

Same-race faces are perceived more holistically than other-race faces

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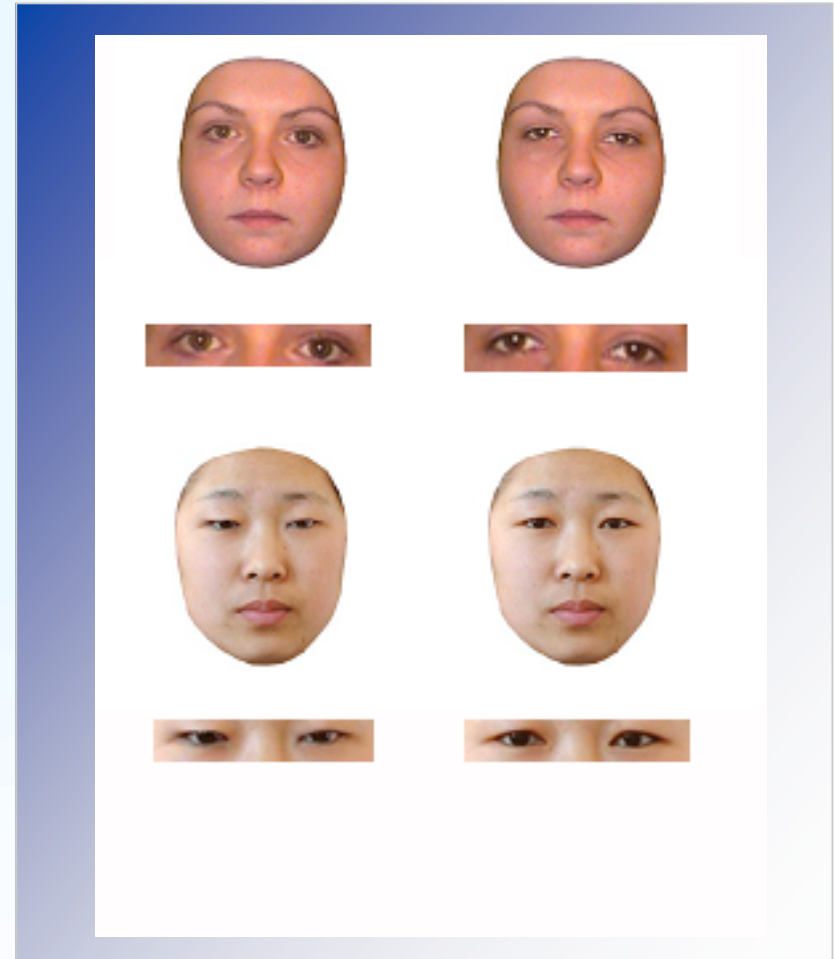
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Visual Cognition, 2006, 14 (1), 55-73.



See also: Michel, C., Rossion, B., Han, J., Chung, C-S, & Caldara, R. *Psychological Science*, 17, 608-615.

Main findings and conclusions

- **Same-race faces are processed more holistically than other-race faces...**

The whole/part advantage is *larger for Caucasian* than for Asian faces in *Caucasian* participants

- **... A differential processing which could disappear with visual experience.**

An equally large whole/part advantage for Asian and Caucasian faces in Asians living among Caucasians.

- **This differential holistic processing for same- versus other-race faces, may be a critical factor in accounting for the 'other-race effect'.**

- **Outstanding question:**

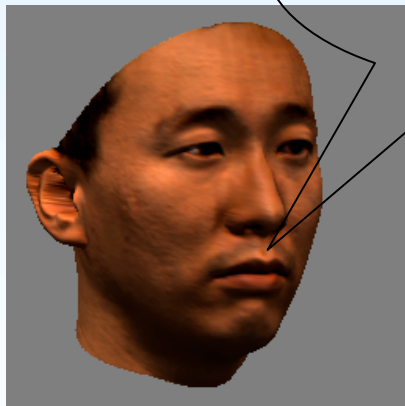
Do Asian people living in Asian countries process Asian faces more holistically than Caucasian faces?



