

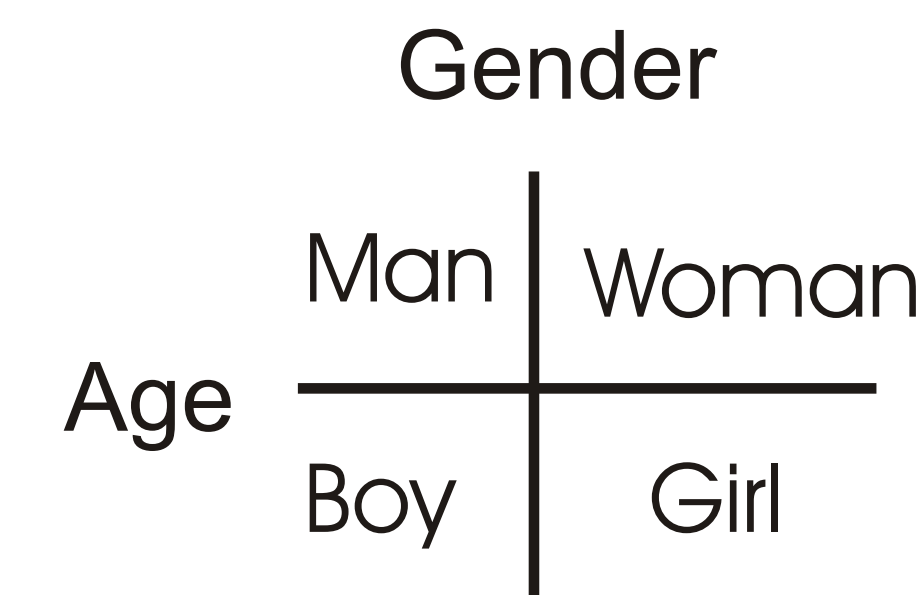
Dual Perceptual Adaptation of Human Faces: Gender and Age

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Introduction

Adaptation of gender, as portrayed by faces (Webster et al, 2004) and movement (Jordan, Fallah & Stoner, 2006), is widely observed. Adaptation is taken to imply the existence of neurons which are selective for a feature. This suggests a possible utility in discerning neuronal representations for higher-level information.

Four 'Gender' Model



How does a second feature modify Gender Adaption effects?

Consistent with multidimensional organisation of face-space

Suggests that adaptation of gender should generalise to children's faces.

Three 'Gender' Model



Adaptation studies assume a male/female dichotomy, more accurate description might involve sexual behaviour.

Pre-pubescent children may form a single group, and therefore boys may not adapt girls.

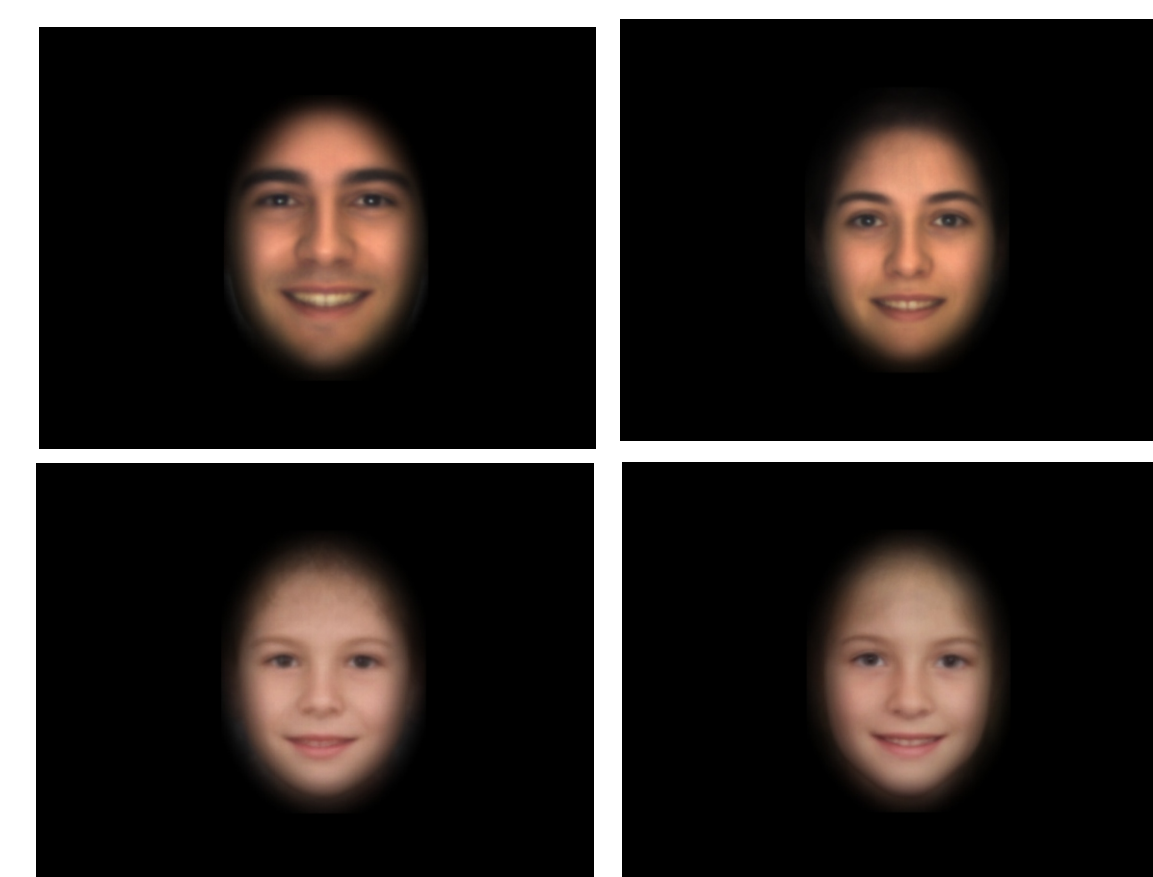
Method

Adult faces: AR Face Database (Martinez & Benavente, 1998)
Children (5-10 years): Public domain.

Adapting stimuli: 37 faces from database for each gender/age category.

In the Neutral Adapting condition, a blank display was presented.

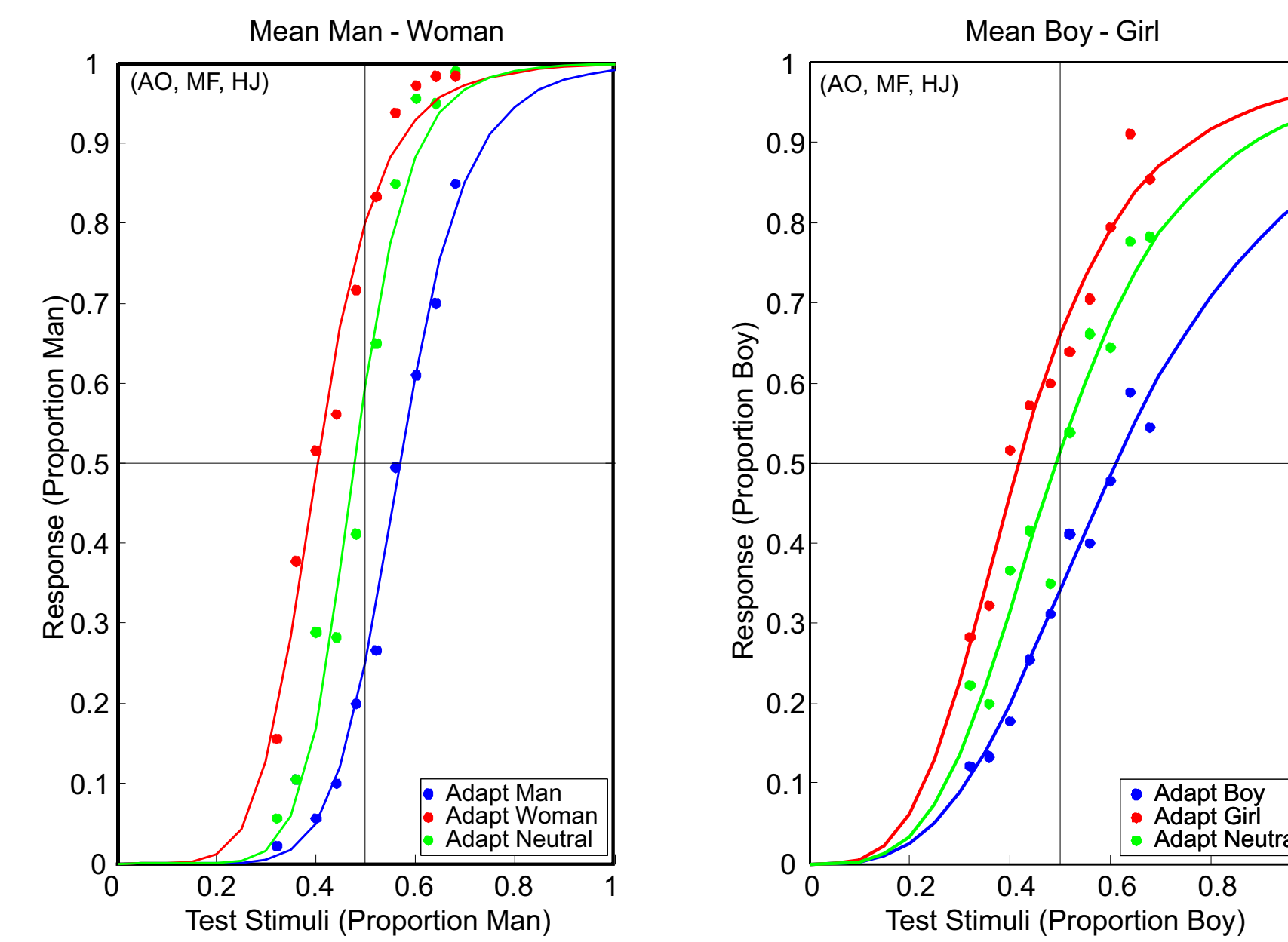
Test Stimuli: Prototypes morphed from 20 faces (FantaMorph, Albersoft)



Test stimuli were constructed by mixing these prototype faces in varying proportions

Observers watched a series of five adapting stimuli, followed by a test stimuli. They were required to report via keypress, the identity of the face e.g. Boy or Girl? No feedback about accuracy of response. Category of adapting stimuli was manipulated between-block. An additional 10 adapting stimuli were presented at the start of the block. Observers completed five blocks of each of the two adapting categories and the neutral condition in a single session, and three sessions for each study.

Gender Adaptation of Faces

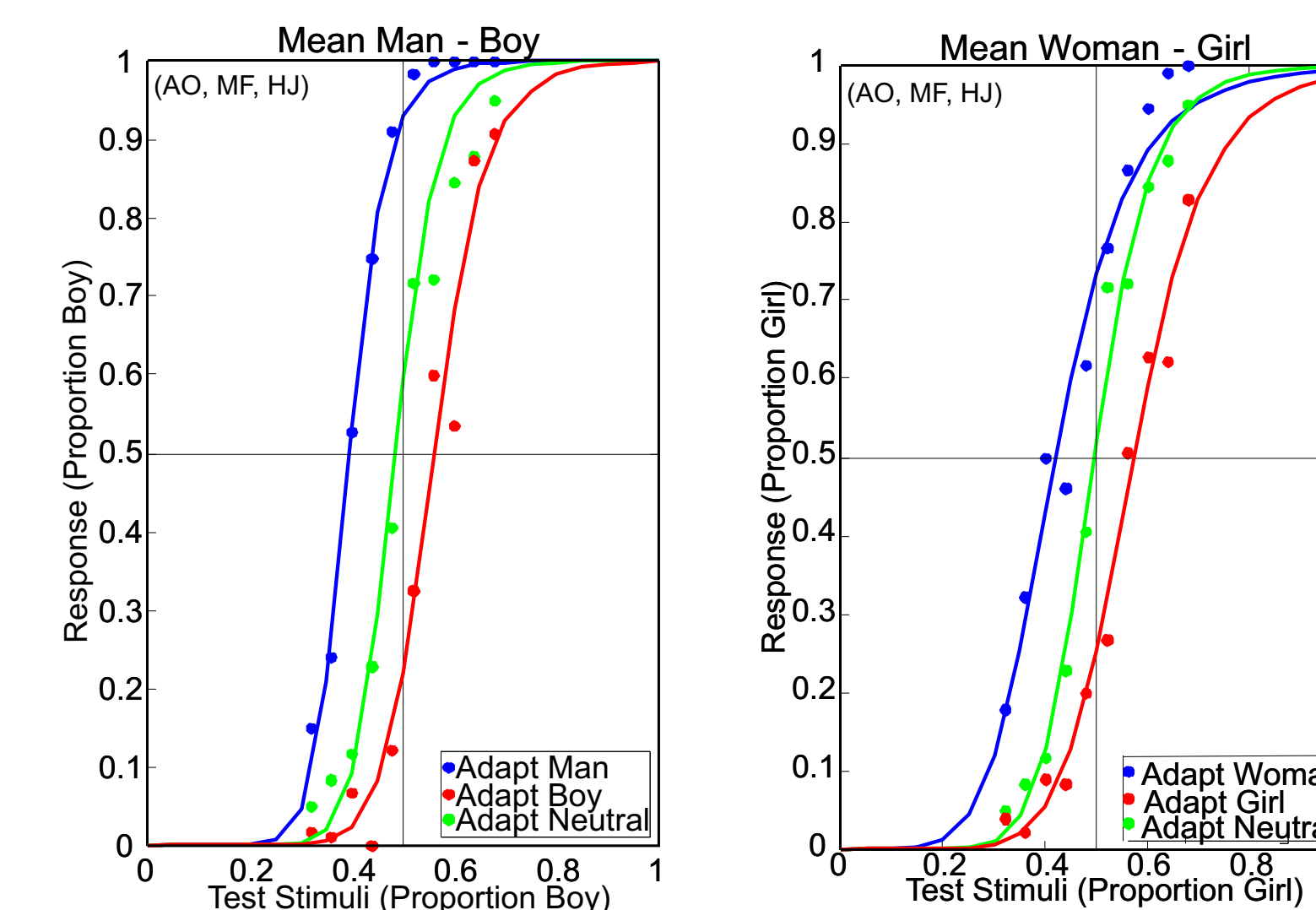


Reliable gender adaptation effects were observed [$F(2,4) = 10.38, p < .05$, which did not differ between adult and child faces, $F(1,2) = 1.59, n.s.$

Although the observers were more sensitive to subtle gender differences in adult faces, the magnitude of the adaptation effects observed are comparable.

Age Adaptation of Faces

Observers were required to categorise the same target stimuli, although they were paired so that the task relevant feature was age e.g. Woman and Girl.



Reliable Age Adaptation effects were observed [$F(2,4) = 29.10, p < .01$. These were no other reliable effects.

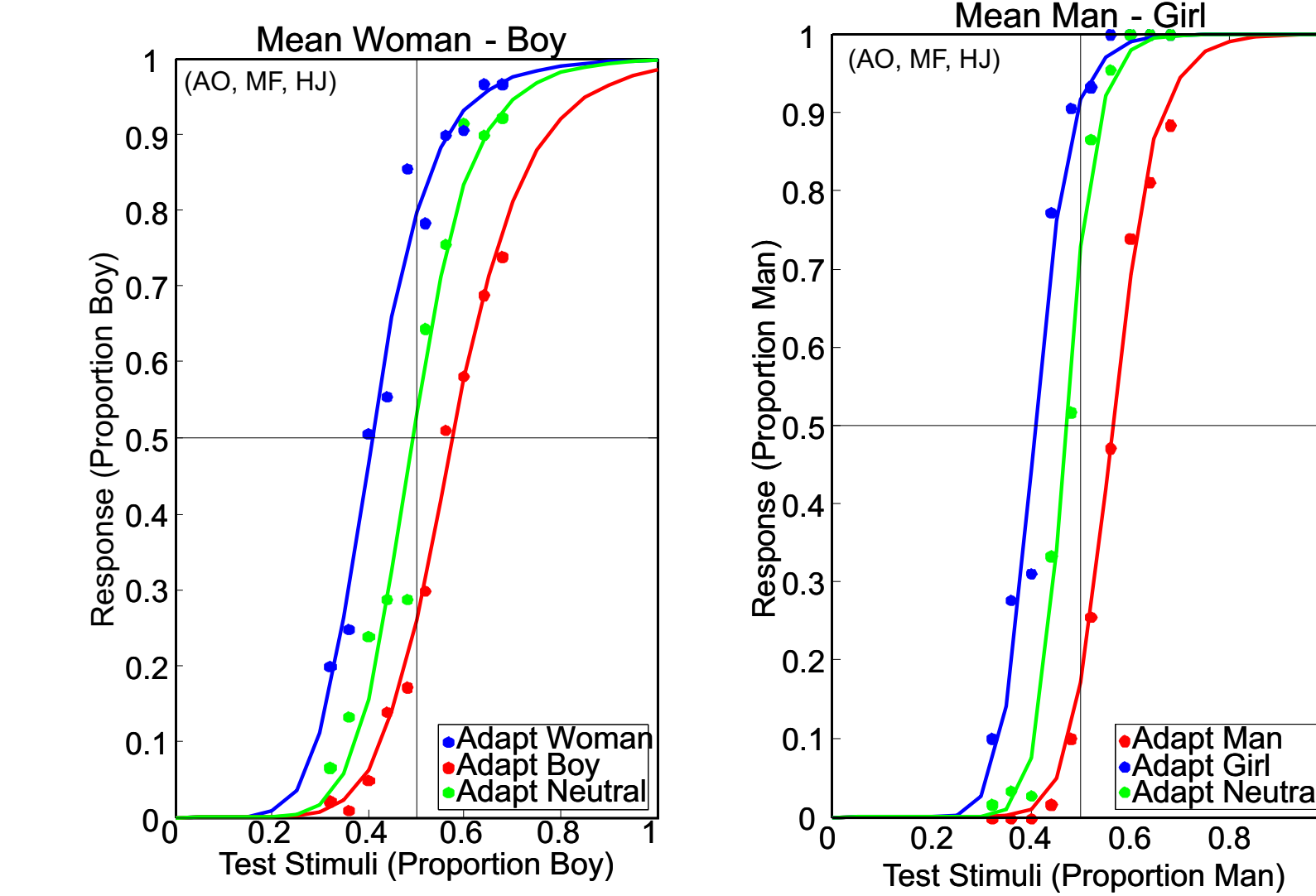
Exposure to faces which differ in either gender or age characteristics can modify judgments of human faces.

Simultaneous Gender And Age Adaptation of Faces

In the previous conditions, observers categorised faces which were distinguished by a single perceptual feature i.e. Gender or Age.

Linguistically, we characterise individuals with terms which encompass several featural dimensions e.g. A girl is a young female.

Are adaptation effects observed when the adapting stimuli differ across two dimensions from the target stimuli?



YES - A 2 (version) X 3 (Adapting conditions) repeated measures ANOVA indicates reliable adaptation effects, $F(2,4) = 29.12, p < .01$. No other effects are reliable.

Is the magnitude of the adaptation effects larger when the adapting stimuli differ in two compared to one feature dimension?

To answer this question, we compared tasks in which the same target stimulus (e.g. Boy) is preceded by adapting stimuli which share either one (gender: Man or age: Girl) or both (woman) feature dimensions. So far, no reliable contrast have been observed.

Magnitude of adaptation effects appear not to vary with perceptual featural dimensions.

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