ICP - HESOS

PROCEEDINGS BOOK

of

International Conference on Psychology
in Health, Educational, Social, and Organization Settings

Universitas Airlangga, Surabaya, 21-23 November 2013

"Psychology in Changing Global Contexts"

Faculty of Psychology
Universitas Airlangga

PROCEEDINGS BOOK

International Conference on Psychology in Health, Education, Social and Organizational Settings (ICP-HESOS)

"Psychology in Changing Global Contexts"

Chief Editor:

Herison Purba, S.Psi., M.Sc.

Cover Design:

Vito Daryfauzi

Cover Picture:

google.com

Layout:

Nur Rachmah A. P.	Dita Ayu
Musrifatul Jannah	Nido Dipo
Evryanti Rasari	Lukman Faizin
Kamelia Widyati	Annisa S
Aini Nadhifah	Dwika Puspita
Vinny josephine	Ribka Mutiara

Publisher:

Unit Penelitian dan Publikasi (UP3)

Psychology Faculty Universitas Airlangga

First Edition:

2013, 1015 pages. 15 X 21 cm

ISBN: 978-979-99555-7-9

Printed by:

Psychology Faculty Universitas Airlangga

Printed in: Surabaya, Indonesia

Cross-Cultural Emotion Recognition of Angry and Happy Face between China and Indonesia samples

Yudiarso, A., and Herdianto, CR.
Faculty of Psychology, Surabaya University, Indonesia
Email: yudiarso@hotmail.com

Li Han, and Yuxuan Zheng
College of Educational Sciences and Technology, Zhejiang University of Technology, China

Abstract.

Face emotion recognition have an important ability in surviving in social relations and have been a nosology of anxiety disorder. The aim of this study is to test the influence of culture between Indonesia and China sample. Participants of this study are 40 student from both countries. Two experiments have been conducted to measure the latency and the score of correct answer in recognizing of happy, neutral and angry face. This reserach found that China samples are significatn more faster dan higher score in angry face recognition.

Keywords: *Face recognition, Emotion, Angry, Happy*

INTRODUCTION

Face recognition ability is a phylogenetically of social communication and represents of social aspect of interpersonal communication.(Grusser,1984; LeDoux, 1996). Emotional facial recognition may processed by separate neural systems from other task. Animal studies in monkeys have found specific activation neurons that respond to emotion recognition (Hasselmo, Rolls & Baylis,1989;Heywood & Cowey, 1992).

There are two important reasons to conduct the study. First is unfinished debate in cross cultural psychology whether emotion recognition is general or specific among the culture. The work of Ekman (1992) among others provides converging evidence for the existence of a set of primitive or basic emotions that allow rapid responses to biologically relevant stimuli. In humans, these basic emotions are associated with very specific facial expressions that are recognised across different cultures (e.g. Ekman, 1972).

Secondly, This research is focus in angry and happy face. Among the emotion recognition angry and happy are very important. The ability to orient attention towards threat which expressed in angry emotion is basic cognitive process for survival. Stimulus angry face modulated early frontocentral ERPs to angry faces (Bediou, Eimer, dâ€™Amato, Hauk, & Calder, 2009). Human have a specific ability to distinct response to happy and angry facial expressions (Nakato, Otsuka, Kanazawa, Yamaguchi, & Kakigi, 2010)

Other study shown the relation how happy and angry recognition corelate with social anxiety (Barrett, Lindquist, & Gendron, 2007; Dâ€™Argembeau, Van der Linden, Etienne, & Comblain, 2003). Thus its clear that the detection of angry and happy had adaptive and survival in species (e.g. Power & Dalgleish,1997). Hapines had been prcessed in a specfoc area in the brain.(Suzuki, Hoshino, & Shigemasu, 2009) Human infants as young as 5-6 months have ability discriminate between facial expressions of fear, anger, and sadness and angry face (Schwartz, Izard, &Ansul,1985;Serrano,Iglesias, & Loeches, 1992). Humans could detect an angry face in a crowd much faster than detecting a happy face in a crowd (Hansen & Hansen, 1988).

