



Labeling Emotional Faces Changes Affective Processing

John C. Flournoy^{1,*}, Nicole Giuliani¹, Anne Hill¹, William E. Moore III¹, Jennifer H. Pfeifer¹

¹ Department of Psychology, University of Oregon

Background

- Talking about negative emotions attenuates their impact—in adults, merely writing about emotional experiences improves mental and physical health¹².
- Adolescents also show improvements following simple written emotional disclosure interventions³⁴.
- Recent neuroimaging work in adults has revealed a neural mechanism that may underlie these effects. Affect labeling was associated with reduced amygdala activity relative to passive viewing of emotional expressions, and this downregulation of amygdala response was associated with heightened activity in right ventrolateral prefrontal cortex⁵.
- We investigate whether affect labeling elicits similar responses in the brains of young girls from pre-adolescence through emerging adulthood.
- Carefully characterizing neural activity during observation of emotional stimuli (especially as displayed by peers), and basic cognitive processing of these same stimuli, can inform our understanding of developmental changes related to emotional reactivity and regulation.

Method

Participants: 58 girls, age 10-22 years (M=16.7, SD = 3.7).

Stimuli: Videos of 6 emotions (*fear, sorrow, disgust, neutrality, happiness, pride*) displayed by gender- and ethnically-diverse actors, age 10-18. After 1 second, the video freezes and the last frame is displayed for the remaining time.

fMRI Parameters: 3T Siemens Skyra. TR=2s. Voxels: 3.13x3.13x4 mm³. 32 Slices.

