



T - a e e ce a ea - b ea a c d

Z Z * - / () , , ... 

Z e , Fa * - / () , , ... 



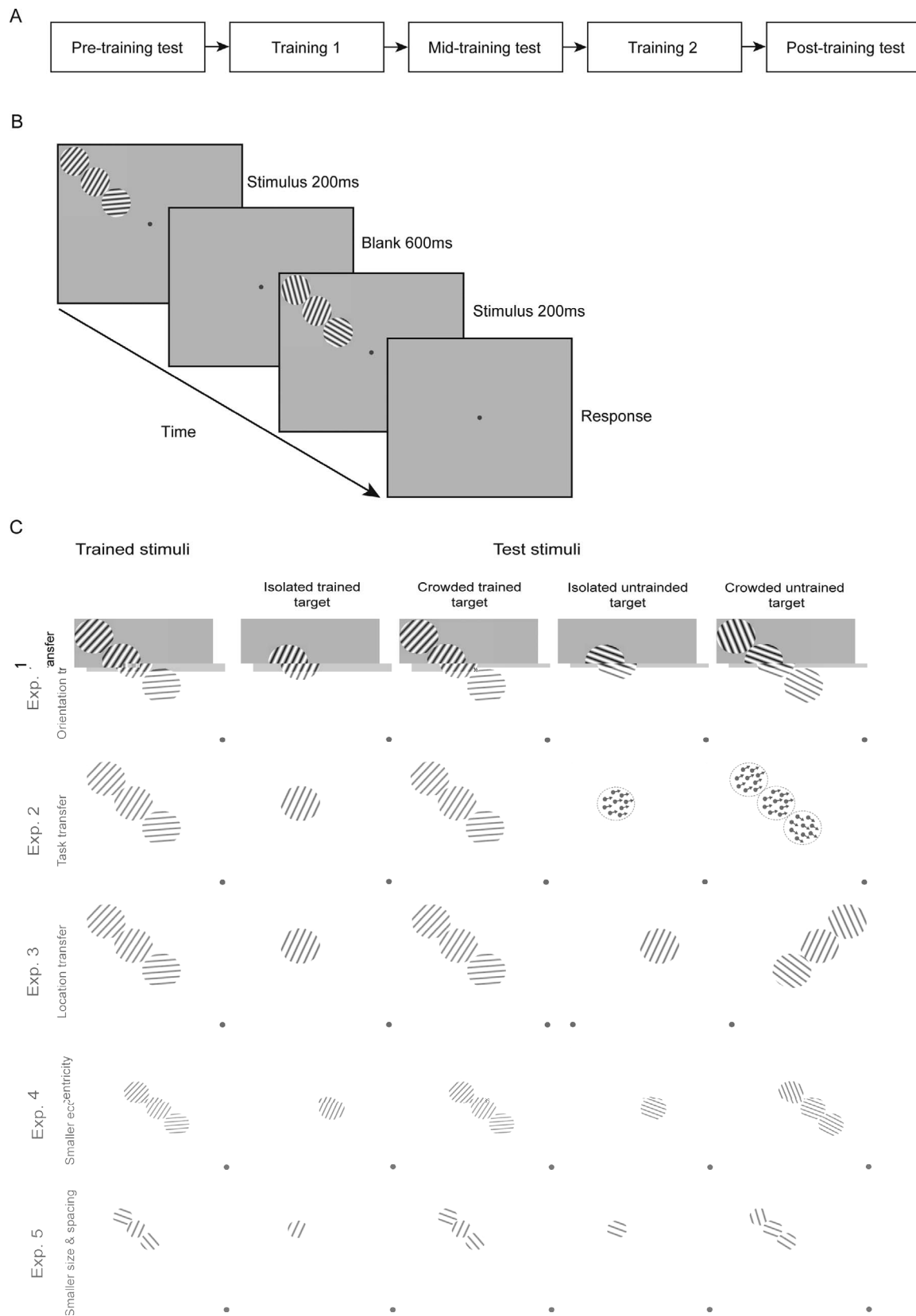
M a e , a a , d , e , d

S b e c

1, () E () 2, ()
E () 3, () E () 4,
10 () E () 5. A
N
A 18 26
P
D H

S... a, d de , ,

H ; (MM906 ; : 100
 : 1024×768 ; : 19
 (: 47.59 μ^2).
 57 μ ,
 E
 E 1 :
 (P), (M),
 (2), (P ;
 F 1A). D ,
 () (: 1.5°;
 : 2 /°; M : 1;
 : 47.59 / μ^2 ; : 10°;
 (F 1B). F θ
 (67.5° 157.5°; 0°)
 A
 (1) 30 E 40
 (& P , 1983). I ()
 $\theta \pm \Delta\theta$
 200 μ
 600 μ (F 1B).
 3°.