See Michel et al., *Psychological Science*, 2006

The 'other-race effect'

Same-race faces are better recognized than other-race faces



They all look alike!



NOTE ON TERMINOLOGY

The concept of 'race'

= at the core of a major debate in the literature.

The opponents

A meaningless concept since only 15% of the human diversity arise between groups (e.g. Lewontin, 1972; Graves, 2004).

The differences between groups are merely cosmetic (skin color, facial features...) and they do not reflect any additional genetical distinctiveness

The proponents

The 'assault' against the notion of race is socio-politically – and not scientifically – motivated, because one is afraid that race promotes racism (e.g. Dawkins & Henig, 2004; Dr George Gill, <http://www.pbs.org/wgbh/nova/first/gill.html>).

TRUE THAT: the genetic clusters that can be defined in human population do not necessarily correspond to the clusters made on the basis of visible characteristics (e.g. Wilson, Weale, Smith, Gratrix, Fletcher, Thomas, Bradman, & Goldstein, 2001).

BUT WRONG THAT only 15% of the diversity arise between groups (e.g. Risch, Burchard, Ziv, & Tang, 2002).

The greatest genetic structure in the human population does occurs at the racial level, as long as suited analyses are conducted: analyses including correlations in gene-frequency data, whose importance has been underlined by Cavalli-Sforza & Piazza, 1975 (e.g. Edwards, 2003).

It is possible to assess the race of individuals from skeletal remains as well as from looking at living people (Dr George Gill; <http://www.pbs.org/wgbh/nova/first/gill.html>).

Terminology

Where we are concerned...

As in most papers dealing with the 'other-race effect' in the face processing literature, we use this term to refer to the large subdivisions that can be made within human species according to physical characteristics such as skin color, head shape and so on...

Whether these cosmetic differences are related or not to additional genetical differences between the subpopulations is not of main interest for research on the ORE, since the ORE precisely refers to the difficulty one has to recognize faces presenting such phenotypical differences as compared to those one is used to see in everyday life.

Of course, the term is used without any hierarchical connotation between these subpopulations.

The other-race effect (ORE) : a very robust phenomenon

Demonstrated empirically in numerous studies with

- different racial groups
- different paradigms

(See Meissner & Brigham, 2001 for a meta-analysis)

HOWEVER:

It does not benefit from a clear theoretical explanation

Why are we better at recognizing faces from our own race?

Consensus among researchers: the ORE is due to the differential visual experience we have with same versus other-race faces.

But what changes with visual experience, making us processing faces of our own-race more efficiently?

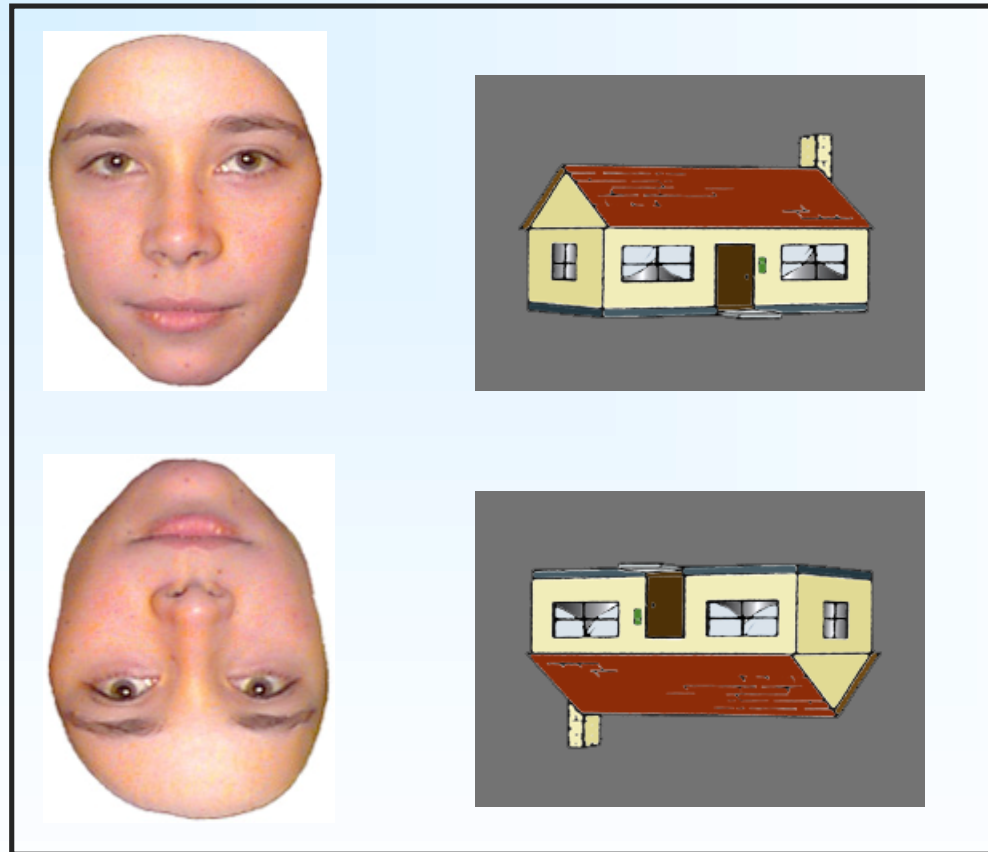
An interesting hypothesis: 'the holistic hypothesis'

