Distinct neural substrates for the perception of real and virtual visual worlds

[illegible]

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Virtual environments have been frequently used for training and skill improvement. However, do real and virtual worlds engage the same

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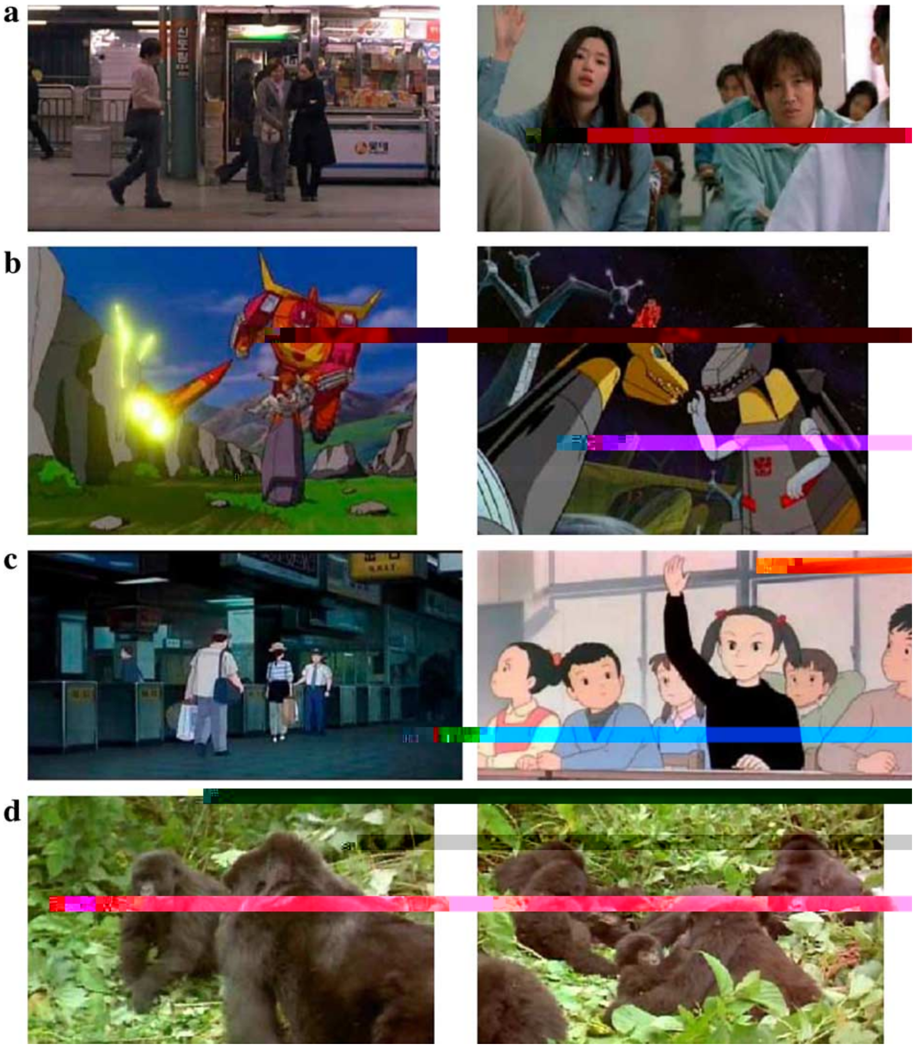
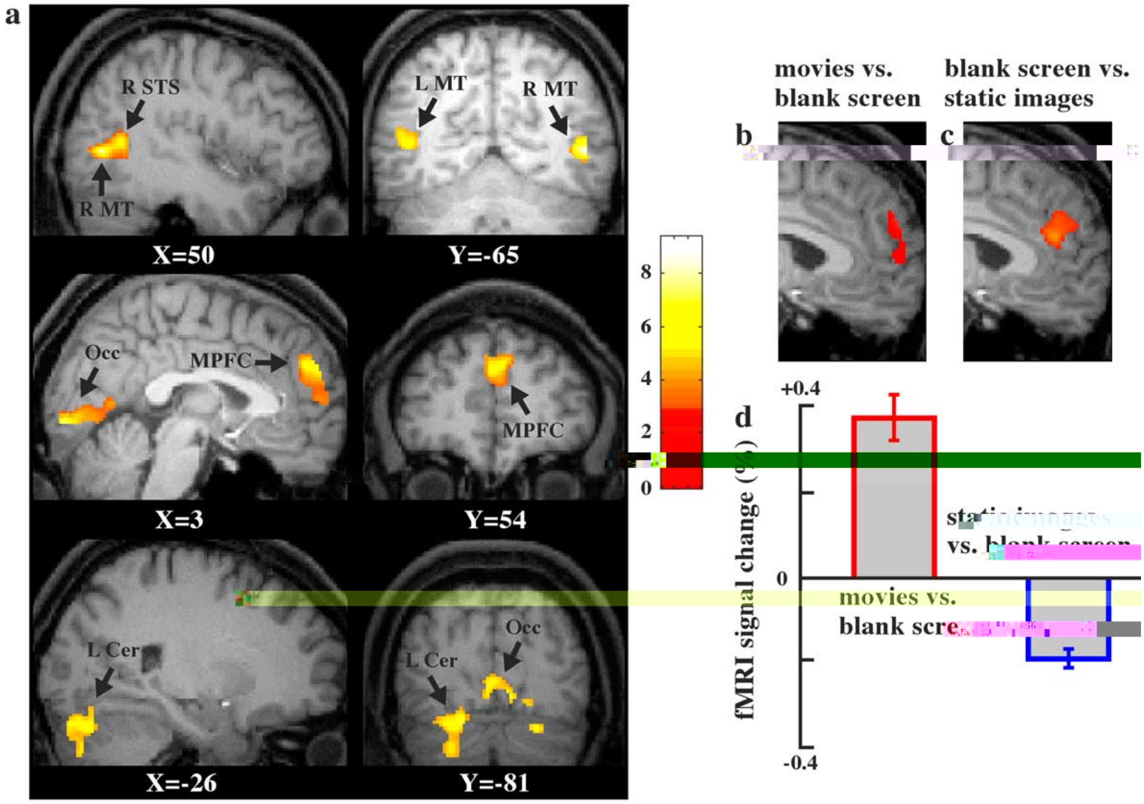
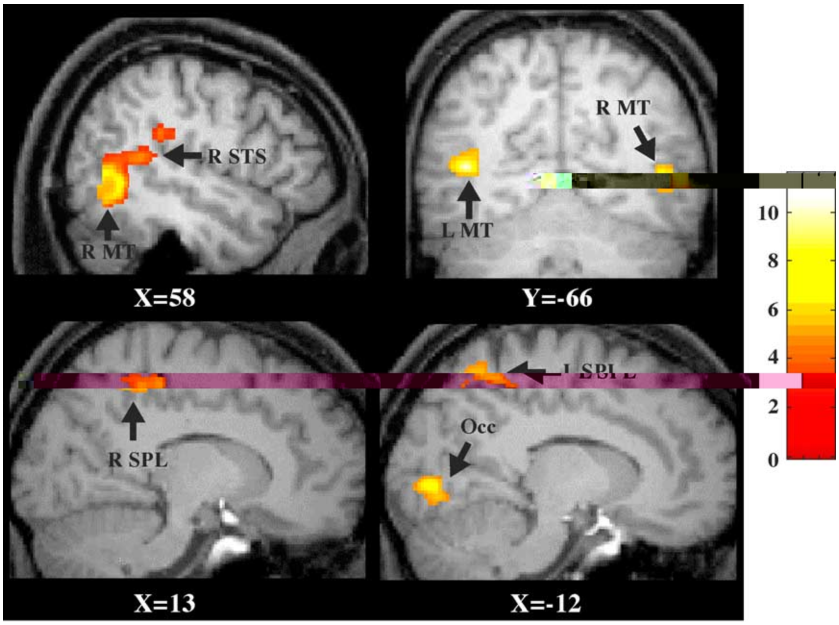
Stimuli and procedure



