

Supplemental Material

Supplemental Table 1. Relationships between Anxiety and Behavioral and P1 Effects

	Response Time			Accuracy			P1p			P250/s		
	<i>(F-D)</i>	<i>N-D</i>	<i>F-N)</i>	<i>(F-D)</i>	<i>N-D</i>	<i>F-N)</i>	<i>(F-D)</i>	<i>N-D</i>	<i>F-N)</i>	<i>(F-D)</i>	<i>N-D</i>	<i>F-N)</i>
Trait Anxiety	-.12	-.14	.01	.14	.02	.13	.35*	.34*	.12	.06	.11	-.05
Anxiety Severity	-.02	-.18	.16	.48**	.28†	.23	.34*	.23	.22	.24	.05	.25
Composite	-.08	-.19	.10	.36*	.17	.21	.40*	.33*	.19	.17	.09	.12

** $p < .01$, * $p < .05$, † $p < .10$

Control of Low-level Influences on Early Visual Processes

Previous research illustrates that early visual ERP components are sensitive to physical stimulus properties such as luminance (Knebel, Toepel, Hudry, le Coutre, & Murray, 2008; McCourt & Foxe, 2004; Johannes, Munte, Heinze, & Mangun, 1995) and spatial frequency (Delplanque, N'diaye, Scherer, & Grandjean, 2007; Pourtois, Dan, Grandjean, Sander, & Vuilleumier, 2005; Singh et al., 2000). It is therefore possible that variability in the physical properties of the picture sets might have elicited differential visual activity. Our careful selection and extensive processing of the images have largely eliminated this potential confound. Our findings that these differential responses to the picture sets were coupled with individual differences in anxiety accentuated emotional effects on P1, affording further exclusion of this possibility.

To further safeguard against this confound, we conducted a control ERP experiment to assess P1 to scrambled versions of the images used in the study. Critically, by randomizing only the phase component of Fourier transformed images, we rendered the images unintelligible without altering the Fourier energy (Chen et al., 2007), in an effort to minimize deviation from the original images.

Participants and Procedure

Twelve participants were recruited (5 male; mean age: 19.1) through the undergraduate psychology research pool at the UW Madison.

In each trial, a scrambled image was presented on a CRT monitor for 400 ms, subtending a visual angle of 7.2°. The image was followed by a centrally presented arrow pointing left or right (<, >) for 400 ms, to which individuals were instructed to make a button press to indicate the direction of the arrow while maintaining fixation. This simple task was designed to maintain subjects' concentration on the task. Each inter-trial interval consisted of a central fixation cross presented for 1000-2000 ms. The task consisted of two consecutive blocks of 150 trials. Individuals initially practiced 20 trials to become familiar with the task.

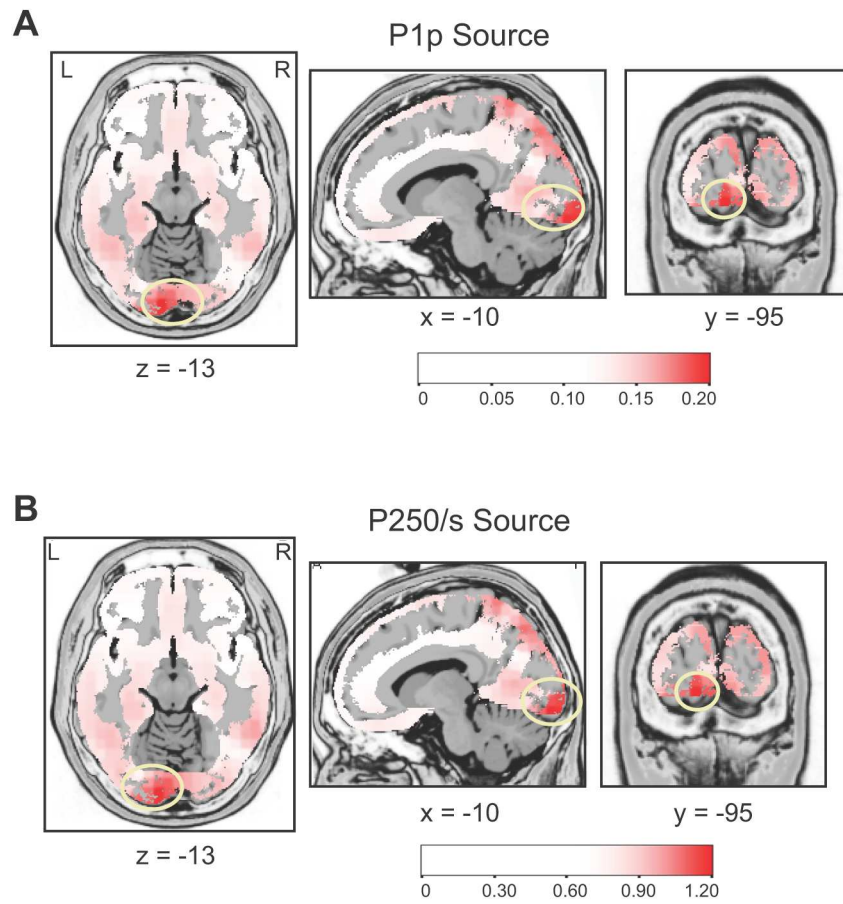
P1 Response to Scrambled Images

ERP recording, artifact and trial exclusion, and P1 analyses were conducted using the same parameters as the main experiment. To determine whether scrambled images of the three emotion sets differentially influenced P1, we subjected mean P1 responses to these images to an analysis of variance (ANOVA). This analysis revealed that the image set did not significantly influence P1 magnitude [$F(2,22)=2.14, p=.17$], nor was the P1 pattern similar to that observed for the intact emotional images. Mean P1 amplitudes (+/- SD) were 7.05 μ V(5.03) for scrambled fear images, 6.66 μ V(5.42) for scrambled disgust, and 6.27 μ V(5.27) for scrambled neutral images. Critically, we note the clear reduction of P1 response to disgust pictures from that to neutral pictures in the main experiment was no longer present with the scrambled pictures.

Supplemental References

- Chen CC, Kao KLC, Tyler CW (2007) Face configuration processing in the human brain: The role of symmetry. *Cereb Cortex* 17:1423-1432.
- Delplanque S, N'Diaye K, Scherer K, Grandjean D (2007) Spatial frequencies or emotional effects? A systematic measure of spatial frequencies for IAPS pictures by a discrete wavelet analysis. *J Neurosci Methods* 165:144-150.
- Johannes S, Munte TF, Heinze HJ, Mangun GR (1995) Luminance and spatial attention effects on early visual processing. *Brain Res* 2:189-205.
- Knebel JF, Toepel U, Hudry J, le Coutre J, Murray MM (2008) Generating controlled image sets in cognitive neuroscience research. *Brain Topogr* 20:284-289.
- McCourt ME, Foxe JJ (2004) Brightening prospects for early cortical coding of perceived luminance: a high-density electrical mapping study. *Neuroreport* 15:49-56.
- Pourtois G, Dan E, Grandjean D, Sander D, Vuilleumier P (2005) Enhanced extrastriate visual response to spatial frequency filtered fearful faces: Time course and topographic evoked-potentials mapping. *Hum Brain Mapp* 26:65-79.
- Singh KD, Smith AT, Greenlee MW (2000) Spatiotemporal frequency and direction sensitivities of human visual areas measured using fMRI. *NeuroImage* 12:550-564.

Fig. S1 Krusemark & Li



S1. LORETA localized the source of the image P1p (A) and the P250/s (B) to the left lingual gyrus.