Third, Electrophysiological studies in angry or treathened situation found that threats are detected in brain located in the dorsal posterior insula and involving medial prefrontal cortex (1, 2), parietal(Schutter, Putman, Hermans, & van Honk, 2001), Amigdala (Adolphs & Tranel, 2003; Sato, et al., 2002).

Fourth, Cross culturaly neuroscience found language involved in perception emotion recognition.(Barrett, et al., 2007; Chiao & Joan, 2009; MartÃnez Mateo, Cabanis, Loebell, & Krach, 2011; Pell, Paulmann, Dara, Alasseri, & Kotz, 2009; Yuki, Maddux, & Masuda, 2007). This hypothesis support by evidence that located temporal area of he brain as the area that involved in facial emotion recognition. (Bonora, et al., 2011; Fowler, et al., 2006; Reynders, Broks, Dickson, Lee, & Turpin, 2005). Other studies support that temporal area as language processing and audio processing also involved in emotion recognition. (Hsieh, Hornberger, Piguet, & Hodges, 2012; Wang, Su, Fang, & Zhou, 2011).

Accordingly to test the effect of culture we compare the respond two distinctive emotions of angry and happy face pictures respond between China and Indonesia sample. Both of culture have different language. We hypotehsis a different activation between

respond in corectness, time reaction and EEG patern activation between both countries.

METHOD

To answer the hypothesis we conduct two experiments. First experiment is to measure the correctedness and time reaction (latency) in judging facial expresion between two culture of Indonesia and china.

Participant of this study are 30 student with age of 19-26 year-old from both of culture. Second experiment is face recognition using EEG spectral analysis. Experimental design. We conduct an twogroup comparrison design using emotional face of angry, neutral and happy stimulus. Instrument. We developed an on-line randomized facial emotion stimuli (Ekman) using INQUISIT software. Three facial emotion block of experimental paradigm including caucassian face of fear, neutral and angry. Each block consisted of 12 pictures that been repeated 3 times randomly exposed to the participant. Data analisys. To analysis the comparriosn data in latency and correctedness and judgment of emotonal face we used a non parametric test of wilcoxon signed rank test.

RESULT

None of the test of normality yielded an normal distribution. Therefore we employ a non-parametric statistics (tabel 1). Hypothestis testing yielded a significant different in latency and corectness in angry face recognition. China samples are significatn more faster dan higher score in angry face recognition (tabel 2).

Tabel.1. Test of normality of experiment data

	Statistic	Df	Sig.	test of normality data
c_happy	0,2	30	0	no normal distribution data
c_neutral	0,24	30	0	no normal distribution data
c_angry	0,2	30	0	no normal distribution data
l_happy	0,15	30	0,07	normal distribution data
l_neutral	0,27	30	0	no normal distribution data
l_angry	0,26	30	0	no normal distribution data
Neutral_to_happy	0,2	30	0	no normal distribution data
Neutral_to_angry	0,18	30	0,01	no normal distribution data

C = correct Answer; l = latency in milli second

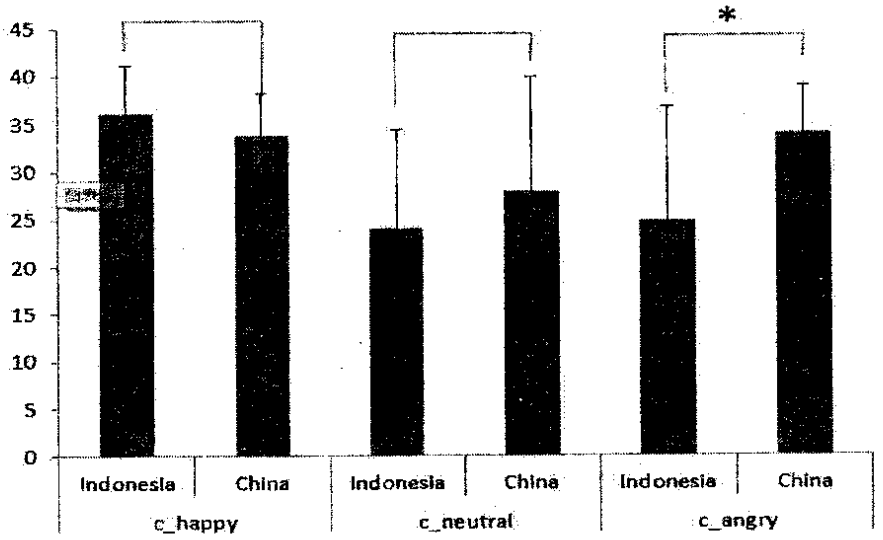
Tabel.2. Comparrisson of latency (in milli second) and Number of correct answers in emotional face recognition

