

Interoceptive Reinstatement Study
Running Protocol

SCHEDULING & PRE-ENROLLMENT

1. Post slots on Psylink

- <https://nu-psylink.sona-systems.com>
- Post slots preferably 1 week, but **at least 2 business days**, ahead
- Change location to “020 Nightingale”

2. Monitor Psylink for new sign-ups

- Look at least 3 business days ahead
- **Cancel slots that have not been filled 24 hours before they are scheduled**

3. Email new sign-ups with the eligibility screening survey

- Open the study email account:
NEUmemoryExp@gmail.com password: ‘Emotion123’
- Paste the participant’s email address in the bcc line, and the experiment email address in the To: line
- Update the body of the email with the participant’s name and your name

4. Schedule 1.5-hour time slot (including setup and cleanup), put it in the Predictive Affect GCal

- **Please put the time down on the calendar *BEFORE* scheduling on Psylink**
- Schedule the slots on Psylink

5. Monitor the study email account

- Check to see if interested participants have replied with their eligibility results
- Once a participant replies to confirm that they are eligible, answer any questions they may have and confirm their appointment time with them
 - ❓ Update the content to include their scheduled appointment date and time
- If a participant has replied that they are not eligible, let them know that you will be cancelling their appointment, but that they are welcome to participate in other studies in the lab
 - ❓ Use the “Reply to ineligible Psylink participants” canned response content
- If a participant has not replied 24 hours before their appointment, attempt to email them to determine if they will be able to complete it with enough advanced notice

Send out eligibility survey *at least 3 weekdays* prior to the experiment day that a participant signed up on Psylink.

Interceptive Reinstatement eligibility survey e-mail template:

Subject: [Response Needed] Eligibility screening for Psylink study on Interceptive Reinstatement

Dear Psylink participant,

We are emailing you because you signed up for the Interceptive Reinstatement experiment through Psylink on **MM/DD HH:MM AM/PM** at the Interdisciplinary Affective Science Lab at Northeastern University.

The experiment you signed up for requires to place sensors on your skin to record a variety of physiological signals. If you are still interested in this experiment, **please complete [this eligibility survey](#) through Qualtrics within 24 hours of receiving this email.** The survey should take less than 5 minutes to complete. **If you are qualified to participate, please copy and paste the confirmation number, shown on the last page of the survey, and reply to this email with that number.** Your experiment is confirmed at the time shown on Psylink, once you send the confirmation number. If you fail to complete the eligibility survey on time or if you are not qualified, your scheduled slot will be cancelled.

Link to the eligibility survey: https://neu.co1.qualtrics.com/jfe/form/SV_cPjkt7rORYdhRGe

This study has been reviewed and approved by the Northeastern University Institutional Review Board (# 19-11-11).

If you have any questions, please don't hesitate to ask by replying to email. Thank you!

Best,
[Your first name]

Interdisciplinary Affective Science Lab
Department of Psychology
Northeastern University

Interoceptive Reinstatement eligibility rejection e-mail template:

Subject: Experiment Cancellation for Psylink study on Interoceptive Reinstatement

Dear Psylink participant,

We regret to inform you that your experiment appointment on MM/DD at H:MM AM/PM has been cancelled, as you are either not eligible for the experiment or did not participate in our survey. If you think this is due to a mistake, please let us know as soon as possible so we can reschedule the experiment for you. If you are not eligible, please seek out other studies from Psylink to participate in.

If you have any questions, please don't hesitate to ask by replying to email. Thank you!

Best,

[Your first name]

Interdisciplinary Affective Science Lab
Department of Psychology
Northeastern University

Interoceptive Reinstatement reminder email template:

Subject: Interoceptive Reinstatement Experiment Reminder

Dear Psylink participant,

We are emailing you to confirm your appointment for the Interoceptive Reinstatement study on **MM/DD at H:MM AM/PM** through the Interdisciplinary Affective Science Lab at Northeastern University. The study will take place on Northeastern's campus in **020 Nightingale Hall**.

To get to this room, take the elevator to the basement and walk straight, or take the stairs and follow the signs to the Interdisciplinary Affective Science Lab. You may wait at the chairs outside of the testing room and an experimenter will come get you. If you get lost or are running late, please call us at 617-373-4789.

