Supporting Information

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SI Text

Analysis. We performed a psychophysiological interaction (PPI) analysis implemented in Statistical Parametric Mapping 8. First, a 5-mm radius sphere around the peak activation (left amygdala; $x, y, z = -30, -4, -22$) was identified as a seed region in the main analysis of family income at age 9 on the contrasts of Reappraisal vs. Maintain. Second, as a physiological variable, the deconvolved time series in the seed region (left amygdala) was extracted for each participant. As a psychological variable, a regressor of the experimental conditions (Reappraisal vs. Maintain) was created. The regressor of interest was the interaction between the time series of the seed region and the experimental condition. Finally, the individual contrast images were entered into a second-level random-effects analysis, and one-sample t tests with family income at age 9 and adult income at age 24 as covariates. No findings were identified when a multiple-comparisons correction was applied (an initial voxel-wise threshold of $P < 0.001$ and a minimum cluster size of 158 voxels using 3dclustsim). Thus, we explored the PPI findings in the ventrolateral prefrontal cortex (VLPFC) and dorsolateral prefrontal cortex (DLPFC) regions at a threshold of $P < 0.001$ (uncorrected) with at least 10 contiguous voxels.

Results. When associations with family income at age 9 were examined, the coupling between the amygdala and the left VLPFC [$x, y, z = -58, 18, 8$; 58 voxels; $t(46) = 3.97$; Fig. S1] in the Reappraisal vs. Maintain contrast was negatively associated with family income at age 9, controlling for adult income at age 24. When connectivity estimates for the Reappraisal and Maintain PPI were extracted for the amygdala–VLPFC connectivity to decompose the effect, amygdala activity was positively coupled with the VLPFC during Reappraisal among individuals with lower family income at age 9, whereas amygdala activity was negatively coupled with the VLPFC during Reappraisal among individuals with higher family income at age 9 (Fig. S2). No association between family income at age 9 and the amygdala–VLPFC was detected during Maintain. Therefore, the findings may suggest that higher childhood family income is associated with greater VLPFC activity to suppress the amygdala activity during Reappraisal. On the other hand, lower childhood income is associated with reduced VLPFC suppression on the amygdala activity during Reappraisal. However, family income at age 9 was not associated with the amygdala–DLPFC connectivity. Family income at age 9 was not positively associated with the functional connectivity between the amygdala and any other regions.

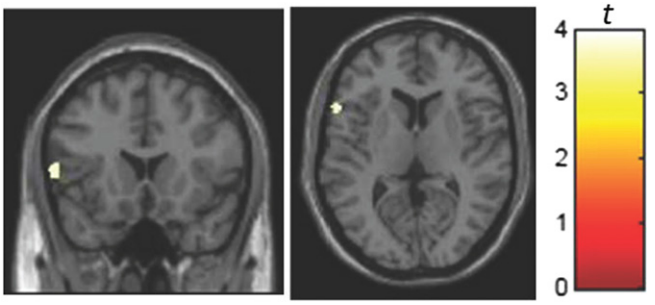

Fig. S1. Left ventrolateral prefrontal cortex ($x, y, z = -58, 18, 8$; 58 voxels) showing a significant coupling with the left amygdala when the associations with childhood family income at age 9 was examined ($P < 0.001$, uncorrected; >10 voxels).

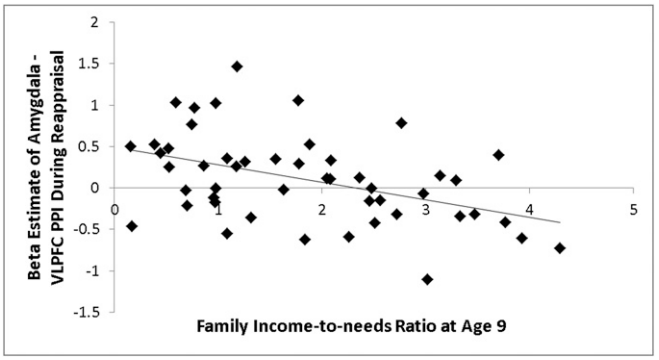

Fig. S2. A partial regression plot describing the associations between family income-to-needs ratio at age 9 and parameter estimates of amygdala–ventrolateral prefrontal cortex psychophysiological interaction (PPI) during Reappraisal, controlling for adult income level.