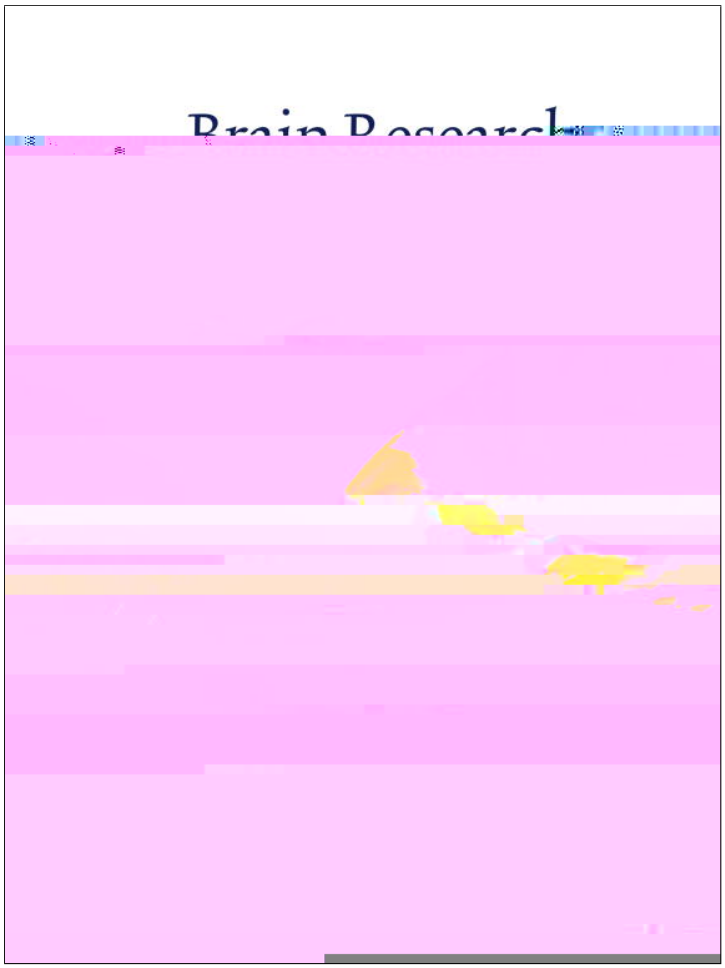
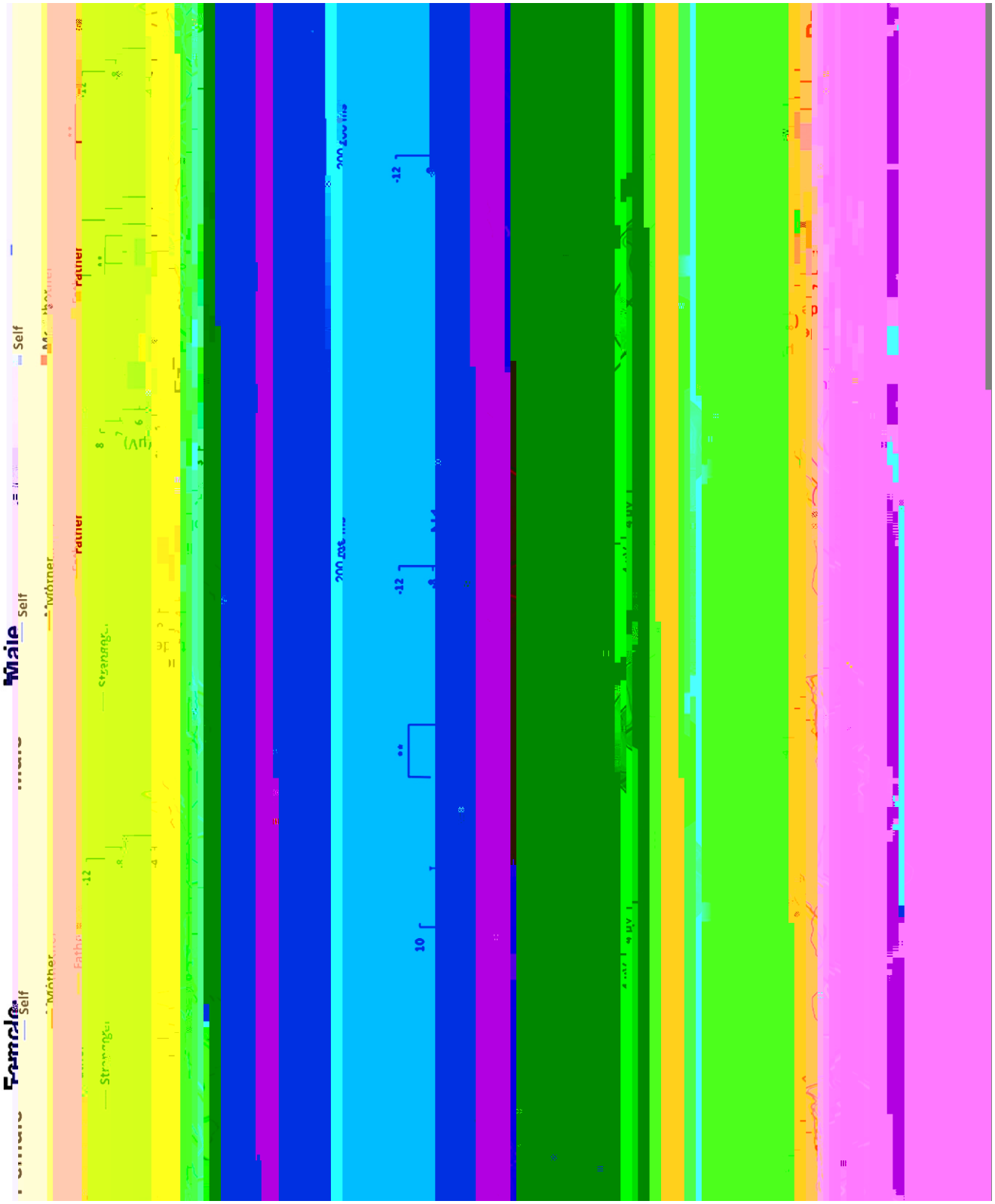