Please try to show up 5 minutes ahead of your schedule time slot in order to start the study promptly. Arriving more than 5 minutes late may result in a study cancellation without PsyLink credit.

If you are not able to make it to your appointment, please let us know at this email.

We look forward to seeing you soon!

Best,
[Your first name]

Interdisciplinary Affective Science Lab
Department of Psychology
Northeastern University

BEFORE PARTICIPANT ARRIVES IN THE LAB

A. Check Psylink for upcoming appointments

- Make a note of the participant name
- Check the study email account for updates (NEUmemoryExp@gmail.com; Emotion123)
- If participant does not arrive within 5-10 minutes of the start time, email them to let them know that their slot has been cancelled

B. Put the door signs on the other side of the door

C. Add the participant to the master list in logbook

- link to the logbook:
<https://docs.google.com/spreadsheets/d/1EiCa4DzoWcXnTFJh36utWhJ4q8dUBMw3uTDNX1ScU2Y/edit?usp=sharing>
- Use the next available line on the list in the Master sheet
- Write down participant ID, the date, and researcher's names
- Create a new page with participant ID

D. Gather necessary paper supplies from the study bin

- a. Consent form (2 copies per participant, both signed)
- b. Health questionnaire (check with disqualification drug list and the answer sheet)
- c. Demographic information
- d. Debriefing form
- e. Debriefing statement

**If any of the forms are running low (less than ~20), please print more and let Danlei know!*

E. Gather physio supplies in the Testing Room

- a. Gauze * 3
- b. Alcohol pads * 3
- c. ECG Stickers * 3
- d. EDA Stickers * 2
- e. Shimmer electrodes (ECG)
- f. Restock these if necessary from the cabinet above the sink

F. Turn on the Testing Room computer and both monitors

- a. Log in:
 - i. Account usernames: .\LFBadmin (notice the backslash)
 - ii. Password: iasladmin
- b. Start Matlab
 - i. In Matlab, open folder *InteroRein_Matlab* on Desktop
 - ii. Open script *InteroceptiveReinstatement_RestingState.m*
- c. Start Teamviewer

G. Turn on the STIM and ACQ computers for Physio Room A

- To log in to the top computer
 - ❓ Start Teamviewer
 - Use the testing room computer password to start screen sharing
 - Change "View" to show both monitor
- The log in to the bottom computer
 - ❓ Username: .\LFBadmin
 - ❓ Password: Support2010
 - ❓ Start Camera Monitor using Firefox: 192.168.1.2/home/homeS.html
- Double press "scrolllock" to change cursor on the monitors

H. Turn on amplifier for mic and speaker of Testing Room A

WHEN PARTICIPANT ARRIVES

1. Introduce yourself

- a. Greet the participant by introducing yourself as a research assistant with the lab
 - i. *"Hi, are you here for the psychology study?"*
 1. **If yes:** *"Hi my name is (insert name). I am the researcher running the study today. How are you?"*
- b. Ask the participant their name to verify that they are the correct participant (make sure that they are here for the right experiment)

2. Escort the subject into the main physio space

- a. Tell the participant that their bags or any additional belongings should be placed in the testing room or the physio suite for safe keeping
 - i. *"Would you mind leaving your phone and belongings on the chair over here?"*
- b. Make sure the participant has turned their phone off or on silent, and that they leave it with their belongings – this also holds for any other devices like smart watches or FitBits

3. Obtain informed consent

- a. You can do this while seated at the chairs and small table in the main physio space
 - i. *Note: If another participant is running in the physio space, complete consent and forms in the testing room. Prepare a clipboard for the participant to use and escort them directly there.*
 1. *"In this study we are interested in learning about people's physiological responses and how people study different images."*
 2. *"The experiment requires to add stickers on your skin (on your collar bone and your ribs), will it be okay if the experimenter touches your skin for that purpose? It would just be like a normal ECG procedure."*
 3. *"After you complete the computer experiment there will be a short debriefing session to ask you a few questions about your experience during the computer task."*
 4. *"This study will take approximately 1 hour and you will receive 2 Psylink credits for your participation"*
- b. Go over the consent form, making sure to highlight the following details:
 - i. (Page 1) The session will last about 2 hours
 1. *"We are going to get started with some paperwork before we begin the experiment."*
 2. *"With the consent form, please take your time reading it over. Feel free to ask me any questions you may have about it. If you agree with what it says, please sign on the last page."*
 3. ***"We want to emphasize that you are a volunteer, so if at any time you do not wish to proceed the experiment, you can discontinue the study or choose not to answer certain questions without penalty."***
 4. *"All of the data collected as part of the study will remain completely confidential."*
 5. *"Do you have any questions so far?"*
 6. *"You will be signing two copies of the consent form, one of which you are free to keep for yourself."*
- c. Ask the participant if they have any questions or need anything explained in greater detail

