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Social status modulates the neural response to unfairness

H, [1] B, [1] H [1] G [2] [2]

C [2] [1,3,4,5]

[1] C B C D y y, B 100871, C [2] y y E y C (y E), 201804, C [3] y y (y E), [4] B y y B H , B 100871, C [5] - DG/ G B , y, B 100871, C

C , D y y, B 100871, C . E- : 104@ .

H B y y.

Abstract

y, y y y y, y G (G). B G y (A) y A y, A y G

Key words: ; ; ; CC; y ;

Introduction

F y y, . E , (G), y (G , 1982). G y , ( ) y y ( ) y, y G

y y G . A G (*et al.*, 1989) (*et al.*, 2011), (*et al.*, 2012), - (, 2011) (*et al.*, 2011). A , (A *et al.*, 2013; H *et al.*, 2014). A *et al.* (2013) (y)

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Design and procedure

Materials and methods

Participants

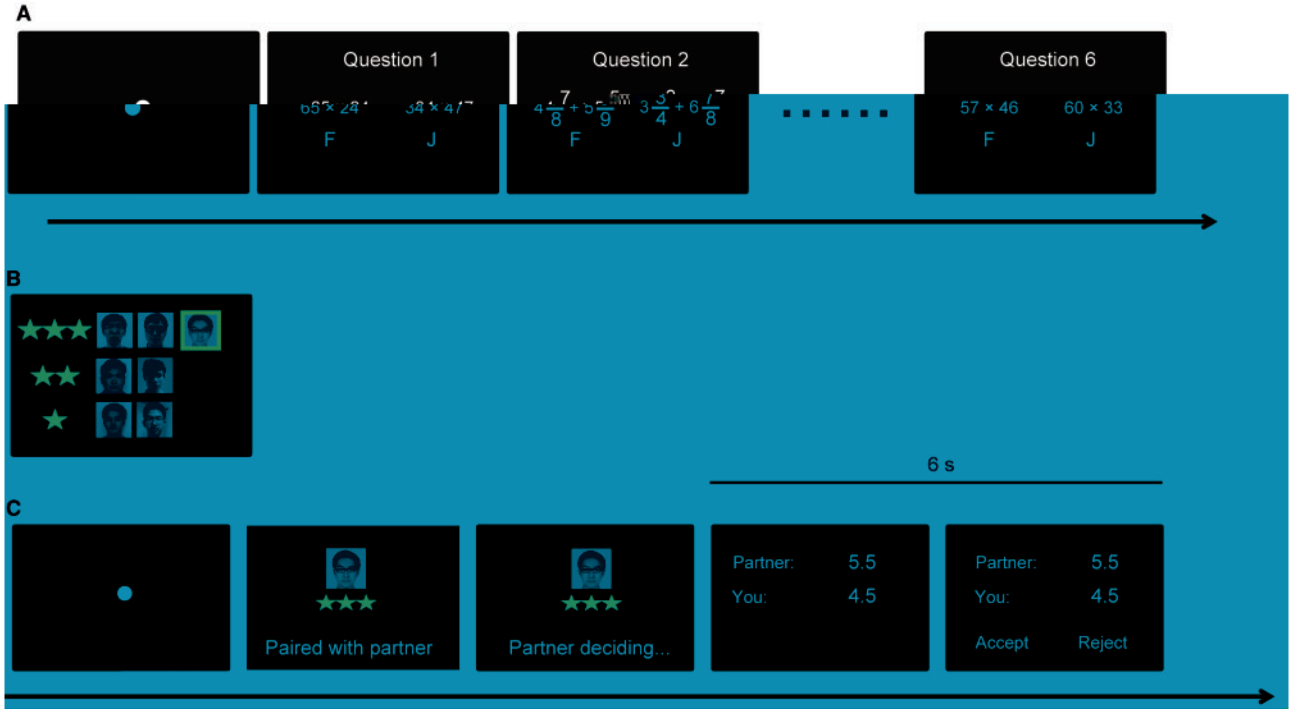

Fig. 1.

