

Supplementary Information for manuscript:
**“The Effect of Transparency on Unsolvable Task Engagement in Domestic
Cats (*Felis catus*) using Citizen Science”**

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Supplementary Information 1: Complete instruction booklet that owners were provided for carrying out the study.

STRESS BEHAVIOUR AWARENESS

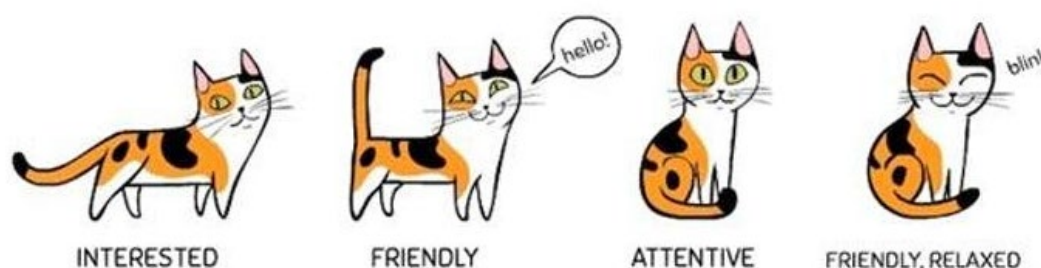
NOTE: It is important that you are continuously aware of any signs of stress that may be observed in your own cat for the duration of the experiment. As cat owners, you will already be aware of such behaviours and can assess your own cat's stress levels accordingly. It is highly unlikely that your cat will show any stress behaviours during this study. Some of the most obvious and notable signs of stress include:

- Piloerection (fur standing on end), hissing, growling, staring, retreating and hiding far away, ears laid back, fluffy tail



Conversely, some positive signs that your cat is happy to engage with the study are:

- Occasional eye contact, ears forward, interacting with the apparatus, sitting near the apparatus and/or near you, pawing and/or rubbing against you, self-grooming



If any stress behaviours are observed during the task, you must stop the study immediately.

Instruction Sheet

Please read this instruction sheet thoroughly before carrying out this study. You may also refer back to this sheet and the instructional video to see a visual demonstration.

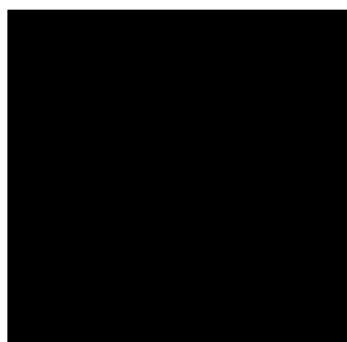
The study pack you received should have these items inside:

- 3 cups (one mesh, one transparent and one opaque)
- A metal tray with sticky tack
- A stopwatch
- 8 magnets
- Phone tripod
- An information and consent sheet

