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Relationships Between Migration to Urban Settings and Children's Creative Inclinations

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In this study, 909 5th- and 6th-grade children were recruited as participants, and questionnaires were used to investigate the relationships between migration to urban settings and children's creative inclinations. The study was broken down to 2 parts. Study 1 compared scores on measures of creative inclinations among migrant, rural, and urban children, and further compared measures of creative inclinations among children with varying migration durations. Study 2 used path analysis to explore factors potentially mediating the effects of migration on children's creative inclinations. The results suggest that migration to urban settings is meaningfully related to creative inclinations, but the relationship seems more nuanced than initially hypothesized. When openness to new experiences, intelligence, and classroom climate were entered into the prediction equation, migration shows some indirect effects on creative inclinations. The results are discussed in terms of the significance of the study and the need for further research.

Creative inclinations refer to a set of active mental states or attitudes conducive to creative activities and processes. Creative inclinations are one of the critical components of creativity (Chen, 1999; Dai & Shen, 2008; Nie & Zheng, 2005). Creative inclinations play an important role in regulating psychological processes, providing a mental state and context for the exertion of creative capabilities, and regulating creative activities by eliciting, boosting, adjusting, and monitoring cognitive processes (Shen, Wang, & Shi, 2005). In contrast to the tests of divergent thinking, which are often criticized for their questionable predictive validity, the measurements of creative inclinations are well received as measures of creative potential (Zheng & Liu, 2000). Williams' Creativity Assessment Packet (Williams, 1980) is one of frequently used instruments in measuring adolescents' creativity according to Zhang and Sternberg (2002), which includes four subscales, representing adventurousness, curiosity, imagination, and challenge.

Creative inclinations should not be equated with personality traits typically associated with creativity. Although the two are closely connected, creative inclinations reflect an active state of mind rather than

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a habitual way of behaving or responding to certain situations. An inclination is not an ability, but a kind of propensity (Zhang, 2003), or *aptitude*, a term that Snow (1992) used to describe one's active tendency toward or proneness to certain activities. Traits associated with creativity, in contrast, are falling into what people commonly know as personal characteristics, close to what is described in big-five personality (Costa & McCrae, 1992), such as openness to new experiences.

Recent research consistently has found that particular geographic locations with its distinct patterns of cultural and social practices, such as individualistic and collectivist traditions, have an impact on creative thinking and creative personality (Hu, Adey, Shen, & Lin, 2004; Hu, Lin, Shen, & Adey, 2003; Kitayama, Conway, Pietromonaco, Park, & Plaut, 2010; Ng, 2003; Park & Peterson, 2010; Riquelme, 2002; Rudowicz, Lok, & Kitto, 1995; Shen, Hu, & Peng, 2003; Shi & Shen, 2009; J.-N. Shi, Xu, & Zhou, 1999; Ye, Hong, & Torrance, 1988; Zhou, Zha, & Shi, 1995). In the subcultural research comparing urban and rural children, quite a few Chinese researchers (Han & Hu, 2005; Liu & Shi, 2004; Nie & Zheng 2005) found that there are differences in creative thinking and personality between urban children and their rural peers, with urban children performing better on measures of creativity. Why do children from various subcultures present such discrepancies and disparities in creativity? To answer this question, a previous study conducted an investigation on differences among urban, migrant and rural children in China on measures of creativity and traced these differences to individual and environmental factors from an acculturation point of view (Shi, Qian, Lu, Plucker, & Lin, 2012). This study found a positive relationship between migration to urban settings and children's creative capabilities in terms of fluency, flexibility, and originality in ideation and problem solving, with a remarkable increase in creative thinking for those children migrating from rural to urban areas. This finding echoes the Flynn Effect on intelligence test performance; though Flynn Effect was observed on a larger time scale as a cohort effect, and the migration effect reflects a much shorter time span and effects reflect changes in living conditions, both are associated with the process of industrialization and urbanization (Flynn, 1994; Neisser, 1998). This study also found that such factors as family SES, classroom environment, openness, intellectual environment, and personal traits account for substantial variations in creative thinking.

According to Park and Peterson (2010), cities provide direct and indirect benefits to the health and well-being of their residents. In the industrialized world, individuals living in cities are increasingly healthier and more productive than their rural counterparts (Bloom, Canning, & Fink, 2008). The aggregation of highly educated and creative people in a city allows the incubation of new ideas and the creation of new technologies (Black & Henderson, 1999; Montgomery, Stren, Cohen, & Reed, 2003). However, due to differences between the concepts of creative capabilities and creative inclinations, effects of migration on creative capabilities can be different from those on creative inclinations. One can imagine that children who migrated from rural to urban settings are exposed to more stimuli, much more open cultures, and presumably a more enriched intellectual environment; thus these children might have better performance in creative thinking (i.e., demonstrating higher creative capabilities). However, will they have better creative inclinations than their peers who still live in rural areas? McCrae, Yik, and Trapnell's (1998) study on first- and second-generation Chinese immigrants and overseas students in Canada indicates that personality differences can be at least partly attributed to cultural differences, and one's personality characteristics and inclinations can change in a new environment through an acculturation process. However, migrant children are not like immigrants described in McCrae et al., and they differ from both rural and urban children in important ways. Given the disparities between urban and rural subcultures in China, migration might bring to these children more knowledge, a widened intellectual horizon, more educational opportunities, and better economic conditions. All these could accelerate their development in creative capabilities and inclinations (in fact, their creative thinking has shown improvement; see Shi et al., 2012). On the other hand, migrant children, along with their migrant parents, are disadvantaged and significantly marginalized in urban areas. Most of them are enrolled in schools temporarily set up for children of migrant workers, with inferior physical conditions and less resources compared to local regular schools. Besides, adaptation to urban life takes time (Guo, 2005). The time span of their migration into the new environment is typically shorter than those immigrants; thus, their creative inclinations could also be suppressed and even decrease, or simply show no difference compared to their rural peers.