Results

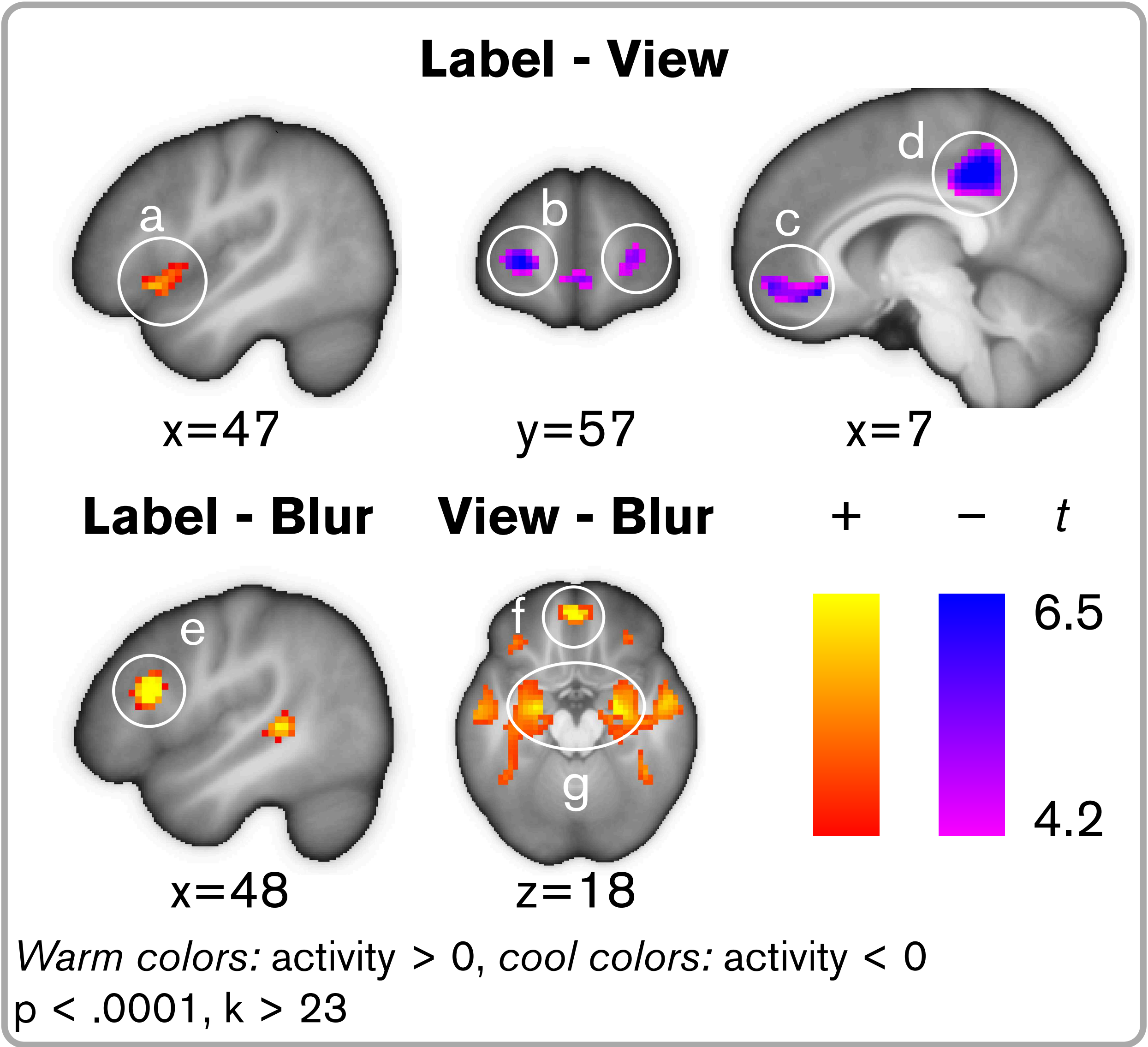
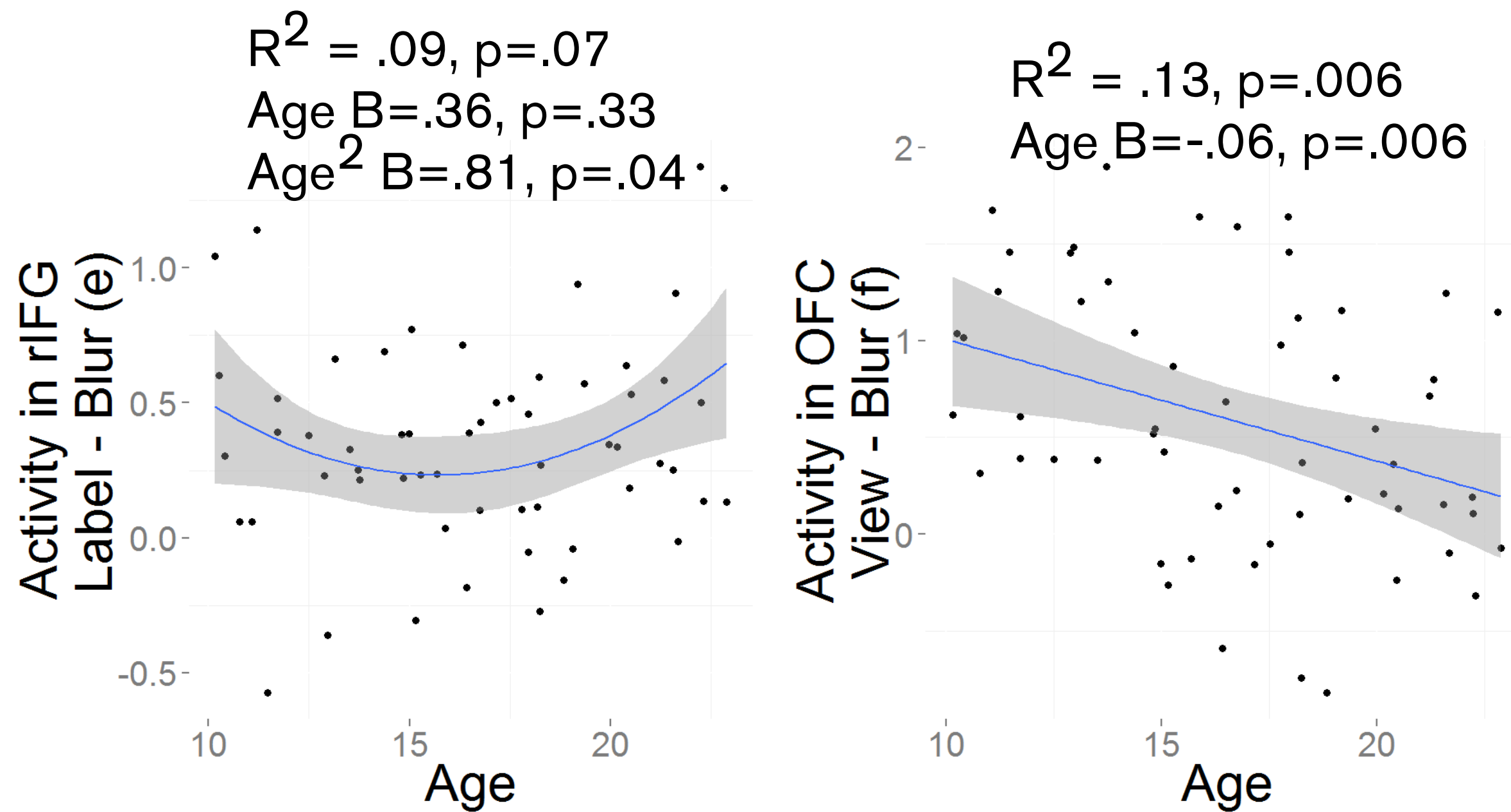
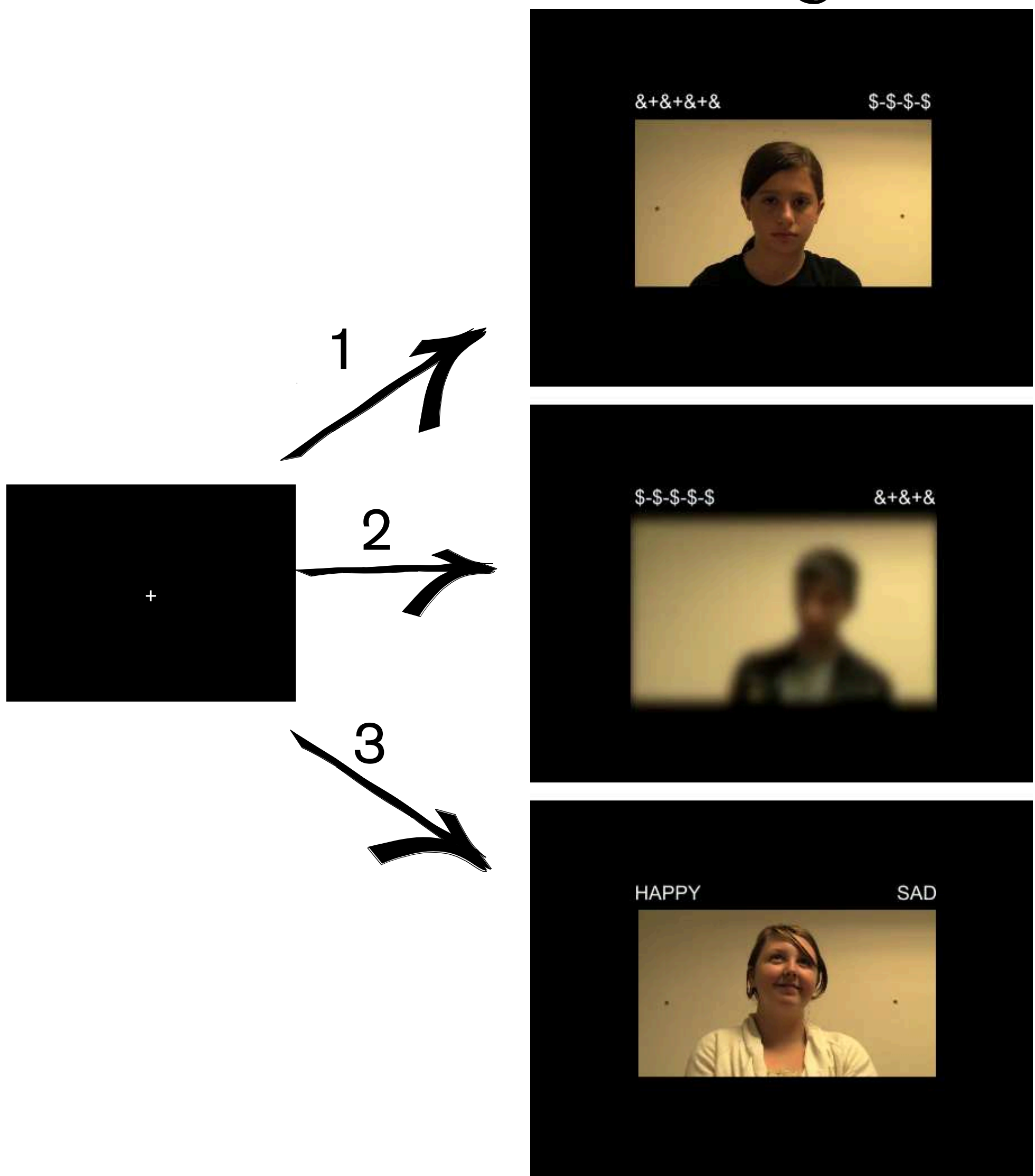