- d. Have them sign both copies of the consent form: one is for us, and one is for them to keep
- e. Sign both copies of the consent form in front of the participant, and leave one for them
- 4. Administer health questionnaire (and alcohol resources sheet) and handedness inventory**
 - a. *"At this time we are going to fill out a health questionnaire. If you have any questions please let me know."*
- 5. Administer demographic information form**
 - a. *"Please fill out this demographics form as well, and let me know when you're finished."*
 - b. Meanwhile, score the health questionnaire
 - i. Reference the scoring instructions and the disqualification drug list in the study bin
 - 1. *"Unfortunately, we will be unable to run this experiment on you today, but we appreciate you taking the time to come in today. You will be given two credits on Psylink for coming in today."*
 - ii. Discuss any questions about health or learning disorders, amount of sleep or caffeine, or medications with the participant as needed to gain more context on responses
 - 1. Can reschedule if needed for the following conditions: not enough sleep, irregular caffeine usage, cold medicine etc. based on the eligibility criteria
 - a. *"Unfortunately, due to your responses in regards to [amount of sleep, caffeine usage, cold medicine, etc.] we will be unable to run the experiment with you today. We would like to reschedule for another time if you are still interested."*
 - 2. If responses to caffeine use and sleep are normal for the participant, continue with the experiment. If responses irregular for their daily routine, offer to reschedule.
 - c. Check the demographic form
- 6. Participants are not fluent English speakers**
 - a. *If participant does not seem to be fluent, make a note in the logbook and ensure they understand all of the instructions.*
- 7. Is the participant qualified to participate?**
 - a. If Yes, list any current medications, time taken, and dose if known in the notebook.
 - b. If No, thank the participant for their time; tell them their original Psylink appointment will be marked as canceled, but they will be booked for another appointment for 3-hour credit
 - i. *"Unfortunately, we will be unable to run this experiment on you today, but we appreciate you taking the time to come in. You will be given one credit on Psylink for coming in."*
 - ii. *If you are still interested in participating, you are welcome to sign up for the behavioral portion of this study on Psylink. Your original appointment for today will be cancelled but you can sign up for additional appointment."*
- 8. Restroom**
 - a. *"If you need to use the restroom, I would suggest you go now, as it will be inconvenient to go once the cap in place."*
 - Suggest to the participant that they may want to use the restroom now (because placing the EEG cap will make it inconvenient to use the bathroom during the session)
 - Wait for them if they choose to use the restroom before proceeding to the testing room

i. *"Alright, now we're going to head into the testing room. Follow me, please."*

****Keep in mind:** If the participant is running late or set-up is taking particularly long, you may need to ask the participant if they are okay staying a few minutes after the time slot. As an approximate rule of thumb, the experiment should start before 10-15 min into the time slot in order to finish on time.

ECG SETUP

1. Show the participant into Physio Room A

2. Place ECG sensors

a. *tell PP what you are doing before you do it and ask them to lift their shirt when needed*

b. **WHITE** right collar bone, **RED** right rib, **BLACK** left rib,

c. **ECG Collar Bone (the WHITE sensor):** Ask PP to do the "chicken wing" (demonstrate) to determine placement of least movement on outer right collarbone

☐ *"To start attaching these sensors, I'll need to see your right collar bone. So can you pull your shirt to the side for a little bit like this (demonstrate)?"*

☐ *"Could you do this 'chicken wing' action (demonstrate)? This will help me to find the right spot to put the sensor."*

☐ *"I'm going to clean the skin with gauze and alcohol pads and stick the sensors."*

d. **ECG Ribs (right: RED; left: BLACK):** Place sensors on both ribs, right where you can feel the bone (where it starts to become hard). The center of the sensors should be on bone and should not face straight ahead or out to the side, but rather out at an angle.

