Cultural Distance Between Parents' and Children's Creativity: A Within-Country Approach in Taiwan.

ARTICLE in CULTURAL DIVERSITY AND ETHNIC MINORITY PSYCHOLOGY - AUGUST 2014
Impact Factor: 1.36 · DOI: 10.1037/a0037539 · Source: PubMed

READS
36

3 AUTHORS:

Jen-Ho Chang
Academia Sinica
8 PUBLICATIONS 5 CITATIONS

Jenny Chen-Yi Su
St. Lawrence University
17 PUBLICATIONS 183 CITATIONS

Hsueh-Chih Chen
National Taiwan Normal University
29 PUBLICATIONS 78 CITATIONS
Cultural Distance Between Parents’ and Children’s Creativity: A Within-Country Approach in Taiwan

Jen-Ho Chang
National Taiwan Normal University

Hsueh-Chih Chen
National Taiwan Normal University

Jenny C. Su
National Taiwan University

The present study adopted a within-country approach to investigate the relation of cultural distance to general creativity and math creativity in Taiwan. First, we conducted a pilot study of 201 young adolescents with parents from one of the 3 largest subethnic groups in Taiwan, namely Min-nan Taiwanese, Ha-kka Taiwanese, and Outside-Province Taiwanese. The results revealed that young Taiwanese adolescents perceived the cultural distance between Min-nan Taiwanese and Outside-Province Taiwanese as larger than the cultural distance between the other subethnic groups. The main study revealed that 610 young adolescents from large cultural distance families (i.e., those comprising 1 Min-nan Taiwanese parent and 1 Outside-Province Taiwanese parent) outperformed those from small cultural distance families (i.e., those comprising 2 Min-nan Taiwanese parents, and those comprising 1 Min-nan Taiwanese parent and 1 Ha-kka Taiwanese parent) on both general creativity and math creativity. This pattern remained even after controlling for family socioeconomic status, parents’ education level, and adolescents’ school mathematical performance. Implications and limitations are discussed.

Keywords: cultural distance, creativity, mathematical creativity

A growing body of research has demonstrated the link between multicultural experience and creativity (Leung, Maddux, Galinsky, & Chiu, 2008). For instance, children from binational families (parents who came from different countries) had better creative performance than those from mononational families (Chang, Hsu, Shih, & Chen, 2014); students with study abroad experiences (Lee, Therriault, & Linderholm, 2012); expatriates performed better on creativity tasks than students without such experiences (Lee, Therriault, & Linderholm, 2012); expatriates showed more creativity at work than nonexpatriates (Fee & Gray, 2012); and bicultural adults performed more creatively than monocultural adults (Maddux, Adam, & Galinsky, 2010; Tadmor, Galinsky, & Maddux, 2012). To investigate the underlying mechanisms, Cheng and Leung (2013) proposed that cultural distance—namely, the degree of differences in cultural characteristics between two groups, with a small distance indicating similarity and a large distance indicating discrepancy—played a key role in the link between multicultural experience and creativity. Their findings revealed that participants primed with a large cultural distance stimulus (e.g., a combination of Chinese and American icons) performed better on tasks of creativity than those primed with a small cultural distance stimulus (e.g., a combination of Chinese and Indian icons).

However, most research findings on the relation of cultural distance to creativity were based either on samples of adults with experiences living abroad or on cross-cultural/cross-national comparisons, overlooking children and young adolescent samples and within-country comparisons. Our study tried to address these research gaps in three major ways. First, we recruited young adolescents rather than adults as participants for our main study. The focus on young adolescents could shed light on whether the link between cultural distance and creativity exists in earlier stages of human development. Second, we extended the idea of cultural distance to a within-country context. Specifically, we examined whether the cultural distance between parents is positively associated with Taiwanese adolescent children’s level of creativity. Although most people in Taiwan identify as Taiwanese, for historical and political reasons (Huang, Liu, & Chang, 2004; Lee & Pratto, 2011; Lin, Wu, & Lee, 2006) the Taiwanese population is primarily represented by one of three subethnic groups: Min-nan Taiwanese (70%–75% of the Taiwanese population), Ha-kka Taiwanese (10%–15% of the Taiwanese population), and Outside-
Province Taiwanese (5%–10% of the Taiwanese population). This unique and diverse subethnic composition provides a great opportunity to take a within-country approach to the study of creativity among young adolescents. Third, with regard to creativity, the present study included both domain-general and domain-specific measurements to ensure that the relationship between cultural distance and creativity is not restricted to a single domain. Obtaining similar patterns across multiple measures would enhance confidence in our findings.