1. (), , . () () . () : - (), 1, -
 1 . . ()
 -

I ().
 () ()
 (G , P , & G ,
 2014). 800 1200
 $\Delta\theta$
 E ,
 75%
 D ,
 : ,
 ,
 (F 1C,).
 E (),
 , E
 D 1,
 () E
 P D 2,
 E 2 3
 E 1.
 () E 1 E 2
 3. I E 2,
 E 1
 (DK ; : 1.5° ; : $8/\sigma^2$;
 : 10° ; : $0.01 \text{ } ^2$).
 DK E 1 60° ,
 DK (F 1C,
).
 ,
 I E 3,
 E 1
 ,
 (F 1C,
).
 E 4 E
 1. E 4
 E 1,
 6°
 0.98°

E 1 4 (D & B
 2003).
 1.96° (F 1C,
 E 5
 E 1.1
 P , 1, M
 E 1,
 E 1.
 E 1 (F 1C,
). D 1, 10

Da a a. a

$$\left(\frac{P}{M} \right) / \left(\frac{P}{M} \right) \times 100\% \quad (1)$$

Re

E, $e = e$, $1: P_{ce} = a \cdot ea$, c , ded
E, $e = e$, $a \cdot d$, $a \cdot fe$, c , ded
 a , e , a

67.5° 157.5°

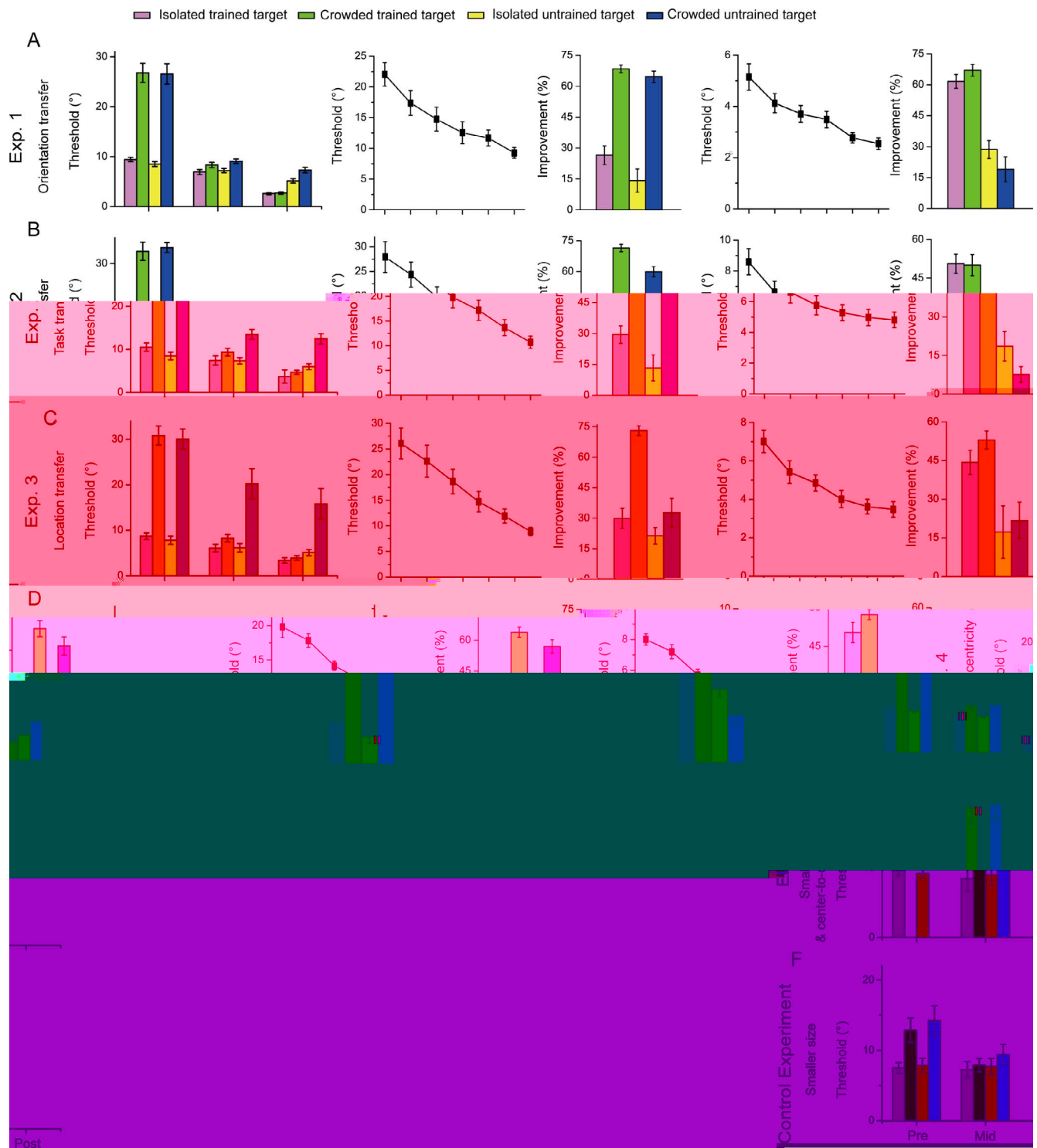
A E 30 E

40 B , P

(F 2A).

, (7) = 10.12, < 0.001;