☐ *"Ok, next we're going to stick two sensors on both sides of your ribs. "*

☐ *"Can you locate where your rib cages are? Can you feel where your rib cages take a turn or the part that sticks out the most?"*

☐ *"I'll need to confirm where your bones are to find the spot for the sensors. Is it okay if I touch your skin?"*

☐ *"Now I'm going to clean the skin with gauze and alcohol pads and stick the sensors."*

e. *Double check to make sure the sensors are on the bones*

3. Guide the PP to sit down carefully

☐ *"Please take a seat. "*

4. Connect leads to sensors and clip the Shimmer box on their shirt

☐ *"Now I'm going to connect the sensors to the stickers and clip this little box on your shirt. Is that ok? "*

EDA SETUP

1. Attach Shimmer device on EDA stickers [Do this **before** attaching the sticker on subject]

2. Apply a little amount of paste

a. Make sure the paste can cover the lead underneath but won't squish out

3. Place two sensors on the beefy pads of the right palm (thumb and pinky side)

a. *"Similarly as before, I am going to attach these two sensors on your right hand. Can I touch your hand?"*

- **Never use alcohol wipes when placing EDA*

- **Always tape sensors to keep secure (will be using this hand with keyboard) with two pieces of tape*

- *Tape leads to forearm to keep out of way during keyboard use*

Keyboard SETUP

1. **Place the keyboard on the computer table and see if PP can reach it**
 - a. If not, place the table tray over their lap to see if they're comfortable with that
2. **Remind PP about posture**
 - a. Sit all the way back on the chair (avoid slouching)
 - b. Sit comfortably but straight (keep neck sensors off the chair)
 - "Please try to sit all the way back on the chair. Sit comfortably but straight. Don't slouch, because that will affect the ECG signal and also influence your experiment process."
 - c. Keep right hand with palm rotated up and open (when not using to type/move mouse)
3. **Leave the room**
 - a. "Ok. We're going to first start a baseline recording, during which you will be asked to sit still for a short time. After that we'll start the experiment."
 - b. "We will step out of the room. Though we will not be in the room with you, we will be able to communicate with you over the intercom. And if you have any questions about the instructions or concerns throughout the course of the experiment, we will be able to hear you if you speak up."
 - c. Over the intercom:
 - "Hi xxx, can you hear me ok? Could you speak up please."

Baseline Recording

1. **leave the room, and open baseline script**
 - b. **Tell participant you are now going to record resting baseline for short time.** Let them know you will be leaving the room, but if they have any questions or problems you will be able to hear them. Let them know you will be back in 5 minutes, and that they should just sit quietly.
 - c. **Start the encoding script in Matlab FROM THE CONSOLE using remote control**
 - ❑ Enter the participant's ID at the prompt "###" (e.g. 003)
 - ❑ Always start the script by typing the name of the script in the console and hit enter.
 - ❑ Do NOT use the RUN button on the top
 - ❑ "Ok, we're going to start with a baseline period recording. During this task, we need you to sit still for a couple of minutes. The instructions will be shown on the screen, and please follow the instructions to complete this part of the experiment. I'll step outside of the room and return when this part is over. Please let me know whenever you have a question."
 - d. Step outside of the testing room to monitor process in the control room
 - e. **Read minimum prominence value**
 - ❑ **Find the middle point of the R spike (red dot) and T (second highest spike) wave based on the ECG plot**
 - ❑ Make a note on the spread sheet
 - f. **Read IBI from Matlab console output**
 - ❑ Make a note of both mean and range on the spread sheet

Encoding and Recognition Task

1. **Start the encoding script in Matlab FROM THE CONSOLE using remote control**

- g. Enter the same participant's ID "###" as in Baseline
- h. Always start the script by typing the name of the script in the console and hit enter.
 - 🔊 Do NOT use the RUN button on the top
- 2. Over the intercom, tell the participant they can begin the task whenever they are ready**
 - a. *"Great. We're moving on to the real experiment."*
 - b. *"Please make sure to read the instructions thoroughly and make sure you're sitting straight up towards the center of the screen."*
 - c. *Let me know if you have any questions about the instruction. Again, I will be able to hear you the entire time.*
 - d. *Please note that the task may be a bit tedious, so please try your best to pay attention throughout the entire experiment.*
 - e. *"You can start whenever you're ready."*
 - Monitor heartrate and note whenever there's a missing HB for a trial in the logbook
- 3. At the start of Recognition test**
 - a. *"Again, please read the instructions carefully, and let us know if you have any questions."*
- 4. Throughout the task, monitor the participant and the data**
 - a. *If the participant is fidgeting a lot, can possibly ask them to remain still during breaks between blocks.*
 - *"Hi, I notice you have been moving around. Please try to stay still during the whole time."*
- 5. Roughly count the number of "missing heartbeat" during the entire experiment**
 - a. Make a note in the sheet

