

## APPENDIX A: Questionnaires

\*Note: Likert scale shown here only after first question.

### SCNEQ

#### Spatial Cognition, Navigation, Experience Questionnaire

We would like to know how familiar you are with this kind of environment or with places that have similar sets of characteristics. Given the following prompts, you are being invited to consider past experiences and questions that may involve some reflection on your navigational history and level of comfort in specific settings.

1. I have spent very little time in large and complex indoor environments like a major hospital .  
strongly agree 1 2 3 4 5 6 7 strongly disagree
2. I grew up in an urban or metropolitan setting.
3. I am used to the layout of a city whose roads are arranged in a grid.
4. I feel more comfortable in open natural environments than in densely populated areas.
5. I lived much of my life in a rural setting.
6. I like the largeness and complexity of Penn/HUP campuses.
7. I appreciate well-organized building and road systems.

### Familiarity with Hospital

Hospital Experience:

Have you been inside the hospital of the University of Pennsylvania before for any reason?

Yes: \_\_\_\_ No: \_\_\_\_

If yes, how long ago was the last time you were in the hospital?

Approximately how many hours have you spent inside the hospital ?

## APPENDIX B: Experimenter Scripts, Pointing Pre-test

*We will now have a brief test to see how accurately you can remember a direction, and give you some practice, with this device.*

*This armband is equipped with a ring of motors [show strap of motors]. As you move, whichever motor is pointing closest to North will vibrate. This is a very useful cue that you can use to maintain your orientation. No matter which you face, the armband will still vibrate toward (approximately) the same direction).*

*Take a few minutes to practice sensing the vibration and moving around with the band on. You'll want to point your arm directly at the ground, and aligned with your body, to get the most accurate reading.*

*Also, the armband is programmed to vibrate toward one specific direction - north - but variations in the environment may cause occasional fluctuations. If at any point it feels like the direction becomes erratic, try taking a few steps around, or just wait until the direction re-stabilizes.*

*To practice, first put on the armband. I will have you move around the space, and I want you to point as best you can to the direction the armband is indicating. Great!*

*Now, I'll put on the blindfold, and you can try again. Great!*

*Now, we'll just do a brief test. I will show you a direction by pointing.*

*Your job is to remember that direction after being spun and moved around the space, and then tell me which direction it was. You will point 3 separate times for each direction. Then we will change the cues you're using and repeat the task. Do you have any questions?*

## APPENDIX C: Experimenter Scripts, Main Experiment

**Section 1. Introduction****Administer SBSOD and Dan Questionnaire.****Go to entrance: doorway that opens to hallway that connects Radvin to Rhoads.****Then, while still outside:**

*We're interested in how well people can learn complex indoor environments. You've never been inside the hospital, right?*

*Great! What we're going to do today, is a study to see how people learn indoor spaces. I will be guiding you along two routes through this hospital. Your goal is to try to learn a few locations (indicated by objects along the route), the layout of the route with respect to the hospital, and with respect to Penn's campus, and the broader external environment.*

*Any questions so far?*

**Proceed to beginning of first route.**

## **Section 2. Compass Route**

### **Pointing Pre-Test**

*To begin, we're going to have you point to a number of things around the Philadelphia area. If you're not familiar with any of the landmarks, be sure to tell your experimenter, but make a guess anyway.*

*Here we give you a working orientation: this direction is north. You may utilize this information in whatever capacity you like, for any of the activities we're doing today.*

### **Route Instructions**

*Great. So, I'm going to lead you on a route through the hospital, and ask you to learn 5 locations – 3 will be objects along the route, the others will just be the start (here) and end of the route. The goal of this will be to learn the route, and as much information about the objects as you can - the order they appear in, and their locations. Pay additional attention to the direction you are facing when viewing the object, enough to be able to recall it later. At each object, take as much time as you like, but we cannot back track.*

*As I said before, try to learn the layout of the route with respect to the hospital, and with respect to Penn's campus, and the broader external environment.*

*Along this route, you will get to use the armband. Remember that this armband indicates a specific direction – NORTH. Many people find this helpful in maintaining their orientation throughout the environment.*

*At the end, you will have to do the pointing task again, but including the objects you've learned, follow the route back to the beginning, and draw a map of the route and the objects.*

**Test compass, then put compass on participant. Make sure they can point to North.**

**Begin route. Point out objects, name them, and ask participant to remember the direction s/he is facing as s/he faces it. Stop at each one, facing head on until participation chooses to continue.**

**Pointing Mid-test. / Route reversal. / Pointing Post-test.**

**Sketch-map (3 minutes) / Post-Test Questions.**

### **Section 3. No Compass Route**

#### **Pointing Pre-Test**

*To begin, we're going to have you point to a number of things around the Philadelphia area. If you're not familiar with any of the landmarks, be sure to tell your experimenter, but make a guess anyway.*

*Here we give you a working orientation: this direction is north. You may utilize this information in whatever capacity you like, for any of the activities we're doing today.*

#### **Route Instructions**

*Great. So, I'm going to lead you on a route through the hospital, and ask you to learn a 5 locations – 3 will be objects along the route, the others will just be the start (here) and end of the route. The goal of this will be to learn the route, and as much information about the objects as you can - the order they appear in, and their locations. Pay additional attention to the direction you are facing when viewing the object, enough to be able to recall it later. At each object, take as much time as you like, but we cannot back track.*

*As I said before, try to learn the layout of the route with respect to the hospital, and with respect to Penn's campus, and the broader external environment.*

*At the end, you will have to do the pointing task again, but including the objects you've learned, follow the route back to the beginning, and draw a map of the route and the objects.*

**Begin route. Point out objects, name them, and ask participant to remember the direction s/he is facing as s/he faces it. Stop at each one, facing head on until participation chooses to continue.**

**Pointing Mid-test. / Route reversal. / Pointing Post-test**

**Sketch-map (3 minutes) \ Post-Test Questions.**