A P D C : B E P E

M 1, 1, G 1, J 1, 1,2,*

[1] *Department of Psychology, Peking University, China*
[2] *The Research Center of Psychology and Behavior, Tianjin Normal University, China*

B (E P) C . I E 1, 102 C 32% . C . I E 2, (MMN) C MMN C . B MMN

*C : , D P , P , B 100871, C . F : +86-10-6276-1081, 104@ , C / : C N P P ; / : 95- -09; C / : N N F C ; / : 30200078, 30070260, 30470569, 60435010; C / : M E ; / : 01002, 02170, 01JA L 015

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P I ( ). DOI: 10.1002/ .309

Keywords: ; (MMN)

IN OD C ION

P (, , & , 1994). L (B & B , 1978, 1983; B & B , 1985; L , F , & P , 1988). P D F , (B & B , 1978; M , C , & , 1993; & , 1995; & , 1994), (, 1981), (K , 1986), (& , 1988; , 1985), (B & , 1993; D & , 1976), (& G , 1997; B , 1997). I (47(-352)-332.747.5(5.9 010(1((( )-7.828)-)2( )0 .9( )-4.9( ),).6(

(M C & K , 1980). A
(M , M A , & , 1999)
(*et al.*, 1998) *et al.* (1998)
et al. (2000)
32 10-
A , P
M / (2000)
50%
(K *et al.*,
2001; *et al.*, 2003; M / *et al.*, 1996; *et al.*, 1998),
A *et al.* (2004)

B E P
I (B , , F , & G / , 1999),
(MMN)
( ) -K , D , B ,
(1999)
D MMN 225 600 ,
per se, MMN
H E P
(-K *et al.*, 1999).
C
B
1300,
5000, M C
A
A

C ( ).
C (, C , A , , & , 2003; & F , 2001; M B -C & H , 2000; H & B , 1997). B C I C E 1 C 102 E 2, E P C

E PE IMEN 1

P ? I ? F

Method

Participants

O C (52 50 , = 129) B A M C

Design and procedure

I C P M (& , 1985)

I

DMD (E & F , 2003)

A B

C 2000 A

60 B.

Linguistic Tests

vocabulary test (& , 1996) 210

10

P

( )

P

Reading fluency test 95

5 P

C

10

phonological awareness test (B & B

1978)

20

I

50 50 (109/) (20/).

Auditory and temporal tests

I *tone frequency discrimination task,* 300 I I 500 . Q (700 H/), 5 120 H/ , 7 C

I *tone temporal order judgment,* 800 H/ 2000 H/ E 50 C I I 5 50 5 . E 10 10 75%

I *temporal interval discrimination,* (1000 H/). 15 I I. 500 100 50 100 10 (5). C 75%

composite tone pattern discrimination task 2000 H/ 800 H/ 50 150 150 50 . C I 75% 25% C

