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# Facial attractiveness and recognition of faces: Effects of age and gender

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## Introduction

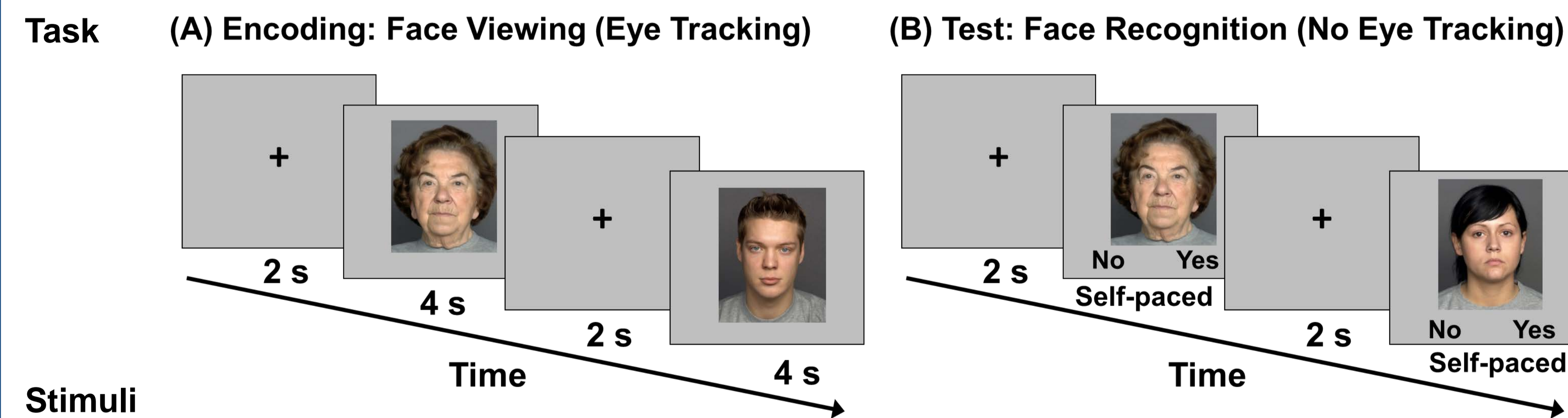
Recognizing faces is a complex, important, and frequent task. Older compared to younger adults experience declines in face recognition *Bartlett et al., 1989; Crook & Larrabee, 1992; Grady et al., 1995*. Visual attention and face recognition in both age groups is influenced by facial features such as expression, race, or age *Ebner & Johnson, 2009; Meissner & Brigham, 2001; Rhodes & Anastasi, 2012*. In addition, facial attractiveness has been shown to influence face recognition in younger adults *Light et al. 1981*. Using eye tracking, the present study examined the influence of facial attractiveness on attention to and recognition memory for faces in adults of different ages.

## Research Questions

- (1) Facial Attractiveness and Face Recognition Memory:** Does facial attractiveness predict successful recognition of faces? Does this relationship vary by age and gender of the viewer?
- (2) Facial Attractiveness and Face Looking Time:** Does facial attractiveness predict time spent viewing faces? Does this relationship vary by age and gender of the viewer?

## Methods

**Sample**  
 n = 25 younger adults (M = 22.2 yrs., SD = 2.9 yrs., range: 19–29 yrs., 60% women)  
 n = 24 older adults (M = 73.9 yrs., SD = 7.8 yrs., range: 63–92 yrs., 71% women)



**Stimuli**

- Neutral faces from FACES Database *Ebner et al., 2010*
- Encoding:** 24 younger and 24 older faces; half male, half female
- Test:** 48 younger and 48 older faces; half male, half female; half target, half distractor
- Faces varied in facial attractiveness *Ebner et al., 2010*
  - Rated by n = 52 younger (M = 26.5 yrs., SD = 3.0 yrs., range: 20-31 yrs., 54% women) and n = 57 older (M = 73.6 yrs., SD = 2.7 yrs., range: 70-81 yrs., 47% women) adults
  - How attractive is this person?; scale: 0 = not attractive at all to 100 = very attractive

