

# TAMAGOTCHI ROBOTS:

## EFFECTS OF ROBOT CARETAKING ON LONG-TERM INTERACTION AND WELL-BEING

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### INTRODUCTION & RESEARCH QUESTIONS

We hypothesize that robot caretaking enhances the likelihood of long-term interaction with a robot and reaps increased well-being in the long-term.

- RQ1. Does **robot caretaking** enhance **interpersonal connection** between humans and robots?
- RQ2. Does robot caretaking enhance **likelihood of interacting with a robot in the long-term** (mitigate novelty effect) compared to other interaction types?
- RQ3. Does robot caretaking **affect participants' moods positively** compared to not caretaking?
- RQ4. Does this interpersonal connection reap **increased well-being** in the long-term?



### METHODS

- **Pre-survey** given at start of study
  - Gauge robot and technological familiarity, personality and traits
  - Understand user attitudes towards robot interactions
- **Continuous 7-day study** deployed via Vector, Raspberry Pi
  - Participants interact with "Robbie" **daily** in **mandatory** and **optional** tasks in **two conditions**

#### Caretaking Condition

- Mandatory activities: Feeding (2x), charging, putting to sleep, waking up
- Optional activities: Exercise, petting



#### Non-Caretaking Condition

- Mandatory activity: Categories game
- Optional activity: Word of the Day, High-Low game



- **Control:** Daily gratitude exercise where Robbie asks user about their day, an item they are grateful for, and something to look forward to
- **Post-survey** given right after conclusion of study and 1 week post-study
  - Measures in pre-survey + open-ended questions
  - Surveys impact of experiencing a week living with Vector
  - Ask user likelihood of continuing to interact with Vector long-term

### STUDY MEASURES

#### Overall measures:

- Social connection with the robot
- User's long-term change in positive and negative affect
- User's likelihood of continuing to interact with the robot
- Impact of robot on user well-being

#### Daily measures:

- Participant's mood
- Gratitude exercise response time
- Caretaking condition:
  - Duration of petting
  - Times fed by user
  - Number of optional caretaking items completed
- Non-caretaking condition:
  - Playing the mandatory game
  - "Happiness meter" that keeps track of Vector's satisfaction with user interaction

#### Possible Interactions with "Robbie"

##### Hey Robbie...

- All conditions
  - Let's check in (gratitude exercise)
  - Is your battery low?
  - It's time to charge!
- Caretaking
  - Are you hungry?
  - Are you sleepy?
  - Goodnight!

##### Other caretaking interactions

- Pet Robbie
- Wake Robbie up
- Feed Robbie with the cube

### DISCUSSION

- **Novelty effect** – users tend to exponentially lose interest in a robot after initial interaction(s)<sup>1,2</sup>

- Need solutions to sustain **long-term interaction**<sup>3</sup>

- **Robot caretaking** shown to be natural in children, implications for **interpersonal connection**<sup>4</sup>

- Similar studies deploying Vector over days exist, but are limited in scope<sup>5</sup>



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