Child Studies in Diverse Contexts
2012. Vol. 2, No. 2, 123-132

www.e-csdc.org
http://dx.doi.org/10.5723/csdc.2012.2.2.123

Affective Decision-Making among Preschool Children in Diverse Cultural Contexts

Li Qu[*1] **Gao Shan**[2] **Cindy Yip**[3]
Hong Li[4] **Philip David Zelazo**[5]

[1] Nanyang Technological University, Singapore
[2] Southwest University, China
[3] University of Toronto, Canada
[4] Liaoning Normal University, China
[5] Institute of Child Development, University of Minnesota, USA

The current study examined 3- and 4-year-olds' affective decision-making in a variety of cultural contexts by comparing European Canadian children to Chinese Canadian, Hong Kong Chinese, and mainland Chinese children (N = 245). All children were tested with a delay of gratification task in which children chose between an immediate reward of lower value and a delayed reward of higher value. Results showed that Chinese Canadian and Hong Kong Chinese children chose more delayed rewards than European Canadian children, with mainland Chinese children showing a trend toward more delayed rewards. Across cultures, 4-year-olds chose more delayed rewards than 3-year-olds; and among 4-year-olds, girls made more such choices than boys. The findings are consistent with previous findings that exposure to Chinese culture is associated with better cool executive function, but they also highlight the importance of examining development across diverse cultural contexts.

Keywords: preschool, executive function, affective decision-making, culture

Executive function, which refers to the processes required for the conscious control of thought, emotion, and action, develops rapidly during preschool years (Zelazo, Qu, & Müller, 2005). Better executive function in childhood has been linked to better school readiness, academic performance, and mental health during later years (e.g., Blair & Razza, 2007; Moffitt, Arsenault, Belsky, Dickson, Hancox, Harrington, et al., 2011). Although executive function can be understood as a domain-general functional construct, a distinction may be made between the more purely cognitive, "cool" aspects, and the relatively "hot" affective aspects of executive function (e.g., Zelazo, Qu, & Kesek, 2009; Zelazo & Müller, 2002; Zelazo et al., 2005). Whereas cool executive function is more likely to be elicited by relatively abstract, decontextualized problems, hot executive function, including affective decision making, is invoked for problems that are motivationally significant because they have meaningful consequences -rewards or punishers. Hot executive function develops in parallel with cool executive function, and both are parts of an interactive functional system (Prencipe, Kesek,

*** Corresponding Author:** Philip David Zelazo, Professor, Institute of Child Development, University of Minnesota, Minneapolis, MN, 55455, USA. E-mail: zelazo@umn.edu, or Li Qu, Assistant Professor, Division of Psychology, Nanyang Technological University, Singapore 637332. E-mail: quli@ntu.edu.sg

Cohen, Lamm, Lewis, & Zelazo, 2011).

To date, cross-cultural comparisons have focussed on the more purely cognitive, "cool" aspects of executive function. In particular, a growing body of evidence suggests that compared to North American and British children, preschoolers who grow up in East Asian countries such as China and Korea perform significantly better on measures of cool executive function such as Dimensional Change Card Sorting and Day/Night Stroop (e.g., Lewis, Huang, & Rooksby, 2006; Oh & Lewis, 2008; Sabbagh et al., 2006). Sabbagh and colleagues (2006), for example, found that a sample of children from Beijing outperformed a sample of children from Eugene, Oregon, US. The finding that Asian children sometimes display better executive function than age-matched Western children is consistent with reports that, following the traditional Confucian philosophy, obedience and impulse control are emphasized in Chinese families (e.g., Chen et al., 1998; Ho, 1994; Wu, 1996) and daycare settings (Tobin, Wu, & Davidson, 1989). Children are expected and indeed trained to inhibit their personal desires, discipline their behaviors, and wait for their turns. Such practices may help children develop their abilities in self control and regulation. It is also consistent with genetic studies showing that the 7-repeat allele of the dopamine receptor gene (DRD4), which is linked with poor executive function and attention-deficit hyperactivity disorder (e.g., Faraone, Doyle, Mick, & Biederman, 2001), is relatively rare in the Asian as compared to the North American population (Chang, Kidd, Kivak, Pakstis, & Kidd, 1996).