[redacted]


a
R STS
R MT
X=50
L MT
R MT
Y=-65
Occ
MPFC
X=3
MPFC
Y=54
L Cer
X=-26
L Cer
Occ
Y=-81
8
6
4
2
0
movies vs.
blank screen
blank screen vs.
static images
b
c
d
+0.4
0
-0.4
fMRI signal change (%)
static images
vs. blank screen
movies vs.
blank screen

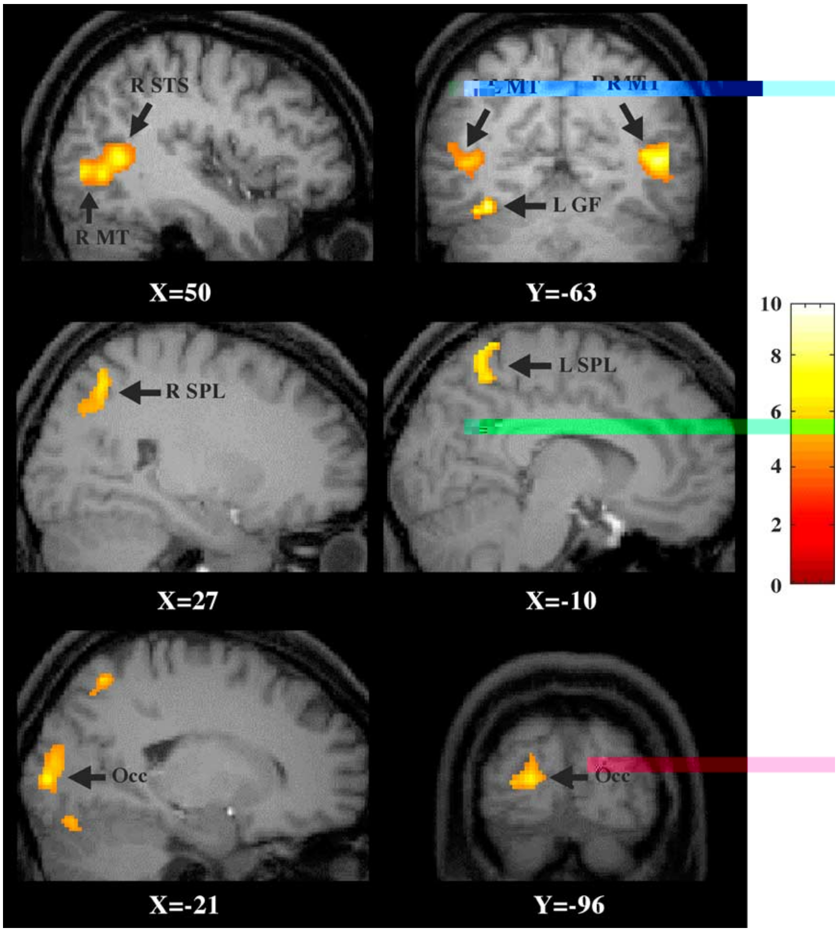
. 3. B . ( ) . 12 . C . z . A , ( ), C, (C). ( ) C (6, 60, 23, $Z = 3.35$, $P < 0.001$,). ( ) C (8, 40, 13, $Z = 5.04$, $P < 0.001$,). ( ) C . . 2 , , . , C .


R STS
R MT
X=58
R MT
L MT
Y=-66
R SPL
X=13
L SPL
Occ
X=-12
10
8
6
4
2
0

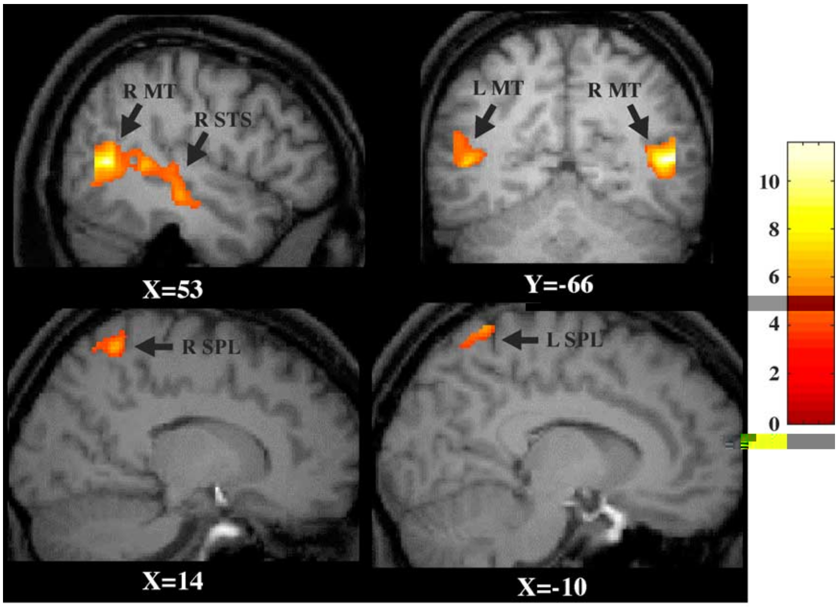
. 4. - . A , ( ), ( ).