Cultural Distances Among the Three Major Taiwanese Subethnic Groups: Min-nan, Ha-kka, and Outside-Province Taiwanese

Cultural distance (i.e., the degree of differences in cultural characteristics between two groups) can be measured both objectively and subjectively. Objectively, cultural distance is typically determined by differences in national scores on various cultural dimensions (e.g., power distance, uncertainty avoidance, masculinity/femininity, and individualism; Hofstede, 1984; Kogut & Singh, 1988) or characteristics (e.g., income inequality; Shenkar, 2001). However, this approach has confined research contexts to cultures or countries with preexisting national scores. If two cultural groups did not have preexisting national scores, then the cultural distance between these two groups could not be computed. A more subjective way to assess cultural distance is to compare groups on perceived differences in social and physical characteristics (e.g., clothing, food, political ideology; Cheng & Leung, 2013; Ward & Kennedy, 1994; Ward & Rana-Deuba, 1999). The latter approach can be applied to the study of different groups within the same country or even within the same ethnicity. Therefore, we adopted a subjective cultural distance approach, focusing on quantitative analyses of perceived cultural distances among different subethnic groups in Taiwan.

More than 95% of Taiwanese identify with one of three major subethnicities: the Min-nan, the Ha-kka, and the Outside-Province (Ministry of Interior in Taiwan, 2013). The Min-nan was the earliest subethnic group to migrate from China to Taiwan. Having lived in Taiwan the longest and outnumbering all other subethnic groups, Min-nan Taiwanese tend to self-identify as “the typical Taiwanese” more than Taiwanese from the other subethnic groups: the Min-nan, the Ha-kka, and the Outside-Province Taiwanese. For this reason, we conducted a pilot study to examine cultural distances among these three Taiwanese subgroups.

Parental Cultural Distance and the Creativity of Children

Based on the idea that larger cultural distance is associated with better performance in the creativity domain (Cheng & Leung, 2013; Morosini, Shane, & Singh, 1998), we focused on the multicultural home environment as a source of multicultural experience. The link between parental cultural distance and children’s creativity can be explained by Crisp and Turner’s (2011) idea that exposure to culturally diverse information creates opportunities for individuals’ mindsets to be challenged. Specifically, individuals immersed in culturally diverse environments are more likely to encounter seemingly opposing and conflicting information and therefore have a greater chance to engage in the process of integrating different ideas. Integration success could be indexed by individuals’ level of cognitive complexity, that is, the extent to which one can hold opposing or different elements in their mind. For example, Benet-Martinez, Lee, and Leu (2006) showed that bilingual individuals showed higher cognitive complexities in working with different cultural information than monocultural individuals. High cognitive complexity provides individuals greater capacity to integrate and organize cultural information with multiple interpretative frames, thereby enhancing their performance on creative tasks (Leung & Chiu, 2010; Tadmor et al., 2012).

To sum, we predicted that children who grew up in larger cultural distance families (i.e., those formed by a combination of Min-nan and Outside-Province Taiwanese parents) would show the highest level of creativity than children who grew up in smaller cultural distance families (i.e., those formed by a combination of Min-nan and Ha-kka Taiwanese parents or by a combination of Ha-kka and Outside-Providence Taiwanese parents).

With regard to creativity, using both domain-general and domain-specific measures provides a more comprehensive assessment of individuals’ level of creativity (Hennessey & Amabile,
Domain-general measures offer a more global perspective that emphasizes general patterns of creative potential. The most commonly used index of domain-general creativity is divergent thinking, which includes dimensions such as fluency, flexibility, originality, and elaboration. However, domain-general measures may overlook creativity in specific areas, especially creativity needed in real-life contexts. Measures of domain-specific creativity address this important shortcoming of domain-general measures, capturing creative abilities that may be more specific to solving problems in real life. For young Taiwanese adolescents in junior high, math is an essential subject that helps them tackle real-life problems creatively (Peng, Cheng, & Chen, 2013; Peng, Cheng, Chen, & Lin, 2013). Therefore, to capture creativity among these young adolescents more fully, both domain-general and domain-specific measures were needed.