In contrast, there are relatively fewer studies directly comparing cross-cultural differences in "hot" executive function, including affective decision making. Affective decision making is decision making that requires appraisals of the motivational significance of stimuli. Measures of affective decision making include the Children's Gambling Task (Kerr & Zelazo, 2004), the Less-is-more task (Carlson, Davis, & Leach, 2005), and the delay of gratification choice paradigm (e.g., Mischel & Metzner, 1962; Mischel, Shoda, & Rodriguez, 1989; Thompson, Barresi, & Moore, 1997). In the delay of gratification choice paradigm, children are asked to choose between a smaller immediate reward and a larger delayed reward. Compared to 4-year-olds, 3-year-olds more often choose the smaller immediate reward instead of the larger delayed reward (e.g., Hongwanishkul et al., 2005), demonstrating their difficulties in inhibiting their desires (Zelazo et al., 2009; Zelazo et al., 2005). Although some studies have suggested that emphasis on delay of gratification was similar across different cultures (e.g., Godoy & Jacobson, 1999), other studies on delay of gratification tasks have shown that culture, social norms, and social learning (Gallimore, Weiss, & Finney, 1974) may influence children's decision making. Hence, the current study aims to examine whether Eastern Asian preschoolers outperform North American preschoolers on affective decision making.

Such a cross cultural comparison, however, has a few challenges. Any two samples of children differ in numerous, often unmeasured ways, making it very difficult to know whether differences in executive function are related to culture per se, as opposed to differences in socioeconomic status (SES), exposure to preschool, or any number of potentially relevant variables. In addition, with increasing globalization, more children grow up in a society where Eastern and Western cultures are intermixed. Immigrants, such as Chinese Canadians, are a typical example; they tend to follow their traditional values while also having adopted some mainstream values of the host country. In addition, people who grow up in those countries and areas where various traditional cultures are combined also tend to be bicultural or multicultural. For instance, Chinese children growing up in Hong Kong are likely to speak both English and Chinese, and to be exposed both Western education and Confucian philosophy (Hong, Morris, Chiu, & Benet-Martínez, 2000; Kemmelmeier & Cheng, 2004; Wang, Shao, & Li, 2010). One way to address the interpretive challenges posed by diverse cultural contexts is to compare performance

across diverse groups of children with exposure to a particular culture.

In addition to the examination of development of affective decision making in children growing up in Chinese culture, the current study also aims to investigate such development in children growing up in a mixed culture. Exposure to both Western and Eastern cultures has been suggested to increase adults' creativity, flexibility, and problem-solving ability (e.g., Kharkhurin, 2010; Lee & Kim, 2011; Leung & Chiu, 2010; Leung, Maddux, Galinsky, & Chiu, 2008; Maddux, Adam, & Galinsky, 2010). However, how multicultural experiences benefit children is still unclear and the results are contradictory. On the one hand, some studies have shown that bicultural children tend to outperform mono-cultural children. For instance, Bialystok and Martin (2004) found that Chinese-Canadian children perform better than European-Canadian children in cognitive control tasks such as the Dimensional Change Card Sort (Zelazo, Müller, Frye, & Marcovitch, 2003). Similarly, Goetz (2003) has found that Chinese American preschoolers were more advanced in understanding false belief (i.e., people's belief can be wrong) compared to their mainland Chinese and Caucasian American counterparts. On the other hand, some studies have shown that bicultural children develop relatively slower compared to mono-cultural children. For example, Liu, Wellman, Tardif, and Sabbagh (2008) found in their meta-analysis that Hong Kong children developed the understanding of false belief later than their Canadian, American, and Chinese counterparts. Similarly, Wang and colleagues (Doan & Wang, 2010; Wang, Hutt, Kulkofsky, McDermott, & Wei, 2006) found that Chinese American 3-year-olds were less accurate in judging and producing emotions compared to their European American counterparts. Hence, it is necessary to compare the development of hot executive function in bicultural children with mono-cultural children.

