

# ARE SHORT-TERM FOSTER PROGRAMS FOR SHELTER CATS BENEFICIAL OR PROBLEMATIC?



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# Introduction

- Over 600 million cats live among humans worldwide (Driscoll et al. 2009)
- 94.2 million cats U.S. homes
- ~3.4 million cats enter US shelter each year (ASPCA, 2022)
- Relatively little scientific research has been done with cats
  - ▣ Especially examining cat social behavior
  - ▣ Why study the social behavior of a solitary animal? Are cats solitary or social?



# Introduction

## Are Cats Solitary or Social?

- Facultatively Social: Cats can live socially or solitarily. Display flexible social behavior depending on environment & upbringing
  - Izawa& Doi 1993; Macdonald et al., 1987; Vitale 2022



# Introduction

- Cats engage in an array of social behavior with one another and with humans.



# Introduction

- Expectancy Bias
  - ▣ Beliefs about cats can unintentionally shape cat behavior
    - Fewer opportunities to:
      - Socialize with strangers
      - Socialize with unfamiliar cats
      - To experience travel to novel locations that result in pleasant experiences



# Introduction

- Expectancy bias may impact cat care
  - ▣ Are cats at risk of unnecessary stress from a fostering experience?
  
- What we know
  - ▣ Shelter life has been associated with increased levels of stress for dogs and cats
    - Social isolation a major stressor (Coppola et al. 2006).
  - ▣ Dog fostering is often perceived as positive for dog welfare
    - Dogs placed in foster can experience decreased stress compared to those that remain in the shelter (Gunter et al. 2019)
      - True for even short foster stays (1-2 days)



# Introduction

**Study Aim:** Evaluate the social, behavioral, and stress outcomes associated with placing shelter cats in a short-term foster environment, when compared with cats that remained in the shelter.

- ❑ Cat foster programs are much less common. Yet, research indicates several possible benefits.
- ❑ Benefits of Social Interaction
  - ❑ Social isolation, which can occur in shelter settings, is regarded as a major stressor for cats (Coppola et al. 2006).
  - ❑ Shelter cats seek out social interactions (Vitale & Udell, 2019).
  - ❑ Increasing human contact can significantly reduce cat stress (Rehnberg et al. 2015) and shelter cats prefers human interaction over other forms of reward (Vitale Shreve et al. 2017).
- ❑ Other Benefits of Fostering
  - ❑ Other work found that cat foster programs have been credited for significantly reducing euthanasia rates in shelters (Kerr et al. 2018).
  - ❑ Long-term cat fostering has also been associated with increased opportunity for behavior modification and improved behavioral outcomes (Kerr et al. 2018).



# Methods

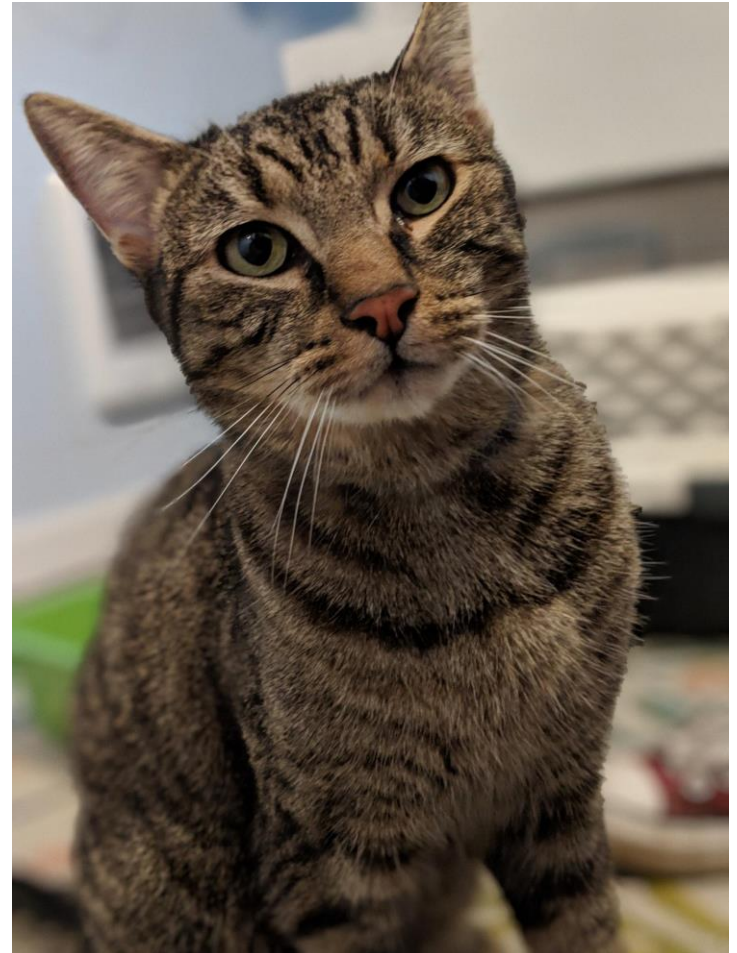
- Short-Term Foster Program
  - ▣ Overnight: 1 Day (24 hrs.)
  - ▣ Weeklong: 7 Days
  
