

Dynamic bicultural brains: fMRI study of their flexible neural representation of self and significant others in response to culture primes

Sik Hung Ng,¹ Shihui Han,² Lihua Mao² and Julian C. L. Lai¹

¹Department of Applied Social Studies, City University of Hong Kong, Hong Kong and ²Department of Psychology, Peking University, Beijing, China

Abstract Bicultural individuals are able to flexibly switch between different cultural mindsets. This study examined the neural representation of self and others in response to culture primes. fMRI data were collected from 20 bicultural individuals while they viewed self-referent and other-referent stimuli. Results showed that bicultural individuals showed a more flexible neural representation of self and others, with a more pronounced medial prefrontal cortex (MPFC) activation in response to self-referent stimuli and a more pronounced MPFC activation in response to other-referent stimuli. These findings suggest that bicultural individuals have a more flexible neural representation of self and others, which may be related to their ability to flexibly switch between different cultural mindsets.

Key words: culture priming, independent self-construal, interdependent self-construal, functional magnetic resonance imaging (fMRI), medial prefrontal cortex, self-inclusiveness.

Introduction

Bicultural individuals are able to flexibly switch between different cultural mindsets (e.g., Ng & Lai, 2009). This flexibility is thought to be related to their ability to represent self and others in a more dynamic way. For example, bicultural individuals may represent themselves as more independent when they are in a Western culture and more interdependent when they are in an Eastern culture. This dynamic representation of self and others may be related to their ability to flexibly switch between different cultural mindsets. In this study, we examined the neural representation of self and others in response to culture primes. We hypothesized that bicultural individuals would show a more flexible neural representation of self and others, with a more pronounced medial prefrontal cortex (MPFC) activation in response to self-referent stimuli and a more pronounced MPFC activation in response to other-referent stimuli.

Self-inclusiveness and self-other differentiation: Evidence from social and cultural psychology

Self-inclusiveness and self-other differentiation are two important concepts in social and cultural psychology. Self-inclusiveness refers to the extent to which individuals include themselves in their social identity. Self-other differentiation refers to the extent to which individuals differentiate themselves from others.

Correspondence

Sik Hung Ng, Department of Applied Social Studies, City University of Hong Kong, Tat Chee Avenue, Kowloon, Hong Kong. Email: shng@cityu.edu.hk
 Shihui Han, Department of Psychology, Peking University, Beijing, China. Email: shan@pku.edu.cn
 Lihua Mao, Department of Psychology, Peking University, Beijing, China. Email: lihua@pku.edu.cn
 Julian C. L. Lai, Department of Applied Social Studies, City University of Hong Kong, Tat Chee Avenue, Kowloon, Hong Kong. Email: jclai@cityu.edu.hk

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... b ... T ... p < 0.0 ... T ... & T ... (...) ...

... b ... W ... V ... T ... p < 0.01 ... V ... b ... (-10,4 ...) ... T ... W ... T ... b ...

Results

Brain imaging

... b ... T ... W ... (Tb - 1) ... T ... b ...

Table 1 Regions of significant increased activation in comparison between self, mother and NIP with font judgments (corrected, $p < 0.05$)

	V	X	Y	Z
W				
	4	4	0	4.0
	0	-4	-1	4.0
	4.1	4	-	4.4
	1	10	4	4.0
	14	4	-0	4.0
	1	-	-	4.1
	11	4	-	4.1
	0	-	1	4.4
		4	4.0	1
		1	-	-1
	4.0	4	4.0	1
	1.1	-	4	0
		1	-1	1
	10	4	4	1
	10.0	-	4	0

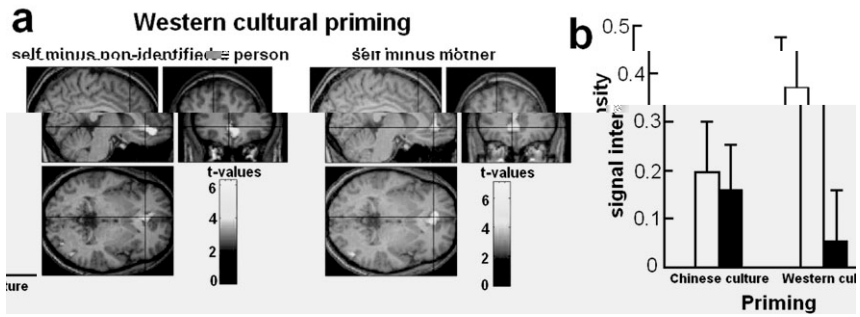


Figure 2 (a) Brain activation observed in the contrasts between self vs non-identified person and between self vs mother after Western cultural priming. (b) Results of region-of-interest analysis of the parameter estimates of signal intensity in the ventral medial pre-frontal cortex. ■, non-identified person; □, self.

Table 2 Mean behavioural performances (*SD*) during the scanning procedure

	Chinese culture	Western culture	Chinese culture	Western culture
Y' accuracy (%)	44.4 (10.1)	44.1 (10.1)	44.1 (10.1)	44.1 (10.1)
W' accuracy (%)	1.1 (0.1)	1.1 (0.1)	1.1 (0.1)	1.1 (0.1)

... ANOVA ($F(1, 14) = 4.4, p < 0.0001$)

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Behavioural performance

... ANOVA

... ANOVA ($F(1, 14) = 4.4, p < 0.0001$)

Discussion

... ANOVA

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