Because Min-nan Taiwanese represent the subethnic majority in Taiwan, unequal sample sizes among the various combinations of parents, especially those involving the minority groups, were expected. Specifically, combinations of Outside-Province Taiwanese parents only, Ha-kka Taiwanese parents only, and Ha-kka Taiwanese parent paired with Outside-Province Taiwanese parent were far fewer than combinations involving a Min-nan Taiwanese parent. Therefore, the current study focused on young adolescent living with at least one Min-nan Taiwanese parent—that is (a) those living with two Min-nan Taiwanese parents, (b) those living with a Min-nan Taiwanese parent and a Ha-kka Taiwanese parent, and (c) those living with a Min-nan Taiwanese parent and an Outside-Province Taiwanese parent.

Overview of the Present Study

The current study adopted a within-country approach to investigate the relationship between cultural distance between parents and the creativity level of young adolescents in Taiwan. We hypothesized that young adolescents from larger cultural distance families (i.e., those formed by a Min-nan Taiwanese parent and an Outside-Province Taiwanese parent) would outperform young adolescents from smaller cultural distance families (i.e., those formed by two Min-nan Taiwanese parents and those formed by a Min-nan Taiwanese parent and a Ha-kka Taiwanese parent). In addition, the present study employed both domain-general and domain-specific measures of creativity to capture creativity more comprehensively (Hennessey & Amabile, 2010). The domain-general creativity measure was based on a figure-drawing test that has been shown to be less biased in terms of language and verbal ability (Kim, 2006; Torrance, 1977). The domain-specific measure involved solving puzzles that closely resembled math problems they were likely to have encountered in school (Haylock, 1987, 1997). Because family socioeconomic status and parent education levels have been shown to correlate positively with children's creativity (Dai et al., 2012), the present study measured these demographic variables and controlled for their effects on creativity. We also collected data on participants’ math grades in order to examine the association between cultural distance and mathematical creativity after accounting for the effect of school math performance.

Pilot Study

The pilot study was conducted to examine how young adolescents perceived cultural distances among Min-nan Taiwanese, Ha-kka Taiwanese, and Outside-Province Taiwanese. The pilot served as an initial test of the assumption that the cultural distance between Min-nan Taiwanese and Outside-Province Taiwanese is larger than the cultural distance between Min-nan Taiwanese and Ha-kka Taiwanese and between Ha-kka Taiwanese and Outside-Province Taiwanese.

Participants

Participants in the study were 218 young adolescents from two public junior high schools in Taiwan (105 females; mean age = 14.08, SD = 0.63; all Taiwanese). We obtained informed consent from all of the participants and their parents. All young adolescents indicated the subethnicity of their father and mother from four categories: (a) Min-nan Taiwanese, (b) Ha-kka Taiwanese, (c) Outside-Province Taiwanese, and (d) other. Our study included only young adolescents who indicated that (a) both of their parents were Min-nan Taiwanese (n = 142; 70 females; mean age = 14.11, SD = 0.60), or (b) one parent was Min-nan Taiwanese and the other was Ha-kka Taiwanese (n = 39; 21 females; mean age = 14.11, SD = 0.69), or (c) one parent was Min-nan Taiwanese and the other was Outside-Province Taiwanese (n = 20; 8 females; mean age = 14.11, SD = 0.65).

Measures

Following the measurement of cultural distance in previous studies (Cheng & Leung, 2013; Ward & Kennedy, 1994; Ward & Rana-Deuba, 1999), we asked participants to complete a 21-item scale that assessed their perception of the extent to which Taiwanese subethnic groups differed from each other on various culture-related characteristics (e.g., clothing, food, value, self-identity). Responses were given on a 7-point Likert-type rating scale ranging from 1 (very similar) to 7 (very different). The scale showed great internal consistency in the cultural distance scores obtained for each pair (Cronbach’s αs = .90 – .92).

