Navigational Strategy Questionnaire (NSQ)

[Scoring Sheet]

This survey concerns the common habits or techniques that you engage in when navigating the familiar places in your everyday environment. When filling out this questionnaire, please **TAKE YOUR TIME, THINK CAREFULLY**, and be **VERY HONEST**. Some statements appear similar but differ in important ways. **Please spend at least 15 minutes doing it.** Circle the best rating using the five-point scale. **As much as possible, please agree or disagree with each statement, and avoid making neutral responses unless you are totally unsure.**

Please circle the appropriate rating using the five-point scale

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<tr>
<td>Totally Disagree</td>
<td>Somewhat Disagree</td>
<td>Neutral</td>
<td>Somewhat Agree</td>
<td>Totally Agree</td>
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1. **In an unfamiliar environment with no clear landmarks (e.g., forest, desert, new city) and/or in low visibility conditions (e.g., fog, heavy rain), I still have a good sense of where I am heading.**

2. **If I travel in a novel multi-level building, I can easily imagine the 3D structure of the space.**

3. **I tend to judge my orientation in the environment in terms of cardinal directions (north, south, east, west).**

4. **My mental representation of space reflects realistic, large-scale structural layout of my surrounding environment with relatively accurate distances.**

5. **If I need to return to my origin, it is easier for me to retrace my route than to find a new shortcut.**

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The NSQ contains three self-report scales assessing three types of strategies that are commonly employed when navigating our everyday environments on foot: (i) **egocentric spatial updating strategy** (denoted by ***), (ii) **survey-based strategy** (denoted by ##), and (iii) **procedural strategy** (denoted by +). The three strategy scales are intended to serve as add-ons to the Santa Barbara Sense of Direction Scale (SBSOD), which provides a unitary scale score that makes no distinction between different navigation strategies (see Zhong, 2013; Zhong & Kozhevnikov, 2016). The egocentric spatial updating strategy scale (17 items) assesses path integration mechanisms (e.g., continuous tracking of self-motion and proximal object cues), an ego-referenced sense of direction, and the recruitment of egocentric frame(s) of reference during mental imagery. The survey-based strategy scale (12 items) assesses competence in cognitive mapping of routes and large-scale environments, and the formation of survey knowledge based on allocentric or environment-centered frames of reference. The procedural strategy (15 items) assesses visual attention to and memory for object/landmarks, and the reliance on object/landmark information for mentalizing routes of travel in a non-spatial/piecemeal or sequential fashion. To compute the respective scale scores, sum the ratings from the items that constitute each scale and average them. Non-desired items can also be discarded, whenever necessary, in the computation of the scale scores.

**To use the NSQ, please read and cite:**


### 6. I usually attempt to visualize a map of the environment from a top-down aerial perspective as I travel.  
1—2—3—4—5

### 7. It is easy for me to estimate the distance and direction between my moving body and the landmarks I have passed by on the route.  
1—2—3—4—5

### 8. If I were to return to my origin, I would attempt to find a shortcut based on judging the direction-of-return to the origin rather than retracing my footsteps.  
1—2—3—4—5

### 9. My mental representation of the route that I traversed is analogous to a schematic map (e.g., floor-plan, blue-print, metro map) rather than a first-person perspective of routes and landmarks.  
1—2—3—4—5

### 10. I rely primarily on landmarks as signs of turning points along my route of travel.  
1—2—3—4—5

### 11. I have an “internal compass”.  
1—2—3—4—5

### 12. To reach my destination, I largely recruit a set of procedures telling me the actions to perform (i.e., go straight/back, turn left/right) at different locations on my route.  
1—2—3—4—5

### 13. I tend to reconstruct my traveled route by imagining abstract spatial relationships amongst different places in a schematic plan rather than by imagining re-walking the route from a 3D first-person perspective.  
1—2—3—4—5

### 14. I usually attempt to mentally represent route segments, turns and their spatial relationships from a top-down aerial perspective.  
1—2—3—4—5

### 15. I remember my route traveled as a succession of different segment lengths and turns without clear spatial relationships.  
1—2—3—4—5

### 16. I can sense where I am heading even with my eyes closed.  
1—2—3—4—5

### 17. At any time during a route, I can point back to where I began.  
1—2—3—4—5

### 18. I prefer following directions with descriptions of landmarks at turning points rather than using a map.  
1—2—3—4—5

### 19. I have stored mental “snapshots” of landmarks or scenes which do not inform me clearly of my position and orientation in the environment.  
1—2—3—4—5

### 20. At any time during a route, I can point back to the landmarks I have passed by.  
1—2—3—4—5

### 21. If I were to walk on my route again, I would depend heavily on a sequence of mental “snapshots” of landmarks or scenes to go to the places I had been to.  
1—2—3—4—5

### 22. I can easily keep track of my direction of travel on my route with respect to the starting point.  
1—2—3—4—5
23. I find it much easier to understand my route procedurally (i.e., where to head and where to turn) than based on forming a map-like mental representation.

24. It is very difficult for me to find a shortcut because I think of my route as a sequence of routes and turns.

25. I find it much easier to recall my route as a set of procedures or actions than as a pattern of spatial relationships.

26. I rely primarily on a schematic mental representation of my environment to help me in finding shortcuts.

27. I rely primarily on a schematic mental representation of my environment to figure out my position in the environment.

28. Whenever I get lost, I try to reorient myself in relation to the visible landmarks.

29. I usually rely on a schematic mental representation to orient and navigate to familiar places.

30. When I navigate, I pay attention to the landmarks at the turning points and try to remember their sequence.

31. I visualize my environment in the form of a 3D spatial layout that maintains the spatial relations between my imagined self and surrounding landmarks/objects.

32. I have navigational intuition.

33. My mental representation of my traveled route resembles a schematic plan of abstract spatial relationships rather than a pictorial, sequential plan of landmarks/objects.

34. I keep a mental record of the landmarks I see on my traveling route in a sequential fashion.

35. I can point to the exit after several turns in a building without relying on salient landmarks/objects as points of reference.

36. To avoid getting lost, I usually try to memorize the landmarks around me, along with their associated turns.

37. My mental representation of space primarily involves sequences of route segments and turning points.

38. Inside buildings with no salient landmarks/objects to serve as points of reference, I can still sense the direction I am facing.

39. I can find my way under low visibility conditions (or even in darkness) in familiar places better than other people.

40. I can easily point to a specific place outside the building when I don't see it from the inside.
### 41. When I imagine reorienting myself on my mental map, I tend to visualize my environment from the top-down aerial perspective and turn my imagined position to face the new heading.

### 42. I know the direction to familiar buildings even when it is blocked from sight by another one.

### 43. I can plan out my route of travel by visualizing a schematic map from a top-down aerial perspective.

### 44. When I reconstruct my mental map, its environmental orientation is fixed and does not change with my imagined heading directions.