Table 1. Peak Activations for Visualized Regions

Region	t	k	x	y	z
<u>Label - View</u>					
a Ventrolateral Prefrontal Cortex	6.13	131	60	17	8
b Bilateral Frontal Pole	-6.67	51	-24	59	2
c Orbitofrontal Cortex	-5.38	37	27	62	5
d Posterior Cingulate Cortex	-6.14	199	-9	32	-10
e Ventrolateral Prefrontal Cortex	-7.50	326	3	-37	41
<u>Label - Blur</u>					
f Orbitofrontal Cortex	8.71	158	45	20	20
<u>View - Blur</u>					
g Bilateral Amygdala	8.36	109	0	50	-19
	8.01	61	-24	-10	-19
	8.03	98	24	-7	-16



Behavioral Paradigm



- 1 - 11 s 4.5 s
1. "If you see a video with symbols at the top, watch it in case it gets blurry."
 2. "If a video is blurry, press either button."
 3. "If you see words at the top, pick the word that describes what the person is feeling."

Conclusion

- This task engages typical networks implicated in emotional reactivity (amygdala, OFC) and regulation (VLPFC), as well as regions that may be unique to adolescent emotional processing (posterior cingulate, frontal pole).
- OFC activity decreases linearly with age while VLPFC activity shows a positive quadratic trend. This is inconsistent with the current dominant model which hypothesizes non-linear increases in reactivity, and linear increases in regulation⁶.
- These new data add to a growing body of findings that are helping to refine and contextualize this model⁷.

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