Differences between Japanese children and Chinese children in behavioral responses to puzzle tasks

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パズル課題に対する日中子どもの行動の違い

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要約

3 つのパズルに取り組む際の、2 つの東アジア文化圏（日本と中国）における 3 歳児の行動が観察された。参加者は、日本人（$n = 20$）および中国（$n = 25$）の保育園の子どもたちであった。観察された行動項目は、5 つの行動、3 つの言語表現、及び 5 つの表情であった。中国の子どもたちは日本の子どもたちよりも行動を多く表出した。異文化間の心理学において、東アジアの文化はしばしば西洋の文化と比較され、ひとくくりとしてまとめられがちである。本研究の結果は、同じ東アジア圏の日本と中国の子どもたちが異なっていることを示しており、東アジア文化は以前の研究で想定されていたよりも複雑であることを示唆している。

Key words

Japanese children, Chinese children, East Asian culture, tasks, behavioral difference.

1. Introduction

A number of studies have been conducted on differences in human development resulting from the influences of Eastern and Western cultures (e.g. Brazelton, Tobey, & Collier, 1969; Caudill & Weinstein, 1969; Chen, Rubin, Liu, Chen, Wang, Li, Gao, Cen, Gu & Li, 2003; Freedman, 1974, 1976; Freedman & Freedman, 1969). Caudill and Weinstein (1969) compared the temperament of three-to-four-months old Japanese and American infants' and reported that Japanese infants were quieter. According to Chen et al. (2003), Chinese parents rear children with manners including "self-control" and compliance more than Canadian parents. Therefore, compared to Chinese toddlers, Canadian toddlers showed more externally imposed and overt protest. Markus and Kitayama (1991) stated that differences between European cultures and Oriental cultures including Japan are to be found in relationships with others, in that Western cultures have an independent view of the self, whereas non-Western cultures have an interdependent view of self. Lewis, Takai-Kawakami, Kawakami and Sullivan (2010) studied differences between American and Japanese children's emotional responses to successes and failures. They reported that Japanese children showed less shame and sadness in response to failures, and less pride and more exposure embarrassment in response to success than American children. Moreover, Ng, Pomerantz, and Lam (2007) reported that when school-aged children failed at a task, East Asian parents emphasize the importance of making progress, whereas American parents focused on success.

In a study with adults, Ekman and Friesen (1971) compared the emotional expressions of American and Japanese after watching a tense movie. They reported that American adults showed unpleasant feeling, whereas Japanese adults expressed feelings that were seemingly pleasant. In another study, Shimoda, Argyle, and Bitti (1978) allowed British, Italian, Japanese university students to make certain facial expressions and let others decode those expressions. Results indicated that British and Italians were more accurate at reading facial expression than Japanese. Studies such as those discussed above have amply demonstrated various developmental differences between children and adults in Eastern and Western cultures.

Countries such as China, Japan, and Korea are known to have strong similarities related to collectivism, and caring about others (e.g., Lee, 2002; Lee & Rogan, 1991; Oetzel & Ting-Toomey, 2003; Ting-Toomey & Kurogi, 1998), and these cultures are usually regarded as being group oriented. Although, certain other studies have maintained that differences between Eastern and Western cultures are an illusion (Takano, 2008).

In this respect, however, another relevant question is whether there are no differences among the Eastern countries (Fujinaga, 1997). For example, Daibo, Uede, Murasawa, Zhao, Mao, and Takahashi (2007) demonstrated that the movements of facial muscles when showing identical facial expressions were different between Japanese, Chinese and Korean college students. Nevertheless, there are only a few studies that have investigated differences between children in East Asian countries.

Methods of communication are known to differ in different countries. Hall (1977) attended to differences in reading context with interpersonal communication and categorized cultures into "high" and "low-context cultures". In this categorization, Japan was considered a "high-context culture", America a "low-context culture", whereas China was considered to be in-between the two. Therefore, the question is, how different are Japanese and Chinese children? In one study, Maruyama, Ujie, Takai, Taka-

hama, Sakagami, Shibayama, Fukumoto, Ninomiya, Ah, and Feng (2015) reported differences in conflict management strategies of three-year-old Japanese, Chinese and Korean children. Their results indicated that Chinese children tended to make friends, Japanese children tended to make compromises, whereas Korean children tended to dominate. Gao and Ting-Toomey (1998) assumed that both Japan and China are collectivistic cultures, and use indirect expressions and a context-centered style. Nevertheless, the Chinese communication style is different from Japanese. According to Zhang (2009), Chinese people communicate self-assertion is different from Japanese people. Self-assertion is the ability to express personal thoughts and feelings in a unaggressive way, without infringing on the rights of others (Deluty, 1979; Hamaguchi, 1994). Self-assertion first appears at the end of the first year of life and develops conspicuously around three years of age (Bruner, Roy, & Ratner, 1982; Kashiwagi, 1988; Kinoshita, 1987; Takasaka, 1996; Yamamoto, 1995; Yamada, 1982). The cultural differences discussed above indicate the need to investigate the influence of culture on early self-assertion in East Asian countries. In conclusion, it is necessary to examine whether there are differences of behaviors in Japanese and Chinese children or not. In order to study differences and similarities in children's behaviors of two countries, especially in early beginning period of development, this study was executed.

