Supporting Information

Hauner et al. 10.1073/pnas.1205242109

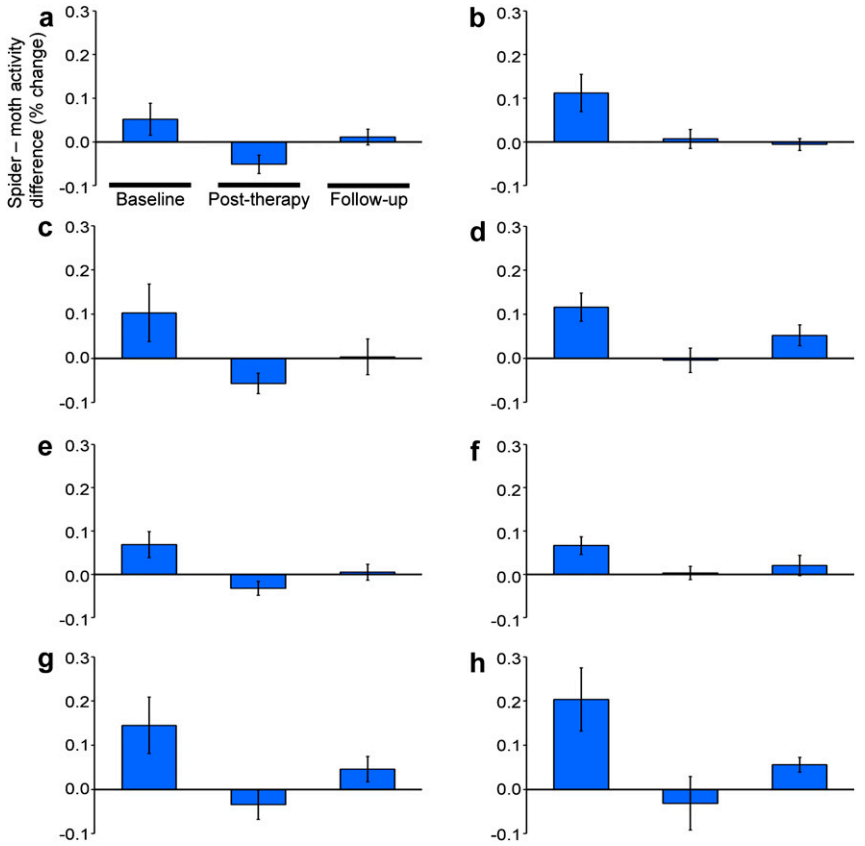

Fig. S1. Activity estimates for each region that showed significantly greater activity at baseline (for phobogenic versus neutral images), followed by significantly decreased activity after therapy (as shown in blue, Fig. 1). Mean activity for all subjects is shown separately for each of the following regions, during baseline, posttherapy, and follow-up scans: (*A*) bilateral posterior cingulate [Brodmann area (BA) 31]; (*B*) bilateral subgenual anterior cingulate cortex extending into ventromedial prefrontal cortex (BA 24, 32); (*C*) left anterior insula (BA 13); (*D*) right anterior insula (BA 13); (*E*) right posterior insula (BA 13, 19); (*F*) left middle temporal gyrus (BA 39); (*G*) right medial frontal gyrus (BA 6); and (*H*) right amygdala (anatomically defined). Mean percent signal change was based on the average signal for each region during presentation of phobogenic vs. neutral stimuli at each functional MRI (fMRI) scan (baseline, posttherapy, follow-up). Error bars indicate SEM. Activity in each region is summarized in Table 1. Activation maps for each region are shown in blue in Fig. 1*B*. Activity estimates averaged across all eight regions for each scan are shown in blue in Fig. 1*C*. A series of post hoc RM-ANOVA analyses confirmed that activation for phobogenic vs. neutral stimuli differed across the three scans in all 8 regions noted above (*P*-value range: 0.002–0.05), as well as in the right dorsolateral prefrontal region shown in red in Fig. 1*B* [$F(2,22) = 16.27$, $P < 0.0001$] and in the right superior parietal lobule region listed in Table 1 [$F(2,22) = 5.06$, $P = 0.02$].