In this study, we compared European Canadian children to three different groups of children with exposure to Chinese culture: Chinese Canadian, Hong Kong Chinese, and mainland Chinese children. All children were administered a delay of gratification choice task (e.g., Mischel & Metzner, 1962; Mischel et al., 1989). If exposure to Chinese culture is associated with advanced development in affective decision making, we would expect that all Chinese children, regardless of location, might be more likely than European Canadian children to opt for delayed rewards on the delay of gratification choice task. Alternatively, performance may vary across diverse contexts, highlighting the need to take a more fine-grained approach to cross cultural comparisons. For example, although Chinese Canadian and Hong Kong Chinese preschoolers are exposed to Western and Eastern cultures in their daily life, the dominant culture of the society is different in these two groups. Chinese Canadian children are immigrants living in a Western country whereas Hong Kong Chinese are natives who live in an Eastern city, with a dominant Confucian philosophy. Hence, the performance of these two groups may be different from each other.

Four hypotheses were generated. First, if Chinese children are culturally and genetically more prepared for the development of executive function, including hot executive function, all Chinese children, regardless of location, should outperform European Canadian children. Second, if Eastern culture is essential in promoting the development of executive function, mainland Chinese children, who are from a relatively pure Chinese culture, should outperform Chinese Canadian and Hong Kong Chinese children, who grow up in a mixed culture. Third, if bicultural exposure promotes the development of affective decision making, Chinese Canadian and Hong Kong Chinese children should outperform European Canadian and mainland Chinese children. Fourth, Chinese Canadian and Hong Kong Chinese children may perform differently if dominant culture influences the development of decision making in bicultural children.

Method

Participants

Two hundred and forty five 3- and 4-year-old children participated in the current study (see Table 1 for a summary of the demographic characteristics of the sample). In all cases, parents were provided with a written description of the experiment, and they granted informed consent allowing their children to participate. The 64 European Canadian children (M = 47.6 months, SD = 7.0, *range*: 36 to 59 months, 33 girls) and 56 Chinese Canadian children (M = 46.5 months, SD = 7.0, *range*: 36 to 59 months, 29 girls) were tested in Toronto, Canada. These children were recruited either from a database of parents who had expressed interest in participating in research, in which case they were tested at the University of Toronto, or from daycares and community centers, which also served as test sites in that case. All European

Table 1
Summary of Demographic Information

	European Canadian (n = 64)	Chinese Canadian (n = 56)	Hong Kong Chinese (n = 57)	Mainland Chinese (n = 68)
Mean age of 3-year-olds (SD)	41.5 (3.4)	42.0 (4.2)	41.9 (2.9)	41.1 (2.9)
Mean age of 4-year-olds (SD)	53.7 (3.23)	53.9 (3.3)	52.9 (3.5)	51.9 (2.6)
Mean number of siblings (range; SD)	1.23 (0 – 4; .9)	.66 (0 – 2; .6)	.74 (0 – 3; .8)	0 (0; .00)
% First born	53%	50%	53%	100%
Neighborhood	Urban (university neighborhood)	Urban (university neighborhood)	Urban (university neighborhood)	Urban (university neighborhood)
Mothers' education	16.7 years (6 – 19; 2.8)	15.2 years (6 – 19; 3.6)	14.9 years (9 – 19; 2.2)	*
Fathers' education	15.9 years (6 – 19; 2.7)	16.5 years (6 – 19; 3.5)	15.5 years (9 – 19; 2.3)	*
Mean number of languages (range; SD)	1.30 (1 – 3; .5)	1.82 (1 – 3; .6)	1.87 (1 – 3; .6)	1 (1; 0)
Language used to conduct the test	English	Mandarin (n = 48) or Cantonese	Cantonese	Mandarin (n = 58) or Sichuan dialect

Note. *Data were incomplete but most parents were college educated.