Results

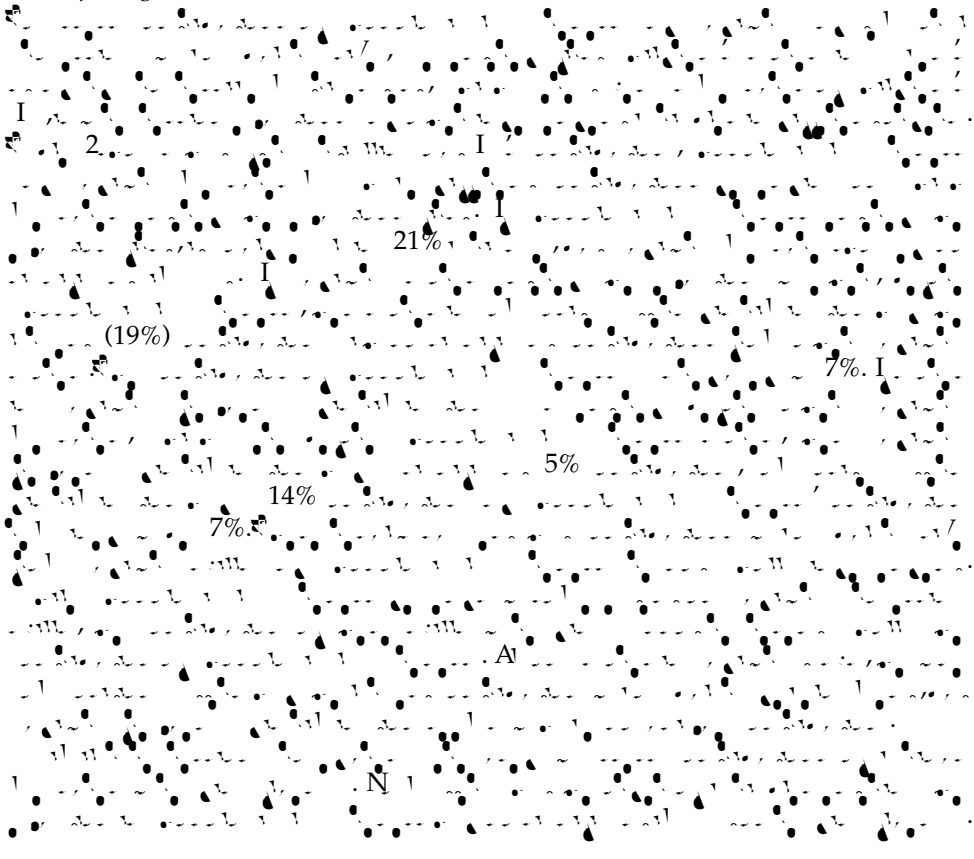
I /

1. M

	1	2	3	4	5	6	7	8	9	10
1.										
2.	0.24*									
3.	0.16	0.33**								
4. P	0.35**	0.50**	0.22*							
5. O	0.10	−0.18	−0.27**	−0.20*						
6. C	0.02	−0.34**	−0.37**	−0.18	0.38**					
7. C E O	−0.20*	−0.35**	−0.14	−0.30**	0.01	0.06				
8.	−0.28**	−0.25**	−0.26**	−0.30**	0.18	0.10	0.06			
9.	−0.01	−0.22*	−0.31**	−0.26**	0.18	0.25**	0.02	0.34**		
10.	−0.27**	−0.23*	−0.28**	−0.46**	0.07	−0.01	0.14	0.21*	0.55**	
11. C	−0.17	−0.43**	−0.22*	−0.56**	0.08	0.31**	0.22*	0.26**	0.26**	0.35**

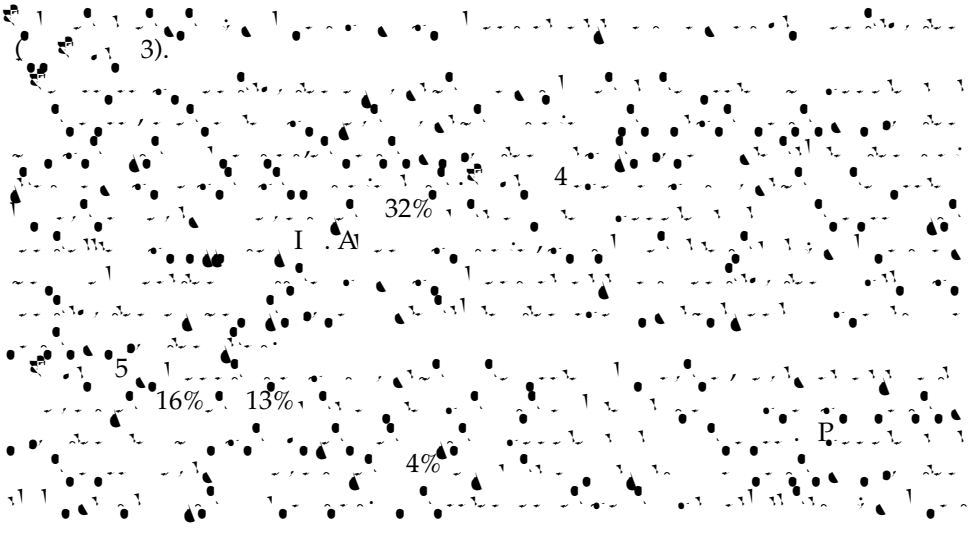
N : * <0.05; ** <0.01; *** <0.001.

Multiple regressions



D	P	R^2	R^2	t
	1.	0.05	0.05*	2.29*
	2. C	0.24	0.19***	−3.55***
	3. P	0.31	0.07**	2.86**
	1.	0.05	0.05*	2.29*
	2.	0.10	0.05*	−2.22*
	3. C	0.24	0.14**	−3.55***
	4. P	0.31	0.07**	2.86**
	1.	0.05	0.05*	2.29*
	2. P	0.26	0.21***	5.02***
	3. A	0.31	0.05	

N : * <0.05; ** <0.01; *** <0.001.



3. I

D	P	R^2	R^2	t
F	1.	0.03	0.03	
	2.	0.17	0.14*	−2.01*
	3. P	0.172	0.002	
	1.	0.03	0.03	
	2.	0.09	0.06*	−2.30*
	3.	0.17	0.08*	−2.01*
	4. P	0.172	0.002	
	1.	0.03	0.03	
	2. P	0.06	0.03	
	3. A	0.172	0.11*	

N : * <0.05.