This study focused on migrant children who moved (typically with their parents) from rural areas into urban areas in China in 1990s and 2000s. With the rise of migrant workers in China since 1990s, migrant children have emerged as a special population in the urban landscape. They are called the second-generation migrants. According to the Regulations of Schooling for Migrant Children and Youth issued by the Ministry of Education and the Ministry of Public Security in China, migrant children and youth are officially defined as those aged from 6 to 14, living in urban areas

more than a half year with their parents or guardians. Due to urbanization in China, the numbers of migrant children and adolescents in urban environments have increased (Zhang, Li, & Liu, 2010). According to the census of the Beijing municipality in 2003, the number of migrant children below the age of 14 reached 290 thousands, which was 7.2% of the whole migrant population (Guo et al., 2005). Based on the report of the fifth national census in 2000, there were 14 million migrant children in the whole country (Duan & Liang, 2004). The sex ratio is 114.6:100 (men vs. women), with an average age of 7; among them, 30% were either born and grew up in migrant areas; and for the rest of this population, 75% live in the migrant areas for 2 or more years.

As some studies (e.g., Liang & Chen, 2007) suggest, the motivation underlying urban migration in China is largely economic: migrant workers earn more than their rural counterparts. However, it is not clear as to what kind influences migration might have on migrant children. Most studies on children migration experiences have been conducted in Western countries despite migration being very common elsewhere (e.g., China). More research is required in this area (Chan, Mercer, Yue, Wong, & Griffiths, 2009). More specifically, will there be distinct changes in psychological attitudes associated with creativity in these migrant children? There is a dearth of research in this regard.

This study focused exclusively on creative inclinations, as measured by Creativity Assessment Packet (PAC). There were two reasons for not including other measures. One was that most current research on migrant children has focused on social development and mental health issues; research on their creative inclination is rare, let alone efforts to compare creative capabilities and inclinations. The other reason was the large number of children involved and other practical constraints such as time.

The purpose of this study was to use urban migration as a unique occasion to investigate potential influences of environmental factors (living in urban vs. rural areas, and duration of that urban experience) on children's cognitive and affective development, particularly with respect to adventurousness, curiosity, imagination, and challenge (seeking), a set of personal inclinations purported to facilitate creative thinking and expressions. Furthermore, from an empirical point of view, the comparison on creative inclinations among rural, migrant, and urban children permits a study of an important environmental variable on child development, and ecologically valid evidence for its potential impact. The study also has practical implications for interventions and bringing high-quality education to the migrant population.

STUDY 1

Study 1 addresses two questions:

1. How do migrant children compare with urban and rural children with regard to creative inclinations defined as adventurousness, curiosity, imagination, and attitude toward challenge?
2. Are there differences in creative inclinations among migrant children with different durations of migration experience?

Methods

Participants. Stratified random sampling was adopted for this study. A total of 909 children from fifth and sixth grades were selected for the study. After eliminating 34 invalid questionnaires, 875 valid questionnaires were subjected to analysis. Based on their migrant or nonmigrant status, participants were categorized into the following three groups:

1. Migrant children. Four hundred and twenty-six fifth and sixth graders were drawn from three special schools for migrant children and one public school in Beijing. One of these special schools for migrant children had been operating for more than 10 years at the time data were collected, and the other two schools were established 2 years and half year before, respectively. The average age was 11.4 for fifth graders and 12.7 for sixth graders. Approximately one-sixth of the participants were born in Beijing, and one-fifth live in Beijing for less than 2 years. The areas from which these children and their parents came involve 18 provinces and municipalities, including Henan Province (36.3%), Hebei Province (15.5%), Anhui Province (9.8%), Hubei Province (9.1%), Sichuan Province (7.5%), and Shandong Province (5.6%).
2. Rural children as a comparison group. Upon considering the comparability in region and the feasibility of sampling, this study selected 284 fifth and sixth graders from seven classes of two regular rural schools in Henan Province. The average age was 12.1for fifth graders and 13.3 for sixth graders. These children had no experiences of migration. A few children who were *left behind* (i.e., left home by their migrant worker parents) were excluded from the study.
3. Urban children as a comparison group. 165 fifth and sixth graders were drawn from six classes in two public schools in Beijing. The average age was 11.2 for fifth graders and 12.9 for sixth graders.