Canadian children spoke English as a first language. The parents of Chinese Canadian children were first-generation immigrants to Canada, and Chinese Canadian children spoke Mandarin (n = 48) or Cantonese (n = 8) as a first language. The 57 Hong Kong Chinese children (M = 47.3 months, SD = 6.4, *range*: 35 to 59 months, 26 girls) were recruited from, and tested at, a day care center at the Hong Kong Institute of Education. The 68 mainland Chinese children (M = 46.5 months, SD = 6.1, *range*: 37 to 58 months, 34 girls) were recruited from, and tested at, a day care center at Southwest University in Chongqing, China. The first language of the Hong Kong Chinese children was Cantonese, whereas the first language of the mainland Chinese children was either Mandarin (n = 58) or a local Sichuan dialect (n = 10). There were no significant age differences among the four groups of children (F < 1). All families, regardless of country, were middle class.

Procedure

All children were tested individually by a female experimenter in a quiet room. Children were tested in their first language. The child and the experimenter first sampled each of the rewards. The child was then told that a number of cards would be presented, and that each card would require the player to decide whether the rewards should be consumed immediately or saved until after the experiment-"when it is time to go home." There were two demonstration trials in which the experimenter made choices. For the first one, the experimenter asked herself whether she should have one candy now or one candy later, and showed the child the two reward options in separate transparent plastic bags. Then the experimenter chose to take the candy now, and ate it. For the second demonstration trial, the experimenter asked herself whether she should have one candy now or eight candies when it was time to go home. In this case, the experimenter chose the delayed reward, put her eight candies in an envelope, and then moved it out of sight.

After this demonstration, the child was invited to play the game. Nine test trials, created by crossing three types of reward (stickers, pennies, candies) and three types of choice (1 now vs. 2 later, 1 now vs. 4 later, 1 now vs. 6 later), were presented in a random order. When children chose one penny now, children would put the

Table 2
Summary of Mean (and SD) Delay Scores out of 9 Trials on the Delay of Gratification as a Function of Age, Group, and Sex

		European Canadian (n = 64)	Chinese Canadian (n = 56)	Hong Kong Chinese (n = 57)	Mainland Chinese (n = 68)
3-year-olds	Total	4.03 (3.68)	5.44 (3.36)	6.14 (2.86)	5.53 (3.24)
	Boys	3.13 (3.31)	5.78 (3.51)	7.00 (2.33)	5.94 (3.17)
	Girls	4.82 (3.89)	5.06 (3.26)	5.08 (3.17)	5.12 (3.35)
4-year-olds	Total	4.69 (3.11)	6.68 (2.83)	6.38 (2.87)	6.00 (3.25)
	Boys	4.44 (3.05)	6.20 (3.36)	5.93 (3.51)	4.94 (3.72)
	Girls	4.94 (3.23)	7.08 (2.39)	7.85 (1.41)	7.06 (2.36)

penny in a decorated transparent jar where they may enjoy shaking the jar with pennies in it. When children chose one sticker now, children would affix the sticker to a colorful piece of paper. When children chose one candy now, children ate it. Test trials were presented in the same fashion as demonstration trials. The experimenter asked the child, for example, "*One now or four later*, *when it is time to go home? What do you want to do*?" and provided no feedback regarding the wisdom of the child's choices, and simply dispensed rewards immediately or put them in an envelope, depending on the child's choice. The entire procedure took about 10 minutes to administer.

The procedure for the Chinese children was identical to that for the European Canadian children except that it was administered in the children's first language. The experimenter asked, for example, "*Xianzai na yi ge haishi yihou, yao huijia de shihou, na si ge? Ni yao zenme zuo*?" These questions were pronounced differently in Mandarin, Cantonese, and Sichuan dialect, as appropriate.

Results

Performance on the delay of gratification choice task was measured as the number of times children chose to delay (i.e., delay scores). Preliminary analyses revealed that type of rewards had no effect on delay scores.