**Equipment**  
 Applied Science Laboratories Model 504 Eye Tracker: Eye movement recoding rate of 60 Hz  
 GazeTracker Software (Eye Response Technologies, Inc.): Stimulus presentation and data processing

**Dependent Measures**  
**Hits:** Percentage of successful recognition of target faces  
**Gaze Time:** amount of time participants' pupil and corneal reflection were recorded during encoding

**Analytic Approach**  
 Multilevel Random Coefficient Modeling using HLM6 *Raudenbush & Bryk, 2002; Nezlek, 2008*  
**Facial Attractiveness and Face Recognition Memory Model**  
 $\eta$  (Hits) =  $\beta_{00}$  +  $\beta_{01}$  (Age Group) +  $\beta_{02}$  (Gender) +  $\beta_{03}$  (Age Group X Gender) +  $\beta_{10}$  (Attractiveness) +  $\beta_{11}$  (Age Group X Attractiveness) +  $\beta_{12}$  (Gender X Attractiveness) +  $\beta_{13}$  (Age Group X Gender X Attractiveness) +  $r_0$  +  $r_1$ (Attractiveness)  
**Facial Attractiveness and Gaze Time Model**  
 Gaze =  $\beta_{00}$  +  $\beta_{01}$  (Age Group) +  $\beta_{02}$  (Gender) +  $\beta_{03}$  (Age Group X Gender) +  $\beta_{10}$  (Attractiveness) +  $\beta_{11}$  (Age Group X Attractiveness) +  $\beta_{12}$  (Gender X Attractiveness) +  $\beta_{13}$  (Age Group X Gender X Attractiveness) +  $r_0$  +  $r_1$ (Attractiveness) + e