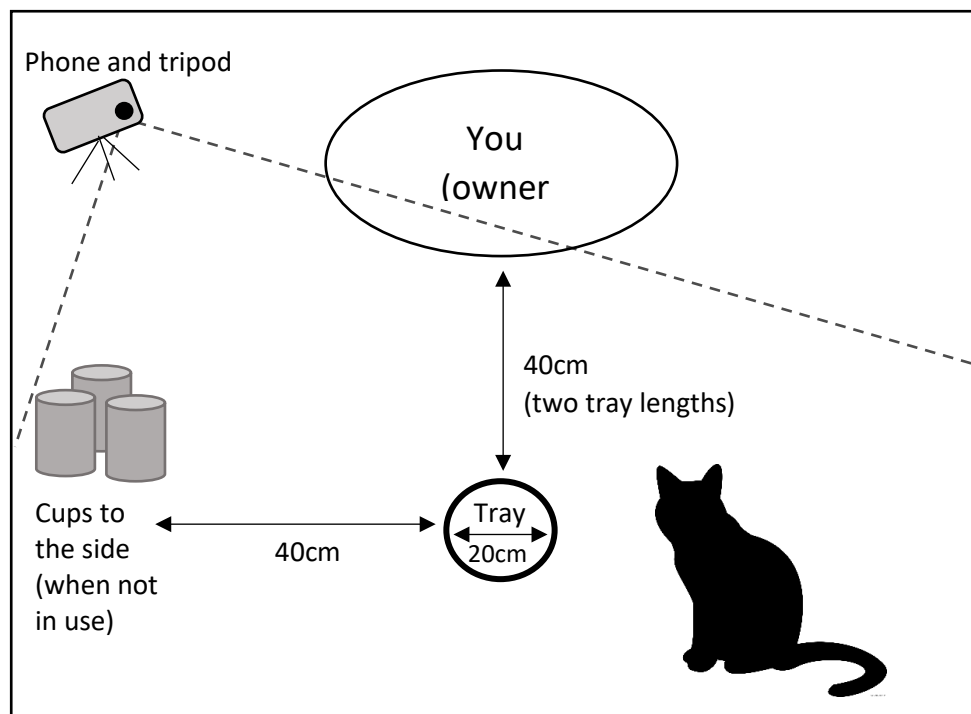
General Information

- The materials should only be within reach of the cat for the duration of the trials. At any other time, all of the materials must be removed from the floor and placed back in the box and moved elsewhere your cat or young children cannot reach
- You may use any treat that your cat prefers to eat other than its regular food, e.g. Dreamies, piece of cooked chicken, piece of ham
- If other people are present, they can continue with their normal activities but should avoid loud or sudden attention-grabbing movement and noises
- Please say out loud the day and the name of the task you will be doing before every trial session, e.g. “Day 1, exposure trial one”, “Day 2, solvable task”
- You may talk to your cat during the study if they look towards you (e.g. “what’s under there?”) but please avoid calling them towards you or tapping the apparatus if they walk away. Please do not touch your cat during the study even if they initiate contact with you
- If you are in a multi-cat household and other cats are able to take part in this study, please test each cat individually. Make sure to clean the surface of the tray between cats if carrying out the trials on the same day
- Please say out loud the actions of your cat if they move out of the camera frame or look at things out of view, e.g. “she is grooming herself”, “he is looking at my partner behind me”, “she is pawing my son to my left”
- Do not force or coerce your cat into participating under any circumstances

You can also refer back to the instructional video using the link or QR code here:

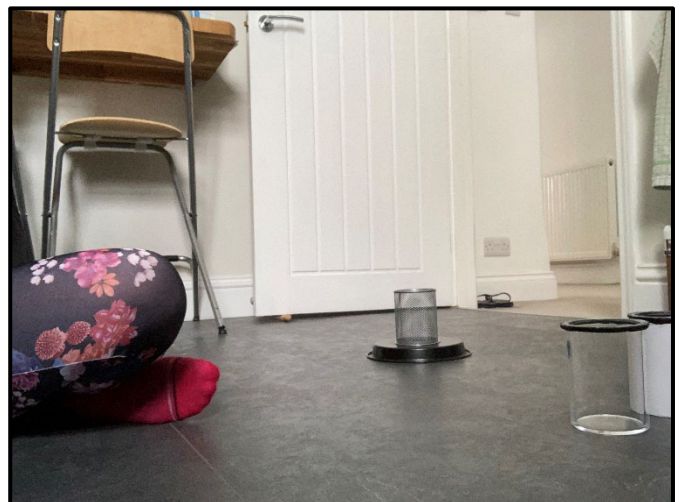


This is an overhead view of how the set-up should look:



← This is the cross-legged position to return to when you are not moving the cups. Your hands should be relaxed in your lap with closed fists

The framing of the camera should look similar to this. Note the small section of leg visible on the left hand side and the visibility of the cups on the right hand side (for solvable and unsolvable trials) →



Exposure Trials – Day 1 and 2

The purpose of these trials is to familiarise your cat with the apparatus used for the tasks. On each day, you will have 3 trials with the **mesh** cup. **These trials will use only the mesh cup in the study pack.**

You will need: phone and tripod; stopwatch; tray and sticky tack; mesh cup; 4 treats.