A 4 (group) x 2 (age) x 2 (sex) mixed analysis of variance (ANOVA) revealed a main effect of age ($F(1, 229) = 3.979$, $p = .047$, $\eta_p^2 = .017$), showing 4-year-olds chose to delay more often than 3-year-olds (see Table 2 and Figure 1). Additionally, there was a significant group difference ($F(3, 229) = 5.247$, $p = .002$, $\eta_p^2 = .064$). Tukey's post-hoc tests showed that Hong Kong Chinese ($M = 6.46$, $SE = .42$) and Chinese Canadian children ($M = 6.07$, $SE = .45$) had higher delay scores (p's $< .05$) than European Canadian children ($M = 4.33$, $SE = .41$). Although not significant by a Tukey's test, mainland Chinese children ($M = 5.74$, $SE = .40$) also had higher delay scores than European Canadian children (as shown by an uncorrected t-test, $p = .01$). Each group's performance was also compared to chance via separate one sample t-tests. The results showed that 3-year-old Hong Kong Chinese ($t(28) = 3.081$, $p = .005$), 4-year-old Hong Kong Chinese ($t(27) = 4.283$, $p < .001$), 4-year-old Chinese Canadian children's ($t(21) = 3.610$, $p = .002$), and 4-year-old Mainland Chinese children ($t(33) = 2.693$, $p = .011$) performed significantly above chance (4.5).

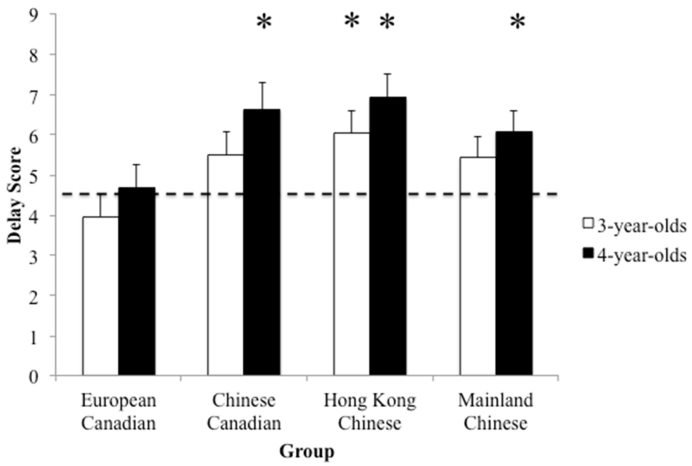

Figure 1. Mean (plus one standard error) delay scores as a function of age and group.
Note. * Performance was above chance level (4.5 out of 9).

In addition to a main effect of culture, there was a significant interaction between age and sex ($F(1, 229) = 4.855$, $p = .029$, $\eta_p^2 = .021$). Further analysis showed that the sex difference was larger among 4-year-olds ($F(1, 108) = 5.742$, $p = .018$, $\eta_p^2 = .050$), with 4-year-old girls ($M = 6.73$, $SE = .40$) delaying more often than boys ($M = 5.38$, $SE = .40$).

Discussion

Consistent with our first hypothesis, three samples of Chinese children outperformed European Canadian children on a measure of affective decision making, the delay of gratification choice task, though only Hong Kong Chinese and Chinese Canadian preschoolers performed significantly better than European Canadian children. This pattern of results is consistent with cultural differences in the emphasis placed on discipline and obedience (e.g., Chen et al., 1998), as well as ethnic variations in the prevalence of alleles linked to executive function (e.g., the 7-repeat allele of a dopamine receptor gene; Chang et al., 1996).

An interesting possibility is that Hong Kong Chinese and Chinese Canadian children may benefit from being raised in a bicultural environment (e.g., Lee & Kim, 2011; Morton & Harper, 2007). Previous research on adults has shown that people who have been exposed to foreign cultures tend to be more open, creative, and flexible, and more able to solve problems from various approaches (e.g., Lee & Kim, 2011; Maddux et al., 2010; Leung et al., 2008). Children who encounter frequent cultural differences or who switch between cultural perspectives may have more opportunities to practice the flexible problem-solving skills that are associated with good executive function. However, the pattern deserves further investigation as Hong Kong Chinese and Chinese Canadian children did not differ significantly from mainland Chinese children.