MRI data acquisition

90° 200 × 200 ,
3.1 × 3.1 × 3.1 .

fMRI preprocessing

8 (
D C),
A AB ( ). F ,
.
3 × 3 × 3 ,
( ) y
F H G . D
1/128 H y.

General linear model analyses

y
(G)
(B D) ,
B D G
G (
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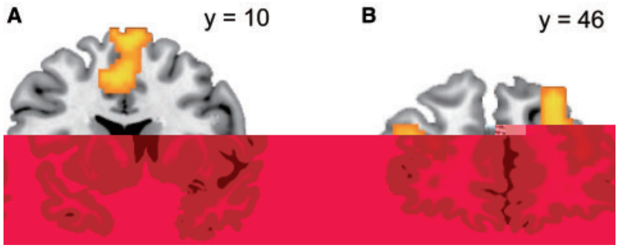

Fig. 3. ACC, A (A) D FC (B). A P < 0.05 (P < 0.001 23).

$F(1, 22) = 97.59$, $P < 0.001$, $\eta^2 = 0.81$, (5.26 ± 0.15) (2.35 ± 0.15). A $F(1,22) = 12.58$, $P = 0.002$, $\eta^2 = 0.36$ $F(1,22) = 10.07$, $P = 0.004$, $\eta^2 = 0.31$. (3.4 ± 0.06) (3.0 ± 0.06), (5.73 ± 0.12) (4.94 ± 0.12). ($r = 0.46$, $P = 0.028$, d.f. = 21) G ($r = 0.82$, $P < 0.001$, d.f. = 21). A , $P = 0.6$; , $P = 0.35$; , $P = 0.74$).

fMRI results

Main effects of social status and fairness. G, G B D G G G . C (et al., 2003, B et al., 2010), ACC, (A/ CC; F 3A 1), D FC (F 3B). > ; = 46 ($P < 0.005$, $P < 0.05$ A), A ($x = -39$, $y = 11$, $z = -8$, T- = 3.10, $k = 75$). (>)

Interaction between social status and fairness. ( ) – (H – H)

Table 1. B (>) $P < 0.05$ ($P < 0.001$, = 23)

				T-	(k)
	x	y	z		
: > F					
ACC/ A ,	6	23	37	5.20	479
D FC	36	50	16	4.75	182
	−36	50	22	4.12	45
: (>) > (H > H)					
A	−21	−4	−11	4.76	41
	−15	−19	4	4.16	47
G	−36	−22	64	3.66	54

Note. = ; = ; A = , H C = .

($x = -21$, $y = -4$, $z = -11$; F 4A), ($x = -15$, $y = -19$, $z = 4$; F 4C) ($x = -36$, $y = -22$, $z = 64$; F). (0.14 ± 0.02) (0.07 ± 0.02, $P = 0.015$), (0.08 ± 0.02) (0.12 ± 0.02, $P = 0.140$) (F 4B). (0.04 ± 0.02) (−0.04 ± 0.02, $P = 0.001$), (−0.005 ± 0.02) (−0.02 ± 0.02, $P = 0.469$) (F 4D).

Correlation analyses. A . F (H), A (2) (F 5).