Results

A 3 (family ethnic composition: two Min-nan Taiwanese parents, one Min-nan Taiwanese parent plus one Ha-kka Taiwanese parent, one Min-nan Taiwanese parent plus one Outside-Province Taiwanese parent) by 3 (cultural distance: Min-nan Taiwanese and Ha-kka Taiwanese, Min-nan Taiwanese and Outside-Province Taiwanese, Ha-kka Taiwanese and Outside-Province Taiwanese) mixed analysis of variance (ANOVA) indicated that only the main effect of cultural distance was significant. F(2, 396) = 12.74, p < .001, η² = .06. Neither the main effect of participants’ family ethnic group nor the interaction effect was statistically significant, Fs < 1.1, ps > .40 (see Table 1). Post hoc analyses revealed that participants perceived a larger cultural distance between Min-nan Taiwanese and Outside-Province Taiwanese than between Min-nan Taiwanese and Ha-kka Taiwanese and between Ha-kka Taiwanese and Outside-Province Taiwanese (ps < .01). The cultural distance between Min-nan Taiwanese and Ha-kka Taiwanese was not significantly different from the cultural distance between Ha-kka Taiwanese and Outside-Province Taiwanese.
The cultural distance between Min-nan Taiwanese and Outside-Provence Taiwanese is larger than the cultural distance between the other pairs of Taiwanese subethnic groups.

**Main Study**

**Participants**

Data were collected from seventh to ninth graders across 12 public junior high schools in Taiwan as part of the Child and Family Study conducted by the National Science Council and the Ministry of Education in Taiwan. All the participants lived with their parents while they were in junior high school. Participants were asked to report the primary subethnic group to which their parents belong by making a selection among one of the following five options: (a) Min-nan Taiwanese, (b) Ha-kka Taiwanese, (c) Outside-Provence Taiwanese, (d) Taiwanese aborigine, and (e) Taiwanese immigrant from a foreign country. Participants were included in the final sample only if both of their parents were Min-nan Taiwanese, or if one parent was Min-nan Taiwanese and the other was Ha-kka Taiwanese, or if one parent was Min-nan Taiwanese and the other was Outside-Provence Taiwanese. To reduce sampling bias, participants with different parental subethnic combinations were paired within the same class, resulting in the classes being evenly represented across the three groups. In addition, participants from different schools did not interact with the other variables. When the effect of school was controlled for, the results did not change. Therefore, we omitted the school variable from our main analyses.

Among the 610 participants (55% female, mean age = 13.53, SD = 0.66) who took part in this study, 447 lived with two Min-nan Taiwanese parents, 93 lived with a Min-nan Taiwanese parent and a Ha-kka Taiwanese parent, and 70 lived with a Min-nan Taiwanese parent and an Outside-Provence Taiwanese parent. Demographic information for each of the three parental subethnic combinations can be found in Table 1. The sample size for each subethnic combination was close to the estimated distribution of Taiwan’s subethnic populations. Estimating the Min-nan Taiwanese, the Ha-kka Taiwanese, and the Outside-Provence Taiwanese to represent 70%, 15%, and 10% of the total Taiwanese population, respectively, the distribution of each parental subethnic combination in our study was projected to be around 73% for the combination involving two Min-nan Taiwanese parents, 15% for the combination involving one Min-nan Taiwanese parent and one Ha-kka Taiwanese parent, and 11% for the combination involving one Min-nan Taiwanese parent and one Outside-Provence Taiwanese parent. The actual distribution of each parental subethnic combination in our sample (73% for the combination involving two Min-nan Taiwanese parents, 15% for the combination involving one Min-nan Taiwanese parent and one Ha-kka Taiwanese parent, and 11% for the combination involving one Min-nan Taiwanese parent and one Outside-Provence Taiwanese parent) did not deviate from the estimated sampling distribution, \( \chi^2 = 0.2, df = 2, p = .96. \)

**Measures**

Each participant completed a demographics questionnaire, as well as measures of domain-general creativity and domain-specific mathematical creativity.

**Demographics.** Participants reported their parents’ education level using a 5-point scale ranging from 1 = primary school, 2 = junior high school, 3 = high school, 4 = college or university, 5 = graduate school. The socioeconomic status of the participant’s family was a standardized index based on the parents’ occupation level within the Taiwanese social context. This family socioeconomic status index was transformed into five levels, ranging from 1 = lowest to 5 = highest (Huang, 2003).