, (7) = 10.23, < 0.001,

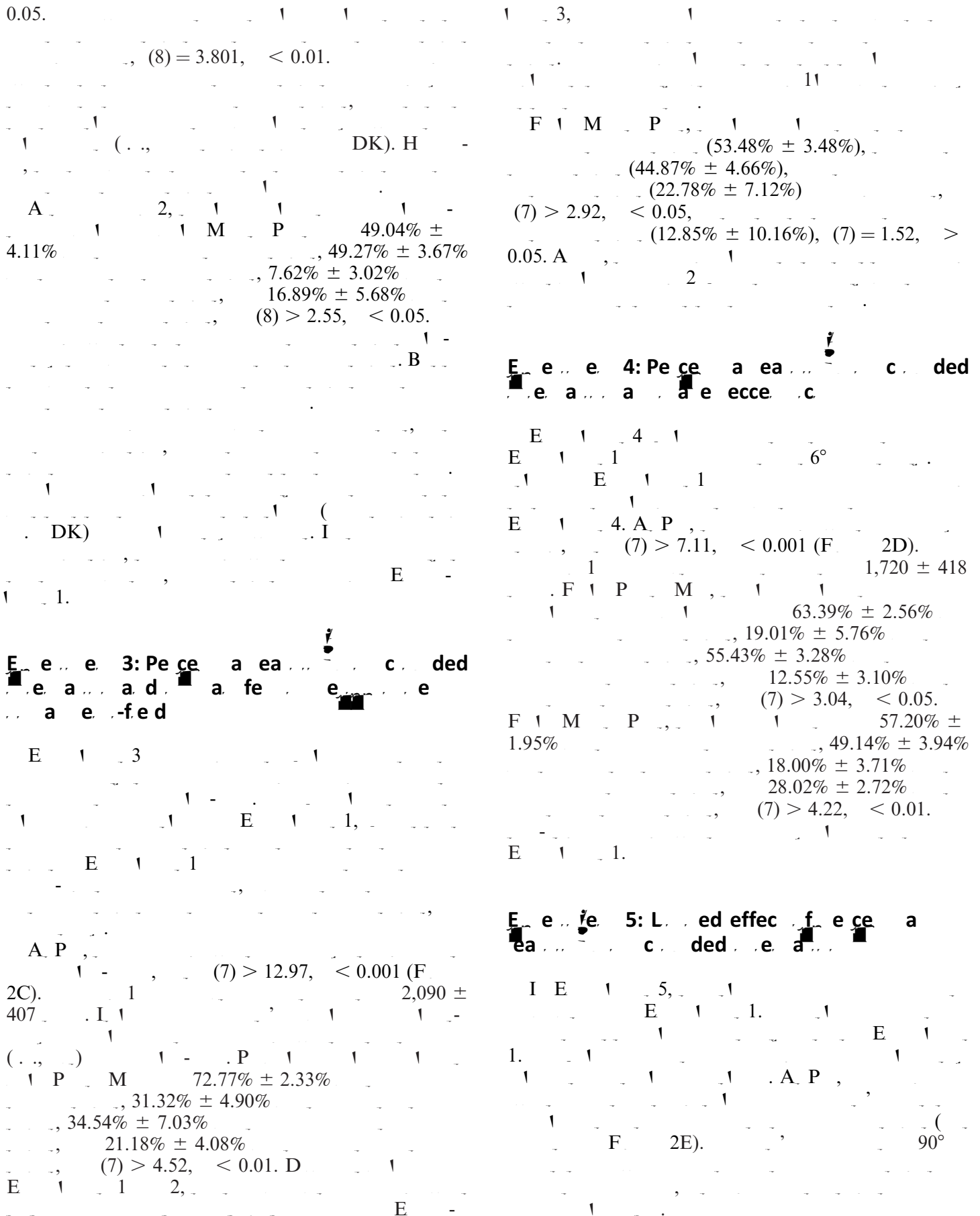


1

learning curve.

1

D = 1, $1,760 \pm 302$ (1.5 \pm), \pm), E P . A. M , (7) = 2.37, > 0.05, 1, P M (68.47% \pm 1.86%), (26.54% \pm 4.51%), (64.60% \pm 2.77%), (7) > 5.61, < 0.001, (14.22% \pm 5.64%), (7) = 2.02, > 0.05. , (7) = 2.74, < 0.05. A . H . I 1 (A & , 2011; G , & M , 2002; M , & O , 2006; , & O , 2001). D 2, A. P , (7) = 0.81, > 0.05. M P 67.07% \pm 2.79% , 61.68% \pm 3.36% , 19.02% \pm 6.06% , 28.64% \pm 4.36% (7) > 2.86, < 0.05. (),



D. 1, H. 1, E. 1.
 10, A.
 M. P. (9) < 0.73, > 0.05. A.
 (9) > 4.45, < 0.01.
 E. 1, (9) = 0.33, > 0.05.
 E. 1,
 E. 5. B. 5.
 E. 5,
 I. E. 5.
 E. 1. A. P. (3) > 3.77, < 0.05. 1
 2,100 ± 439. F.
 P. M. 38.78% ± 2.30%
 3.52% ± 2.90%
 33.87% ± 7.91%
 2.08% ± 4.13%
 A. M.
 (4) = 1.61, > 0.05,
 1,
 I. E. 1. 5,
 (. . .)
 P.
 E. 1
 3-
 F. 67.5°
 157.5°
 23.21%, 13.98%, 30.02%,
 67.5°
 157.5°
 17.29%, & (2008).

D. c

P. I. ()
 (. . .). H. I.
 ()
 N. I.
 I. (, 2011;
 & , 2015). C
 (C , 2007; H & N , 2007;
 H , 2012; , 2010; , 2015)
 P. 30% 88%,
 H.
 O.
 F. D.
 E.
 I.
 E. 5.
 C. ()
 (L , 2002; P

. I , . M ,
 . B
 . H ? O
 . I
 (H , 1996)
 (, 2005).
 . I ,
 . O ,
 . A
 A
 (B , 1958; M & D , 1985).
 . F ,
 (A ,
 G , & C , 2012; C & C ,
 2009).

(Cicchetti, A., & C., 2014).
C., A., C. (2007).
C.
(C. &
2002),
(2010)
A
(B., 1970). I
P. (2007; P. &
, 2008)
.” A
I
E., 5,
A
A
C
(J. C., 2014;
K., B., M., &, 2014; M., A.,
C., &, 2013)
B
O

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* F
C
C : F
B : @
A : PK-IDG/M G I B
, P , B , P. C

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4. C
B , 21, 1661–1666.
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A : H
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B , H. (1970). I , 226, 177–178.
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v . El , N : P P
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A
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49, 1638–1646.
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- (N. C , 2015;
L & G , 2008; , 2001). I
(A & H , 1997, 2004),
O
(H & , 2014; J , D , L , & L ,
2010). I
G
I

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