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A. , D , C *

100875, C a

, CA 94720, USA

A R T I C L E I N F O

20 A 2011

28 2011

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A B S T R A C T

1. Introduction

(., 2008). (E) . A (A & , 1997; C ., 1997; F , 1994, 1997; & , 1991; & , 1995; , & , 1995; & , 1992; , , & , 2004). (A , , & , 2002; B ., 2011; D & , 1998; & G , 2009; & D , 1996; , F , & E , 1992; 2003; , , & D , 2003), (& G , 2004). (., 2008; , , ., 2010; , ., 2010). F ( ),

(., 2010; , , ., 2010). (., 2011). (, , ., 2010). (G ., 2009; ., 2009). E

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* C . F : +86 10 5880 6154.

E- a : @ . . (C.).

0042-6989/$ - © 2011 E . A

:10.1016/ . .2011.07.019

( )

( )

(, ,)

( )

(2008),

( ).

2. Methods

2.1. Ob a a a

F (

B) . A

(, , CA)

21- . G520 (2048 × 1536 ,

0.19 × 0.19 , 75).

50 / ^{2}.

1.5 . E

2.2. S

(G)

5° (Fig. 1A).

(3), (90°), (0.29°),

(0.47), ( ),

4λ.

~ 15 .

0.47 0.47 + ΔC.

2.3.

200 . F

. F

. A

400 . A

3- -1-

79.4% . E

(50

). 0.05 .

2.4. S a c

( ), = (−)/

3. Results

3.1. Ba : a a a ca

(1 1) 5°

(2 2)

200 (Fig. 1A).

~ 15 ,

~ 2.5 . B

(1 1,

( ) = 27.3 ± 2.9%, p < 0.001,) 2-

(Fig. 1B C).

(1 2, = −0.5 ± 4.4%,

p = 0.55; 2 2, = 1.2 ± 4.0%, p = 0.39),

(2 1, = 1.5 ± 5.8%,

p = 0.40) (Fig. 1B C).

(2008).

3.2. D b a : a a ca a a a a a

A 16

(Fig. 1), (

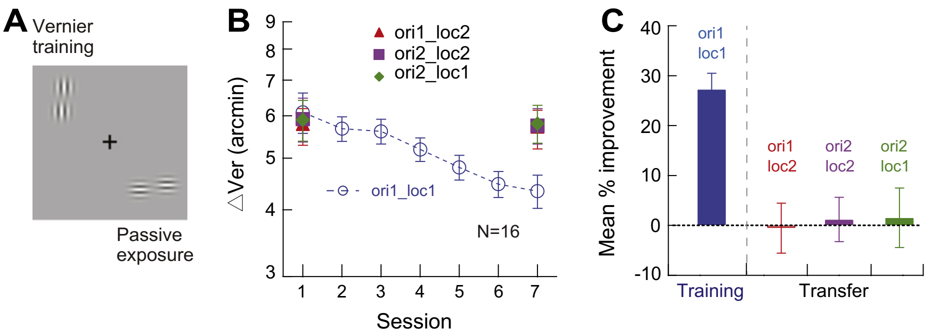

Fig. 1. . (A) . 1 1 (2 2). (B) - . (C) ( ) ( ).

<3%) (- ( ), / , >0.5). (. = −0.15 ± 0.14).

(F . 2A, F . 1A, 80% ,) E (20%) (. = 99.7%) . F 1 1 (= 30.3 ± 2.9%, < 0.001, F . 2B C), 1 2 (= −9.7 ± 8.0%, = 0.85), 2 2 (= −1.9 ± 8.1%, = 0.59), 2 1 (= −9.5 ± 9.4%, = 0.81) (F . 2B C). A . E , 1 2 (= 14.5 ± 4.0%, = 0.012) 2 2 (= −2.8 ± 4.7%, = 0.71) 2 1 (= −9.6 ± 10.4%, = 0.79) (F . 2B C), 1 2 (14.5% . 30.3%) (= 0.047 1 1 . 1 2).

(4.34 ± 0.47 1 1 4.50 ± 0.16 1 2, = 0.37) 1 2 (F . 2B).

(., 2008) ( ) ? 1 1 E 1 29.6 ± 4.0% (< 0.001), 30.3 ± 2.9% F . 2B. 1 2 (= 18.2 ± 6.6%, = 0.015) 2 2 (= 5.1 ± 4.9%, = 0.17) 2 1 (= 4.3 ± 5.1%, = 0.21) (F . 2D E).

1 2 1 2 (= 0.014)

3.3. D b a : a a a ca a a a . a .

(F . 1) (F . 3A). (. = 99.1%) ( ) . F 1 1 (= 24.1 ± 3.8%, < 0.001), 1 2 (= 0.3 ± 3.1%, = 0.47), 2 2 (= 2.4 ± 2.3%, = 0.18), 2 1 (= −5.6 ± 8.7%, = 0.73) (F . 3B C). 2 2, 1 2 (= 15.5 ± 3.1%, = 0.002) 2 2 (= 20.4 ± 4.6%, = 0.003) 2 1 (= 13.2 ± 5.2%, = 0.026) (F . 3B C).

(= 18.6 ± 5.0%, = 0.007) (= 0.30, A A).