Setting up

- Have 4 treats ready in a closed fist
- Bring the metal tray and the **mesh** cup into the study space
- Stick the metal tray to the surface and place the cup facing upwards to the side on the floor
- Set up your phone on the tripod and check the framing (see image)
- **Start the video recording**
- Sit in a cross-legged position, facing the tray, which is to about 2 tray lengths in front of you (about 40cm)
 - Your hands should be in your lap with closed fists any time you are not moving the cups (see image)

Trials

- Call your cat's name to get their attention. Place one treat in the middle of the tray on the sticker and allow your cat to eat it from the tray
- After 5 seconds, call your cat's name again so they are looking at you. Place a second treat in the middle of the tray and this time place the **mesh** cup facedown over the treat straightaway
- Start the stopwatch and time 45 seconds
 - if your cat knocks the cup over within the 45 seconds and gets the treat, you do not have to wait until 45 seconds are over to start the next trial
- Repeat for the next two treats with a short break of 5 seconds between each treat
- Once you have completed these 3 trials, remove the materials from the floor and put them back in the study pack and place it where your cat cannot see or reach them
- **Stop the video recording**

Repeat these instructions again for Day 2.

Note: If your cat successfully retrieves all 3 of the treats underneath the cup on Day 2, you may continue to the next set of trials below on Day 3. If your cat does not successfully retrieve all 3 treats on Day 2, you may repeat the exposure procedure again on the next day (Day 3) and continue to the next set of trials below on Day 4.

Solvable Trials

These trials will take place on the day after the exposure trials. **These trials will use all three cups and will not be magnetised to the tray.**

You will need: phone and tripod; stopwatch; tray and sticky tack; mesh, transparent and opaque cups; 4 treats.

Setting up

- **Check the magnets are not attached to the underside of the tray**
- Have 4 treats ready in a closed fist
- Bring the metal tray and all 3 cups into the study space
- Stick the metal tray to the surface and place the cups facing upwards to the side on the floor
- Set up your phone on the tripod and check the framing
- **Start the video recording**
- Sit in a cross-legged position, facing the tray, which is to be about 2 tray lengths in front of you
 - Your hands should be in your lap with closed fists any time you are not moving the cups

Trials

- Call your cat's name to get their attention. Place one treat in the middle of the tray on the sticker and allow your cat to eat it from the tray
- After 5 seconds, call your cat's name again so they are looking at you. Place a second treat in the middle of the tray and gently place the **mesh** cup facedown over the treat straightaway. Time 45 seconds and then lift the cup off the tray and allow your cat to eat the treat
- After 5 seconds, call your cat's name again so they are looking at you. Place a third treat in the middle of the tray and gently place the **opaque** cup facedown over the treat straightaway. Time 45 seconds and then lift the cup off the tray and allow your cat to eat the treat
- After 5 seconds, call your cat's name again so they are looking at you. Place a fourth treat in the middle of the tray and gently place the **transparent** cup facedown over the treat straightaway. Time 45 seconds and then lift the cup off the tray and allow your cat to eat the treat
- Once you have completed these trials, remove the materials from the floor and put them back in the study pack and place it where your cat cannot see or reach them
- **Stop the video recording**

End of trials.

Unsolvable Trials

These trials will take place after the solvable trials. **These trials will use all three cups which will be magnetised to the tray.** It is beneficial to test out the magnets so you are aware of how strong the magnetic pull is.

You will need: phone and tripod; stopwatch; tray and sticky tack; mesh, transparent and opaque cups; magnets; 4 treats.