Same-race faces would be processed more holistically than other-race faces.



face = processed and represented as a whole percept with the facial features being integrated, instead of a sum of independent parts

The holistic hypothesis has been **tested previously**, using the 'Face Inversion Effect' (FIE; Yin, 1969).



FIE = vertical inversion impairs recognition of faces more than recognition of other objects.

Introduction

Since the vertical inversion is supposed to disrupt mainly configural or holistic processing of the face, the FIE is often taken as an evidence that faces are processed holistically/configurally.

The idea was thus the following:

If same-race faces are processed more holistically than other-race faces, the FIE should be larger for the former than for the latter.

➤ Indirect evidence

➤ Conflicting results:

- Rhodes et al., 1989: larger FIE for same-race (SR) faces
- Valentine, 1991: larger FIE for other-race (OR) faces
- Buckhout & Regan, 1988: no difference between SR and OR

Introduction

Are same-race faces processed more holistically than other-race faces?

Here, we tested this hypothesis directly, with Asian and Caucasian participants

Measuring holistic processing of SR and OR faces

The whole/part advantage (Tanaka & Farah, 1993)

Discriminating 2 faces differing by one feature is easier/faster than the 2 features presented in isolation.

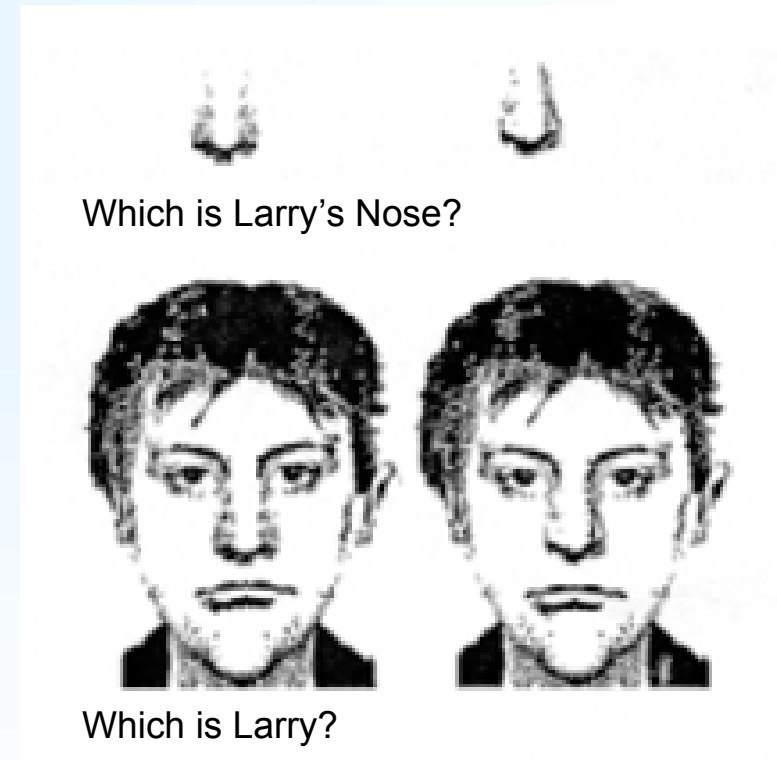
Tanaka & Farah, 1993

Davidoff & Donnelly, 1990

Farah et al., 1998

Sergent, 1984

Homa, Haver, & Schwartz, 1976



Paradigm

In the present experiment: a delayed matching task

'Whole condition'



followed by:



Easier than

'Parts condition'



followed by:



The present experiment:

First of all: do our participants present an ORE in face recognition?

Measure of the ORE

Old/new recognition task for SR and OR faces separately

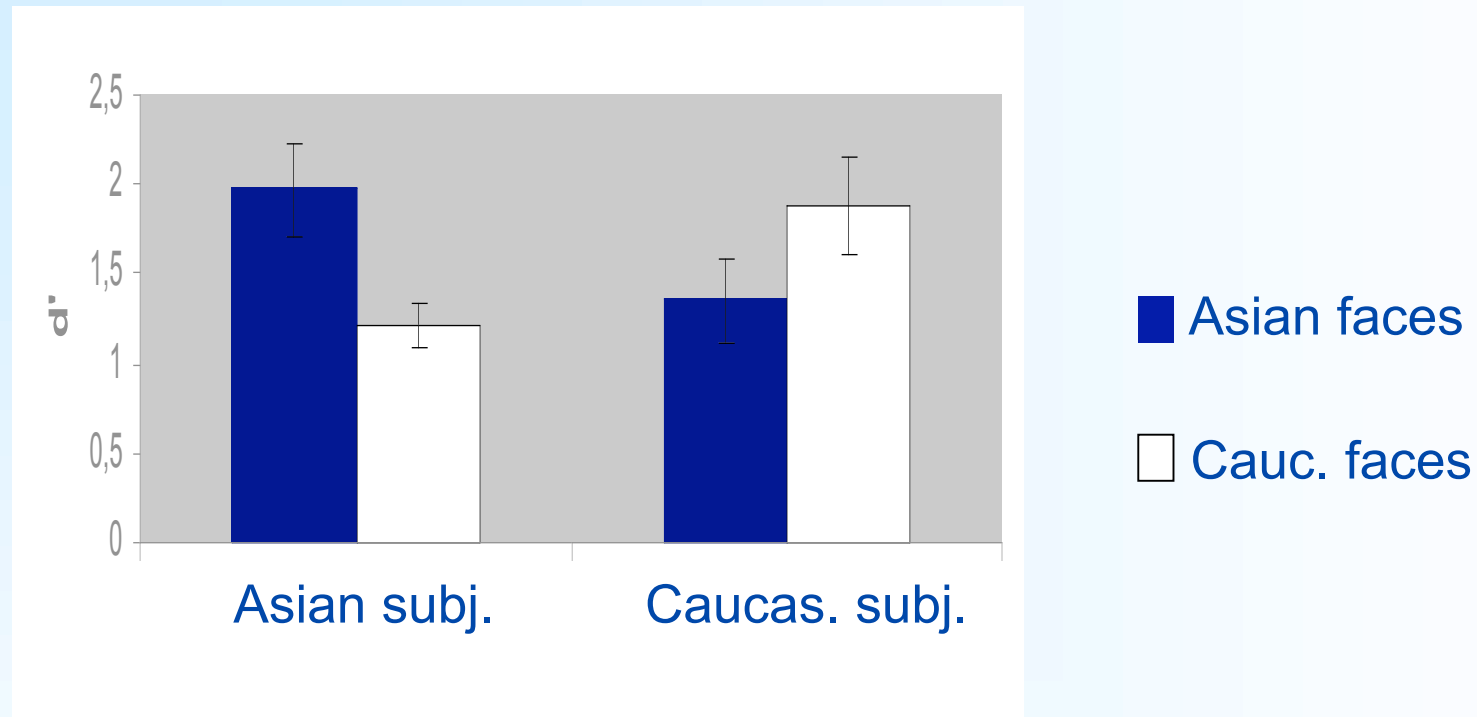
first stage: 20 faces presented sequentially (max. 3 s.)

