Hypotheses:

- **Mindsets:** People with a growth mindset are more likely to report a good sense of direction, feel less anxious during navigation, and show navigation capacity (ability to find a short cut).
- **Behaviors:** People with a growth mindset are more likely to explore new places (exploration tendency) and less likely to rely on GPS (GPS dependence).
- **Ability:** People with a growth mindset have better performance in perspective-taking tests, have better survey knowledge (less angular error in estimating directions in the real world), and show navigation efficiency (ability to find a short cut).

Materials:

**Navigation Mindsets (Questionnaires)**

- Growth Mindset in Navigation Ability (7-scale and 8 items)
- Implicit theories about whether their intelligence can / cannot be improved
- E.g., I have a certain amount of navigational ability, and I can’t really do much to change it.
- Exploration Tendency (7-scale and 4 items)
- Attitude about exploring new places
- E.g., If I have a chance, I would like to explore different routes to get to my destination
- GPS Dependence (5-scale and 5 items)
- Tendency to use GPS in 5 scenarios
- E.g., Finding my way to an appointment in an unfamiliar area of a city or town

**Perspective-Taking Tests**

- Object Version: 32 trials; (Hagerty & Waller, 2004; Friedman et al., submitted)
- Map Version: 32 trials; (Developed based on Montello et al., 1999)

**Real-World Pointing Test & Short Cutting Test**

- Main Landmarks: Pointing location
- Other Landmarks
- Perspectives taken by participants
- “Learning” Route

**Study 1**

109 undergraduate (68 females & 41 males) students from subject pool

**Study 2 (in progress)**

- Random
- Short
- Long

Results:

- **Perspective-Taking Tests**
  - Highly Correlated to each other
  - Significantly different
- **Exploration Tendency**
  - Highly Correlated to each other
  - Not significantly different

Conclusions:

- **In study 1:**
  - People with a growth mindset are more likely to report a good sense of direction, feel less anxious during navigation, and are more likely to explore new places. They also have better performance in perspective-taking tests.
  - People who report a good sense of direction are less likely to rely on GPS, whereas those with high anxiety during navigation are more likely to rely on GPS.
  - In terms of gender differences, the results of perspective taking tests replicate the prior findings favoring males. In addition, females are more likely to report a poor sense of direction and high spatial anxiety, replicating previous research. Females are also less likely to explore new places or use new routes, and more likely to rely on GPS.

References:

- Castella & Byrne, 2015. The results show that people with growth mindset are more likely to report a good sense of direction, feel less anxious during navigation, and are more likely to explore new places. They also have better performance in perspective-taking tests.