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ABSTRACT

a - a a a a a a a a - , a a (. ., a) a a a a a a a a a a (. . a). a a a (a a)a a a a a a a a a a . a a a a a a (Ga . , a - a) a a a a . , a - a a a a a a a a a a a . a , a a a a a a a a a a . a a a a - a a a a a a a a a a .

1. Introduction

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

a a a a a a a - a a (a a ., 2008). a , a a - - (E) , a a a a , a a - , a a a a a a - a a a a (a , a , a ., 2010). a a a a a - a a a a a a a a a (a a ., 2008; a , a , a ., 2010; a , a , a ., 2010). a a a a a a a a a a , a a a (a a ., 2011). a - a a a a a a a a a (a , a , a ., 2010). a a - a a a a a . , a a a a a a a a a a a a a a . a a a a (Ga a ., 2009; a a a a a ., 2009). a a E a a

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

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(a a., 2008),

, a a (a a). - a

2. Methods

2.1. Ob a a a a

F (a a a B) - - a . A . -

a (, a a , CA) a 21- . G520 (2048 × 1536 , 0.19 × 0.19 , 75 a a). a 50 / ². a 8- - a . a 1.5 . E .

2.2. S

a a a Ga (Ga a) a 5° (F . 1A). Ga (3), (90°), (0.29°), (0.47), (a), - - - 4λ. , Ga Ga . ±15 . Ga 0.47 a 0.47 + ΔC.

2.3. P c

200 . F Ga Ga Ga Ga Ga . F Ga . A 400 . A 3- -1- 79.4% . Ea (50). 0.05 .

2.4. S a c

( ), = (–)/ . , -a .

3. Results

3.1. Ba : a a a a a ca

(1 1) a 5° (2 2) 200 (F . 1A). ±15 , ±2.5 - . B (1 1, ( ) = 27.3 ± 2.9%, < 0.001, -) 2- (F . 1B a C). (1 2, = −0.5 ± 4.4%, = 0.55; 2 2, = 1.2 ± 4.0%, = 0.39), (2 1, = 1.5 ± 5.8%, = 0.40) (F . 1B a C). (a a., 2008).

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

A 16 (F . 1), a (

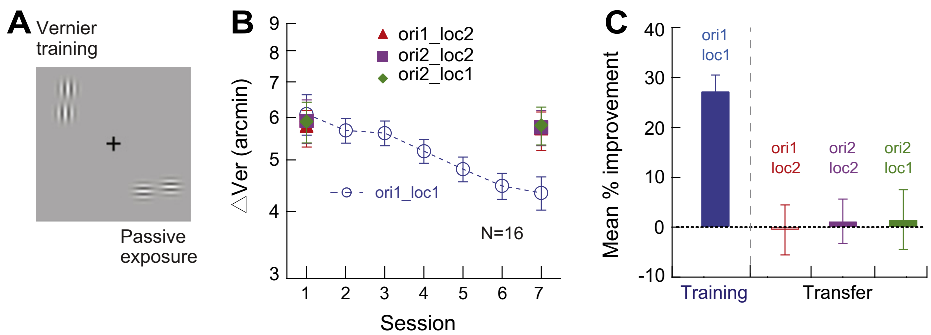


Fig. 1. a a a a a a a a a a a . (A) . a a a 1 1 a a a a a a a a a a (2 2). (B) a - - a a a -a - a a a . (C) a a (a)a a a (a).

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

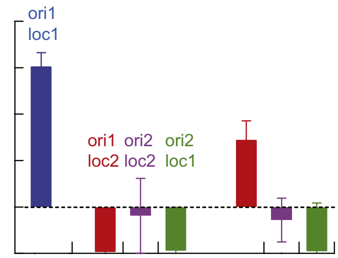
a a Ga (F . 2A, a a a Ga F . 1A, 80% a ,) a a E (20% a)a a a a a a - a . a , - a a a (a a - a = 99.7%)a a a . F , a a a - 1 1 (= 30.3 ± 2.9%, < 0.001, F . 2B a C), a a a 1 2 (= −9.7 ± 8.0%, = 0.85), - 2 2 (= −1.9 ± 8.1%, = 0.59), a 2 1 a a a (= −9.5 ± 9.4%, = 0.81) (F . 2B a C). A Ga . E , a a a 1 2 (= 14.5 ± 4.0%, = 0.012), a a 2 2 (= −2.8 ± 4.7%, = 0.71) a 2 1 (= −9.6 ± 10.4%, = 0.79) (F . 2B a C), a a a a a a a a a a a a a a a , a a a . a , a - 1 2 (14.5% . 30.3%) a a a a a a a (= 0.047 a 1 1 . 1 2). , a a a a a a a a a a a , a a a a a (- a - 4.34 ± 0.47 a a 1 1 a 4.50 ± 0.16 a a 1 2, = 0.37) - a - a 1 2 (F . 2B). a a a a a a . (a a ., 2008) a a a a a a a a a a (a a a a - - a) a a a . , a a a a a a a a . a a a a a a a a a ? a a a a 1 1 a a Ga E a a a a a a a a a . a - a a 1 1 29.6 ± 4.0% (< 0.001), a

a 30.3 ± 2.9% F . 2B. a a a a a a a 1 2 (= 18.2 ± 6.6%, = 0.015), a 2 2 (= 5.1 ± 4.9%, = 0.17) a 2 1 (= 4.3 ± 5.1%, = 0.21) (F . 2D a E). a a a a a a - a . , a a a a a a 1 2 a a 1 2 (= 0.014) a a - a .

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

a a a (F . 1) a - a a a a a a a (F . 3A). a a , a a a (a a a = 99.1%), a a a a ( ) a . F , a a a - 1 1 (= 24.1 ± 3.8%, < 0.001), a a a 1 2 (= 0.3 ± 3.1%, = 0.47), 2 2 (= 2.4 ± 2.3%, = 0.18), a 2 1 (= −5.6 ± 8.7%, = 0.73) (F . 3B a C). , a a a 2 2, a a 1 2 (= 15.5 ± 3.1%, = 0.002), a a 2 2 (= 20.4 ± 4.6%, = 0.003) a 2 1 (= 13.2 ± 5.2%, = 0.026) (F . 3B a C). , a - a a a a a (= 18.6 ± 5.0%, = 0.007) a a (= 0.30, a a A A).

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



Gabors/E?

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

3.4. D u b a : a u a u ca a w a
a b u a a - a

a a a a
a a a a a a
a a a - a a
a (a a ., 2008). a
a a a a .

Acknowledgments

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

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