**New version of the Chinese Creative Thinking Test.** We used a new version of the Chinese Creative Thinking Test to assess participants’ level of domain-general creativity because it uses the most complete, updated norm and coding system in Taiwan (Wu et al., 1999). The test was based on the Torrance Creativity Thinking Test-Figural (Torrance, 1974), and was later modified by Wu et al. (1999) for use with Chinese samples. Specifically, participants were shown different sized versions of the Chinese character for human (人) and were given 10 minutes to draw as many creative figures incorporating this Chinese character as they can. Creativity was assessed using four different indices: (a) fluency: the sum of the total number of responses generated by each participant, (b) flexibility: the number of different categories of responses, (c)

---

1 The estimated population of each combination was around 49% (70% x 70%) for individuals with two Min-nan Taiwanese parents, 11% (70% x 15%) for individuals with one Min-nan Taiwanese parent and one Ha-kka Taiwanese parent, and 7% (70% x 10%) for individuals with one Min-nan Taiwanese parent and one Outside-Provence Taiwanese parent. With the conditional probability that included only combinations involving at least one Min-nan Taiwanese parent, the estimated proportion for the combination involving two Min-nan Taiwanese parents would be around 49%/(49% + 11% + 7%) = 73%. The same procedure was used to estimate the proportion of the other parental subethnic combinations in our sample.
The sum of scores (0 or 1) on each response in comparison to the norm (Wu et al., 1999), and (d) elaboration: the number of elaborated decorations in each response. Scores were derived based on the standardized grading norms established by Wu et al. (1999) and showed high 4-month test–retest reliability \( (r_s = .42\ldots .60, p < .001) \) and high interrater reliability \( (r_s > .94, p < .001) \). Moreover, analyses based on 2,300 participants across different developmental stages (from children to adults) showed that each creativity index (e.g., fluency) correlated positively with the Torrance Creativity Thinking Test–Figural \( (r_s = .39\ldots .75, p < .001; \) Wu et al., 1999). In the present study, two independent raters, blind to the participant’s background, provided highly consistent ratings across all indices, \( r_s = .90\ldots .99, p < .001 \).

**Nine-dot areas test.** We used the nine-dot areas test to assess participants’ level of domain-specific mathematical creativity. This nine-dot areas test was developed from the Divergent Production Tests in Mathematics (Haylock, 1987, 1997) and modified into the present Chinese version by Peng and her colleagues (Peng, Cherng, & Chen, 2013; Peng, Cherng, Chen et al., 2013). Participants were shown 24 nine-dot areas with 1-cm distance to each dot and were asked to draw as many shapes measuring 2 cm² as possible within 10 minutes (see Figure 1). Three indices were used to assess participants’ level of mathematical creativity: (a) fluency: the number of correct 2-cm² responses generated (the same responses were not counted again), (b) flexibility: the number of different categories of responses, and (c) originality: the sum of scores on each response in comparison to the norm (Peng, Cherng, & Chen, 2013; Peng, Cherng, Chen et al., 2013). Scores were derived from standardized grading norms and showed high interrater reliability \( (r_s > .94, p < .001) \) and positive correlations \( (r_s = .16\ldots .36, p < .05) \) with the new version of the Chinese Creative Thinking Test (Peng, Cherng, & Chen, 2013; Peng, Cherng, Chen et al., 2013). To control for the effect of general math performance on math creativity, we collected data on participants’ school math grade (ranged from 0 to 100) for the semester during which they took the nine-dot areas test. In the present study, two independent raters, blind to the participant’s background, provided highly consistent ratings across all indices, \( r_s = .91\ldots .95, p < .001 \).

**Results**

**Plan of analysis.** First, we compared the demographic characteristics of the three adolescent groups. Second, we examined correlations between the demographic variables and creativity.

Finally, we compared the three adolescent groups on both domain-general and domain-specific math creativity.

**Preliminary analyses.**

**Demographic comparisons.** First, the three adolescent groups did not differ in terms of gender \( (\chi^2 = 3.76, df = 2, p = .15) \), age, \( F(2, 607) = 0.12, p = .89 \), socioeconomic status, \( F(2, 607) = 0.42, p = .66 \), father’s education level, \( F(2, 607) = 0.50, p = .61 \), or mother’s education level, \( F(2, 607) = 0.34, p = .50 \) (see Table 2).