- In-Shelter
  - ▣ Control
  - ▣ *Socialization Program*
    - *45 min of out of cage*
    - *Don't have time to discuss for this talk!*





# Methods

- 2 Study Sites:
  - ▣ Willamette Humane Society in Salem, OR
  - ▣ SafeHaven Humane Society in Tangent, OR
- Both shelters no-kill, limited-admission shelters
- 80 cats enrolled total
  - ▣ 40 foster, 40 in-shelter
    - \*Some cats dropped out over course of study due for various reasons such as being adopted or a medical issue. Sample size variable by test.
  - ▣ >1 year old



# Methods

- Data:
  - ▣ Urinary cortisol (Stress measure)
    - Urine samples reflect stress levels from ~1–3 hr. prior to urination
    - Kit4Cat Hydrophobic Sand™
    - Cortisol:Creatinine ratio calculated to standardize cortisol level (UCCR)
  - ▣ Behavior
    - Feline-ality assessment
    - 1-min novel room assessment



# Methods

- Data collected at 3 time points
- Urine always collected before behavioral data



**A**

- Baseline, 1-day before intervention
- All in the shelter

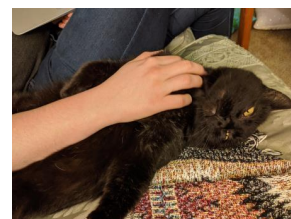


**Foster Intervention**



**B**

- 1-day during intervention
- At foster group
- In-shelter group



**C**

- 1-day after intervention
- All in the shelter

# Methods

- Fostering Program
  - Neither shelter had an adult cat foster program in place prior to study
- Cats stayed at the foster home for either 24 hours or 1-week
  - Volunteers pick-up/drop-off foster cats at set times
    - Solicited from community, shelter, and local university
  - At pick-up received a bag of supplies:
    - Instructions for Feline-ality & a paper Feline-ality assessment
    - A written survey to track activities in the foster home
    - Instructions and supplies for urine collection (disposable litter box, hydrophobic litter, pipette/tube for collection)
    - Food & extra litter box with normal litter for remainder of foster stay



# Feline-ality Assessment



# Feline-ality Assessment

- Some cats unable to participate in full assessment
- If cat displayed  $>1$  of these indicators they were classified as aggressive/fearful for that time point:
  - ▣ dilated pupils
  - ▣ lip licking
  - ▣ flattened ears
  - ▣ crouched body posture
  - ▣ hissing or growling
  - ▣ swatting/scratching
  - ▣ biting
- Assessment ended to avoid unnecessary stress

- *Frequent lip-licking & swallowing*
- *Dilated pupils*
- *Distress vocalizations*
- *Scottish fold- ears not reliable here!*