TABLE 1
Demographic Distribution of Participants

	Migrant Children		*Rural Children*		*Urban Children*		*Sum*	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
Fifth	150	102	64	65	35	36	249	203
Sixth	104	70	75	80	39	55	218	205
Sum	254	172	139	145	74	91	467	408
Total	426		284		165		875	

The demographic distribution of participants is presented in Table 1.

Instruments and procedures. Demographic information of participants was gathered regarding the background and migration status of the migrant and nonmigrant children, including birth place, the years living in hometown and in Beijing.

An adapted Chinese version of Williams' Creativity Packet (Lin & Wang, 1994) was used to measure creative inclinations. The instrument has three components: divergent thinking, divergent feelings, and Williams' Evaluation Scale. The divergent feelings subscale has an alternative name, *Creative Inclinations Test*, consisting of 50 items and four dimensions: imagination, curiosity, risk-taking (adventurousness), and complexity (challenge). The manual indicates that it is suitable for use with 4th-grade to 12th-grade students. The use of imagination, curiosity, risk-taking, and complexity as measures of creative inclinations is based on cognitive and affective distinction. Creativity reflects both a set of cognitive capabilities for generating and verifying new ideas or products, and a set of affective tendencies to engage in cognitive activity leading to creativity (Dai & Shen, 2008). The self-report measures of the four dimensions of divergent feelings (imagination, curiosity, risk-taking (adventurousness), and complexity or challenge) are better interpreted as tendencies, than capabilities, which can be assessed more appropriately with performance tests.

The duration for completing this questionnaire was about a half hour. This group-administered instrument is intended for children of 6 to 18 years of age. It includes 50 self-report items, using a 3-point Likert scale, with *strong agree* equaling 3 points, *partially agree* 2 points, and *strongly disagree* 1 point. The measurement comprises four subscales: adventurousness, curiosity, imagination and challenge. According to the instruction of the instrument adaptors, four subscale scores and one total score could be generated. Both composite and subscale measures showed good reliability and concurrent validity.

For the sample of this study, the Cronbach Alpha coefficient is .77, split internal consistency .61 and .66. A confirmatory factor analysis was conducted using AMOS 4.0, with the following results: $\chi^2/df\ z = 2.311$, NFI = .976, IFI = .986, TLI = .985, CFI = .986, RMSEA = .038, which suggests a good data-model fit using the four dimensional model.

Results

A3 (rural vs. urban vs. migrant) × 2 (5th vs. 6th grade) × 2 (men vs. women) multivariate analysis of variance (MANOVA) was conducted to assess the main and interaction effects on measures of creative inclinations.

Comparison of the migrant, rural, and urban groups. Table 2 presents the total or composite scores of three groups of children on creative inclinations.

To investigate differences in creative inclinations among three groups, this study conducted a 3 (three groups of children: migrant, rural, and urban, from here on *migration status*) × 2 (grade) × 2 (gender) multivariate analysis of variance (MANOVA), with four measures of creative inclinations as dependent variables.

The results indicated a significant main effect of groups (migrant vs. rural and urban). A post hoc inspection shows that urban children had an advantage over the rural and migrant children, but there was no detectable difference between the rural and migrant groups. There was a main effect of gender in favor of girls. There was also a significant migration status by grade

TABLE 2
Composite Scores on Creative Inclinations for Three Group Children (M ± SD)

	Five Grade		*Six Grade*		*Sum*	
	Male	*Female*	*Male*	*Female*	*Five Grade*	*Six Grade*
Migrant	108.91 ± 11.0	109.81 ± 10.2	107.99 ± 10.0	109.46 ± 10.7	109.27 ± 10.7	108.58 ± 10.3
Rural	105.94 ± 9.96	108.57 ± 9.29	112.39 ± 9.03	111.73 ± 9.46	107.26 ± 9.68	112.05 ± 9.23
Urban	114.97 ± 9.75	121.28 ± 9.85	118.41 ± 9.63	117.18 ± 9.93	118.17 ± 10.2	117.69 ± 9.77
Sum	109.00 ± 10.9	111.45 ± 10.8	111.37 ± 10.3	112.41 ± 10.4	110.10 ± 10.9	111.87 ± 10.4

TABLE 3
Results of the Multivariate Analysis of Variance With Adventure, Curiosity, Imagination, and Challenge as Dependent Variables

			ANOVA F (Partial Eta squared)			
Source	*df*	*λ(MANOVA)*	*Adventure*	*Curiosity*	*Imagination*	*Challenge*
Groups	2	.85***	39.72*** (.08)	48.69*** (.10)	11.90*** (.03)	22.20*** (.05)
Grade	1	.98*	.13 (<.01)	7.71** (.01)	.25 (<.01)	5.60* (.01)
gender	1	.98**	8.21** (.01)	.77 (<.01)	7.42** (.01)	3.34 (<.01)
Groups by grade	2	.98*	1.67 (<.01)	5.75** (.01)	4.22* (.01)	3.06* (.01)
Groups by gender	2	.99	1.27 (<.01)	.10 (<.01)	.65 (<.01)	.86 (<.01)
Grade by gender	1	.99	.19 (<.01)	5.65* (.01)	1.92 (<.01)	5.62* (.01)
Groups by grade by gender	2	.99	.58 (<.01)	1.85 (<.01)	3.40* (.01)	1.62 (<.01)

***$p < .001$. **$p < 0.01$. *$p < 0.05$.

interaction effect. Post hoc inspection on the group by grade interaction effect reveals that the rural comparison group scored the lowest in creative inclinations, with the migrant children in the middle for the fifth grade. In contrast, for the sixth graders, the rural comparison group had a slight advantage over the migrant group.