Across all four samples, there was an effect of age on performance. This pattern is consistent with the idea of an age-related decrease in susceptibility to interference from salient reward-related information, and it suggests that decision-making develops in a similar fashion across several cultural contexts (Zelazo et al., 2009; Zelazo et al., 2005).

Finally, at 4 years of age, girls had higher delay scores than boys, consistent with Silverman's (2003) meta-analysis over 33 studies using the delay of gratification paradigm. Unlike decision making in a neutral context, sex differences often emerge in research on affective decision making. For example, compared to boys, preschool girls showed stronger resistance to extinction (e.g., Happaney & Zelazo, 2004); however, they also made more disadvantageous choices in the Children's Gambling Task (Kerr & Zelazo, 2005). Such differences may be due to differences in socialization, strategy use (Garon & Moore, 2007), and/or the developmental of orbitofrontal cortex (Overman et al., 1996), which has been found to develop differently in male and female monkeys (Clark & Goldman-Rakic, 1989).

Any two samples of children from different cultures are likely to vary in many ways (e.g., socioeconomic status, number of siblings, bilingualism), making it difficult to interpret behavioral differences (Hong & Chiu, 2001). To improve the generalizability of the findings, we recruited Chinese Canadian, Hong Kong Chinese, and mainland Chinese children. Nevertheless, we only examined one group of Western children, and we did not measure parents' cultural values, parenting practices, and socioeconomic status. Furthermore, we only used one executive function task. To increase validity, other executive function tasks should be included as well. Future studies should address these limitations.

In conclusion, our findings support the proposal that exposure to Chinese culture may improve the development of executive function and illustrate the cross-cultural differences in the development of affective decision making. Together with previous results on the superior development of Eastern Asian children in cool executive function, the current study suggests that the traditional Confucian approach of

discipline and regulation of one's desires may be beneficial for the early development of executive function. Additionally, our results highlight the difficulty of collapsing across various cultural backgrounds and emphasize the importance of studying children from diverse cultural contexts.

Acknowledgements: This research was supported by a grant from NSERC of Canada to PDZ [grant number 138009-06]. We thank the Hong Kong Institute of Education HSBC Early Childhood Learning Centre, Dr. Wong Wai Yum Veronica, and Mrs. Yu Chan Wai Ling for their generous support. We thank Shintula Wijeya, Nichol Recel, and Susu Jin for their assistance in data collection.

References

Bialystok, E., & Martin, M. M. (2004). Attention and inhibition in bilingual children: Evidence from the Dimensional Change Card Sort Task. *Developmental Science, 7*, 325-339.

Blair, C., & Razza, R. P. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development, 78,* 647-663.

Carlson, S. M., Davis, A. C., & Leach, J. G. (2005). Less is more: Executive function and symbolic representation in preschool children. *Psychological Science, 16*, 609-616.

Chang, F. M., Kidd, J. R., Kivak, K. J., Pakstis, A. J., & Kidd, K. K. (1996). The world-wide distribution of allele frequencies at the human dopamine D4 receptor locus. *Human Genetics, 98*, 91-101.

Chen, X., Hastings, P. D., Rubin, K. H., Chen, H., Cen, G., & Stewart, J. L. (1998). Child-rearing attitudes and behavioral inhibition in Chinese and Canadian toddlers: A cross-cultural study. *Developmental Psychology, 34*, 677-686.

Clark, A. S., & Goldman-Rakic, P. S. (1989). Gonadal hormones influence hte emergence of cortical function in nonhuman primates. *Behavioral Neuroscience, 103*, 1287-1295.