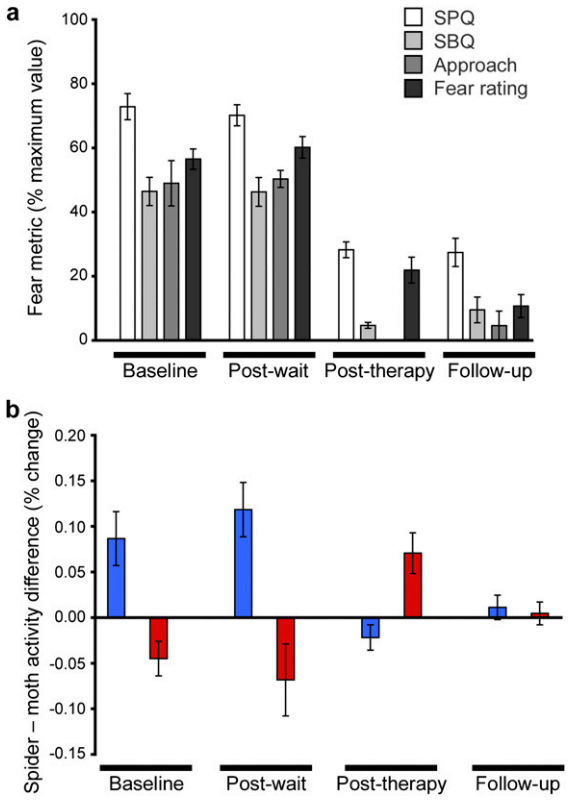

Fig. S2. Changes in fear and neural processing of phobogenic images were caused by exposure therapy. Results from subjects assigned to the wait-group subsample (half of total subjects) are summarized. These subjects had an additional scanning session 2 h after the baseline scan and before exposure therapy (see *Materials and Methods*). (*A*) Scores on the four fear indices did not change during the wait period, and changed only in response to exposure therapy (scores shown using the same format in Fig. 1*A*). Comparisons of baseline and postwait assessments demonstrated no significant differences on any fear index (*P*-value range: 0.25–0.40), whereas comparisons of postwait and posttherapy assessments demonstrated significant reductions within the wait group itself on all four fear indices (*P*-value range: 0.001–0.002). (*B*) Mean percent signal change was based on the average signal for each region during presentation of phobogenic vs. neutral stimuli at each fMRI scan (baseline, postwait, posttherapy, follow-up). Error bars indicate SEM. As in Fig. 1*C*, activity estimates were calculated based on the mean percent signal change of all voxels comprising either the blue or red regions, during presentation of phobogenic vs. neutral images. For the eight regions in which activity significantly decreased from baseline to posttherapy (shown in blue as in Fig. 1*C* and listed in Table 1), a 2 (baseline vs. postwait scan) × 8 (region) RM-ANOVA analysis confirmed that activation did not change during the waiting period [$F(1,64) = 0.01$, $P = 0.93$]. For the same eight regions, a 2 (postwait vs. posttherapy scan) × 8 (region) RM-ANOVA analysis confirmed that activation did change during treatment [$F(1,64) = 9.95$, $P = 0.002$] among the same participants. There were no significant effects for region ($P > 0.36$) or interaction effects for time × region ($P > 0.94$) in either of these analyses. For activity in right dorsolateral prefrontal cortex (shown in red, as in Fig. 1*C*), a one-way RM-ANOVA analysis confirmed that activation did not significantly change between baseline and postwait scans [$F(1,8) = 0.54$, $P = 0.48$]; however, changes in activation approached statistical significance between postwait and posttherapy scans [$F(1,8) = 4.61$, $P = 0.06$]. Thus, changes in fear and neural processing can be attributed to exposure therapy rather than to passage of time or to repeated scanning sessions.