4. I

	P	R^2	R^2	t
P	1.	0.12	0.12**	2.46**
	2.			−2.63**
	C	0.44	0.32**	−4.9***
	1.	0.12	0.12**	2.46**
	2.	0.16	0.04*	−2.14*
	3.			−2.63**
	C	0.44	0.28**	−4.9***

N : * <0.05; ** <0.01; *** <0.001.

5. I

D	P	R^2	R^2	*P*
C	1. (I)	0.00	0.00	0.84
	2. A	0.16	0.16	0.00**
	3. P	0.17	0.007	0.66
	2. P	0.04	0.04	0.05*
	3. A	0.17	0.13	0.01**

N : * <0.05; ** <0.01.

I ,

Discussion

7% C C C 2 H C C et al., 2000; et al., 1998). I per se C

C

B

C

H

E PE IMEN

E 1 C

C

E 2

? M ?

Method

Participants

P 23 : 11 (2
9) 12 (2 10).
I C
P M (& , 1985):
8 13 (11 1 , *S.D.*=1.34).

A

N

A

H K L -D
(HK - LD) (H , C , , & L , 2000)

: C
P 7
(6).

Stimuli

P

C M ,

6.

	A (.D.)	I (.D.)	C	D	
C	10.91 (0.34)	75.84 (4.24)	9.56	9.97	10.02
D	11.18 (0.48)	81.81 (2.36)	5.7	7	5.875

C , D ($p < 0.01$).

21 110 I 80% 20%.

A I (*simple tone*), 1250 H/ 1400 H/ . E 50 700 I (*composite tone pattern*), (2000 H/), 50 (800 H/), 50 150 350 350 150 1000

C / / / / I / / / / 1/ / 2/ C I 40 700

Procedure

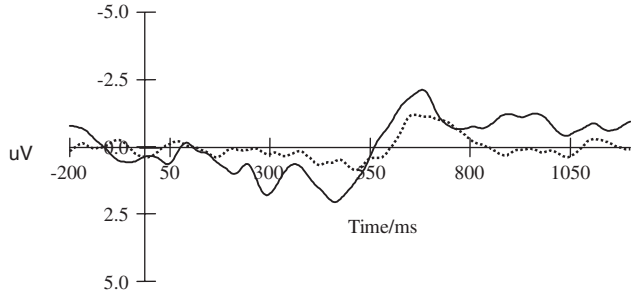
P C M ( ) P

(EEG) 30 I 10 20 . E F/ , F / , C/ , P/ , C / O/ . O

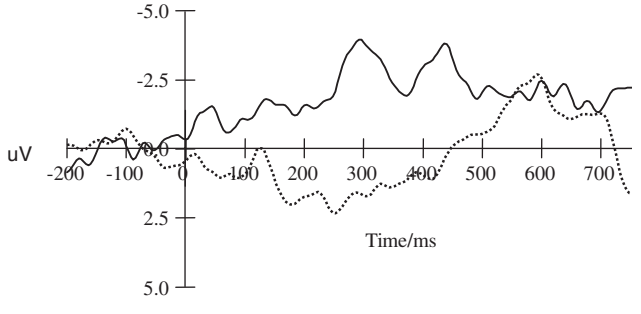

0.05 70 H/
E P
B 2
composi
μ ( )
Re
B
7
1
8
M
B
M1
B
200 300 400 6
Time/m

($0.05 < p < 0.1$, F 2). C
MMN 150 500

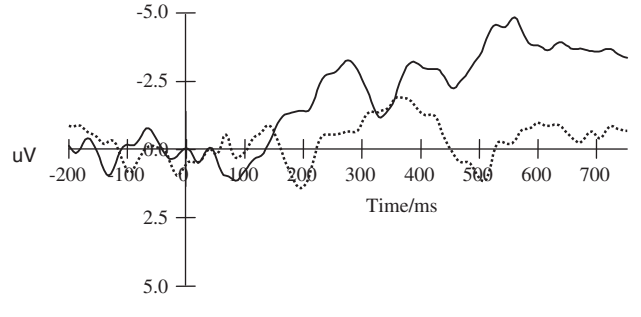
D MMN
I F 3
0 100 ($p < 0.05$).
C
MMN 380 700
($0.05 < p < 0.1$, F 4). F
MMN
(F 5).



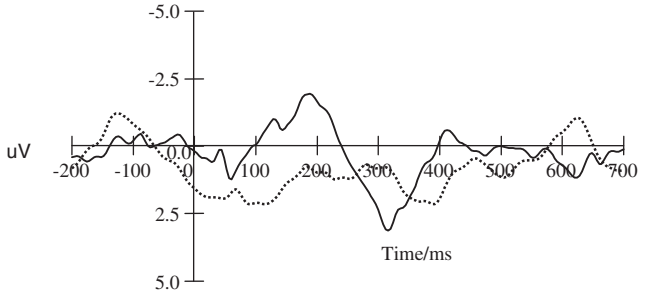
F 2. G MMN ( ) ( ) F/ (-).