	c_happy	c_neutral	c_angry	l_neutral	l_angry	Neutral_to _happy	Neutral_to _angry
Wilcoxon W	187	201,5	170	198	177	209,5	221,5
Z	-1,91	-1,29	-2,6	-1,43	-2,3	-0,96	-0,46
P	0,06	0,2	0,01	0,15	0,02	0,34	0,65

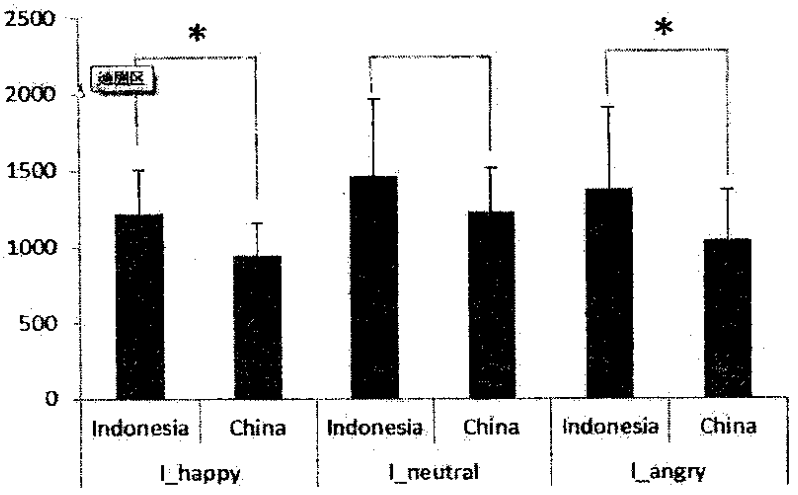
Tabel.3. Mean and SD of latency and correct answers between two groups

Latency (l) and correct answer (c)	groups	Mean	Std. Deviation	P
Correct answer happy	Indonesia	36,1	5,04	No significant difference
	China	33,9	4,27	
Corect answer angry	Indonesia	24,7	12	China group is higher in correct score to recognize angry face
	China	34	4,87	
Latency of happy	Indonesia	1218	290	China group is faster to recognize happy faces
	China	950	210	
Latency of angry	Indonesia	1371	537	China group is faster to recognize angry faces
	China	1048	324	
Neutral_to_happy	Indonesia	7,27	4,48	No significant difference
	China	5,4	4,78	
Neutral_to_angry	Indonesia	8	6,89	No significant difference
	China	7,8	8,27	

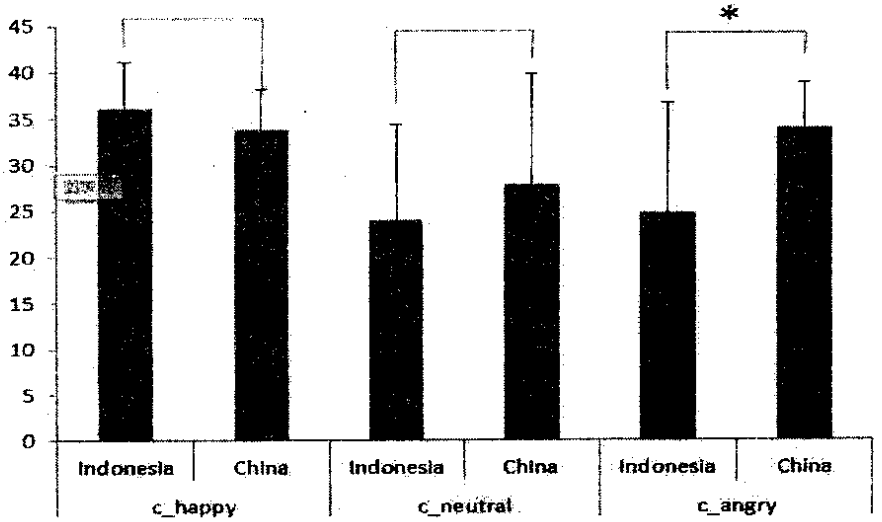
Graph 1. Correct answer comparrisson between Indonesia and China Sample.