Setting up

- **Place the 8 magnets onto the stickers on the underside of the tray**
- Have 4 treats ready in a closed fist
- Bring the metal tray and all 3 cups into the study space
- Stick the metal tray to the surface and place the cups facing upwards to the side on the floor
- Set up your phone on the tripod and check the framing
- **Start the video recording**
- Sit in a cross-legged position, facing the tray, which is to be about 2 tray lengths in front of you
 - Your hands should be in your lap with closed fists any time you are not moving the cups

Trials

- Call your cat's name to get their attention. Place one treat in the middle of the tray on the sticker and allow your cat to eat it from the tray
- After 5 seconds, call your cat's name again so they are looking at you. Place a second treat in the middle of the tray and gently place the **mesh** cup facedown over the treat straightaway. Start the stopwatch and time 45 seconds. Hold down the tray with one hand and lift the cup with your other hand off the tray and allow your cat to eat the treat
- After 5 seconds, call your cat's name again so they are looking at you. Place a third treat in the middle of the tray and gently place the **opaque** cup facedown over the treat straightaway. Time 45 seconds and then lift the cup off the tray and allow your cat to eat the treat
- After 5 seconds, call your cat's name again so they are looking at you. Place a fourth treat in the middle of the tray and gently place the **transparent** cup facedown over the treat straightaway. Time 45 seconds and then lift the cup off the tray and allow your cat to eat the treat
- Once you have completed these trials, remove the materials from the floor and put them back in the study pack and place it where your cat cannot see or reach them
- **Stop the video recording**

Uploading Video Files

You're all done with the tasks! Now you need to upload the videos you have taken. For this you will need to use the secure file sharing website "Dropbox". The best way to upload is directly from your mobile phone following the QR code and instructions below. If you choose to upload from a computer, you will have to transfer the videos to your computer first and upload at this link here: [REDACTED]



These uploads may take around 20 minutes depending on how long the videos are. Please do not trim or edit the videos – it's better for us to have all of the footage!

You won't have to create a Dropbox account but you will need to type your **participant ID number** and your email address to upload videos. Other participants will not be able to see the videos you upload and vice versa.

How to upload from a mobile device:

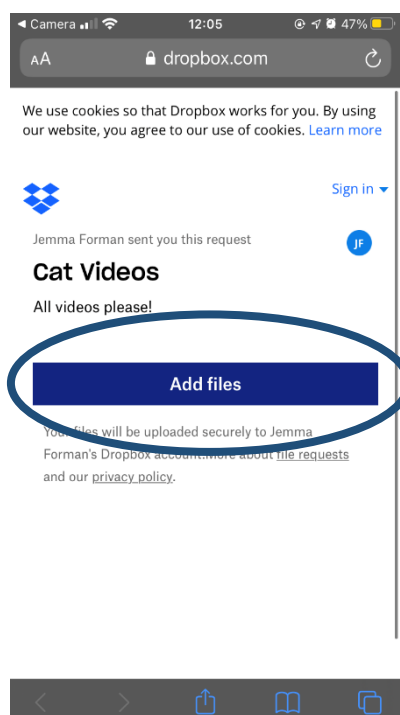
- You do not need to download the Dropbox app for this to work and instead you can do it from a web browser from your phone (e.g. Safari, Chrome)

1. Scan this QR code using the camera app:

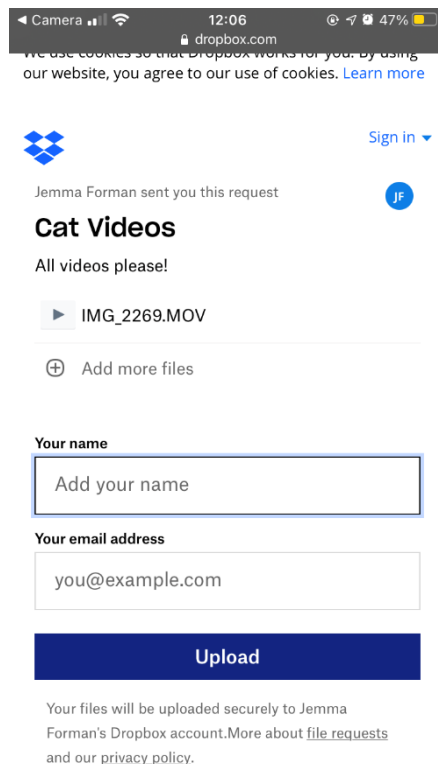
**Make sure you are using Wi-Fi and not mobile data
(unless you have very good signal and unlimited data!)**



2. This will open up the Dropbox website where you can upload your video files. Click on "Add files" and it will give you the option to choose video files from your photo library.