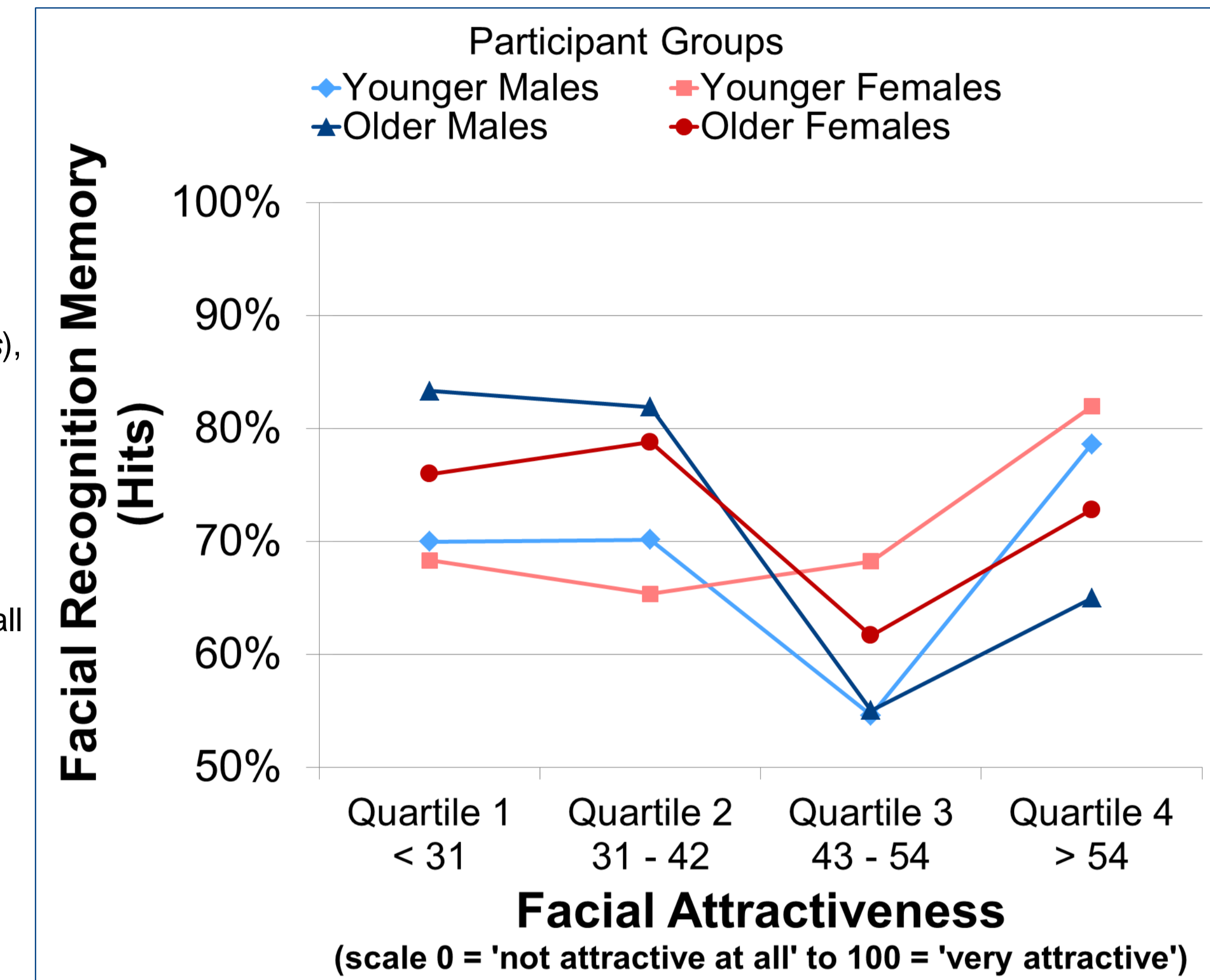
## Results

### (1) Facial Attractiveness and Face Recognition Memory

Older adults were better at remembering faces rated as less attractive; younger adults were better at remembering faces rated as more attractive

Variable	Face Recognition Memory (Hits)
<b>Fixed effects</b>	
Intercept	2.24
Age group of participant	1.27
Gender of participant	1.14
Age group of participant X Gender of participant	0.88
Attractiveness rating of face	1.00
<b>Age group of participant X Attractiveness rating of face</b>	<b>0.96 *</b>
<b>Gender of participant X Attractiveness rating of face</b>	<b>1.02 *</b>
Age group of participant X Gender of participant X Attractiveness rating of face	1.01
<b>Random Effects</b>	
Attractiveness rating of face	0.00

- \* p < .05
- + p < .10
- Logistic regression
- Face recognition memory: 0 (miss), 1 (hit)
- Age group: 0 (younger), 1 (older)
- Gender: 0 (female), 1 (male)
- Reported parameter estimates: odds ratios
- Odds ratio of 1 indicates face recognition to be equally likely in all groups
- Odds ratios greater than 1 indicates face recognition to be more likely in the group coded 1 than in the group coded 0