Functional connectivity analysis. G A (H) (F 5), A CC (C 2009) (F 6 2). A A

Discussion

. H (et al., 1967; , 2005; G et al., 2007),

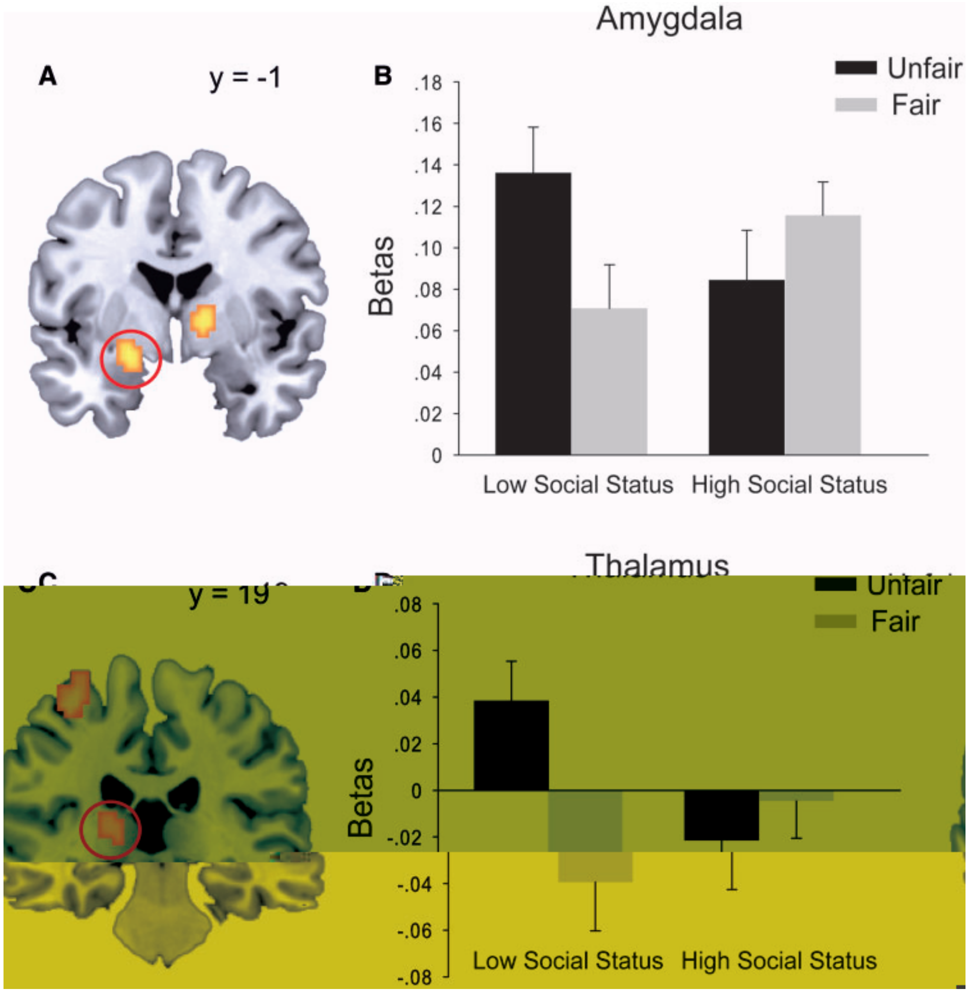

Fig. 4. (–) – (H – H) (A). A (B). (–) – (H – H) (C). A (D). 3 . A $P < 0.05$ ($P < 0.001$ 23).

H G. y, K et al., 2001; A et al., 2013; H et al., 2014). (B . A , y y K y y . A y A , ACC/ A G. y D FC US G y, F , y 2010), et al., 4 5 y (G et al., 2015), A K y K (et al., 2012). A ACC/ CC y (F y et al., 2006), A y, ACC/ CC G, y. y.