, , C A. (−50, −66, 7, Z = 4.90, P < 0.001, , 55, −62, 8, Z = 4.62, P < 0.001,), (−22, −93, 8, Z = 4.11, P < 0.001,), (39, −60, −13, Z = 4.57, P < 0.02, , . 5). N (−10, −55, 60, Z = 4.11, P < 0.01, , 28, −61, 49, Z = 3.92, P < 0.01,), . , C C, A - . ; , (., 1998). D,

. (. 1, C). . (−51, −66, 7, Z = 4.66, P < 0.001, , 55, −60, 8, Z = 5.23, P < 0.001,), (−63, −43, 15, Z = 4.85, P < 0.001, , 64, −38, 19, Z = 5.00, P < 0.001,), (−4, −50, 52, Z = 3.18, P < 0.04, , 20, −49, 61, Z = 4.35, P < 0.03, , . 6), . , C . , ; , C . A - C - (t = 6.00 4.75, , P < 0.001), C - .


R STS
R MT
L MT
R MT
L GF
X=50
Y=-63
R SPL
L SPL
X=27
X=-10
Occ
Occ
X=-21
Y=-96
10
8
6
4
2
0

. 5. B . A , ( ), ( ), ( ).

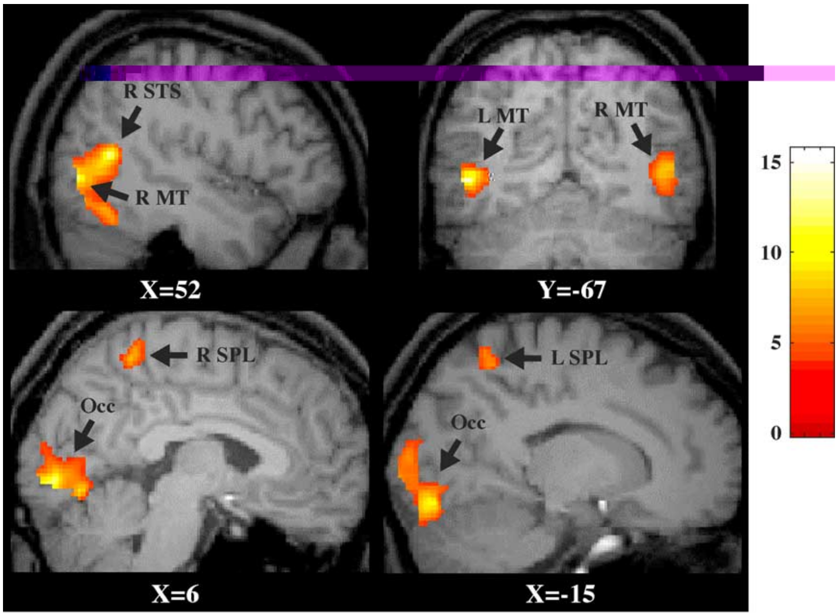

R MT
R STS
X=53
L MT
R MT
Y=-66
10
8
6
4
2
0
R SPL
X=14
L SPL
X=-10

. 6. . A ( ).

C , C , (. 1). (−51, −66, 3, $Z = 5.70$, $P < 0.001$, , 51, −73, 2, $Z = 5.39$, $P < 0.001$,), (−2, −91, −2, $Z = 5.74$, $P < 0.001$,), (−14, −53, 61, $Z = 4.31$, $P < 0.001$, , 6, −44, 57, $Z = 4.39$, $P < 0.03$, , . 7). , C .

Discussion

. A ,


R STS
R MT
X=52
L MT
R MT
Y=-67
15
10
5
0
R SPL
Occ
X=6
L SPL
Occ
X=-15

. 7. . A , ( ), ( ).

, 1998), (., 1995)

(., 1998)

. N C C C

C C

C

C

(., 2004) (,).

C

D , 2001).

3, 3.25, 2.88, 4, 5- 5 = , $F(1,11) = 0.25, P > 0.5$.

(D , 1998),

C

(, 1999; , 1978; , 1990), (B ., 2000; ., 1995; ., 2000), (., 1998; ., 2001).

( ),

). C

, (., 1995; , 1986)

C

(., 2000) (C ., 2000),

C ( )

C

(., 2003), (., 2001), (., 2000; N ., 2003).

(., 1999) (., 2002),

C

(, 2003) (., 2004)

(2003)

C. , , .

(., 2002; , 2004). C

(C , 1999).

Acknowledgments

N N C (30225026 30328016), C (2002CCA01000), C (02170), ( ), ( ).

References

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B , ., , ., -B , ., D , ., 2000. A . N 11, 157 166.

C , ., , ., , ., , C., 2000. : . N 12, 314 325.

D , . ., , .A., 1998. N : , . . 2, 355 362.

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, .B., , .B., , . ., , ., B , . ., B , . ., , B. ., B , . ., 1995. . N . 15, 3215 3230.

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