Doan, S. N., & Wang, Q. (2010). Maternal discussions of mental states and behaviors: Relations to emotion situation knowledge in European American and immigrant Chinese children. *Child Development, 81*, 1490-1503.

Faraone, S. V., Doyle, A. E., Mick, E., & Biederman, J. (2001). Meta-analysis of the assoication between the 7-repeat allele of the dopamine D(4) receptor gene and attention deficit hyperactivity disorder. *American Journal of Psychiatry, 158*, 1052-1057.

Gallimore, R., Weiss, L. B., & Finney, R. (1974). Cultural differences in delay of gratification: A problem of behavior classification. *Journal of Personality and Social Psychology, 30*, 72-80.

Garon, N., & Moore, C. (2007). Developmental and gender differences in future-oriented decision-making during the preschool period. *Child Neuropsychology, 13*, 46-63.

Godoy, R., & Jacobson, M. (1999). Covariates of private time preference: A pilot study among the Tsimane' Indians of the Bolivian rain forest. *Evolution and Human Behavior, 20*, 249-256.

Goetz, P. J. (2003). The effects of bilingualism on theory of mind development. *Bilingualism: Language and Cognition, 6*, 1-15.

Happaney, K., & Zelazo, P. D. (2004). Resistance to extinction: A measure of orbitofrontal function suitable for children? *Brain and Cognition, 55*, 171-184.

Ho, D. Y. F. (1994). Cognitive socialization in Confucian heritage cultures. In P. M. Greenfield & R. R. Cocking (Eds.), *Cross-cultural roots of minority development* (pp.285-313). Hillsdale, NJ: Erlbaum.

Hong, Y., & Chiu, C. (2001). Toward a paradigm shift: From cross-cultural differences in social cognition to social-cognitive mediation of cultural differences. *Social Cognition, 19*, 181-196.

Hong, Y., Morris, M., Chiu, C., & Benet-Martínez, V. (2000). Multicultural minds: A dynamic constructivist approach to culture and cognition. *American Psychologist, 55*, 709-720.

Hongwanishkul, D., Happaney, K., Lee, W. S.

C., & Zelazo, P. D. (2005). Assessment of hot and cool executive function in young children: Age-related changes and individual differences. *Developmental Neuropsychology, 28*, 617-644.

Kemmelmeier, M., & Cheng, B. Y. M. (2004). Language and self-construal priming: A replication and extension in a Hong Kong sample. *Journal of Cross-Cultural Psychology, 35*, 705-712.

Kerr, A., & Zelazo, P. D. (2004). Development of "hot" executive function: The children's gambling task. *Brain and Cognition, 55*, 148-157.

Kharkhurin, A. V. (2010). Sociocultural differences in the relationship between bilingualism and creative potential. *Journal of Cross-Cultural Psychology, 41*, 776-783.

Lee, H., & Kim, K. H. (2011). Can speaking more languages enhance your creativity? Relationship between bilingualism and creative potential among Korean American students with multicultural link. *Personality and Individual Differences, 50*, 1186-1190.

Leung, A. K.-Y., & Chiu, C.-Y. (2010). Multicultural experience, idea receptiveness, and creativity. *Journal of Cross-Cultural Psychology, 41*, 723-741.

Leung, A. K.-Y., Maddux, W. W., Galinsky, A. D., & Chiu, C.-y. (2008). Multicultural experience enhances creativity: The when and how. *American Psychologist, 63*, 169-181.

Lewis, C., Huang, Z., & Rooksby, M. (2006). Chinese preschoolers' false belief understanding: Is social knowledge underpinned by parental styles, social interactions or executive functions? *Psychologia, 49*, 252-266.

Liu, D., Wellman, H. M., Tardif, T., & Sabbagh, M. A. (2008). Theory of mind development in Chinese children: A meta-analysis of false-belief understanding across cultures. *Developmental Psychology, 44,* 523-531.

Maddux, W. W., Adam, H., & Galinsky, A. D. (2010). When in Rome, learn why the Romans do what they do: How multicultual learning experiences enhance creativity. *Personality and Social Psychology Bulletin, 36,* 731-741.

