

Does Habituation Affect Fingerprint Quality?

Mary Theofanos, Ross Micheals, Jean Scholtz, Emile Morse, Peter May



Does habituation affect user's performance and the acquisition of quality prints?

How does feedback affect habituation and image quality?

Study Design

- Collected impressions of left and right index fingers
- For each phase collected 2 impressions per day over 15 days

Phase 1:

- Operator indicated when to place and remove finger
- Operator manually triggered image capture
- Participants received no information about image

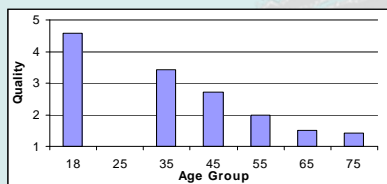
Phase 2:

Participants:

- Decided which order to scan fingers
- Saw a dynamic scale bar of image quality
- Encouraged to collect as many samples as needed to achieve desired quality
- Decided when to submit the image to the database

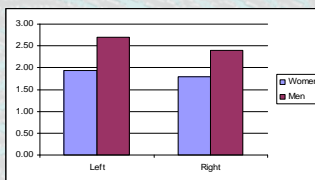
Phase One:

1. Younger participants submit higher quality images than older participants



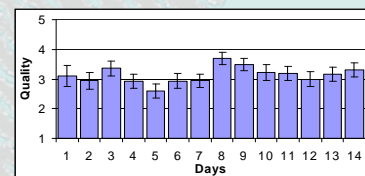
Quality of fingerprints by age group

2. Women's images, on average, are of poorer quality than men's



Quality of fingerprints by gender

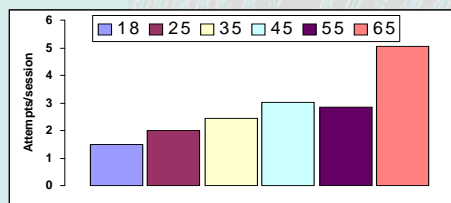
3. Habituation has no effect on image quality without feedback



Quality of finger prints over time

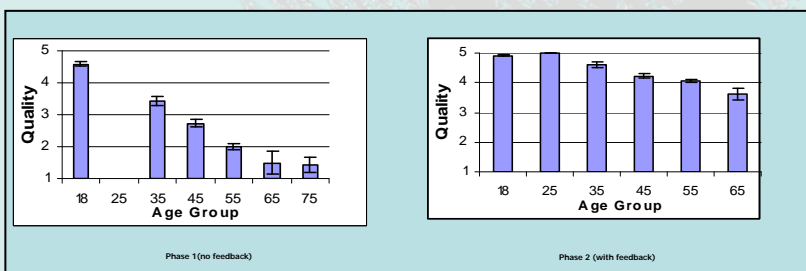
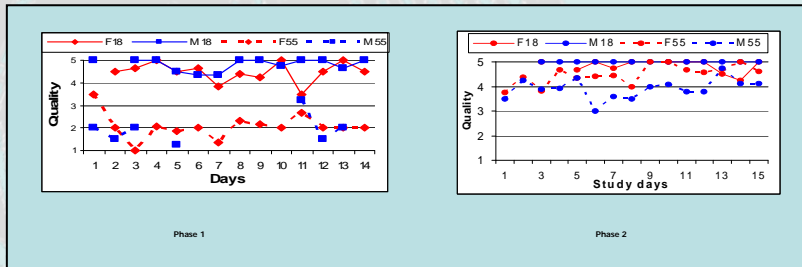
Phase Two:

1. When feedback was introduced older participants tried more times



Attempts by age group

2. Older participants produced images that were of higher quality over time



3. But younger subjects still submit higher quality images