

Fig. 1. (A) Experimental setup. (B) Electrode locations on the scalp. (C) Sequence of 12 math questions. (D) Trust Game procedure.

(Cheng et al., 2016; Cheng et al., 2015). The questions were presented on a screen for 4 s, and the response period was 10 s. The questions were presented on a screen for 4 s, and the response period was 10 s. The questions were presented on a screen for 4 s, and the response period was 10 s.

2.2. Experimental tasks and procedures

The Trust Game (TG) was used to measure trust and reciprocity. The TG consists of four phases: (1) Status display phase, (2) Investment phase, (3) Repayment phase, and (4) Outcome phase. In the Status display phase, the investor is informed of the amount of money they have (e.g., ¥10). In the Investment phase, the investor chooses to invest or not. In the Repayment phase, the trustee chooses to repay or not. In the Outcome phase, the final amount of money for both parties is displayed.

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25). 51
26) (, 25).

(Fig. 1D).

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(0 10)
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(, 2015).

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2.3. Data acquisition

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(Fig. 1B). 3 × 5
22 (1 22).
(). 4 × 4
6 24 (23 46).
6; (, 2007).
(3) 3
(, 2017),
(, 2009; , 2005; , 2009).

2.4. Data analysis

2.4.1. Behavioral data

(, 2020).
lme4
(, 2020).

2.4.2. fNIRS data

(, 2003)
(, 2018;
, 2013).
(,
2019; , 2017).
0.01 0.5
()
(, 2010).
(, 2018).

Interpersonal brain synchronization (IBS).

(, 2018; , 2021, 2017, 2015).
(,
10 10)
(,
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(, 2018; , 2018),
t
() (, 1995).

Brain activation. (, , 2015; , 2016). rest) 10 task

2.4.3. Predictive relationship between brain activation/IBS and behavioral performance

(, ,) 46 (1) (2) (F) (, 2020; , 2013) (R²) (, 2019). / p- (, 1995).

3. Results

3.1. Manipulation check for social status

(, ,) 100 , F (1, 96) = 4.43, p = 0.038, η² = 0.044. , F (1, 96) = 6.95, p = 0.01, η² = 0.067, , F (1, 96) = 5.44, p = 0.022, η² = 0.054, , F (1, 96) = 8.59, p = 0.004, η² = 0.082.

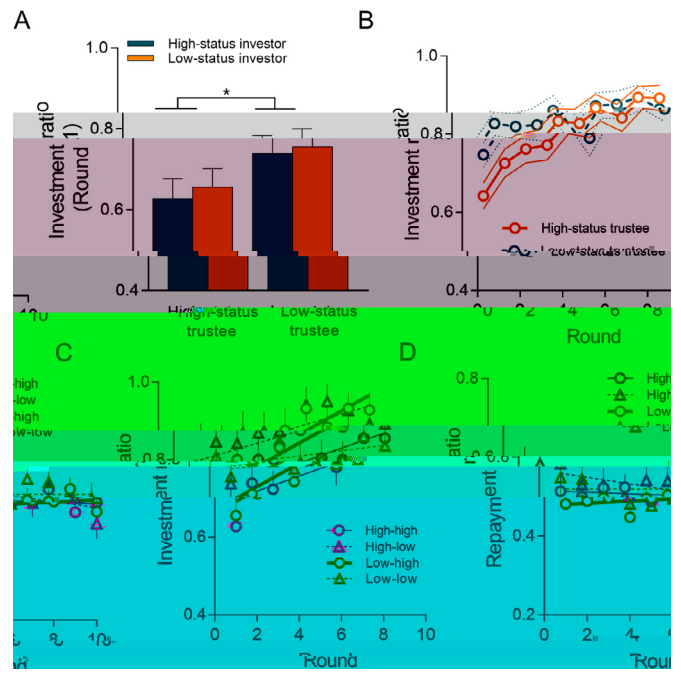


Fig. 2. () (, , 1), - ()