scrambled faces (12%). Subjects were asked to respond only to

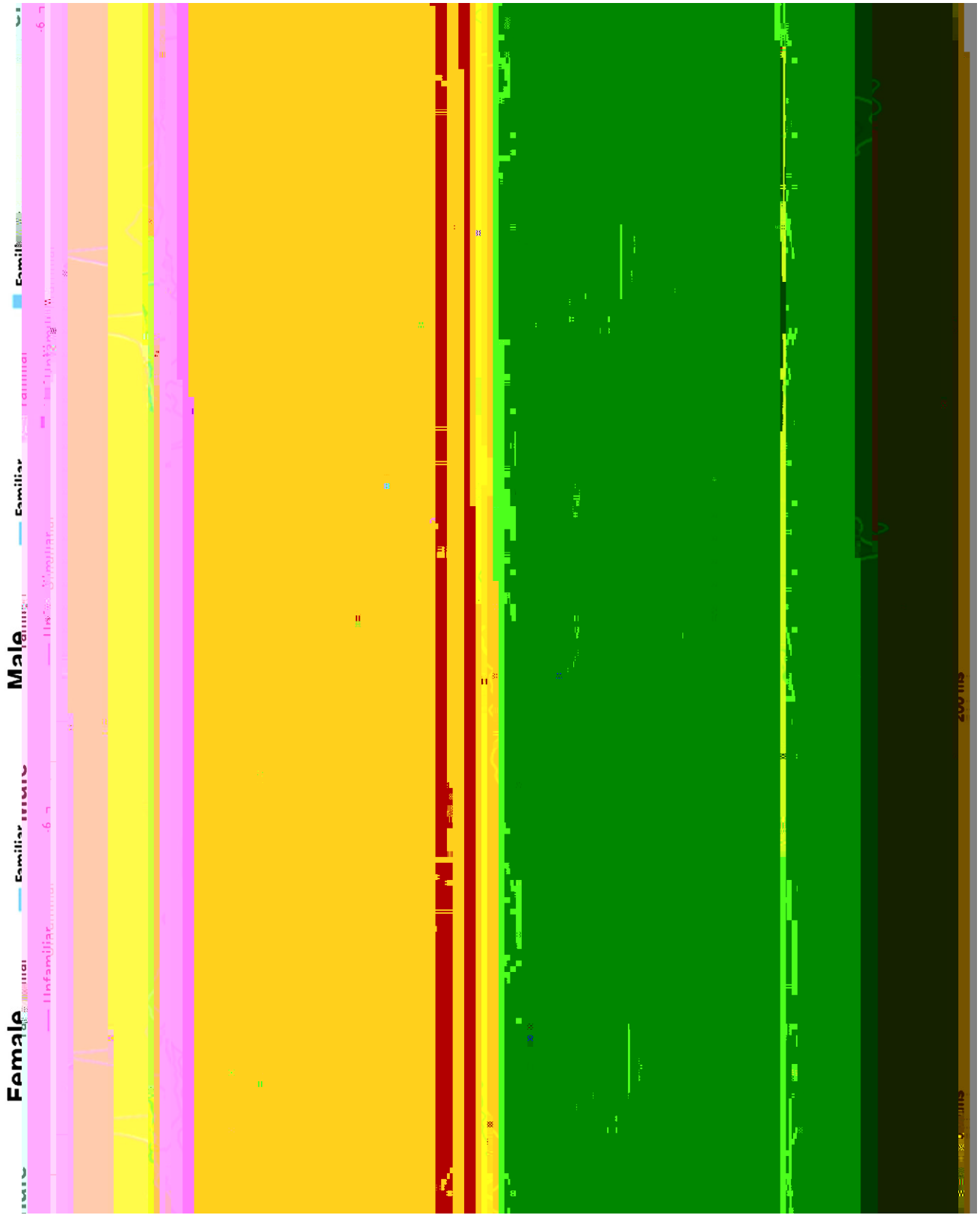
effect of Face was found in men (Fz, $F(2,12)=8.670$, $p=0.005$, $\eta^2=0.591$; F3–F4, $F(2,12)=5.757$, $p=0.018$, $\eta^2=0.490$; Cz, $F(2,12)=10.185$, $p=0.003$, $\eta^2=0.629$; C3–C4, $F(2,12)=13.024$, $p=0.001$, $\eta^2=0.685$; Pz, $F(2,12)=13.342$, $p=0.001$, $\eta^2=0.690$; P3–P4, $F(2,12)=18.235$, $p<0.001$, $\eta^2=0.752$) but not in women (ps > 0.05). Post-hoc t-tests showed that the target P3 was of larger amplitude to self-face than to mother-face (ps < 0.001) or to father-face (ps < 0.005) in men. However, the mean amplitudes of the target P3 did not differ between mother-face and father-face (ps > 0.1). ANOVAs of the target P3 latency showed a significant main effect of Face (Pz, $F(2,25)=4.463$, $p=0.022$, $\eta^2=0.263$) in men, as the self-face P3 peaked later compared to mother-face or father-face P3. Neither the main effect of Hemisphere nor its interaction with Face and Sex was significant (ps > 0.05). Similar analyses of ERPs elicited by strangers' faces did not show any significant effects (ps > 0.05).

