The Role of Sexual Dimorphism in the Perception of Attractiveness and Confidence

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Background

• Human body shape and gait patterns are rich in socially relevant information.
• Several studies have investigated sex-specific differences in walking style (e.g., Troje 2002;2003). These studies found that:
  • The exaggerated male walking pattern is determined by a wide step width, a significant sway of the shoulders, and the elbows being held away from the body.
  • The exaggerated female walking pattern is determined by a significant rotation in the hips, little lateral motion in the upper body, and the elbows being held close to the body.
• Little is known about how sexual dimorphism in walking relates to the perception of biological and personality traits.

Research Question

• How does sexual dimorphism in walking relate to the perceived attractiveness and confidence of a person?
• What is the role of body shape and motion in the perception of attractiveness and confidence?

Methods I

Stimuli

We used the walking motions of 50 men and 50 women from the bmlRUB motion capture database (Troje, 2002). Each actor’s body shape and walking motion was reconstructed from the motion capture data using the MoSh algorithm (Loper et al., 2014). The 100 walkers were presented in 3 different ways, as a:

1. walking virtual character with each actor’s shape and motion
2. walking stick-figure with lines connecting 15 body landmarks
3. static virtual character in an A-pose

Methods II

Apparatus:

Oculus Rift DK2 & Lioncast Arcade Fighting Stick.

Experiment 1: 40 observers (20 female, 20 male) rated the attractiveness of the 100 walkers on a 6-point Likert scale (“not attractive” to “very attractive”).

Experiment 2: 36 observers (18 female, 18 male) rated the confidence of the 100 walkers on a 6-point Likert scale (“not confident” to “very confident”).

Methods III

Data Analysis:

The motion patterns of the 100 walkers were analyzed using the algorithms described in Troje (2002). Based on linearization of the motion data, a motion space was defined that is spanned by the first 9 principle components. Using participants’ attractiveness and confidence ratings, and walker gender, linear discriminant functions defining 9D vectors in the motion space were computed. To analyze how sexual dimorphism in walking relates to attractiveness and confidence ratings, correlations were calculated between the coefficients of the respective linear discriminant functions.

Results

1. Both shape and motion contribute to perceived attractiveness and confidence of the walkers, as indicated by strong correlations between:
   • walking virtual characters and stick-figures and
   • walking virtual characters and static characters

2. Sexual dimorphism in walking plays a different role for male and female walkers for perceived attractiveness and confidence:
   • The more feminine a woman walks, the more attractive she is rated.
   • The more masculine a man walks, the more confident he is rated.
   • Male attractiveness and female confidence are determined by increased vertical movements.

3. Highly attractive female and male body shapes, and female body shapes rated as highly confident are tall and slim, the male body shape rated as highly confident is tall and strong (as compared to small and heavy).

Conclusion

• Perceived attractiveness and confidence relate to body shape and walking motion.
• The role of sexual dimorphism plays a different role in attributing biological and personality traits to females and males. In line with previous research (Troje 2003) sexual dimorphism is more important for female attractiveness, increased vertical motion is important for male attractiveness.
• Male and female participants agreed on what they perceive as being attractive and confident in body shape and walking motion.
• Future research should investigate the role of inconsistencies between body shape and motion for the perception of biological and personality traits.

References

• N. F. Troje. Cat walk and western hero: Motion is expressive. iGSRNReport, Cognitive Neuroscience, pages 40–43, 2003.