1 1 ( ) 2 2 . C 1 - 1 (= 38.9 ± 4.3%, < 0.001,), 1 2 (= 17.8 ± 5.8%, = 0.011), 2 2 (= 20.9 ± 4.9%, = 0.003) 2 1 (= 18.7 ± 8.4%, = 0.034) (F . 3D E). , F . 2D, (= 0.015 , A A). F . 2 3 ,

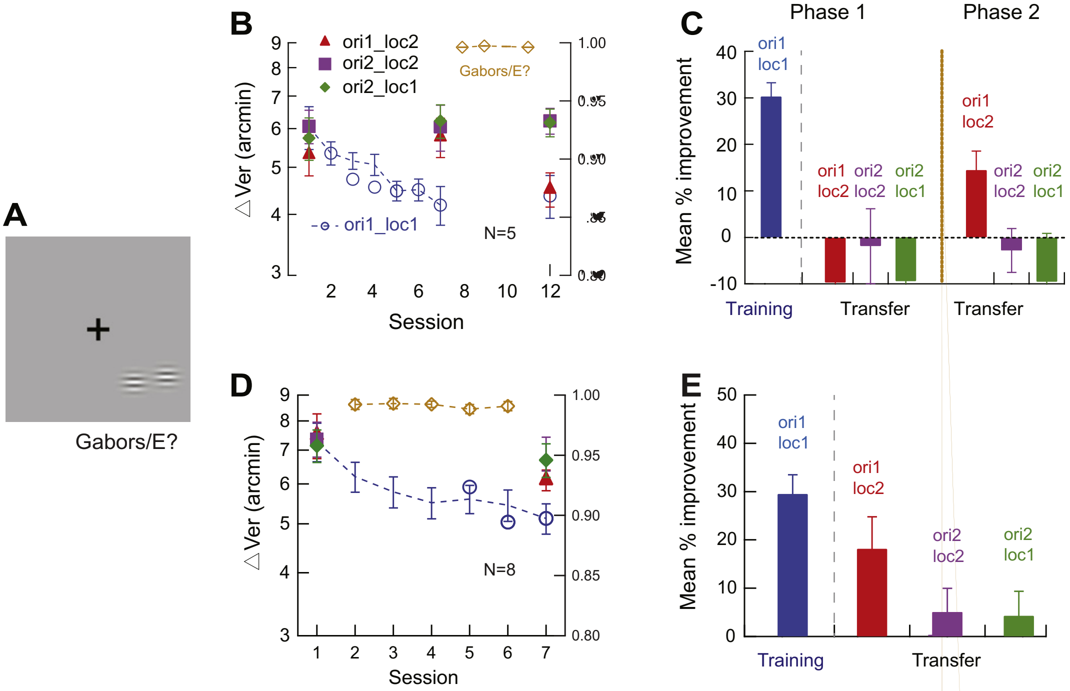

Fig. 2. . (A) E. (B) : 1 1 (F . 1) 2. (C) - -E 2. (D) : 1 1 - -E 2 . (E) ( ) ( )

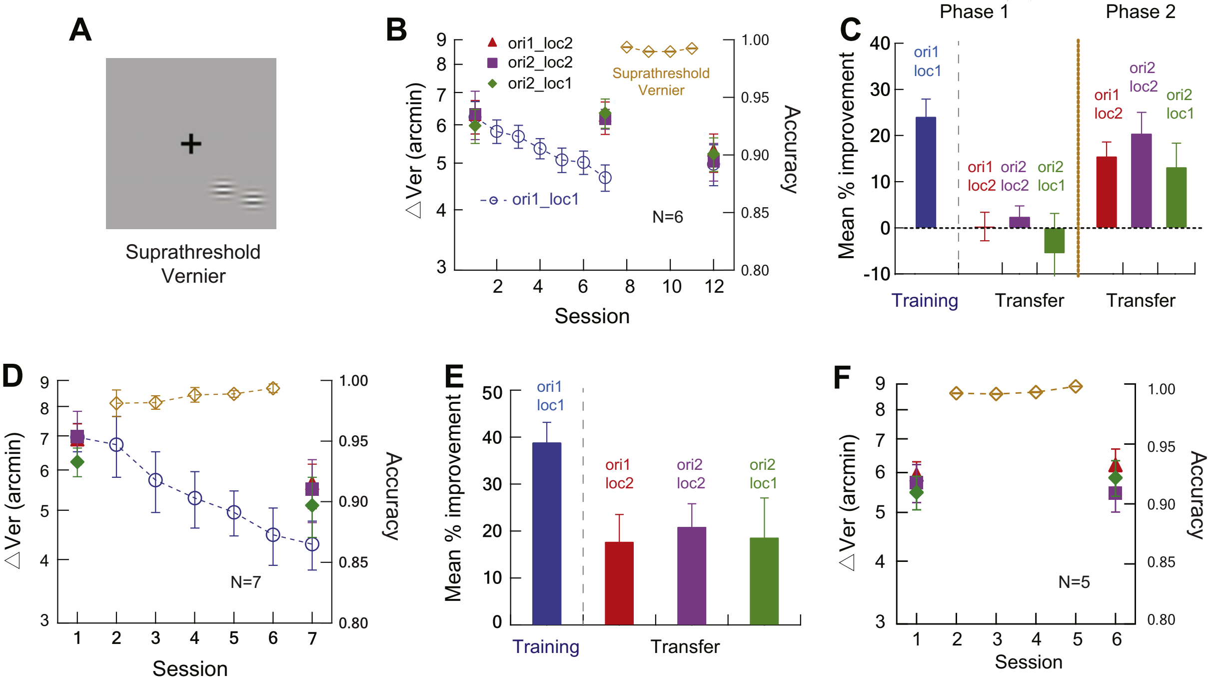

Fig. 3. . (A) . 2 2 . (B) : 1 1, 2 2. (C) . (D) : 1 1 2 2 . (E) ( ) ( ) . (F) C : - - .

, , - - . (, -) 2 2

1 2, 2 2, 2 1 (F. 3F),

3.4. D b a : a a ca a a b a a.

(., 2008).

Acknowledgments

F C G 30725018 (C) 31000459 ( ) G 01-04776 (A) 01-01728 (D).

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