F 3. G MMN
/ // / ( ) ( ) F/ (-).



F 4. G MMN C



F . 5. G MMN C ( ) ( ) F/ ( ).

Discussion

O C MMN C F C (M / *et al.*, 1996; -K *et al.*, 1999). M C C (M B -C , 1995; , A , & 2000). F C (A *et al.*, 2000; K *et al.*, 2001).

C -K *et al.* (1998) B *et al.* (1999). C P

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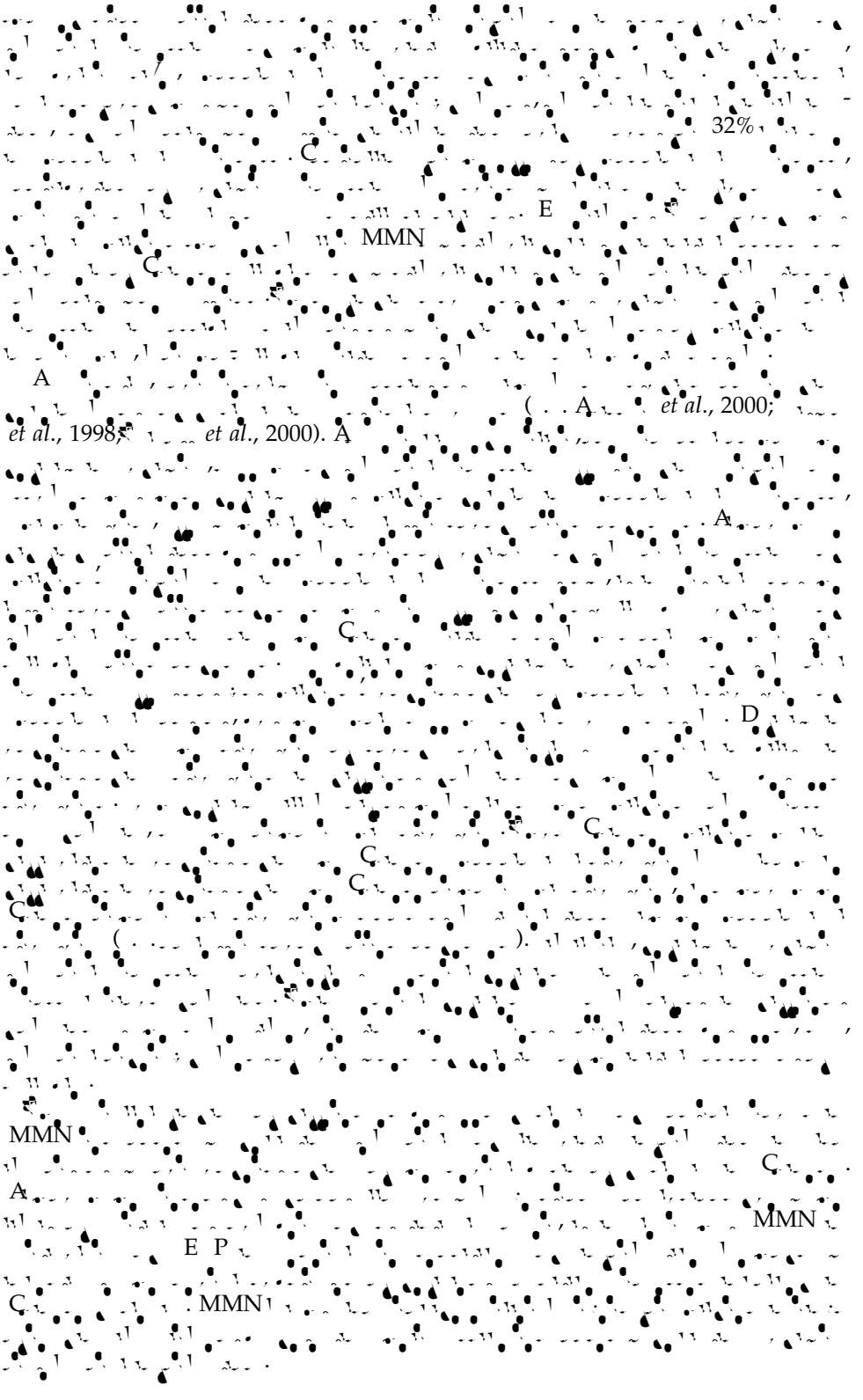
F I



I C
D C

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C N P P (95--09), N N F C (30200078, 30070260, 30470569, 60435010), M E (01002, 02170, 01JA L 015). E P

EFE ENCE

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