**Relation of demographic variables to creativity.** Means, standard deviations, and correlations among the key variables are reported in Table 3. Consistent with previous findings, socioeconomic status and parents’ education level correlated positively with fluency, flexibility, and originality from the Chinese Creative Thinking Test \( (r_s = .14\ldots .20, p < .001) \) and with fluency from the nine-dot areas test \( (r_s = .11\ldots .12, p < .001) \). In addition, participants’ math grade was positively correlated with fluency, flexibility, and originality from the Chinese Creative Thinking Test \( (r_s = .13\ldots .14, p < .001) \), and with all indices of the nine-dot areas test \( (r_s = .12\ldots .17, p < .001) \). Intercorrelations among the Chinese Creative Thinking Test indices ranged from moderate to high \( (r_s = .23\ldots .84, p < .001) \), and the nine-dot areas test indices also correlated highly with each other \( (r_s = .71\ldots .80, p < .001) \). However, the Chinese Creative Thinking Test indices correlated low to moderate \( (r_s = .04\ldots .38, p < .32) \) with the nine-dot areas test indices, suggesting noteworthy differences between domain-general creativity and domain-specific mathematical creativity.

**Cultural distance and domain-general creativity.** With regard to domain-general creativity, four ANOVAs were conducted on each index of the Chinese Creative Thinking Test. There was equal variance across all indices, \( Fs < .73, p s > .48 \). The results (see Figure 2) revealed significant group differences on fluency \( F(2, 607) = 11.54, p < .001, \eta^2_p = .04 \), flexibility \( F(2, 607) = 12.74, p < .001, \eta^2_p = .04 \), originality \( F(2, 607) = 5.15, p = .003, \eta^2_p = .02 \), and elaboration \( F(2, 607) = 6.69, p = .001, \eta^2_p = .02 \). Post hoc analyses showed that on all four indices of domain-general creativity, participants living with a Min-nan Taiwanese parent and an Outside-Provinces Taiwanese parent outperformed those living with two Min-nan Taiwanese parents and those living with one Min-nan Taiwanese parent and one Ha-kka Taiwanese parent, \( ps < .01 \). The latter two groups did not differ from one another on any of the four domain-general creativity indices, \( ps > .58 \). In addition, analysis of covariance (ANCOVA) was conducted on each of the four Chinese Creative Thinking Test indices, controlling for family socioeconomic status, father’s education level, and mother’s education level. Results revealed significant group differences on fluency \( F(2, 604) = 11.97, p < .001, \eta^2_p = .04 \), flexibility \( F(2, 604) = 13.89, p < .001, \eta^2_p = .04 \), originality \( F(2, 604) = 5.51, p = .002, \eta^2_p = .02 \), and elaboration \( F(2, 604) = 5.80, p = .001, \eta^2_p = .02 \). Post hoc analyses again showed that participants living with a Min-nan Taiwanese parent and an Outside-Provinces Taiwanese parent outperformed those living with two Min-nan Taiwanese parents and those living with one Min-nan Taiwanese parent and one Ha-kka Taiwanese parent on all four domain-general creativity indices, \( ps < .05 \). The latter two groups did not differ from one another on any of the four domain-general creativity indices, \( ps > .59 \). These results supported our prediction that young adolescents from larger cultural
distance families had greater domain-general creativity than young adolescents from smaller cultural distance families.

**Cultural distance and mathematical creativity.** With regard to domain-specific mathematical creativity, an ANOVA was conducted on each index of the nine-dots areas test. The results (see Figure 3) revealed group differences on fluency (corrected for unequal variance: $F(2, 180.75) = 7.07, p < .001, \eta^2_p = .02$), flexibility ($F(2, 607) = 5.87, p = .003, \eta^2_p = .02$), and originality (corrected for unequal variance: $F(2, 165.5) = 3.05, p = .04, \eta^2_p = .01$). Post hoc analyses showed that, on all three indices of mathematical creativity, participants living with a Min-nan Taiwanese parent and an Outside-Province Taiwanese parent outperformed those living with two Min-nan Taiwanese parents and those living with one Min-nan Taiwanese parent and one Ha-kka Taiwanese parent ($p < .05$). The latter two groups did not differ from one another on any of the three indices of mathematical creativity ($p > .90$). Three ANCOVAs controlling for family socioeconomic status, father’s education level, mother’s education level, and participant’s math performance also revealed significant group differences on mathematical creative fluency ($F(2, 603) = 8.12, p < .001, \eta^2_p = .03$), flexibility ($F(2, 603) = 5.87, p = .003, \eta^2_p = .02$), and originality ($F(2, 603) = 3.01, p = .04, \eta^2_p = .01$). Post hoc analyses again showed that, on all three indices of mathematical creativity, participants living with a Min-nan Taiwanese parent and an Outside-Province Taiwanese parent outperformed those living with two Min-nan Taiwanese parents and those living with one Min-nan Taiwanese parent and one Ha-kka Taiwanese parent ($p < .05$). The latter two groups did not differ from one another on any of the three indices of mathematical creativity ($p > .98$). These results supported our prediction that young adolescents from larger cultural distance families had greater mathematical creativity than young adolescents from smaller cultural distance families.