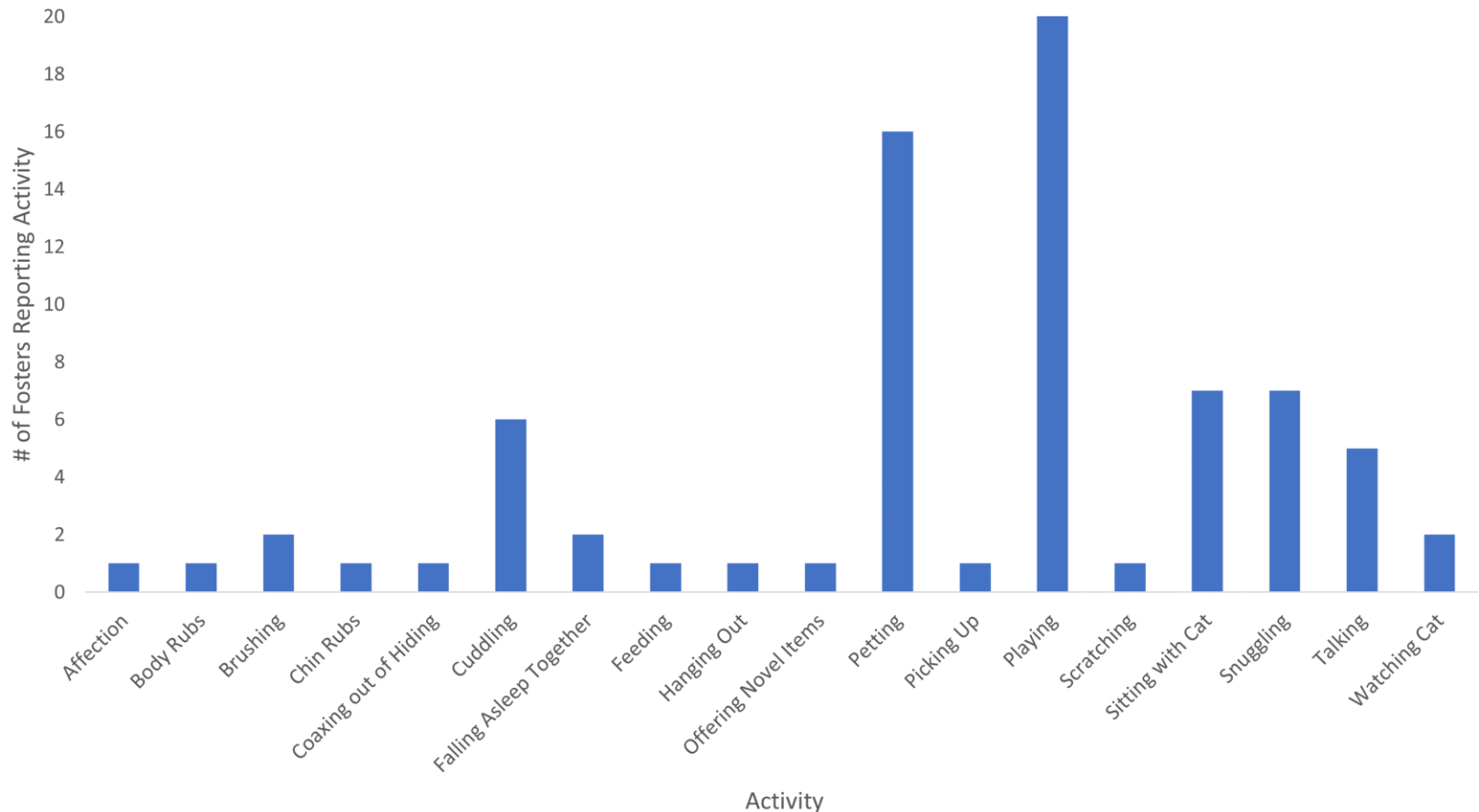
# Volunteer Results

**Please see published paper for full results and statistical information!**

Vitale, K. R., Frank, D. H., Conroy, J., & Udell, M. A. R. (2022). Cat Foster Program Outcomes: Behavior, Stress, and Cat–Human Interaction. *Animals*, 12(17), 2166.