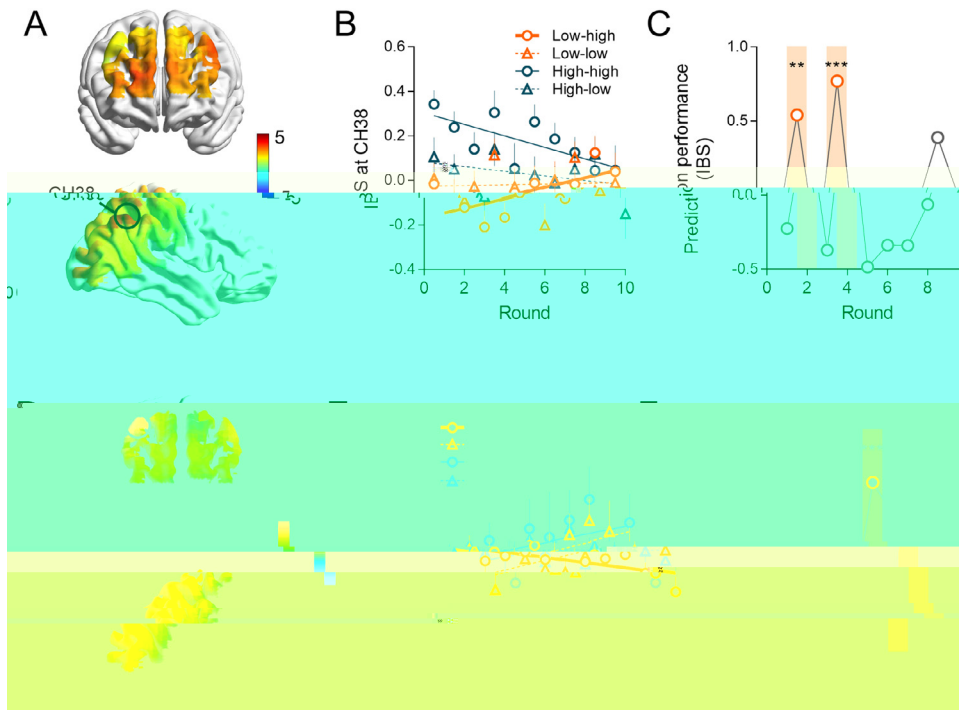


Fig. 3.

3.3. Social status-dependent IBS during trust interaction

($r = 0.54$, $r^2 = 27.69\%$, $p = 0.006$, $t = 2.61$, $p = 0.009$). (Fig. 3A).

38 (Fig. 3A). $(\beta = 0.370$, $SE = 0.120$, $t = 3.08$, $p = 0.002$).

($\beta = -0.035$, $SE = 0.017$, $t = -2.03$, $p = 0.043$). $(\beta = -0.026$, $SE = 0.009$, $t = -2.96$, $p = 0.003$) $(\beta = 0.021$, $SE = 0.008$, $t = 2.80$, $p = 0.006$; Fig. 3B).

3.4. Social status-dependent brain activation during trust interaction

($r = 0.65$, $R^2 = 16.81\%$, $p < 0.001$, $t = 2.19$, $p = 0.029$; Fig. 3E).

($r = 0.54$, $R^2 = 27.69\%$, $p = 0.006$, $t = 2.61$, $p = 0.009$).

($\beta = 0.022$, $SE = 0.010$, $t = 2.23$, $p = 0.026$),

($\beta = -0.03$, $SE = 0.014$, $t = -2.40$, $p = 0.016$),

($\beta = 0.051$, $SE = 0.020$, $t = 2.61$, $p = 0.009$).

($\beta = 0.02$, $SE = 0.01$, $t = 1.93$, $p = 0.055$);

($\beta = -0.012$, $SE = 0.005$, $t = -2.19$, $p = 0.029$; Fig. 3E).

3.5. Prediction of behavior performance based on brain data

2 ($r = 0.54$, $R^2 = 27.69\%$, $p = 0.006$, $t = 2.61$, $p = 0.009$) $4 (r = 0.77$, $R^2 = 59.12\%$, $p < 0.001$, $t = 3.88$, $p < 0.001$) (Fig. 3C).

1 ($r = 0.65$, $R^2 = 16.81\%$, $p < 0.001$, $t = 2.19$, $p = 0.029$) (Fig. 3F).

4. Discussion

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... 2011.
... 108, 7710-7715. :10.1073/ .1014345108.
... 2010.
... 107. :10.1073/ .1008662107.
... 2016.
... 11, 23-32. :10.1093/ / 092.
... 2009.
... 4, 294-304. p/ 1 -0.001 (. . .) / 324 65 .