sciences, Sint-Niklaas, Belgium.*
[5] *Ethology and Animal Welfare Research Group, Department of Nutrition, Genetics and Ethology, Faculty of Veterinary Medicine, Ghent University, Merelbeke, Belgium*
* Presenting author: joni.delanoeije@kuleuven.be

Smartcollars function as non-invasive tools to measure animals' physiological responses and physical activity in naturalistic settings. The current study describes PetPace smartcollar data collected in a college campus cat with owner-provided survey data to compare data collected in the context of campus visits of the cat with the cat's behavior at home. First, heart rate variability (HRV) and physical activity are compared between campus days and days at home. Second, associations between smartcollar data and survey data are explored.

Continuous 24-h smartcollar data and daily survey data were collected during 55 days, of which 3 days during campus visits. The smartcollar provided continuous (i.e. every 2 to 15m) data about HRV and physical activity (except 2-3h charging time every 3-4 days). HRV was calculated using vasovagal tonal index and physical activity was measured with a tri-axial accelerometer. The owner provided survey data at the end of each day about perceived stress and physical activity in the cat. Smartcollar data were aggregated on the day level and merged with the survey data.

First, the collar measured higher HRV, indicating lower stress, on campus days (Mdn = 9.2) compared to days at home (Mdn = 9.0); the distributions differed significantly (Mann-Whitney U = 26.00, p < 0.05). Second, interestingly, we found no significant Kendall's tau-b correlations between collar-measured HRV and survey-reported stress (τb = .18, p = .16).

While exploratory, our study is the first that examined associations between a cat's 24-h physiological data and daily survey data collected in home and campus contexts. Since significant differences were found between HRV at home and on campus, which were not explained by survey data, this study provides evidence that methodological approaches to examine cats' stress may benefit from incorporating HRV and physical activity through smartcollar measurement rather than through owner-provided survey data alone. The main limitation is that observations were made in one individual. Future studies may benefit from exploring these relationships in larger sample sizes to account for measurement dependencies.