Contributing Factors of Person Recognition in Natural Environments

Carina A. Hahn, P. Jonathon Phillips, Alice J. O’Toole

1The University of Texas at Dallas, Richardson, TX, 2The National Institute of Standards and Technology, Gaithersburg, MD

**Goal**

Explore person recognition in natural environments when viewing a person approach.

**Background**

Information from face, body, and gait support person recognition.

- Research has largely concentrated on face
- Body can support recognition
- “Inferential” cues in face when both are accessible

How is this information combined over time when making recognition judgments?

Which features influence use of each in natural viewing environments?

**Approach**

Examine recognition in natural environments with whole people approaching in motion—quality of identity information from the face and body in flu over changes in distance.

- Two within-subjects test types:
  - Whole person (Face + Body; Body alone; Face only)
  - Face only (Face alone; Body alone)

- Response latency is independent of person's distance from viewer

**Method**

- Learning phase (all experiments)
  - Familiarized with 3 identities + 4 motion-based actions + 120 videos total

- Recognition test (all experiments)
  - Tested using 60 identities
  - All shown walking toward camera
  - Experienced 8-motion patterns

- Two within-subjects test types:
  - Whole person vs. Face only

**Results**

**Experiment 1 – Segmented Videos**

- Whole person:
  - F(4, 94) = 4.38, p < .001, partial η² = .36
  - No benefit of seeing more video

- Face only:
  - F(4, 94) = 26.29, p < .001, partial η² = .54
  - No benefit of seeing more video

**Experiment 2 – Blurred Face or Bodies**

- Whole person:
  - F(4, 94) = 36.05, p < .001, partial η² = .63
  - Accuracy improves with proximity

- Face only:
  - F(4, 94) = 6.50, p = .003, partial η² = .24
  - Accuracy improves with proximity

**Conclusions**

- Decisions have at least two sources of information from face and body at time of recognition decision determines accuracy

- Face and body contribution varies as a function of person's distance from viewer

- Reliance on face/body varies with proximity and reliance on face improves with proximity

**References**


**Future Directions**

- Neuroimaging: Neural representation of whole people across distances
  - Distinct representations of faces, bodies, and whole people
  - Separability/biological relevance of neural responses to familiar and unfamiliar people over time
  - Integration of faces and bodies in context of recognition

- Other sources of expected information influences decision making