# Volunteer Results

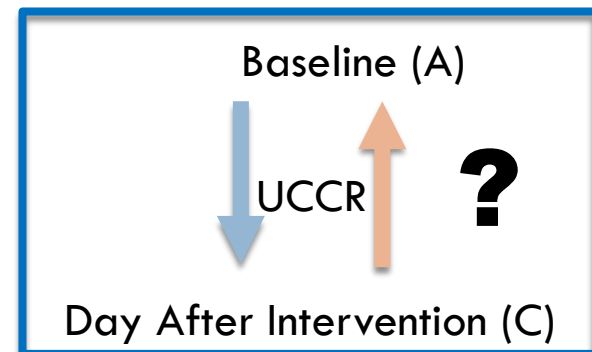
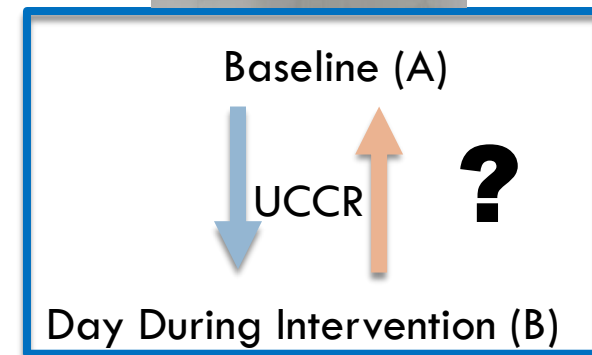
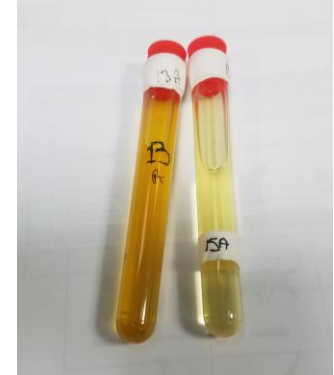
- Most frequently reported activity was playing (20). Petting (16) and cuddling/snuggling (13) were also commonly reported.
- On average, 24 hr. volunteers reported spending an average of 7.6 hrs. with the cat. 1-Week volunteers reported spending an average of 18 hrs. with the cat.





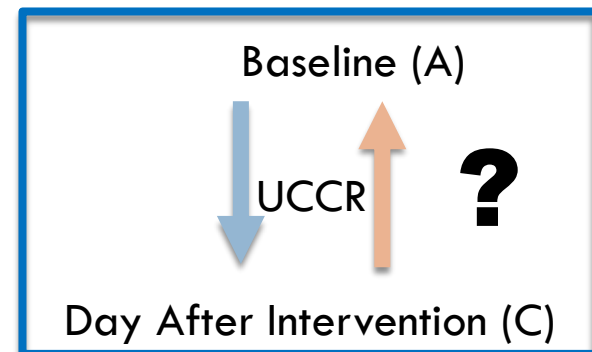
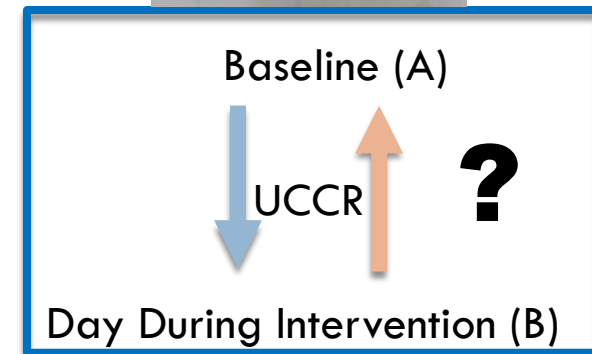
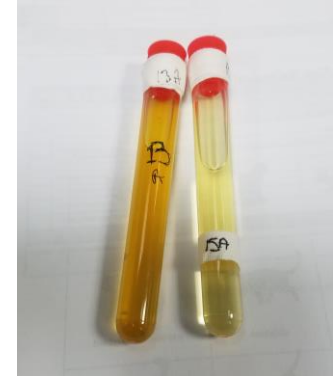
# Stress Results: In-Shelter vs. Foster

- Stress Level
  - ▣ As measured by Cortisol : Creatinine ratio (UCCR)
- Cats that went to foster did not have higher cortisol scores than cats that stayed at the shelter.
  - ▣ No significant difference in UCCR score between foster cats and in-shelter cats at any time point (before, during, after intervention)
- Also looked at if UCCR increased/decreased from baseline to each time point
  - ▣ No significant difference between foster and in-shelter cats in # of cats displaying increase/decrease in UCCR from A to B or from A to C



# Stress Results: Foster Group Only

- When combining foster groups
  - ▣ No significant difference in UCCR score seen when comparing fosters at baseline to during and baseline to after the fostering experience
- When comparing 1-day foster cats to 7-day foster cats:
  - ▣ No significant difference was seen in # of cats that had an increase or decrease in UCCR score from timepoints A to B or from A to C



# Stress Results: Urinary Behavior

- Several foster cats did not urinate in litter box on 1<sup>st</sup> day of fostering
- Compared to cats that stayed in shelter, significantly fewer foster cats urinated in the litter box on the first day of the intervention (Fisher's  $2 \times 2$ ,  $p = 0.027$ )
- After returning to the shelter, no significant difference was found in the # of cats using the litter box when comparing the foster and in-shelter groups (Fisher's  $2 \times 2$ ,  $p = 0.49$ )

