The influence of facial motion on the perception of facial attractiveness

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Introduction

Facial Attractiveness

Facial attractiveness has usually been explored via static stimuli, such as photographs or computer generated pictures of faces (e.g. N. Etcoff, 1999, Langlois & Roggman, 1990, Perrett et al. 1994, Thornhill, 1999). Facial attributes such as averageness, symmetry, secondary sex traits, familiarity or youthfulness have been extensively investigated as possible contributors to physical attractiveness. What about facial motion? Does the way we move our faces influence the impression of facial attractiveness?


Facial Motion

Facial motion can convey information about gender , emotion, age and identity (e.g. Bassili, 1978; Berry, 1991; Bruce & Valentine, 1988; Hill & Johnston 2001; Lander & Bruce, 2000; Knappmeyer, Thornton & Bülthoff, 2001; O'Toole et al. 2002).

morph sequence
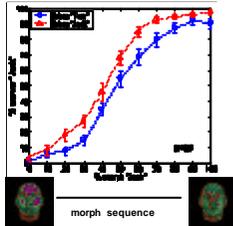
Questions

1. Does non-rigid facial motion influence the perception of facial attractiveness?

2. If so, does dynamical presented information and static information contribute to the effect in the same way?

Facial Animation
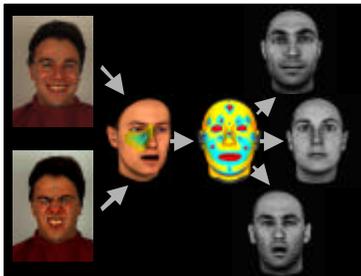
Methods

Stimuli

➢ motion patterns recorded from a non-professional male human 'actor'

➢ 27 blue / green foam markers attached to the actor's face

➢ 25 male / 25 female 3D laserscans (Cyberware™) of human heads

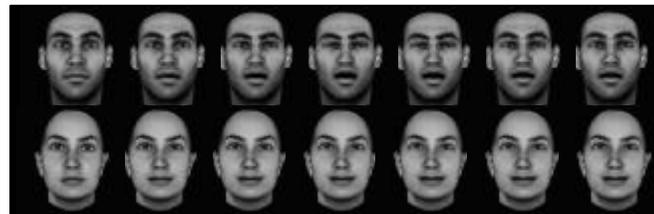➢ individual skin texture replaced with a standard male / female texture (Blanz & Vetter, 1999

➢ animated with famous3D animator

➢ only non-rigid facial motion used

➢ Expression: neutral, positive, negative

➢ Presentation: static (1 frame at peak expression), animated (~1.5 s, 25f/s)

Motion sequences:

Task

➢ Sixteen observers: 8 male / 8 female
➢ Rating: open scale with fixed endpoints "less attractive" and "more attractive"
➢ Six tick-marks on scale, but all positions allowed (internal resolution 0-100 in steps of 1)
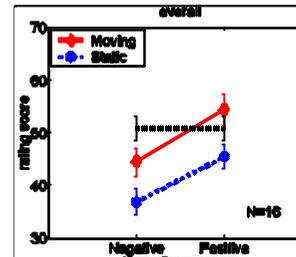➢ Random presentation
➢ Instruction: "Rate the faces not the facial expression. Try to ignore the deformation of the face!"

Results & Discussion

Overall

➢ **Main effect of presentation mode** with moving faces rated more attractive than static faces (F(1, 14)=32.2, p<0.001).
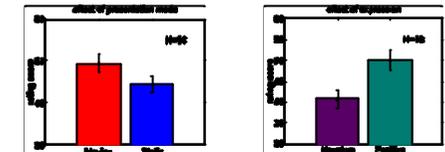
➢ **Main effect of expression type** with positive expression rated more attractive than negative expression (F(1, 14)=11.1, p=0.005).
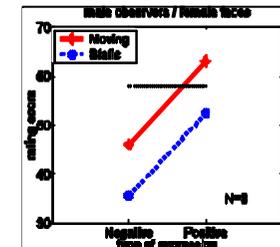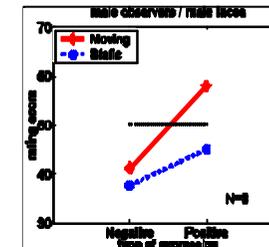
➢ **Interactions:**
Face gender x expression type: F(1, 14)=9.1, p=0.009.
Subject gender x expression type: F(1, 14)=3.8, p=0.07.

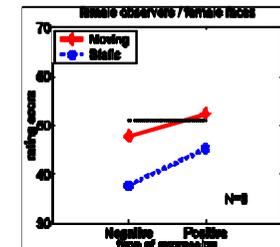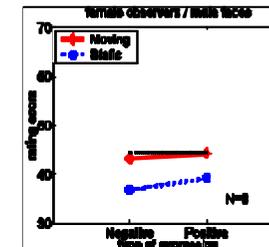➢ Face gender x presentation x expression: F(1, 14)=6.1, p=0.027.

➢ Subject gender x face gender x presentation x expression: F(1, 14)=3.2, p=0.097.

Male Observers

Female Observers

Discussion

✓ The way a face moves influences its perceived attractiveness.

✓ Static expressive faces are rated less attractive than moving expressive faces. Do moving faces appear more natural?

✓ Negative expression pushes perceived attractiveness below baseline, whereas positive expression lifts the perceived attractiveness only when presented in motion and only for the male observers. Artifact of animation technique? Realistic smile harder to model than realistic negative expression?