## Discussion

Building on the perspective that cultural distance facilitates creativity (Cheng & Leung, 2013; Morosini et al., 1998), the current study took a within-country approach by comparing cultural distances among the three major subethnic groups in Taiwan. The pilot study revealed that the cultural distance between Min-nan Taiwanese and Outside-Province Taiwanese was perceived to be larger than the cultural distance between Min-nan Taiwanese and Ha-kka Taiwanese and that between Ha-kka Taiwanese and Outside-Province Taiwanese. With regard to the main study, the results revealed that young adolescents from larger cultural distance families (i.e., those who lived with a Min-nan Taiwanese parent and an Outside-Province Taiwanese parent) demonstrated both greater domain-general creativity and domain-specific mathematical creativity.

### Table 2
**Demographic Characteristics of Each Adolescent Group Different in Parents’ Subethnic Backgrounds**

<table>
<thead>
<tr>
<th></th>
<th>Min-nan parents only</th>
<th>Min-nan and Ha-kka parents</th>
<th>Min-nan and Outside-Province parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>447</td>
<td>93</td>
<td>70</td>
</tr>
<tr>
<td>Gender (female %)</td>
<td>53.47</td>
<td>60.22</td>
<td>64.29</td>
</tr>
<tr>
<td>Age</td>
<td>13.52 (0.62)</td>
<td>13.54 (0.79)</td>
<td>13.55 (0.69)</td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td>3.11 (1.41)</td>
<td>2.97 (1.48)</td>
<td>3.06 (1.44)</td>
</tr>
<tr>
<td>Father’s education level</td>
<td>3.19 (0.94)</td>
<td>3.26 (0.78)</td>
<td>3.11 (0.93)</td>
</tr>
<tr>
<td>Mother’s education level</td>
<td>3.16 (0.83)</td>
<td>3.22 (0.80)</td>
<td>3.24 (0.82)</td>
</tr>
</tbody>
</table>

*Note. The standard deviations are provided in parentheses.*

### Table 3
**Descriptive Statistics and Intercorrelations Among the Key Variables (N = 610)**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlled variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Socioeconomic status</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Father’s education level</td>
<td>.45**</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Mother’s education level</td>
<td>.43**</td>
<td>.56**</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Math grade</td>
<td>.20**</td>
<td>.27**</td>
<td>.19*</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New version of Chinese Creative Thinking Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Fluency</td>
<td>.13*</td>
<td>.14**</td>
<td>.14**</td>
<td>.14**</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Flexibility</td>
<td>.18**</td>
<td>.20**</td>
<td>.16**</td>
<td>.13*</td>
<td>.81**</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Originality</td>
<td>.14*</td>
<td>.16**</td>
<td>.14**</td>
<td>.13*</td>
<td>.81**</td>
<td>.64**</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Elaboration</td>
<td>.01</td>
<td>.02</td>
<td>.04</td>
<td>.05</td>
<td>.33**</td>
<td>.25**</td>
<td>.23**</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nine-dots areas test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Fluency</td>
<td>.11*</td>
<td>.12*</td>
<td>.11*</td>
<td>.17**</td>
<td>.38**</td>
<td>.30**</td>
<td>.33**</td>
<td>.12*</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Flexibility</td>
<td>.08</td>
<td>.05</td>
<td>.06</td>
<td>.16**</td>
<td>.30**</td>
<td>.25**</td>
<td>.26**</td>
<td>.08</td>
<td>.74**</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>11. Originality</td>
<td>.04</td>
<td>.04</td>
<td>.06</td>
<td>.12*</td>
<td>.24**</td>
<td>.17**</td>
<td>.19**</td>
<td>.04</td>
<td>.80**</td>
<td>.71**</td>
<td>—</td>
</tr>
<tr>
<td>Mean</td>
<td>3.09</td>
<td>3.19</td>
<td>3.18</td>
<td>6.70</td>
<td>13.79</td>
<td>8.32</td>
<td>11.06</td>
<td>2.74</td>
<td>15.22</td>
<td>6.11</td>
<td>11.30</td>
</tr>
<tr>
<td>SD</td>
<td>1.42</td>
<td>0.92</td>
<td>0.82</td>
<td>2.28</td>
<td>6.63</td>
<td>3.65</td>
<td>7.35</td>
<td>2.82</td>
<td>9.43</td>
<td>2.96</td>
<td>13.43</td>
</tr>
</tbody>
</table>