## B: Day 1 of foster experience (at foster)

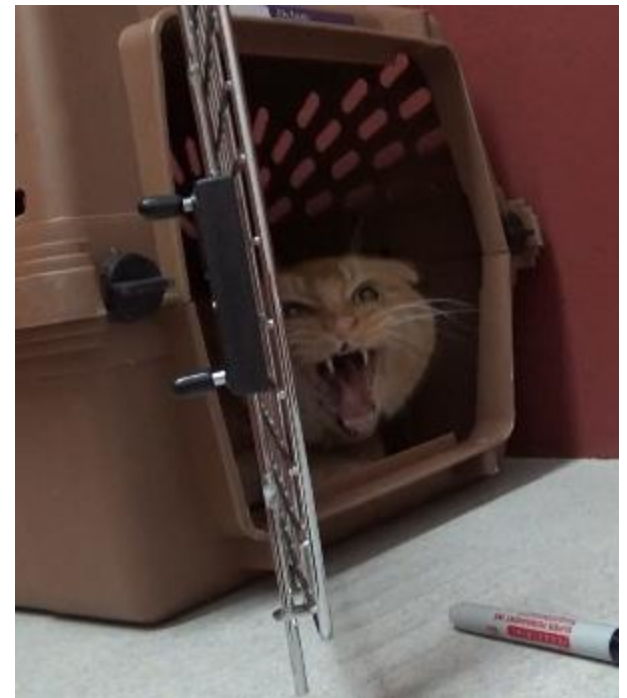
Group	Did Urinate in Box at B	Did Not Urinate in Box at B	Total
Foster	19	10	29
In-Shelter	29	3	32

## C: Day after foster experience (in shelter)

Group	Did Urinate in Box at C	Did Not Urinate in Box at C	Total
Foster	22	0	22
In-Shelter	25	2	27

# Behavior Results

- Foster cats did not display an increase in aggression or fear
  - ▣ Examined # of cats labeled as agg/fear during Feline-ality
  - ▣ For foster group: no significant difference in # of agg/fear cats from baseline to at-foster or from baseline to returning to shelter.
  - ▣ Comparing foster cats to in-shelter cats: no significant difference in # agg/fear cats at any of the time points.



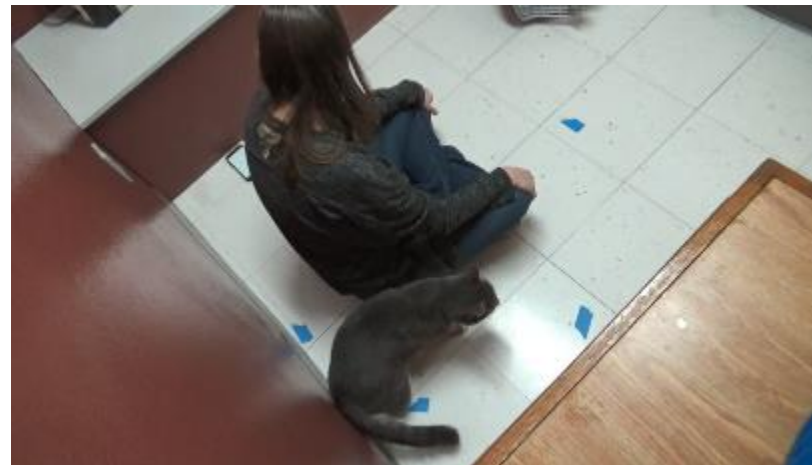


# Behavior Results

- Foster cats did not display significantly less social behavior after fostering
  - ▣ Novel Room Sociability scores compared between foster and in-shelter groups.
  - ▣ No statistically significant differences between these groups were identified at either time point A or C.