Multivariate analysis (Table 3) indicated that only migration status and gender had significant main effects on adventurousness (for migration status: $F_{(2,863)} = 39.72$, $p < 0.001$, partial eta squared = .08; *for* gender: $F_{(1,863)} = 8.21$, $p < 0.01$, partial eta squared = .01). The post hoc comparison of main effect of migration status reveals that there was no significant difference between the rural comparison group and the migrant group; however, both of them scored significantly lower than the urban comparison group. Inspection on the main effect of gender reveals that girls scored higher than boys.

On the dimension of curiosity, significant main effects of migration status ($F_{(2,863)} = 48.69$, $p < 0.001$, partial eta squared = .10) and grade level ($F_{(1,863)} = 7.71$, $p < 0.01$, partial eta squared = .01) were found. Post hoc comparison indicated that the rural comparison group scored the lowest on curiosity, significantly lower than the migrant and urban groups; the migrant group scored in the middle, significantly lower than the urban comparison group. Significant interaction between groups and grade was found on the curiosity measure ($F_{(2,863)} = 5.75$, $p < 0.01$, partial eta squared = .01), suggesting that the discrepancies were greater for the fifth than sixth graders. For the sixth graders, the rural comparison and migrant groups did not differ significantly with each other. However, both of them scored significantly lower than the urban comparison group. The interaction between grade and gender ($F_{(1,863)} = 5.65$, $p < 0.05$, partial eta squared = .01) was also significant.

As for the imagination index, there was a significant migration status by grade by gender three-way interaction ($F_{(2,863)} = 3.40$, $p < 0.05$, partial eta squared = .01). For the fifth grade, the main effects of migration status and gender were significant ($F_{(2,446)} = 6.30$, $p < 0.01$, partial eta squared = .03; $F_{(1,446)} = 8.00$, $p < 0.01$, partial eta squared = .02), and their interaction was not ($F_{(2,863)} = 1.57$, $p > 0.05$, partial eta squared <.01). Further examination indicated that differences were not significant between the migrant group and rural comparison group, but both groups scored significantly lower than the urban group; girls had higher scores than boys. For sixth graders, the main effect of migration status was significant ($F_{(2,417)} = 8.91$, $p < 0.001$, partial eta squared = .04), but the gender main effect and interaction effect were not. Post hoc comparison results suggest the migrant group scored the lowest in imagination, significantly lower than rural and urban children. The rest two groups did not differ significantly.

For the challenge index, there were significant main effects of migration status ($F_{(2,863)} = 22.20$, $p < 0.001$, partial eta squared = .05) and grade ($F_{(1,863)} = 5.60$, $p < 0.05$, partial eta squared = .01). There was also a significant interaction between migration status and grade ($F_{(2,863)} = 3.06$, $p < 0.05$, partial eta squared = .01). Simple effect analysis indicated that, for the fifth graders, there was a significant difference among three groups ($F_{(2,449)} = 13.41$, $p < 0.001$, partial eta squared = .06); the migrant children scored slightly higher in challenge (but insignificant) than the rural children. Both of them score significantly lower than the urban children. For the sixth graders, significant differences were also found among the three groups ($F_{(2,420)} = 11.12$, $p < 0.001$, partial eta squared = .05). However, in contrast to the fifth graders, the sixth-grade rural children scored higher than the migrant children but the difference was not statistically significant. Both groups scored significantly lower on challenge than the urban children.

Given that the majority of migrant children have had migration experience for no more than ten years, changes in personality and personal inclinations could be limited. Based on this assumption, this study tested a further hypothesis that children with migration experiences over longer periods will evidence significant

TABLE 4
Distribution of Migration Duration of Participants

	Short (Under 3)		*Median (4–7)*		*Long (Over 8)*		*Sum*	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
Fifth grade	56	48	51	29	43	25	150	102
Sixth grade	31	23	33	29	40	18	104	70
Sum	87	71	84	58	83	43	254	172
	158		142		126		426	

differences in creative inclinations compared to those with shorter periods of migration experiences.

The 426 fifth and sixth graders in Study 1 were selected for the within-migrant group comparison. This study generated children's migration years by subtracting the number of years living in their hometowns from their age. In view of the fact that most participants were around 12 years old when data were collected, and taking into account the frequency distributions of years of migration, the sample was categorized into three groups: short time span of migration (0–3.50, 37.2%); median time span of migration (3.51–7.50, 33.3%), and prolonged time span of migration (7.51–15, 29.5%). The distribution of the participants is presented in Table 4.

To enhance the reliability of the measurements and focus on the general trends, this study used the composite measure of creative inclinations for testing the effects of migration duration.

Analysis of the duration of migration. The total or composite scores on creative inclinations for the three groups migrant children are presented in Table 5.