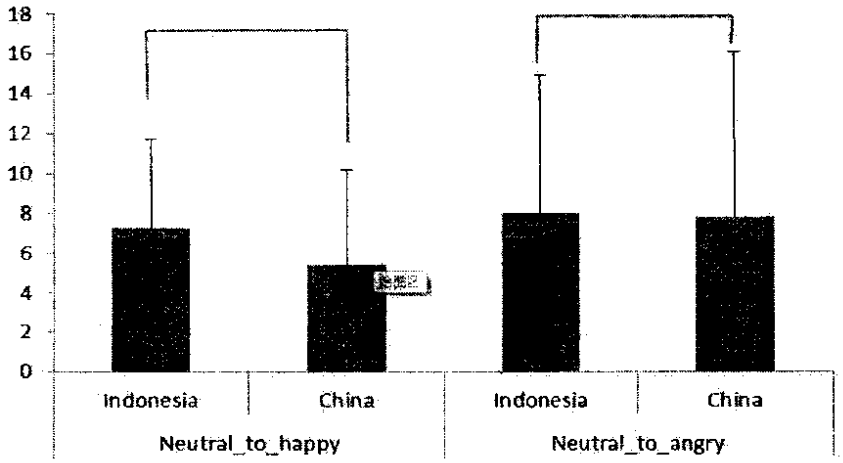
Graph 2. Speed of response comparisson between Indonesia and China Sample



Graph 1. Correct answer comparrisson between Indonesia and China Sample.



Graph 3. Number of subjects mistaked nuetral face to happy or angry



DISSCUSSION

The experimental result a mixed result. First, the result support the hypothesis that there is a statistical significant different between Indonesia and china samples in latency and correct response in emotional recognition. However this positive findings are only in angry face. This result supported the hypothesis that Culture through language processing in temporal lobe involved in emotion recognition. (Hsieh, Hornberger, Piguet, & Hodges, 2012; Wang, Su, Fang, & Zhou, 2011). China sample have more sensitive in latency and correct answer in angry face recognition. This may an effect of a cross cultural differences. First, angry face is a negative emotion recognition. Cross culturally Indonesia have positive value who perceived the stranger in a positive way. This values may affected in percentage of correct since Indonesia sample a lower score in correct answer.

Secondly we found no different in latency and correct answer between Indonesia and china in happy face recognition. This no significant different may resulted from our limitation study. We emphasize on two limitations of this experiment since there are control variabel that affected the results. First, Indonesian sample speak more than one language (English, Bahasa Indonesia and their regional language as their mother tongue). Since we use university student who are in student exchange both of samples have English ability. Secondly, repetition effect in face recognition may take effect since this experiment using repeated pictures.

China samples are significant faster dan higher score in angry face recognition. This result support our hypothesis that culture throught language that is representated in a different brain activation (temporal area) resulted statistically significant different between latency and the correct response of facial emotion recognition between two countries.

REFERENCES

Adolphs, R., & Tranel, D. (2003). Amygdala damage impairs emotion recognition from scenes only when they contain facial expressions. *Neuropsychologia, 41*(10), 1281-1289.

Barrett, L. F., Lindquist, K. A., & Gendron, M. (2007). Language as context for the perception of emotion. *Trends in Cognitive Sciences, 11*(8), 327-332.

Bediou, B., Eimer, M., dâ€™Amato, T., Hauk, O., & Calder, A. J. (2009). In the eye of the beholder: Individual differences in reward-drive modulate early frontocentral ERPs to angry faces. *Neuropsychologia, 47*(3), 825-834.