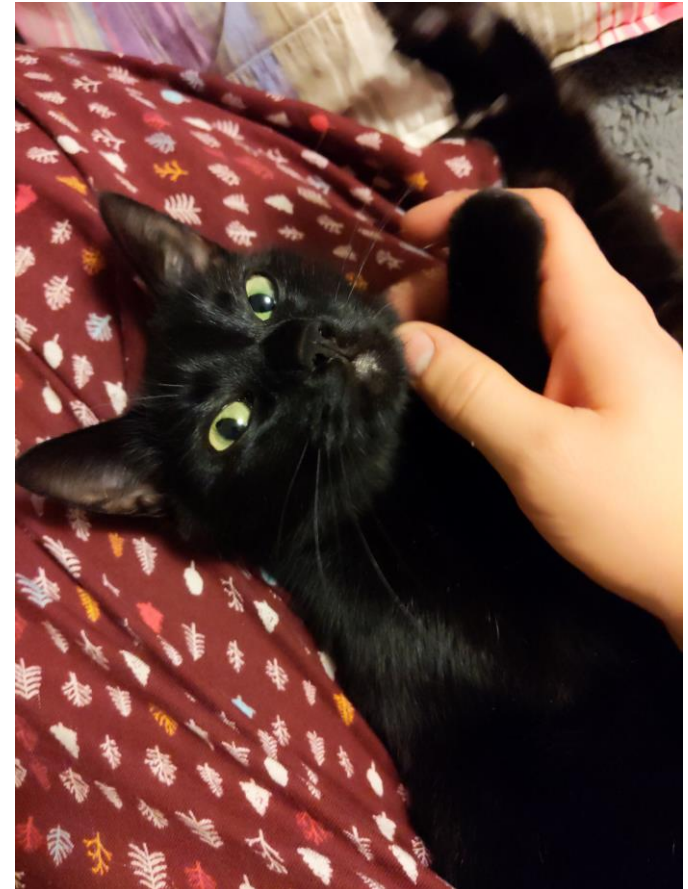


**Time spent next to unfamiliar person for first 1 min.**



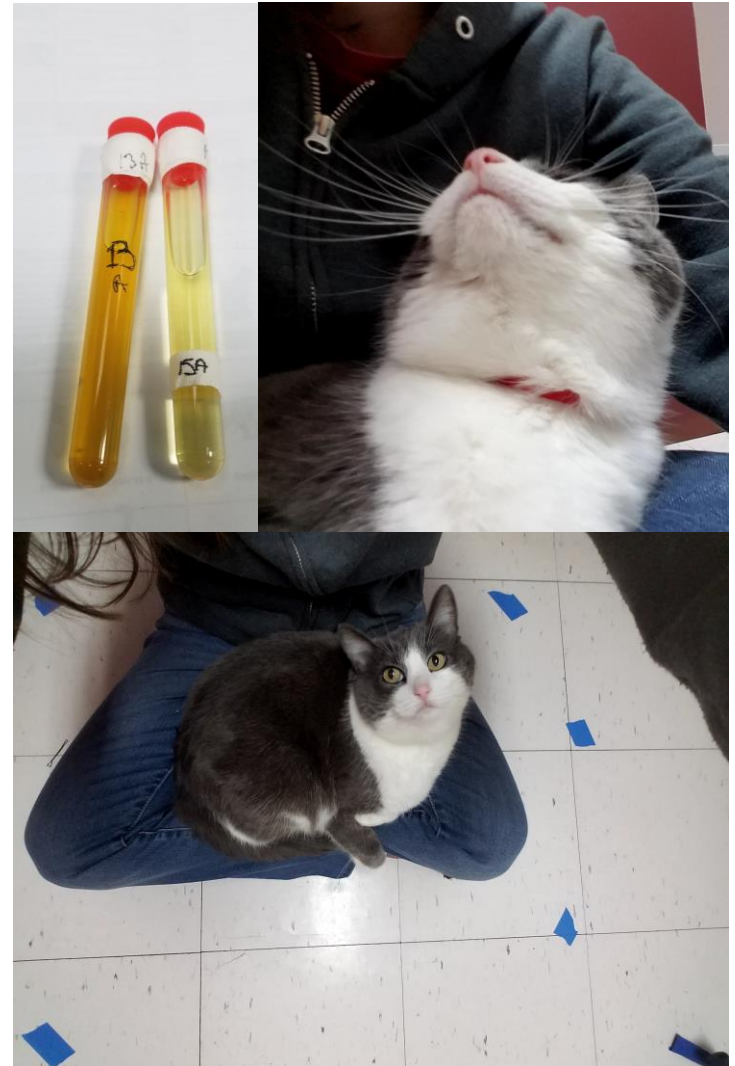
# Discussion

- **Results indicate that shelter cats placed in foster care were not at a disadvantage as compared to cats that stayed in the shelter.**
  - ▣ Did not have significantly higher cortisol scores.
  - ▣ Did not display significantly less social behavior after fostering.
  - ▣ Were not more likely to display signs of fear or aggression during or after the foster experience.
- **Results indicate short-term fostering (24 hrs. or 1 week) experiences are viable options for shelter cats.**
  - ▣ No significant difference in stress levels for 1-day and 7-day cats.
  - ▣ Fosters sent for 1 day did not show less social behavior during or after fostering.