Mischel, W., & Metzner, R. (1962). Preference for delayed reward as a function of age, intelligence, and length of delay interval. *Journal of Abnormal and Social Psychology, 64*, 425-431.

Mischel, W., Shoda, Y., & Rodriguez, M. L. (1989). Delay of gratification in children. *Science, 244*, 933-938.

Moffit, T. E., Arsenault, L, Belsky, D., Dickson, N., Hancox, R. J., Harrington, H., et al. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences of the United States of America, 108*, 2693-2698.

Morton, J. B., & Harper, S. N. (2007). What did Simon say? Revisiting the bilingual advantage. *Developmental Science, 10*, 719-726.

Oh, S., & Lewis, C. (2008). Korean preschoolers' advanced inhibitory control and its relation to other executive skills and mental state understanding. *Child Development, 79,* 80-99.

Overman, W. H., Bachevalier, J., Schuhmann, E., & Ryan, P. (1996). Cognitive gender differences in very young children parallel biologically based cognitive gender differences in monkeys. *Behavioral Neuroscience, 110*, 673-684.

Prencipe, A., Kesek, A., Cohen, J., Lamm, C., Lewis, M. D., & Zelazo, P. D. (2011). Development of hot and cool executive function during the transition to adolescence. *Journal of Experimental Child Psychology, 108*, 621-637.

Sabbagh, M. A., Xu, F., Carlson, S. M., Moses, L., & Lee, K. (2006). The development of executive functioning and theory of mind: A comparison of Chinese and U.S. preschoolers. *Psychological Science, 17*, 74-81.

Silverman, I. W. (2003). Gender differences in delay of gratification: A meta-analysis. *Sex Roles, 49*, 451-463.

Thompson, C., Barresi, J., & Moore, C. (1997). The development of future-oriented prodence and altruism in preschoolers. *Cognitive Development, 12*, 199-212.

Tobin, J. J., Wu, D. Y. H., & Davidson, D. H.

(1989). *Preschool in three cultures: Japan, China and the United States*. New Haven, CT: Yale University Press.

Wang, Q., Hutt, R., Kulkofsky, S., McDermott, M., & Wei, R. (2006). Emotion situation knowledge and autobiographical memory in Chinese, immigrant Chinese, and European American 3-year-olds. *Journal of Cognition and Development, 7*, 95-118.

Wang, Q., Shao, Y., & Li, Y. J. (2010). "My way or Mom's way?" The bilingual and bicultural self in Hong Kong Chinese children and adolescents. *Child Development, 81*, 555-567.

Wu, D. Y. H. (1996). Chinese childhood socialization. In M. H. Bond, (Ed.), *The handbook of Chinese psychology* (pp.143-151). New York: Oxford University Press.

Zelazo, P. D., & Müller, U. (2002). Executive function in typical and atypical development. In U. Goswami (Ed.), *Handbook of childhood cognitive development* (pp.445-469). Oxford: Blackwell.

Zelazo, P. D., Qu, L., & Kesek, A. C. (2009). Hot executive function: Emotion and the development of cognitive control. In S. Calkins & M. A. Bell (Eds.), *Child development at the intersection of emotion and cognition*. Washington, DC: American Psychological Association.

Zelazo, P. D., Qu, L., & Müller, U. (2005). Hot and cool aspects of executive function: Relations in early development. In W. Schneider, R. Schumann-Hengsteler, & B. Sodian (Eds.), *Young children's cognitive development: Interrelationships among executive functioning, working memory, verbal ability, and theory of mind* (pp.71-93). Mahwah, NJ: Erlbaum.

Zelazo, P., Müller, U., Frye, D., & Marcovitch, S. (2003). The development of executive function: Cognitive complexity and control-revised. *Monographs of the Society for Research in Child Development, 68*, 93-119.

Received February, 27, 2012
Revision Received April, 10, 2012
Accepted April 18, 2012