2. Methods

2.1 Participants

Participants were 21 Japanese and 27 Chinese preschool-aged children. One Japanese and two Chinese children were eliminated from the study because they could not complete the task. The data of 20 Japanese children (10 girls and 10 boys, M = 3.64 years, SD = 0.26), and 25 Chinese children (13 boys and 12 girls, M = 3.57 years, SD = 0.29) were analyzed. The Japanese children were living in Kanagawa Prefecture, and the Chinese children were living in Shanghai district.

2.2 Procedure

Three puzzles made of paper (15 pieces, 48 pieces, and 14 pieces) were used. The results of a preliminary experiment by Fu (2015) defined 15- and 14-piece puzzles as easy, and the 48-piece puzzle as difficult.

Children were asked to finish the three puzzles one by one. An experimenter (the author who is a native Chinese speaking fluent Japanese) sat beside the child. The experimenter said to a child "Do you know this puzzle? Please finish this puzzle (in Japanese or Chinese) ". Children were allowed to start after the experimenter said: "Start, please".

After a child had finished the 15-piece-puzzle, the experimenter replied "You did a good job. Try another one." She then asked the child to finish the 48-piece-puzzle. The child was asked to finish the difficult task in 20 minutes by stating, "You have 20 minutes to finish the puzzle. " Pointing to a clock, she said, "Now, the long hand is at 12, when it goes to 4, the time is up." If the child displayed negative behaviors or words, such as refusing to do the task, the child was allowed to drop out. After the child had completed the second puzzle with 48-piecs, she/he was asked to do the third, 14-piece-puzzle. After each puzzle was completed, the child was asked what they thought about the puzzle, and if the puzzle was difficult or easy. The complete process of the study was video recorded.

2.3 Data analysis

Table 1 shows the target behaviors that were observed, which were divided into three categories: actions, verbal expressions, and facial expressions.

The data were coded within each 10-second interval. When toddlers repeated identical behaviors during an observational interval, the first instance of the behavior in each interval was analyzed. The first and the third puzzle were coded from the

Table 1: Observational indexes

Abbreviation	Explaination	Category	Muscles parts
SH	Scratch head	action	
PC	Posture change	action	
LC	Look at the clock	action	
LR	Look around	action	
LE	Lood at the experimenter	action	
Tse	Talk to self	verbal	
AP	Asking about how to finish the puzzle	verbal	
Tso	Talking about something except asking about the puzzle	verbal	
Fr	Frown	facial	up
RE	Raise eyebrows	facial	up
MM	Mouth movement	facial	down
Sm	Smile	facial	down
Si	Sigh	facial	down

beginning to the end, and the second puzzle was coded for 10 minutes from the start of the puzzle.

2.4 Reliability

All the data were coded a native Japanese and a native Chinese coder. Inter-observer reliability was reassessed by using six random samples, or 10 % of the data. Kappa of .81, indicated that reliability of the data was high.

3. Results

All the 45 children successfully finished the first puzzle and the third puzzle, and none of them finished the second puzzle. These results suggested that doing the first and the third puzzles were easy tasks for the children, whereas doing the second puzzle was a difficult task for them.

3.1 Differences in behaviors of children between the two cultures

Figure 1 shows the mean data of children after ten seconds. The main purpose of this study was to compare differences in nationality and gender in target behaviors when doing the puzzles. Therefore, a two-way analysis of variance (ANOVA) was conducted with nationality and gender as independent variables and the target behaviors when doing the puzzles as the dependent variable. In the first puzzle, the main effect of the nationality was significant, (F (1, 41) = 9.81, $p < .01$, $\eta^2 = .19$), whereas neither the effect of gender nor the interaction between nationality and gender was significant. In the second puzzle, the effect of nationality was significant, (F (1, 41), $p < .001$, $\eta^2 = .37$), whereas neither the effect of gender nor the interaction between nationality and gender was significant. Also, the nationality effect was significant in the third puzzle (F (1, 41), $p < .01$, $\eta^2 = .20$), whereas neither gender nor nationality or the interaction was significant. The Chinese children displayed more behaviors than the Japanese children when doing both easy and difficult puzzles.