# Discussion

- Is fostering too stressful for cats?
  - ▣ Several foster cats did not urinate during the first night of foster care.
  - ▣ May indicate lack of urination is an alternative behavioral marker of stress (Andrukonis et al. 2021; Ramos et al. 2020)
  - ▣ Effect is not long lasting when it occurs.
    - After returning to the shelter, foster cats resumed using the litter box.
    - For cats sent to 1-week foster that did not urinate in the litter box on the first night of foster, none were reported to have issues urinating in the box on day 2 of foster.





# Discussion

- Although foster cats were not at a disadvantage, short-term fostering did not lead to a significant improvement in stress levels or human-directed social behavior.
- Future research should examine additional factors that could lead to significant differences in welfare:
  - ▣ Fostering lengths  $>1$  week
  - ▣ Fostering practices
    - E.g., access to house
  - ▣ Traits of individual cats
    - Do some individuals benefit more than others?
- Is fostering still worth it?



# Practical Applications

## □ Benefits of Establishing Adult Cat Foster Programs

### □ **Opportunity for human social interaction has the potential to promote cat welfare**

- Providing opportunities for social interaction is extremely important for shelter cats (Coppola et al. 2006; Rehnberg et al. 2015; Houser & Vitale, 2022; Vitale & Udell, 2019).
- Chance to engage in social interactions with a set caregiver and receive individualized attention
- Although some cats may have experienced stress due to the change in environment (seen with litter box aversion), cats still freely participated in social interactions.
  - Cats were equally likely to be highly social both at the shelter and at foster.
- Social interactions such as playing, petting, and cuddling/snuggling



# Practical Applications

- Benefits of Establishing Adult Cat Foster Programs
  - ▣ Opportunity for human social interaction has the potential to promote cat welfare
  - ▣ **Option of a foster-to-adopt program**
    - 3 different volunteers ended up adopting their foster cat
    - Short-term fostering may be a viable option for improving adoption outcomes



# Practical Applications

- Benefits of Establishing Adult Cat Foster Programs
  - Opportunity for human social interaction has the potential to promote cat welfare
  - Option of a foster-to-adopt program
  - **Engagement of shelter staff and community**
    - Shelter staff and volunteers were open to the idea of adult cat foster opportunities and excited to be involved



# Practical Applications

- Benefits of Establishing Adult Cat Foster Programs
  - ▣ Opportunity for human social interaction has the potential to promote cat welfare
  - ▣ Option of a foster-to-adopt program
  - ▣ Engagement of shelter staff and community
  - ▣ **Can contribute to life-saving efforts by freeing up space when shelter space is limited**
    - No significant reasons to avoid placing cats in foster care, even for just 24 hrs.



# Practical Applications

- ❑ Considerations of Establishing Adult Cat Foster Programs
  - ❑ Foster volunteers should be informed that litter box aversion may be a temporary behavior related to stress of relocation.
    - Also relevant for the caretakers of newly adopted cats bringing their shelter cat home
  - ❑ May be useful to provide a foster program “cheat sheet” to each new foster with details of what to expect, including litter box aversion.
    - Instructions to contact if urination is not seen on following day of foster!
  - ❑ Person responsible for coordination with cats and fosters
  - ❑ System for marking cats to go to foster



# Take-Away

***Short-term foster programs are not problematic for shelter cats.***

***There are not significant reasons to avoid placing cats in foster care, for 1-day or 1-week, due to behavioral or stress-related concerns.***



# Select References for Further Reading

Vitale, K. R., Frank, D. H., Conroy, J., & Udell, M. A. R. (2022). Cat Foster Program Outcomes: Behavior, Stress, and Cat–Human Interaction. *Animals*, 12(17), 2166.

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# Thank you! Questions?

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