2.3.2. Novelty P3

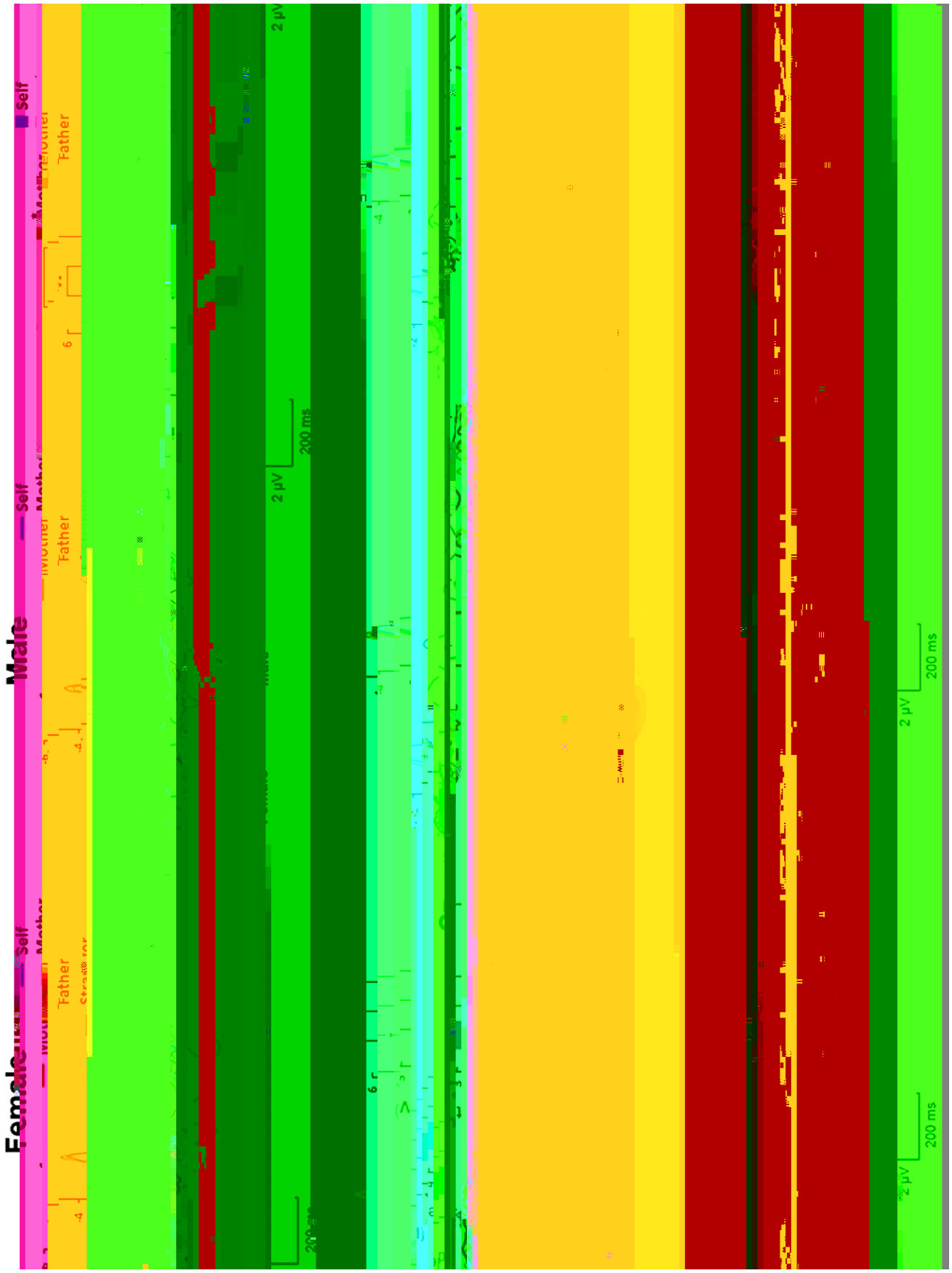
The analyses of the novelty P3 first examined if, relative to men, women were more sensitive to the difference between familiar and unfamiliar faces when both were presented as contextual events (i.e., non-target stimuli). As can be seen in Fig. 2, ERPs elicited by non-target familiar faces (averaged from self-, mother-, and father-faces) resulted in a positive deflection at 400–600 ms whereas strangers' faces did not. 2 (Face: familiar vs. unfamiliar)×2-way (Sex: male vs. female subjects) ANOVAs showed a significant main effect of Face at 430–530 ms at frontal, central, and parietal electrodes (Fz, $F(1,26)=35r6.5$. to thein