To investigate differences among the three migration groups, this study conduct 3 (migration duration) × 2 (grade) × 2 (gender) univariate analysis of variance (ANOVA). The results are presents in Table 6.

The results of ANOVA indicated that differences among the three migrant groups on the composite measure of creative inclinations were statistically significant ($F_{(2,414)} = 3.26$, $p < 0.05$, partial eta squared = .02). Post hoc tests reveal that children of the short duration of migration (<3 years) scored significantly lower than the median (4–7 years) and the long (>8) groups, and there was no significant difference between the latter two groups. Main effects of grade and gender and interaction effects were not statistically significant.

TABLE 6
The Results of Analysis of Variance for the Composite Measure of Creative Inclinations With Migration Duration, Grade, and Gender as Predictors

Source	*SS*	*df*	*MS*	*F*	*Partial Eta Squared*
Migration duration	711.25	2	355.63	3.26*	.02
Grade	59.33	1	59.33	.54	<.01
Gender	139.38	1	139.38	1.28	<.01
Duration × Grade	48.41	2	24.20	.22	<.01
Duration × Gender	69.29	2	34.64	.32	<.01
Grade × Gender	6.80	1	6.80	.06	<.01
Duration × Grade × Gender	478.77	2	239.39	2.19	.01
Error	45216.66	414	109.22		
Total variance	46955.96	425			

*$p < 0.05$.

If the migration duration can actually lead to an increase in creative inclinations, then we wondered whether children of the short span of migration had scores on creative inclinations closer to those of rural children, yet children of the median and long durations of migration had much higher scores than rural children.

To answer this question, this study reintroduced the group of rural children and made comparison between the rural group and the three migrant groups. Specifically, this study conducted 4 (the three migration groups plus the rural group) × 2 (grade) × 2 (gender) analysis of variance, with the composite measure of creative inclinations as a dependent variable.

Again, the results indicated a significant interaction between groups and grade. For the fifth graders, there was a significant difference between the three migrant groups and the rural comparison children ($F_{(3,377)} = 3.83$, $p < 0.01$, partial eta squared = .03). Post hoc tests indicated that the rural children did not differ significantly with children of the short duration of migration on the composite measure of creative inclinations, but both groups scored significantly lower than children of

TABLE 5
Sores on the Composite Measure of Creative Inclination for Three Groups

	5th Grade		*6th Grade*		*Sum*	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*
Short	105.43 ± 10.7	108.98 ± 10.4	108.45 ± 9.39	106.35 ± 9.93	106.51 ± 10.3	108.13 ± 10.2
Moderate	111.29 ± 10.5	110.17 ± 10.9	108.48 ± 9.94	110.52 ± 9.55	110.19 ± 10.3	110.34 ± 10.2
Long	110.60 ± 11.0	111.00 ± 8.96	107.23 ± 10.7	111.72 ± 13.0	108.98 ± 11.0	111.30 ± 10.7
Sum	108.91 ± 11.0	109.81 ± 10.2	107.99 ± 10.0	109.46 ± 10.7	108.53 ± 10.6	109.67 ± 10.4

median or long span of migration, thus supporting out hypothesis that the duration of migration matters. For the sixth graders, the results do not support the hypothesis. Although a significant difference was also found between the three migrant groups and the rural comparison group ($F_{(3,325)} = 3.75$, $p < 0.05$, partial eta squared = .03), post hoc inspection reveals that the rural children scored significantly higher than children of short and long spans of migration, but have no significant difference from children of median span of migration.

Discussion

The most distinct observation from Study 1 is the group by grade interaction effects. For fifth graders, the rural, migrant, and urban groups ranked from the lowest to the highest respectively on the composite measure and specific indices of creative inclinations. Although some of the differences between the migrant and rural children were statistically nonsignificant, all the results were nevertheless in the predicted direction. In contrast, for the sixth graders, the migrant children tended to score the lowest, and significantly lower than rural and urban children on some indices of creative inclinations. One may draw a simple conclusion from these results that there is a significant difference in creative inclinations between rural and urban children, but migration status or duration has no significant effect or sometime a negative one in that regard. However, there are alternative explanations for the mixed findings, particularly with respect to the migration status by grade interaction effects.

The first explanation is that with the limited sample size, sample characteristics may come into play to affect the results so that the mixed findings simply reflect sampling errors. The second explanation, also related to sampling, is that the proportions of boys and girls for the rural, migrant, and urban groups were not as balanced. Specifically, there was a slight overrepresentation of girls in the rural and urban groups and an underrepresentation of girls in the migrant group (172:254, specifically). Because girls tended to score higher than boys, the under repesentation of girls for the migrant group might explains why there was no significant difference between migrant and rural children on measures of creative inclinations. Although, the main effect of gender was statistically controlled, the imbalanced proportion of girls and boys might have an effect on the results.

The third explanation is more substantive, suggesting that the findings are meaningful in the context of migrant conditions and education systems in China. The migrant children have the pressure of getting admitted to local middle schools at the sixth grade, whereas for rural or urban children, the pressure is minimal. The main reason is that, for migrant children, the opportunity to enroll in a middle school in urban settings is not guaranteed due to their nonresident status, but for rural children, it is.