Bonora, A., Benuzzi, F., Monti, G., Mirandola, L., Pugnaghi, M., Nichelli, P., et al. (2011). Recognition of emotions from faces and voices in medial temporal lobe epilepsy. *Epilepsy & Behavior, 20*(4), 648-654.

Chiao, J. Y., & Joan, Y. C. (2009). Cultural neuroscience: a once and future discipline *Progress in Brain Research* (Vol. Volume 178, pp. 287-304): Elsevier.

Dowman, R. (2007a). Neural mechanisms of detecting and orienting toward unattended threatening somatosensory targets. I. Modality effects. *Psychophysiology*, 44, 407-419.

Dowman, R. (2007b). Neural mechanisms of detecting and orienting toward unattended threatening somatosensory targets. II. Intensity effects. *Psychophysiology*, 44, 420-430Dâ€™Argembeau, A., Van der Linden, M., Etienne, A.-M., & Comblain, C. (2003). Identity and expression memory for happy and angry faces in social anxiety. *Acta Psychologica, 114*(1), 1-15.

Fowler, H. L., Baker, G. A., Tipples, J., Hare, D. J., Keller, S., Chadwick, D. W., et al. (2006). Recognition of emotion with temporal lobe epilepsy and asymmetrical amygdala damage. *Epilepsy & Behavior, 9*(1), 164-172.

Hsieh, S., Hornberger, M., Piguet, O., & Hodges, J. R. (2012). Brain correlates of musical and facial emotion recognition: Evidence from the dementias. *Neuropsychologia, 50*(8), 1814-1822.

MartÃnez Mateo, M., Cabanis, M., Loebell, N. C. d. E., & Krach, S. r. (2011). Concerns about cultural neurosciences: A critical analysis. *Neuroscience & Biobehavioral Reviews, 36*(1), 152-161.

Nakato, E., Otsuka, Y., Kanazawa, S., Yamaguchi, M. K., & Kakigi, R. (2010). Distinct differences in the pattern of hemodynamic response to happy and angry facial expressions in infants â€" A near-infrared spectroscopic study. *NeuroImage, 54*(2), 1600-1606.

Pell, M. D., Paulmann, S., Dara, C., Alasseri, A., & Kotz, S. A. (2009). Factors in the recognition of vocally expressed emotions: A comparison of four languages. *Journal of Phonetics, 37*(4), 417-435.

Reynders, H. J., Broks, P., Dickson, J. M., Lee, C. E., & Turpin, G. (2005). Investigation of social and emotion information processing in temporal lobe epilepsy with ictal fear. *Epilepsy & Behavior, 7*(3), 419-429.

Sato, W., Kubota, Y., Okada, T., Murai, T., Yoshikawa, S., & Sengoku, A. (2002). Seeing Happy Emotion in Fearful and Angry Faces: Qualitative Analysis of Facial Expression Recognition in a Bilateral Amygdala-Damaged Patient. *Cortex, 38*(5), 727-742.

Schutter, D. J. L. G., Putman, P., Hermans, E., & van Honk, J. (2001). Parietal electroencephalogram beta asymmetry and selective attention to angry facial expressions in healthy human subjects. *Neuroscience Letters, 314*(1â€"2), 13-16.

Suzuki, A., Hoshino, T., & Shigemasu, K. (2009). Happiness is unique: A latent structure of emotion recognition traits revealed by statistical model comparison. *Personality and Individual Differences, 48*(2), 196-201.

Wang, Y., Su, Y., Fang, P., & Zhou, Q. (2011). Facial expression recognition: Can preschoolers with cochlear implants and hearing aids catch it? *Research in Developmental Disabilities, 32*(6), 2583-2588.

Yuki, M., Maddux, W. W., & Masuda, T. (2007). Are the windows to the soul the same in the East and West? Cultural differences in using the eyes and mouth as cues to recognize emotions in Japan and the United States. *Journal of Experimental Social Psychology, 43*(2), 303-311.