The questionnaire measurements showed that, relative to women, men scored higher in the individualism and independent self-construal subscales. Thus the subjective reports are consistent with the idea that men are biased with independent self-construals to a larger degree than women (Cross and Madson, 1997; Guimond et al., 2007). As independent self-construals bias attentional processing of self-related information (Markus and Kitayama, 1991, 2003), one would



The comparison between target P3 and novelty P3 suggests that enhanced attention to target stimuli facilitated self-face processing to a greater degree in men than in women whereas enhanced attention to target stimuli facilitated the processing of faces of close others to a greater degree in women than in men. These results, when considering the gender difference in self-construals (Cross and Madson, 1997; Guimond et al., 2007), fit well with the suggestion that independent self-construals result in bias of attentional processing of self-related information whereas interdependent self-construals emphasize the fundamental connections between the self and others and result in enhanced attention to others (Markus and Kitayama, 1991, 2003). Previous brain imaging research has shown that attention strongly modulates neural activity involved in face processing. For example, face-specific fusiform activity is reduced when stimuli appear outside the focus of attention (Vuilleumier et al., 2001; Wojciulik et al., 1998). However, it is unknown how the effects of attention on face processing vary as a function of the social information in face stimuli. Our findings raise the possibility that the influence of attention on face processing may depend on both the social significance of stimuli and subjects' self-construals. In addition, as the left and right fusiforms may be respectively engaged in the processing of self-face physical properties and self-face identity (Ma and Han, in press), it would be interesting to investigate whether different aspects of self-face processing are facilitated by attention in a similar vein. Another issue related to our ERP results is where the effect of attention on self-face processing arises from in the brain. Previous fMRI studies show evidence that a neural circuit consisting of the fusiform gyrus, anterior and mid-cingulate, lateral and medial frontal gyri, and precuneus is recruited during self-face recognition (see Platek et al., 2008 for a review). Repetitive transcranial magnetic stimulation (TMS) studies found that 1 Hz repetitive TMS to the right inferior parietal lobule selectively disrupted performances during self–other face discrimination (Uddin et al., 2006) and TMS-induced evoked potentials in the right motor cortex were modulated by



to the experiment. This study was approved by a local ethics committee.

4.2. Stimuli and procedure

Each participant was asked to provide photographs of a front view of his/her parents' faces and his/her own face with a neutral expression. Photographs of three age/gender matched faces were also taken from models that were unfamiliar to participants. All photographs were transferred to black and white with the same luminance level using Adobe Photoshop CS4. A profile shaped scrambled face was produced from the photographs. Each face stimulus was 5×7 cm (width×height) and subtended a visual angle of 2.9°×2.9° at a viewing distance of 100 cm.

Each trial consisted of a stimulus with a duration of 200 ms presented in the center of the screen. Each stimulus was followed by a fixation cross with an inter-stimulus interval that varied randomly between 200 and 1000 ms. Three blocks of 300 trials were conducted to obtain the Target P3. Each block consisted of 24 self-faces, 24 mother-faces, 24 father-faces,

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