A fourth explanation is that is that changes in creative inclinations are not the same as changes in creative thinking, and they entail changes in personality and attitude, which is a long-term proposition. The results of the comparison of the short, median, and long durations of migration lend some support to this position, particularly for the fifth graders. For reasons discussed earlier, the patterns of data for the sixth graders are complicated and suggest extraneous variables not taken into account in this study might play a role.

Taken together, the results of Study 1 suggest that urban migration constitutes an important environmental change that can potentially impact the development of creative thinking and inclinations in childhood. They further suggest that duration of migration should be considered as well as specific social contexts for the migration experience. If migration to urban settings does make a difference on creative thinking and inclinations, how might it happen, and what are potential pathways and mediational processes? Study 2 focused on this question.

STUDY 2

To go beyond the *status* approach to effects of urban migration on creative inclinations, that is, merely looking at whether they are migrant children or not, it is important that both environmental and psychological variables be considered simultaneously. Therefore, Study 2 aimed at identifying some key variables that help specify contextual changes and potential pathways and mechanisms associated with duration of migration. Environmental factors most relevant to migrant children are family socio-economic status (SES) and classroom climate. Research evidence points to a distinct advantage enjoyed by children of higher SES over children of low SES not only in academic achievement but in creative thinking (Lichtenwalner & Maxwell, 1969; Milgram, 1983; Ogletree, 1971), and this phenomenon seems prevalent across cultures (e.g., Shi & Shen, 2007; Vijayalakshmi, 1980). Therefore, this study hypothesized that duration of urban migration might raise family SES, which also likely allows parents of migrant children more leeway in choosing what school districts they live in, and consequently what schools their children will attend. It is unlikely, however, environmental factors can have any immediate effects on migrant children's creative inclinations without some psychological mediation; that is, some internalized

factors should have a more direct impact on creative inclinations. In Study 2, two such variables were selected, intelligence and openness to experience (Costa & McCrae, 1992).

The rationale for making intelligence a mediator is the evidence that schooling, or more generally, an enriched environment increases children's IQ significantly; even school-in-session vs. summer vacation makes a difference (Ceci & Williams, 1997). It is also in keeping with the findings of Flynn Effect or rising curve in performance on intelligence tests (Flynn, 1994), at least partly attributable to urbanization. Intelligence contributes to creative inclinations through its links to enhanced self-confidence and cognitive motivation such as curiosity and interest (Ackerman & Heggestad, 1997). On the personality side, this study used openness as a mediator, as this trait is presumably a critical personality characteristic associated with duration of migration. This study hypothesized that openness to new experiences was partly enhanced by duration of migration, family SES, and a classroom climate that supports this characteristic. Openness as an enduring aspect of personality will also influence creative inclinations as a set of behavioral, attitudinal, and motivational tendencies. Overall, this theoretical model is in line with the mainstream theory of creativity (Amabile, 1983, 1996; Eysenck, 1995, 1997; Feldman, Csikszentmihalyi, & Gardner, 1994) as well as current thinking about creativity as involving a combination and reciprocal interaction of both environmental and individual influences through development (Niu, 2007; Prabhu, Sutton, & Sauser, 2008).

On the basis of this integrative review of the literature, a path model was developed, which specifies three sets of relationships: (a) Migration duration will have a direct effect on creative inclinations and indirect effects through its influences on family SES, intelligence, classroom climate, and consequently openness; (b) intelligence will partly mediate the effects of migration duration and SES on creative inclinations; (c) openness will partly mediate the effects of migration duration and SES on creative inclinations.

Methods

Participants. Four hundred and twenty-six migrant children from the same sample in Study 1 were recruited for this study. Instruments were administered to them by graduate students in psychology in one sitting.

Instruments and data analysis. This study used the software AMOS4.0 to build a path model represented. Instruments include.

Intelligence (cognitive ability). Raven's Standard Progressive Matrices (Raven, Raven, & Court, 1998) was used as a measure of intelligence. This study adopted the Chinese urban version edited by Zhang, et al. (1989), whose reliability and validly are well supported by research (RSPM – CR National Cooperation Group, 1989).

Personality traits. Openness was measured using an adapted elementary school version of the Questionnaire of Five Personality Factors (Xiang, Zhang, & Zou, 2006; Zhou et al., 2000), which was based on the big-five model of personality and adapted from the NEO-PI-R questionnaire (Costa & McCrae, 1992). The measurement used a 5-point scale, ranging from (5) *very much like me* to (1) *not like me at all*. According to the technical report of this Chinese version, Cronbach alpha for this questionnaire is .68–.89, internal consistence (spit half) coefficient .90. Correlation coefficients with the revised Chinese version of the NEO-PI-R range .59–.75, indicating good concurrent validity. To ensure that the questionnaire is fit to be used for upper graders in primary schools, the researchers conducted a pilot test with 12 primary school students. The result suggests the viability of using the questionnaire for this age group. The Cronbach's α is .88 for this sample.

Family SES. Self-reported parent occupations and education levels were used to estimate SES. In this study, the demographic questionnaire asked participants to self-report parents' occupations and education levels, and this study adopted relevant occupation category criterion (Lin & Bian, 1991) in coding parent occupation grades and this occupation grade and education level were combined to generate a composite index of SES.

Classroom climate. This is a measurement developed by Zhang and Lin (2001), 40 items in total, comprised of four dimensions: teacher support, classmate support, levels of satisfaction, and cohesion. It is a 5-point Likert scale, ranging from (1) *strongly disagree* to (5) *strongly agree*. According to Zhang and Lin, Cronbach alpha for the 4 subscales range from .82 to .88, and is .94 at the composite level, showing good psychometric properties when used with children and adolescents. In this study, its Cronbach's α is .91 for the whole and .68–.78 for the 4 subscales.

Results

The correlation matrix of migration duration, creative inclinations, and environmental, personality variables are presented in Table 7.

To test the proposed theoretical model, this study conducted a structural equation modeling using AMOS

TABLE 7
Interorrelations of Variables in Study 2

Variables	*2*	*3*	*4*	*5*	*6*
1. Creative inclinations	.099*	.074	.295***	.127**	.509***
2. Migration duration		.121*	.094	.097*	.033
3. Socioeconomic status			.121*	.199***	.191***
4. Classroom climate				.187***	.279***
5. Intelligence					.045
6. Openness					

***$p < 0.0001$. **$p < 0.01$. *$p < 0.05$.

TABLE 8
The Summary of Direct and Indirect Effect of Each Factor on Creative Inclinations in the Trimmed Model

Variance	*Direct Effect*	*Indirect Effect*	*Sum of Effects*
Intelligence	.07	0	.07
Openness	.46	0	.46
Family socioeconomic status	0	.12	.12
Classroom	.14	.13	.27
Migration duration	.06	.01	.07

4.0 with the method of Maximum Likelihood to build a path model specifying direct and indirect effects of migration duration on creative inclinations. Several revisions resulted in a trimmed model presented in Figure 1. Judged by criteria for evaluating the data-model fit (Wen, Hau, & Marsh, 2004), the model has acceptable fit indexes ($\chi^2 = 7.01$, $\chi^2/df = 1.40$, NFI = .99, .99, CFI = 1.00, RMSEA = .031). The results of this path modeling are presented in Figure 1.

Direct and indirect effects of environmental and personal factors on creative inclinations are summarized in Table 8. It indicated that that migration duration had a direct effect on creative inclinations (path coefficient: .06), and also had indirect effects mediated by family SES, and further by cognitive ability and openness. However, the magnitude of effects of migration duration on creative inclination seems limited, with a total effect value lower than that in another study (Shi et al., 2012) concerning its effect on creative thinking.

Discussion

In building and testing this theoretical model, this study assumed that migration duration and creative inclinations may represent a compounding, rather than directly causal, relationship. That is, the real cause is not migration per se, but certain environmental variables or changes brough about by migration. Thus it is important that migration status or duration is not studied as a sufficient condition for certain developmental changes of interest, but serve as a marker of deeper environmental changes, such as changes in SES and educational environments, and changes in cognitive ability and personality such as openness, which in turn can influence creative inclinations. The direct effect of migration could be interpreted as reflect changes in life style, physical environment, and subcultural values; it is conceivable that as children become more open and knowledgeable, their creative potential also tend to increase. The indirect effect through SES can be interpreted as an effect of migration on changes in general home environment. In sociological research, the primal measurement of family environment mainly focuses on family SES, which reflects individuals' family backgrounds and amounts of social capital available to the family. Jeynes (2002) suggested that SES was not a simple catch-all variable. It not only indicated a family's economic condition and education levels, but also reflected individual personality traits and environmental characteristics, including intelligence, industriousness,

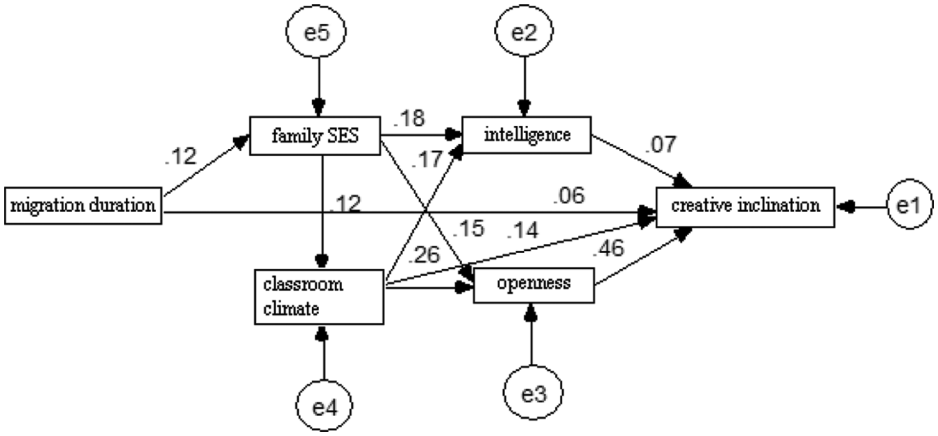

FIGURE 1 The results of a path model predicting direct effects of migration duration on creative inclinations and indirect effects through contextual and personality factors.

resolve, aspiration, encouragement from adults, and even marriage. For instance, Cassidy and Lynn (1991) conducted a longitudinal study and found that individual's intelligence, achievement motivation, extraversion, psychological stability and parental encouragement at the age of 16 effectively predict family SES at the age of 23. Hence, SES does not just represent a family's economic condition and education level; it also reflects many personality characteristics of one's parents and even grandparents, and their relationships, and the general home environment they created. Thus it is not surprising that SES in this study predicts other environmental factors such as classroom environment; it also predicts cognitive ability and personality (e.g., openness), and furthermore has both direct and indirect effects on creative inclinations. Studies using interviews on migrant children and parents (e.g., Zhang, Qu, & Zou, 2003) suggest that the migrant population differs enormously in economic earnings, which has an impact on many aspects of children development, such as the opportunity of entering a public school or good special schools for migrant children, attendance in after-school tutoring classes, involvement in extracurricular activities. All these factors could influence the creativity inclinations of migrant children.

GENERAL DISCUSSION

This study represents a preliminary effort to understand how environmental experiences, resources, and opportunities might significantly influence children's personality development in terms of creative inclinations, operationalized as adventurousness, curiosity, imagination, and attitude toward challenge. The unique social context of migration to urban settings by millions of rural residents and their children provides a window of opportunity for investigating this issue. Theoretically speaking, migration from rural to urban settings should produce more positive outcomes in terms of the development of children's creative inclinations, not only because of the disparities of educational resources and opportunities between urban and rural areas in China, but also because of subcultural differences between rural and urban social contexts. As the capital of China, Beijing has one important psychological feature which called *strengths of the head*, means intellectual and self-focused strengths such as curiosity and creativity, residents of such city are experiential in their approach to life and are open to experience (Park & Peterson, 2010). In general, urban environments are more open and modernized, and they tend to encourage individuality and pursuit of one's imagination, passion, and identity. Indeed, being on the adventurous side is very much against the Chinese rural culture, which stresses the importance of fulfilling one's duties, being loyal to elders' conventional wisdom, and playing safe in one's endeavor (Dai, 2008; Dai & Shen, 2008). General findings of this study provide interesting, though circumscribed, supporting evidence for such a theoretical speculation. This study contributes to the literature not only in terms of positive evidence for the environmental influences on children's personality development, but also in terms of raising questions about the nature of urban migration. The migration status by grade interaction effects suggest that migration status and duration need to be considered in conjunction with specific social and educational contexts. For example, the social contexts and conditions for developing creative inclinations may be different for rural, migrant, and urban children. Thus, what happened to children with migration (e.g., early stage vs. later stage of acculturation) is more important than migration status or duration per se. An in-depth look at migrant children's daily lives and experiences is needed in future research.

Another important issue that warrants attention is that, although migrant children evidenced distinct gains in creative capabilities operationalized as fluency, flexibility, and originality on a traditional divergent thinking test (Shi et al., 2008), their gains or differences from their rural peers on the measures of creative inclinations are less dramatic, as shown in this study. Findings of increased creative thinking are consistent with Flynn Effect, which indicates that fluid intelligence rather than crystallized intelligence constitutes a more distinct gains on IQ tests over decades. However, why are changes in creative inclinations less distinct? Does it have anything to do migrant children's sense of personal agency such as self-concept and self-efficacy as creative agents? As we know, migrant workers and their children are a disadvantaged group in urban environments. Although they are exposed to a more open and modern society, and often get a more advanced education than otherwise possible, they are also vulnerable to discrimination and social prejudice. From the viewpoint of developing creative personality, migration may be a double-edge sword. Thus, the relationship between migration and development of creative inclinations is a complex one.

This study has some limitations that are worth discussion for the sake of making improvement in future research. First, although the study took advantage of the unique historical event of migration in China's modernization and urbanization process, and has good ecological validity, it cannot avoid the weaknesses of such a naturalistic ''quasi-experimental'' design, because various contextual variables other than migration status and duration were not subject to control. Although the stratified random sampling, along with the relative large sample size, tried to eliminate sampling biases, this study cannot be certain that extraneous variables did

not play a role in biasing the results. In other words, interpretational uncertainties exist despite the efforts of control.

Second, the measurements used in the study relied heavily on children's self-report, and relationships between predictor and criterion measures are not corroborated by independent sources of evidence. Although the literature this study reviewed supports the predicted relationships, the data are correlational; as a consequence, causality of the relationships investigated cannot be determined. Although it is practically difficult to gather evidence using a multi-trait, multi-method approach (Campbell & Fiske, 1959) with such a large sample, future research can zero in on specific topics but enlist multiple sources of data to build a stronger case. Third, because of the preliminary nature of the study, environmental and personality variables selected for this study were purported to be covary with the migration status and duration. These variables were meant to be representative of some key factors as having a bearing on creative inclinations, and carry a distinct exploratory flavor. Nevertheless, there may be other important variables unexplored and other mediating processes uncharted. More refined theorizing as well as more stringent research design and methodology is needed to continue this line of inquiry, as the topic is theoretically intriguing, and practically important.

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