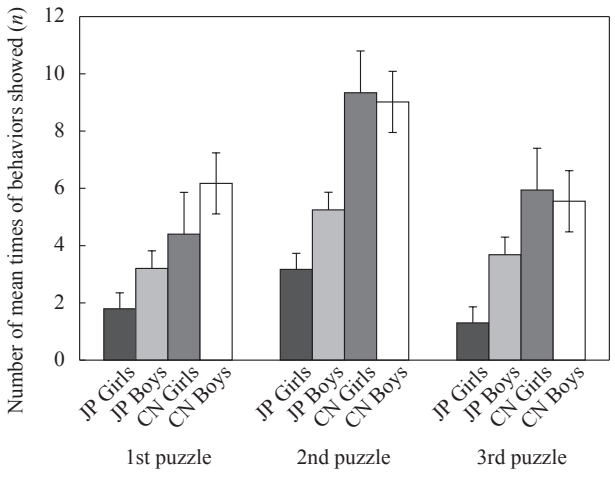

Figure 1: Mean times taken for 13 behaviors when doing each puzzle for 10 seconds

Note: Bars represent standard deviations.

3.2 Differences during the first 10 seconds among the three puzzles

Then, the numbers of children that displayed target behaviors were compared. The differences between the two national groups are shown in Figure 2. In the first puzzle, there were 7 Japanese and 14 Chinese children that showed the target behaviors. A chi-square test was conducted for comparing differences in the two national groups, which indicated no significant differences. In the second puzzle, there were 7 Japanese children and 20 Chinese children that showed the target behaviors, in which a chi-square test indicated group differences (χ^2 (1) = 9.38, $p < .01$). In the third puzzle, 6 Japanese children and 19 Chinese children showed the target behaviors. A chi-square test indicated a significant difference between the two national groups in target behaviors (χ^2 (1) = 9.52, $p < .01$). In addition, there was a marginally significant gender difference in the first puzzle (χ^2 (1) = 3.81, $p < .10$). The effect of gender was neither seen in the second nor the third puzzle.

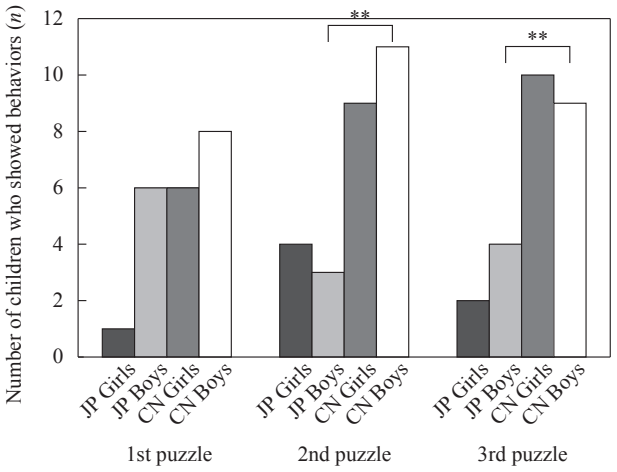

Figure 2: Number of children displaying target behaviors for the first ten seconds of each puzzle

Note: **: $p < 0.01$.

3.3 The second puzzle: Differences in the three categories between the two national groups

To investigate possible differences in the target behavior, the 13 behaviors were divided into three categories (action, verbal, and facial). Figure 3 shows the results of a one-way ANOVA, which yielded a significant main effect of all three categories (Action: F (1, 41) = 7.39, $p < .01$, $\eta^2 = .15$; Verbal expression: F (1, 41) = 6.72, $p < .05$, $\eta^2 = .14$; Facial expression: F (1, 41) = 30.05, $p = .000$, $\eta^2 = .41$).

4. Content of TSo (Talking about something)

The TSo behaviors shown in the second puzzle were clas-

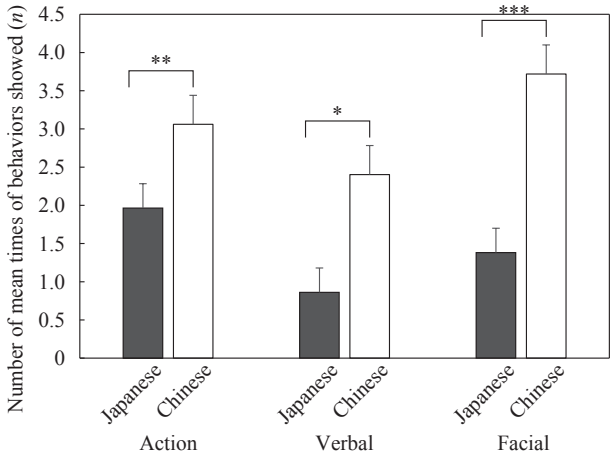

Figure 3: Mean time taken for behaviors in each of three categories during the second puzzle

Notes: Bars represent standard deviations.
*: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$.

sified into several types (Table 2 and 3). Japanese children displayed four types of behaviors: talking about the puzzle's content, saying the puzzle is difficult, saying he or she cannot finish it, and talking about the clock. Chinese children displayed ten types of behaviors: talking about the content of the puzzle, saying the puzzle is difficult, saying he or she cannot finish it, expressing his or her intentions, chatting, showing the puzzle to the experimenter, explaining how to do puzzle, asking questions from other children, saying the puzzle is easy, and making stories by imagining the puzzle. Therefore, Chinese children displayed more TSo types than Japanese children.