Trouble shooting for possible recording issues

- 1. If Shimmer doesn't connect the task won't start (meaning the instruction page won't show up for the PP)**
 - a. If Matlab console says "Could not connect to Shimmer device", it means the Shimmer isn't turned on
 - i. try to restart Shimmer by switching the button on the side
 - ii. if i. doesn't work, try to disconnect the device from participant and connect the device to the docker for a minute, disconnect the device from the docker, and reconnect the device to the participant
 - iii. Make sure the light is on
 - b. If there's the Realterm windows (with icon that looks like green square and a computer at the bottom of the screen), close them before restarting the task
 - c. Wait for about a minute and if the issue persist, try to quit Matlab and start over
 - i. To quit Matlab display, hover mouse over the Matlab icon at the bottom of the screen and close the display window
 - 1. This operation will kill the running task, and you can start over with the same previous procedures
 - d. If a. doesn't work, try again
 - e. If b. doesn't work, try to restart Shimmer by switching the bottom on the side
 - f. Repeat steps a.b.c. and if the issue still can't be solved, contact Danlei and possibly let the PP leave with full credits
- 2. If Matlab has a problem (e.g., the display is frozen)**
 - a. Try to quit and restart Matlab

- i. To quit Matlab display, hover mouse over the Matlab icon at the bottom of the screen and close the display window
 1. This operation will kill the running task, and you can start over with the same previous procedures
 - b. Try to restart the computer
 3. Sometimes the issue is caused by too much movement so that Shimmer or Matlab cannot find viable signals. So always try to remind people to keep still and possibly restart
 4. If the issue happens in the middle of the task
 - a. LEAVE A NOTE ON THE LOGBOOK
 - b. Restart the task if there will be enough of time
 - c. Let the participant leave and make a note in the log if there will not be enough of time to restart
 - i. Note on when/why/how the issue happens and what you have tried to solve it
 - ii. Let Danlei know about the issue

Debriefing

5. **Enter the testing room and ensure the participant is comfortable**
 - a. *"Alright (participant name), you've finished with the experiment. How are you doing? We will step in the room to ask you a few questions about the experiment"*
6. **Administer debriefing questionnaire**
 - a. Read through the questions on the debriefing sheet one by one
 - b. Document Subject's response to each question in detail.
 - c. After questionnaire is all filled out, say
 - i. *"You have finished the experiment. Now we're going to let you get cleaned up."*

END OF SESSION

1. **Remove the ECG and EDA sensors**
 - a. *"Now I'm going to take the sensors off. You can remove the stickers by yourself if you want to as well."*
 - b. Hand the participant a wipe and say, *"Feel free to use these wipes and clean out any residues."*
2. **Thank the participant for their time and ask if they need directions out**
 - a. *"You have finished the experiment. Thank you for coming in. Do you need any directions out of the lab? We have given you credit on Psylink. Please collect your belongings and have a great day!"*

WHEN PARTICIPANT LEAVES

1. **Back up data to server on the PP's computer**
 - a. Log in to server:
 - i. Click **Start** and select **Run**.
 - ii. Enter one of the following:
 1. \\nunet.neu.edu\dept-shares\IASL
 2. \\fs2.nunet.neu.edu\IASL
 - iii. When prompted for username, enter nunet\your sponsored account username
 - iv. Enter your password

2. **Give the participant Psylink credit**
3. **Shut down computers and monitors in both rooms**
4. **Shut down amplifier**
5. **Finalize relevant notes in notebook**
6. **File all paper data in appropriate folders in study bin**
 - Make sure you also signed the consent form
 - Put the study bin away
7. **Clean up the testing room**
 - Recharge the shimmer box
 - Put away trash
8. **Remove signs from doors**

COVID protocol

- Wipe down all surfaces
- Spray all fabric