*p < .01. **p < .001.*
than young adolescents from smaller cultural distance families (i.e., those who lived with two Min-nan Taiwanese parents and those who lived with one Min-nan Taiwanese parent and one Ha-kka Taiwanese parent). In addition, the effects remained after controlling for family socioeconomic status, parents’ education level, and adolescents’ school math performance.

Our findings supported the notion that the link between cultural distance and creativity can also be found within a single country, suggesting that multicultural experiences are not restricted to individuals who traverse national borders. Recent perspectives support the idea that culture should not be equated with country affiliation. Rather, culture is better studied as shared value systems and life practices (Han et al., 2013; Kitayama & Uskul, 2011). Moreover, unlike previous research, our study focused on the experiences of young adolescents rather than adults, demonstrating for the first time a positive link between cultural distance and creativity in earlier stages of human development. Finally, by documenting the link between

**Figure 2.** Performance on the new version of the Chinese Creative Thinking Test among young adolescents from three groups differing in parents’ subethnic backgrounds. The error bars represent ± 1 standard error.

**Figure 3.** Performance on the nine-dot areas test among young adolescent from three groups differing in parents’ subethnic backgrounds. The error bars represent ± 1 standard error.
cultural distance and creativity in the home environmental context, we introduced the possibility that large cultural distance between parents can foster children’s creativity by exposing them to diverse sets of values, beliefs, habits, and customs. The relation of parental cultural distance to children’s creativity echoes the complex family perspective (Gute, Gute, Nakamura, & Csikszentmihalyi, 2008), which originated from the complex personality perspective (Csikszentmihalyi, 1996). The complex personality perspective posits that holding multiple or opposing elements within the self could have beneficial effects on creativity. Extending to the family level, growing up in families with different ethnic compositions, as indicated by the presence of demographically and psychologically diverse parents, may contribute to higher levels of creativity among children via the psychological processes of differentiation and integration (Gute et al., 2008; Chang et al., 2014). An alternative explanation for our findings is that individuals who marry an outgroup member out of free will (e.g., a Min-nan Taiwanese marrying an Outside-Province Taiwanese) could be less conventional and more open. As low conformity and high openness to experience are positively related with creative performance, children raised by parents who marry outside of their ethnic group also might be more creative because of a more open family climate. More research is needed to test these competing explanations.

Although our study focused on cultural distances among different subethnic groups in Taiwan, this within-country approach might apply to other countries or ethnic groups. For instance, in the United States, large variability in values (Vandello & Cohen, 1999) and personality (Rentfrow, 2010; Rentfrow, Gosling, & Potter, 2008) have been found across different states, with historical influences playing a role in some of these regional differences. For example, Cohen and his colleagues conducted a series of studies showing that the culture of honor that became prevalent in the South as a result of historical developments in the region explains the tendency of Southern states, with historical influences playing a role in some of these subethnic groups. Our study showed that cultural distance can be studied within a single country and a single ethnic group. Specifically, young adolescents growing up in larger cultural distance families (i.e., families comprised of parents from culturally dissimilar backgrounds) had greater domain-general and domain-specific creativity than young adolescents from smaller cultural distance families (i.e., families comprised of parents from culturally similar backgrounds). In addition, the within-country cultural distance approach is in its infancy and needs to be scrutinized by future empirical investigations before it can be generalized to other countries and cultures.

**Conclusion**

Our study showed that cultural distance can be studied within a single country and a single ethnic group. Specifically, young adolescents growing up in larger cultural distance families (i.e., families comprised of parents from culturally dissimilar backgrounds) had greater domain-general and domain-specific creativity than young adolescents from smaller cultural distance families (i.e., families comprised of parents from culturally similar backgrounds). In addition, the within-country cultural distance approach is in its infancy and needs to be scrutinized by future empirical investigations before it can be generalized to other countries and cultures.

**References**


CULTURAL DISTANCE AND CREATIVITY

485