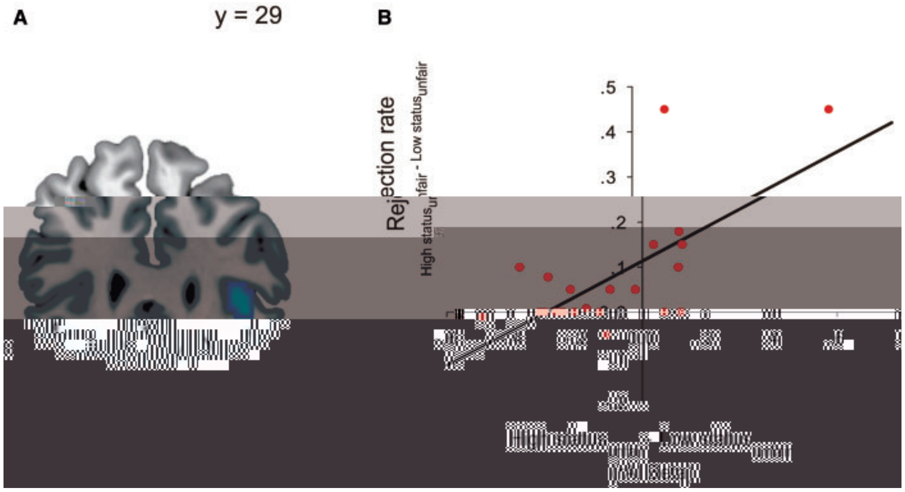

Fig. 5. G … (H …) (A). … A … G … (B), … (A). … 2 … 3 … P < 0.05 (… P < 0.001 … 23 …). … (A) …

… A … (C … -D … 'A … et al., 2013) … A … (… et al., 2009; … , 2010). … (. … ; … et al., 2008). … (… et al., 2008; … et al., 2012), … G … (… et al., 2008; … et al., 2012) … (H … F … , 2009; G … et al., 2011; … et al., 2014), … (… et al., 2008). H … G … (F … 4D), … (H … C … , 2009).

C … A , ACC/ A … D … FC … (… et al., 2003; D … et al., 2009; G … et al., 2014). A … A … (C … et al., 2012; C … -D … 'A … et al., 2013; G … et al., 2014). … A … G … (B … et al., 2001; A … et al., 2013) … (B … C … , 2012; H … et al., 2014), … A … A … (…) … (…) … (… et al., 2003; … et al., 2007; … et al., 2014).

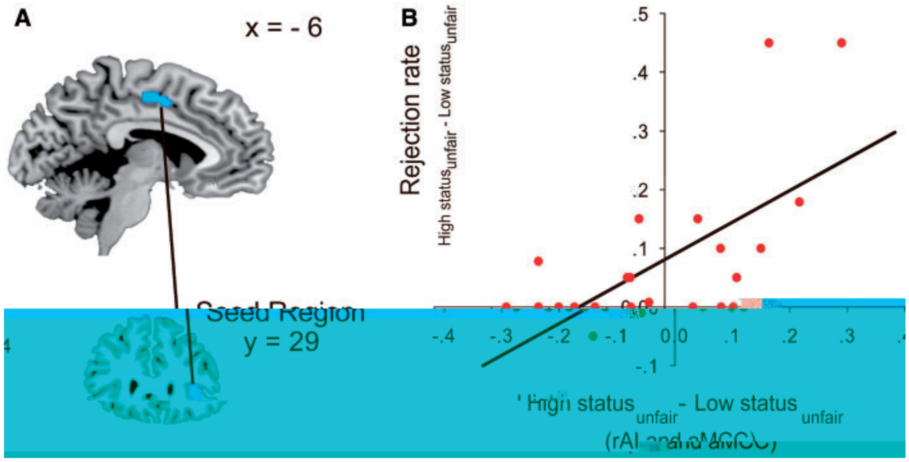

Fig. 6. ACC/ CC (A). ACC/ CC (B). P < 0.05 (P < 0.001 (A)

(C , 2010; , 2014; et al., 2014). et al., 2014). A et al. (2011) G G A A A CC A CC CC A CC, (et al., 2006; et al., 2008; C 2009; et al., 2009). et al. (2012) (ACC) A - ACC CC A vs (et al., 2003; C et al., 2012; C -D 'A et al., 2013; C 2009; F et al., 2015). A CC

Conclusion

B G, A CC, F

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B (973 : 2010CB833904, 2015CB856400) C

F C. (91232708, 31170972).

Supplementary data

y SCAN .

Conflict of interest. .

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