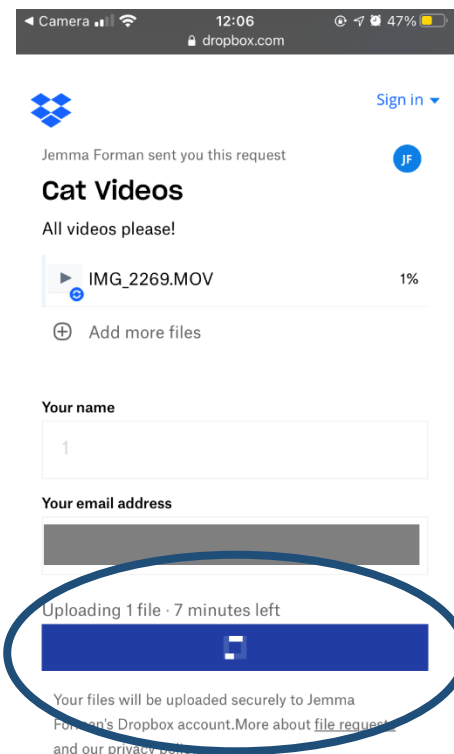


- 3 After selecting the four videos to upload, you will need to include your **participant number** in the “Your name” field and your email address to upload



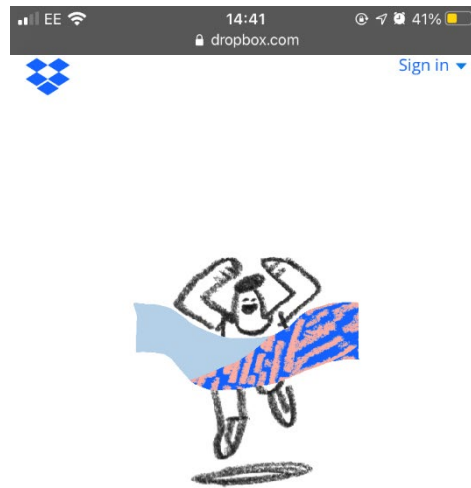
The screenshot shows the Dropbox mobile app interface. At the top, there's a status bar with 'Camera', signal strength, time '12:06', and battery '47%'. Below it, a cookie notice for 'dropbox.com' is visible. The main header features the Dropbox logo, a 'Sign in' link, and a notification 'Jemma Forman sent you this request' with a profile icon 'JF'. The title 'Cat Videos' is followed by 'All videos please!'. A file 'IMG_2269.MOV' is listed with a play icon. Below it is a button 'Add more files'. The 'Your name' field contains 'Add your name'. The 'Your email address' field contains 'you@example.com'. A large blue 'Upload' button is at the bottom. Below the button, a message states: 'Your files will be uploaded securely to Jemma Forman's Dropbox account. More about [file requests](#) and our [privacy policy](#).'

- 4 When uploading, you will be able to see a progress bar at the bottom of the screen that tells you the minutes left to upload.



This screenshot shows the same Dropbox mobile app interface as the previous one, but with the upload progress bar visible. The file 'IMG_2269.MOV' now has a progress bar indicating '1%' completion. The 'Your name' field now contains the number '1'. The 'Your email address' field is obscured by a grey bar. A blue oval highlights the bottom section of the screen, which includes the text 'Uploading 1 file · 7 minutes left' and a blue progress bar with a play icon. The same footer message about secure uploads is present.

- 5 Once all the uploads have finished, you will see this screen:
- You will also get an email once all the files are uploaded with the same information that will be sent to me



You're all done! Scan this QR code or follow the link to see the debrief sheet:

