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Implicit Gender Aftereffects in the Perception of Face Silhouettes

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Introduction

Several recent studies have shown figural aftereffects in the perception and categorization of face stimuli (e.g., Leopold, O’Toole, Vetter, & Blanz, 2001, Witthoft, Winawer, & Boroditsky, 2006). In these studies, prolonged exposure to a face with a particular characteristic temporarily biases subsequent perception of faces as having the opposite characteristic. For instance, prolonged exposure to a male face biases subsequent perception of a gender-neutral face as female (Kaping, Bilson, & Webster, 2002). Here we examine whether such gender aftereffects can arise in a brief, implicit adaptation paradigm using parameterized face silhouettes (Davidenko, 2004; see Figure 1a).

Methods

Experiment 1: Simultaneous presentation

Stimuli and Procedure. From an analysis of silhouette face space (Davidenko, 2006), we constructed 8 male and 8 female face silhouettes and one target silhouette that was approximately gender-neutral. 121 Ss filled out a questionnaire with 9 silhouettes, the first 8 of which were either all male or all female. Ss rated each silhouette on age, race, attractiveness, or gender. Only the 9th face (the target) was rated for gender. We hypothesized that the few seconds spent rating each of the first 8 gendered silhouettes would be sufficient to induce gender-specific adaptation, biasing the gender rating of the 9th face.

Results. Gender ratings of the target silhouette were dramatically affected by the gender of preceding silhouettes (Figure 1b). Of the 59 subjects who adapted to female silhouettes, 97% rated the target silhouette as male, while of the 62 subjects who adapted to male silhouettes, only 39% rated the target silhouette as male. This extends the figural aftereffects previously shown with front- and 3/4-view photographs of faces to silhouettes, and shows that adaptation can be obtained even when subjects are doing tasks orthogonal to the adapting dimension. It also shows how quickly adaptation can occur (many adaptation paradigms begin with a minute or more of adaptation). In Experiment 2 we tested whether the adaptation effect depended on simultaneous contrast (e.g., seeing a gender-neutral face in the context of 8 female faces), or whether it could be achieved from sequential presentation.

Experiment 2: Rapid sequential presentation

Stimuli and Procedure. We constructed three sets of parameterized face silhouettes: female, male, and gender-

neutral. 10 Ss rated sequentially presented face silhouettes (displayed every 4 seconds, for 3 seconds each) on race, age, distinctiveness, and gender. Gender ratings were done on the approximately gender-neutral target silhouettes. We varied the number of male or female silhouettes preceding each target silhouette from 0 to 3.

Results. We found a large gender aftereffect, modulated by the number of gendered silhouettes preceding the target (Figure 1c). The more female silhouettes that preceded the target, the more likely the target was to be rated as male, and vice versa ($r = .89$, $p < .01$), indicating adaptation can be induced by observing only a few silhouettes sequentially.

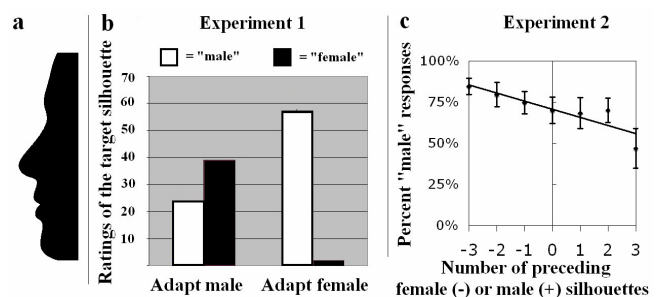


Figure 1: A parameterized face silhouette (a); results of Experiment 1 (b) and Experiment 2 (c).

Discussion

Our results show that briefly viewed gendered face silhouettes can implicitly affect the perceived gender of a target silhouette, both in simultaneous and sequential presentation paradigms.

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