task: to memorize the faces

second stage: 40 faces sequentially (20 old + 20 new) (max. 2 s.)

task: old or new?

d'



Interaction race subjects x race faces: $p < .001$

Participants present a strong ORE in face recognition

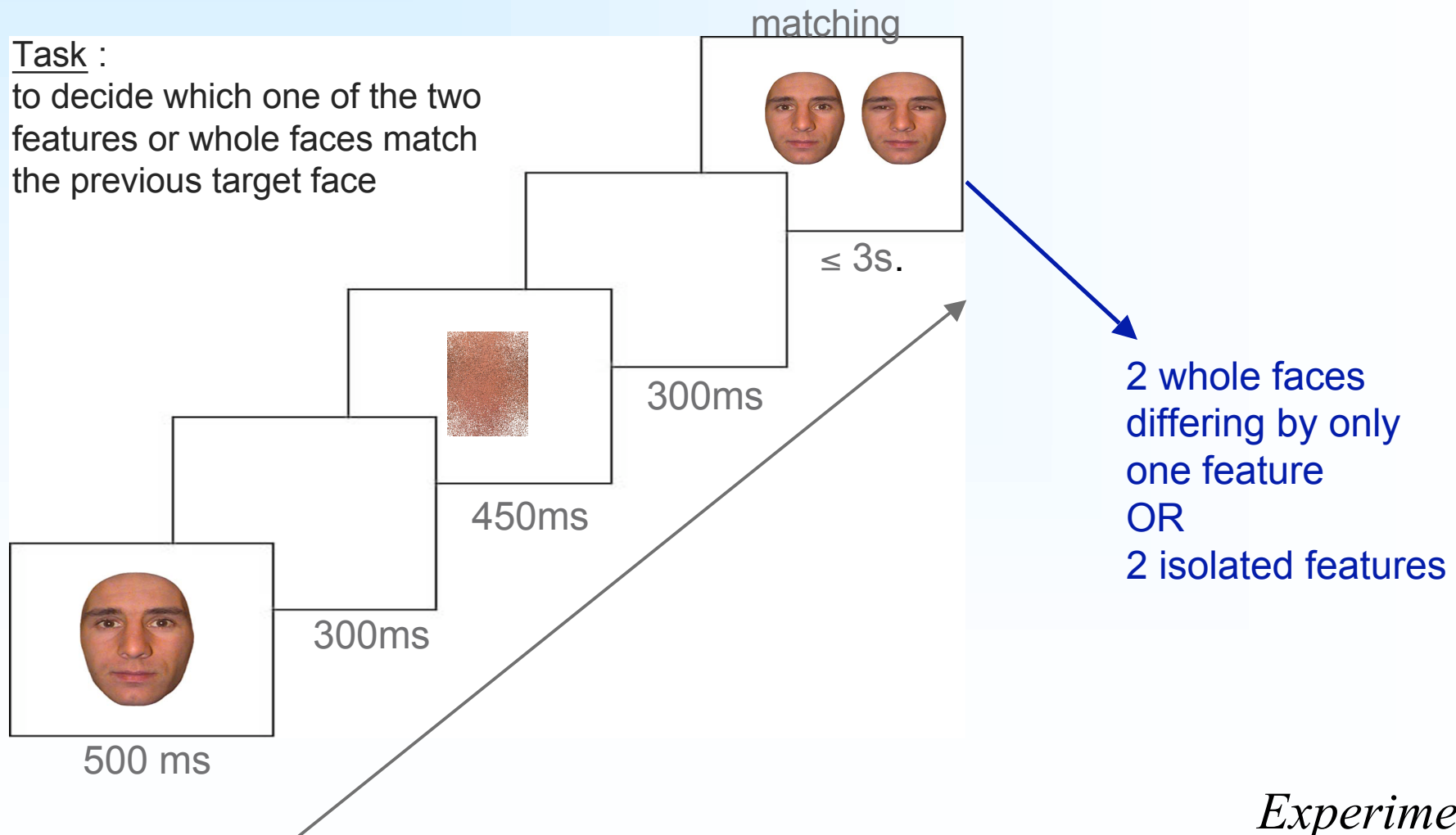
Experiment

Is the whole/part advantage larger for SR than for OR faces?

The delayed matching task

Task :

to decide which one of the two features or whole faces match the previous target face



Experiment

2 x 2 x 2 design

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graph TD; A[2 x 2 x 2 design] -- red --> B[Asian participants (N=21)]; A -- red --> C[Caucasian participants (N=21)]; A -- blue --> D[Asian faces]; A -- blue --> E[Caucasian faces]; A -- black --> F['whole' condition]; A -- black --> G['parts' condition];
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Asian participants
(N=21)

Caucasian participants
(N=21)