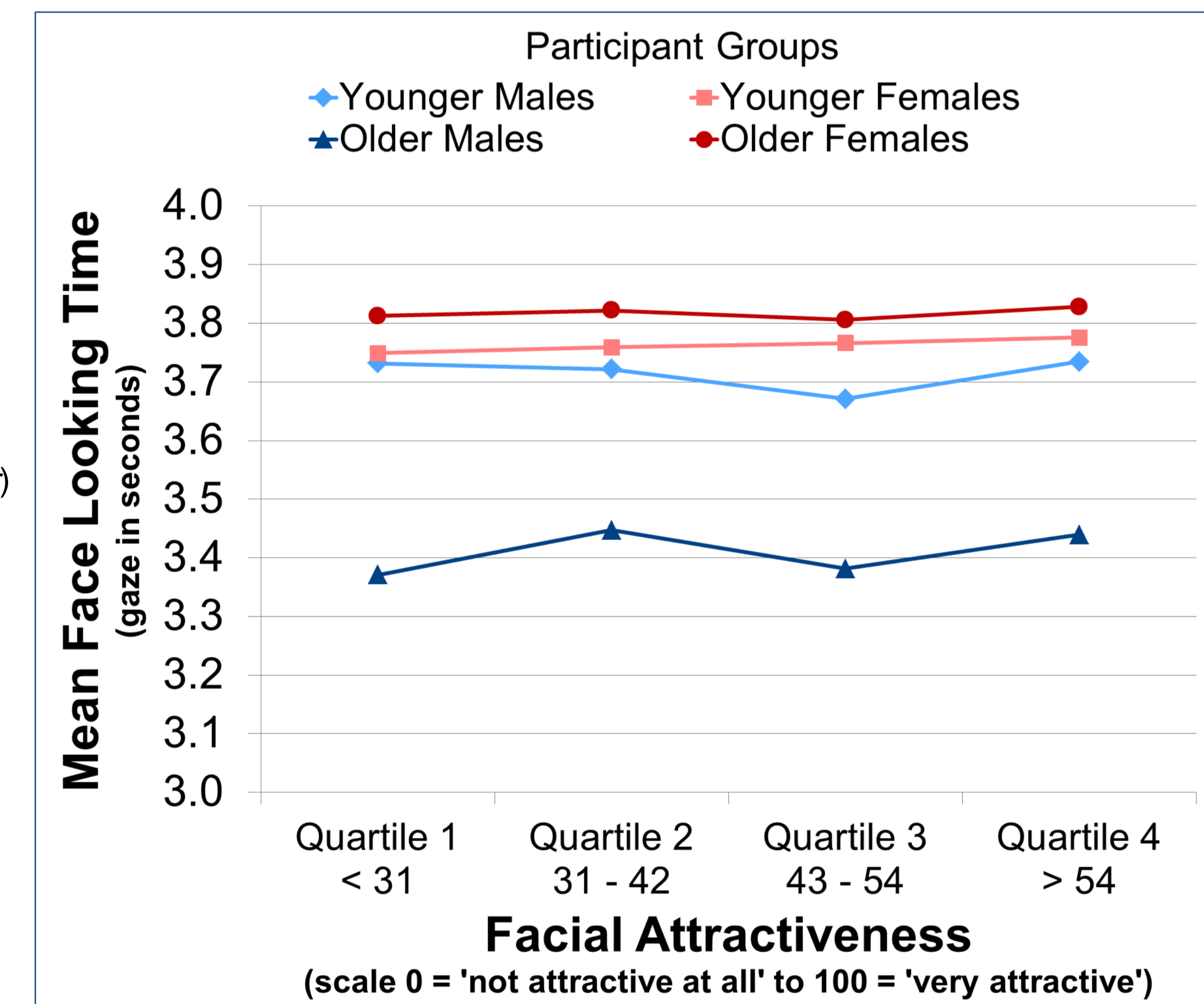


### (2) Facial Attractiveness and Face Looking Time

Older males had shorter looking time overall than all other groups; overall face looking time effect was independent of facial attractiveness

Variable	Face Looking Time (Gaze)
<b>Fixed effects</b>	
Intercept	3.72
<b>Age group of participant</b>	<b>-0.41 *</b>
Gender of participant	0.02
<b>Age group of participant X Gender of participant</b>	<b>0.48 *</b>
Attractiveness rating of face	0.00
Age group of participant X Attractiveness rating of face	0.00
Gender of participant X Attractiveness rating of face	0.00
Age group of participant X Gender of participant X Attractiveness rating of face	0.00
<b>Random Effects</b>	
Intercept	0.07
Attractiveness rating of face	0.00
Residual	0.08

- \* p < .05
- n = 2,277
- Gaze time: M = 3.72, SD = .39, range: 1.7 – 4.0 seconds
- Age group: 0 (younger), 1 (older)
- Gender: 0 (female), 1 (male)
- Fixed effects: Unstandardized regression coefficients
- Random effects: Estimated variance components



## Discussion

- Attractive faces may be less distinctive *Light et al., 1981*, and thus harder for older adults to recognize
- Younger adults may have better recognition for more attractive faces because of mating and competition goals; these motivations may become less salient with age
- Differences between younger and older men and women in ratings of facial attractiveness may affect effects observed in the study

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