4. Discussion

The findings of this study demonstrated the significance of cultural effects on Japanese and Chinese children. Firstly, as can be seen in Figure 1, Chinese children showed more behaviors than Japanese children during all three, two easy and one difficult, puzzles. The figure shows that the Chinese children's behavior patterns differed from that of Japanese children. Secondly, Figure 2 shows how these two national groups of children acted during task performance. The data indicate that the Chinese children displayed more behaviors than Japanese children from the time they started doing the puzzles. Thirdly, Figure 3 shows that compared to Japanese children, the Chinese children showed more behaviors in all three categories. This finding implies that Chinese children show different behaviors when doing a task. Specifically, in the category of action, for the indexes of "look around" and "look at the experimenter", in the category of the verbal, the index of "taking about something except asking about the puzzle", and in the category of the facial, the index of "raise eyebrows", "mouth movement" and "sigh", Chinese children showed more behavior than Japanese children. Moreover, as can be seen by Tables 2 and 3, after finishing the puzzle, Chinese children talked about things that were unrelated to the puzzle. Furthermore, the content of Chinese children's behaviors was more varied than that of Japanese children. These results suggested that Chinese children show a larger variety of self-assertive language than Japanese children, even when the examiner was not responding to them.

Moreover, almost no gender differences were noted in this study, perhaps because of the small sample size. According to Kitayama (1994), Japan and China are different in their history, language, political systems, and various other aspects including customs. Therefore, even though they are both countries located in the same geographical region of East Asia, differences in communication style and emotional expression should be expected between these two countries. The cultural, social process affects "display rules" by controlling the expression of feelings (Ekman, 1984; Tomkins, 1962).

The results of this study suggest that it would be necessary for future research to compare Western countries with many different East Asian countries.

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Table 2: TSo behaviors of Japanese children

	Type	Example	Number
1	Talking about puzzle's content	Giraffe（キリンさん） This is whale's tail.（これはくじらの尾）	5
2	Saying the puzzle is difficult	This is difficult.（これ難しい）	4
3	Saying he or she cannot finish it	I don't know.（分からない）	1
4	Talking about the clock	Rabbit（ウサギだ）	1

Table 3: TSo behaviors of Chinese children

	Type	Example	Number
1	talking about puzzle's content	shark（大鲨鱼）	4
2	saying the puzzle is difficult,	Why is this so difficult?（怎么这么难啊？） This puzzle's pieces are too much.（这拼图，太多了） This puzzle is too difficult to finish.（这个拼图太难了）	9
3	Saying he or she cannot finish it	I cannot do it.（拼不来） Teacher, I lost.（老师，我输了。） I don't know this.（这个我不知道。）	6
4	Talking about the clock		0
5	Expressing his or her intention	I don't want to do anymore.（我不想拼了。） I think this puzzle is too difficult, I want to change another one.（我觉得这拼图好难，我想换一个拼图了。） One more again, I want to choose the puzzle by self.（再玩一次，我自己选。） It is boring.（没意思） I am exhausted.（好累啊）	7
6	chatting	I think Class XX is boring.（我觉得，XX 班很无聊。） I have a lot of books at home.（我家里有很多书） My grandmother is fool… other children's grandmother is smart.（我奶奶很笨的 . . . 人家小朋友的奶奶很聪明的。）	4
7	Showing the puzzle to the experimenter	I finished by myself, look!（我自己拼好了，你看。）	2
8	Explaining how to do puzzle,	My grandmother says starting with the edge parts（我奶奶说要先拼外面…） I make the chicken.（我拼鸡）	2
9	Asking questions from other children	Why don't you ask XX to do this?（为什么你不叫 XX 拼。） Teacher, this puzzle is easy for me, it is also easy for the other children?（老师，这个拼图对我来说很简单哟，对其它小朋友来说很简单的吗？） Teachers want me, a little girl, to do this?（他们想让我这个小妹妹玩？）	2
10	Saying the puzzle is easy	Teacher, I could finish it soon.（老师，这个我很快就拼完的。） This is not different.（这个不难）	2
11	Making stories by imagining the puzzle	Tiger family and lion family are good friends（老虎和狮子家族是好朋友）	1

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