Asian faces

Caucasian faces

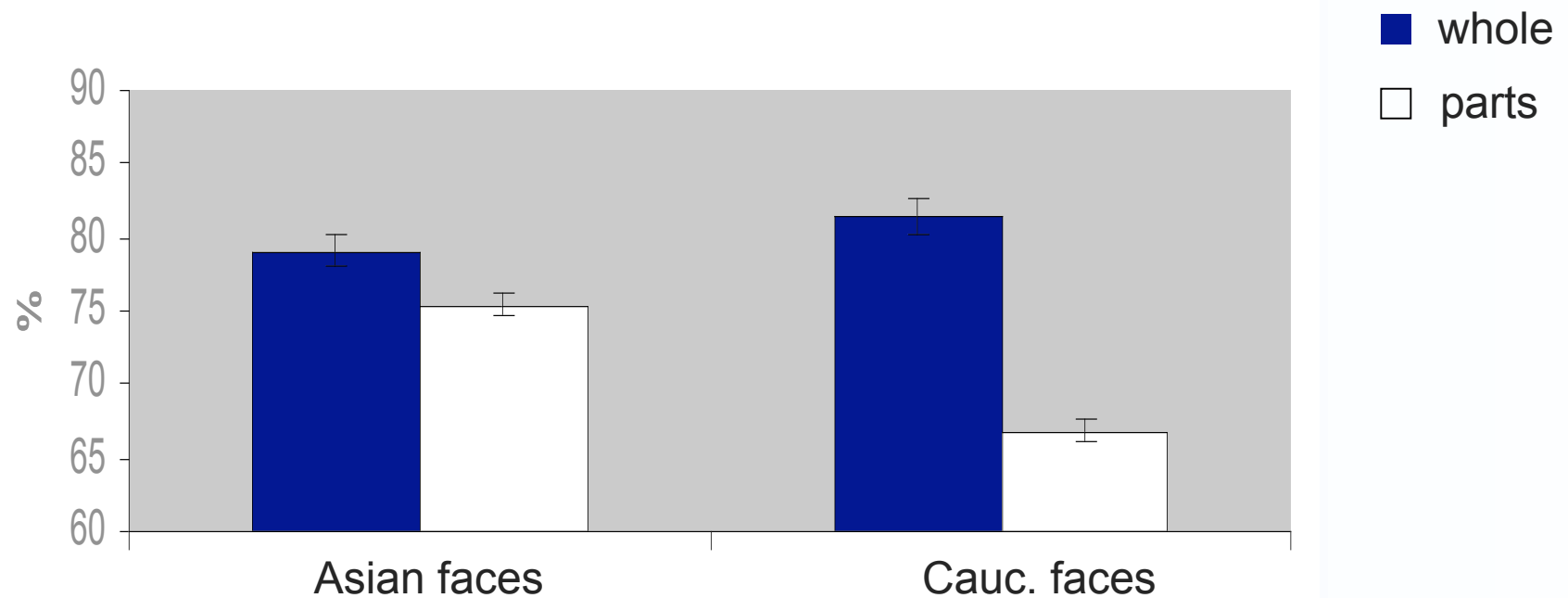
'whole' condition

'parts' condition

Experiment

ACCURACY

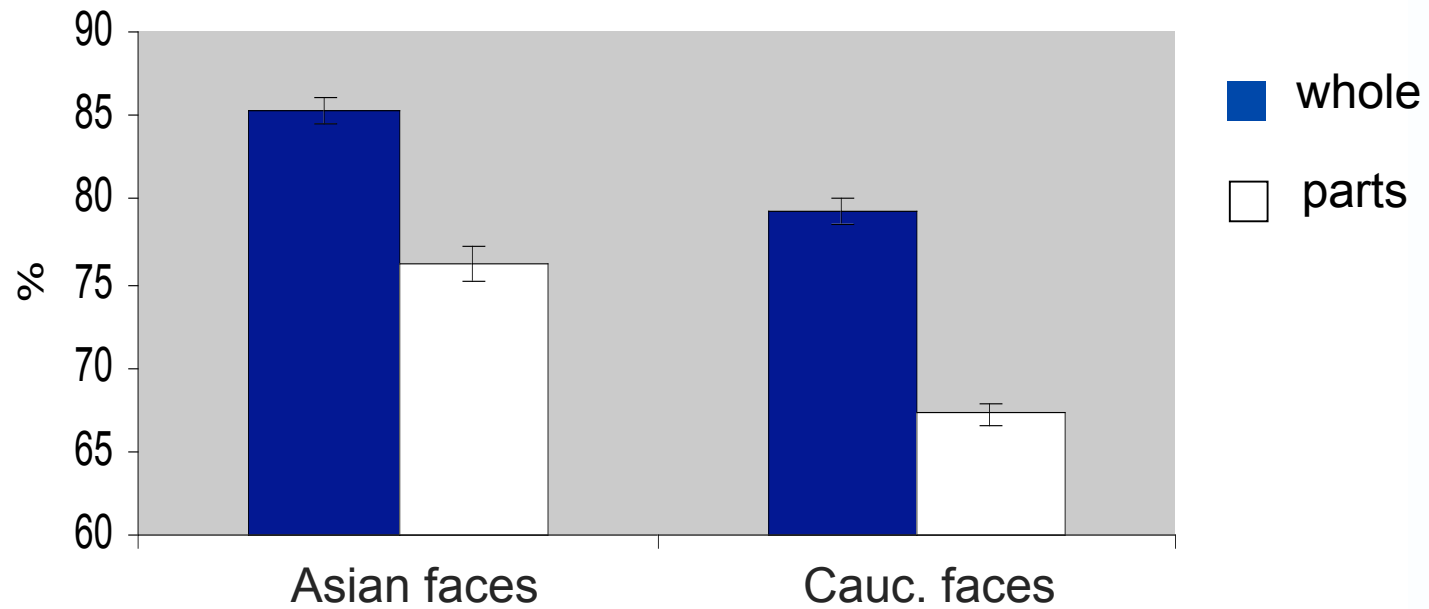
Caucasian participants



The whole/part advantage is larger for Caucasian than for Asian faces

Experiment

Asian participants

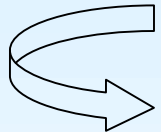


The whole/part advantage is equally large for Asian and Caucasian faces

Experiment



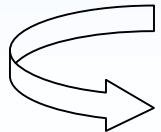
Evidence that same-race faces are processed more holistically than other-race faces



Probably a by-product of visual experience



A differential processing which could disappear with visual experience with OR faces



To confirm with Asian participants living in Asian countries

See Michel, C., Rossion, B., Han, J., Chung, C-S, & Caldara, R. *Psychological Science*, 2006, 17, 608-615.

Conclusions