Recognizing faces across different views: does caricaturing help?

Barbara Knappmeyer*, Yi Cheng** & Isabelle Bülthoff*

*Max Planck Institute for Biological Cybernetics, Tübingen
** Brown University, Providence

The Caricature Effect

- Caricatures are recognized at least as fast and as accurately as the corresponding veridical representations of faces, often even faster and more accurately.
- This caricature effect is a robust finding, which has been demonstrated employing different tasks and different stimuli, such as line-drawings (Rhodes et al. 1987) and photographs (Benson & Perrett, 1991).
- Usually caricatures have been presented only at test and only in frontal views.
- Face recognition is view-dependent (e.g., Kruse 1981, Hill et al. 1997, Troje & Bülthoff 1996).

Face Space Idea

- Distinctive face
- Typical face
- Average face

Valentine 1981

Questions

- Does the caricature effect (CE) hold for different views?
- Does the CE generalize across changes in viewpoint between learning view and testing view?
- Can we find a reversed caricature effect (RCE), i.e. do caricatures also help when presented at training (at the encoding rather than at the retrieval)?
- Is the caricature effect limited to memory tasks or can we also observe it in more perceptual tasks, such as face matching?

Methods & Materials

Sequential matching task:

Stimuli:

- Anticaricature
- Vertical
- Caricature

Old / new recognition:

Training phase

1. Passive viewing
2. Naming with feedback

Testing phase

- Effective
- Name test letter of name
- Same / different
- Is it new?

Experiment 1: Sequential Matching

Caricature at test (CE):

Performance: d'prime

Response bias: criterion

Caricature at training (RCE):

Performance: d'prime

Response bias: criterion

Experiment 2: Old / New Recognition

Old / new recognition:

Training phase

1. Passive viewing
2. Naming with feedback

Testing phase

- Effective
- Name test letter of name
- Same / different
- Is it new?

Caricature at test (CE):

Performance: d'prime

Response bias: criterion

Caricature at training (RCE):

Performance: d'prime

Response bias: criterion

Speculations

View-based or individual-based account for the face space model (Newell et al. 1999)?

1. Passive viewing
2. Naming with feedback

Performance: d'prime

Response bias: criterion

Summary & Conclusions

- Caricature effect present (with C>E>V>AC)
- No interaction between caricature level and views, i.e. CE generalizes across views.
- Criterion: observers are more conservative with caricatures
- Reversed caricature effect present (with C>E>V>AC)
- No interaction between caricature level and views for the sequential matching task, i.e. RCE generalizes across views. But interaction between LV and CL for old/new recognition task, with RCE strongest for profiles, weakest for FF at learning
- Criterion: observers are more conservative with caricatures

1. Passive viewing
2. Naming with feedback

Performance: d'prime

Response bias: criterion