

Differential outcomes of psychosocial development among local and mobile children in two school types in Beijing and Shanghai

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Abstract

Background: Adjustment of rural-to-urban migration in China is a challenge to mobile children and after-school activities can be an important resource to children's development of social support and resilience.

Objective: This study compared levels of social support and resilience of children with different migration status and school type. The influence of after-school activities on social support and resilience was examined simultaneously with the effect of school type.

Study group: A sample of 925 junior secondary 1–3 students from three Beijing and one Shanghai middle schools.

Methods: A cross-sectional survey design was adopted, using a self-administered questionnaire covering areas of gender, age, school type, migration status, after-school activities participation, and psychosocial measures on resilience and social support.

Results: One-way ANOVA showed that levels of social support and resilience were lower in mobile children and children studying in migrant schools. Multiple regression analyses identified several multivariately adjusted predictors of social support and resilience, including positive predictors of talking to parents and homework/studying and a negative predictor of electronic/online games. The grouping by activity interaction identified also suggested differential effects of activities on resilience and social support in the children.

Conclusions: After school education programs for mobile children are crucial to their positive adjustment in order to produce better development outcomes for urban living. Programmatic activities for mobile children should promote interaction with parents and studying, and prevent or minimize the opportunity to play electronic/online games.

Keywords: after-school activity; mobile children; psychosocial development; resilience; social support.

Introduction

Increasing rates of migration throughout the world have led to a growth of interest in the impact of migration on child development. About 10% of the population in the Chinese Mainland is rural-to-urban migrants (1–3) and they have moved to urban cities such as Beijing and Shanghai to pursue a better life (4). About 12% of this population is children of school age (5), but studies on child development as well as intra-national migration are relatively few (5–9). In the broad area of development, the adjustment needs of migrant children is an important topic and an understanding of the influence of migration on child adjustment can provide information on the design of intervention and education programs for these children which ultimately positively contribute to child development.

Theoretical models of adjustment in migrants posit social support and resilience-related psychological variables as factors for consideration (10, 11). Perceived social support was found to be a persistent and robust factor of psychosocial adjustment in a representative sample of new immigrants from Mainland China to Hong Kong, and showed a moderation effect on the impact of stressful life events on life satisfaction (12, 13). Migrants also had their social ties broken and face difficulties in establishing new social bonding in which support can be obtained (14). Other factors of psychosocial adjustment in migrants, including sense of control, fatalism, and expectation, were connoted in the resilience literature as personal competence, tolerance to negative affect, and positive acceptance of change (15, 16). Resilience in children of migrants can empower them to face adversities and to cope in prolonged and acute negative circumstances, as well as recovery from loss which is often associated with migration.

Developing resilience and social support in children of migrants can help them overcome the hurdles of migration, such as poor social support and a lack of hope in their new living environment. Understanding development from a strength perspective can instill positive changes and hope which a deficit perspective cannot attain (17). This is especially important to the study of development in children of migrants who should be given opportunities and hope to develop instead of providing only restorative measures (9, 18). Developmental psychologists also considered youths' time as a developmental resource for a wide range of faculties (19, 20), and

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participation in activities building positive relationships and social networks can provide children with opportunities to build life and social skills, and therefore better adjustment. Studying the association between activity participation and resilience and social support in children of migrants would help to provide evidence on the positive influence of constructive time use in these children and the mechanism likely to be responsible for this positive influence.

There are similarities and differences between intra-national and international migration (21). Both migrants of intra- and international migration usually move from less developed to economically advantaged areas. Difficulties and challenges from a new living environment may create stress and psychological problems in migrants and their children (6). However, problems arising from residency, language, and cultural background are fewer in intra-national migration. In the Chinese Mainland, children of migrants often stay in extremely impoverished schools set up by people who are often migrants themselves. These schools usually do not receive formal approval or license to operate from the government, and mostly provide poor quality education and with insufficient facilities (22). There are also children of migrants paying discriminatory fees to study in public schools, but promotion to senior forms in middle schools is restricted by the *hukou* system (household registration) (5, 22).

The study is among the first in the Chinese Mainland to examine the levels of resilience and social support, and after-school activity participation in a group of mobile children, who were children of intra-national migrants, and compare them with a group of local children. Several hypotheses were made based on theories of migration, the school environment of migrant schools, and after-school activity participation in adolescents. Firstly, it was hypothesized that migrant children showed lower levels of resilience and social support than local children. Furthermore, mobile children studying at the migrant schools would have lower resilience and social support than the children studying at the public schools. Secondly, that migrant children spent less time in constructive activity than local children. Specifically speaking, support from schools and families was less for migrant children and therefore, migrant children would spend less time in constructive activities like studying, but more time in helping parents or participation in passive activities such as watching television and playing computer games. Thirdly, it was hypothesized that participation in constructive activities associated positively with resilience and social support, whereas participation in passive activities associated negatively with the two outcomes. Interaction effects between children's migration and school types and after-school activities will be explored. This study intended to identify after-school activity participation patterns which show positive association with resilience and social support in the mobile children as well as the local children, and therefore, provide empirical evidence for the design of potentially useful programs to ameliorate the impact that an impoverished school environment and low activity participation have on child development (19, 20).

Methods

Questionnaires were administered to a sample of 1196 junior secondary 1–3 students from two local public schools and two schools for mobile children in 2008 and 2009. Students filled in the questionnaires in class and were asked to complete the questionnaires independently and carefully. The two schools for mobile children were located in two *chengzhongcun* (urban village) in Beijing, and the two local public schools were in the cities of Beijing and Shanghai. Due to the *hukou* system, mobile children and their families were not entitled to low-cost housing and free education in the cities. The living areas of *chengzhongcun* are scattered, with poor infrastructure and public facilities, though the rental price is relatively low and affordable to migrant workers (23).

After excluding cases missing on the studied variables of gender, age, school, migration status, after-school activities participation and psychosocial measures on resilience and social support, the studied sample was reduced to 925 students (77% of the whole sample). There were 506 boys and 419 girls (54.7% and 45.3% respectively), with a mean age of 14.28 (SD = 1.21). About 20% (n = 181) were local children studying in public schools. Of the 744 mobile children, 289 of them studied in public schools and 455 children studied in migrant schools. There was no association between gender and school but there were slightly more boys [$\chi^2(1, n=925)=5.44, p=0.02$] in the group of mobile children (56.6%) than in the local children group (43.4%). Small differences in children's mean age between public and migrant schools (0.38 years) and between local and mobile children (0.45 years) were observed, with mobile children and children in migrant schools older.

This study compared the levels of social support and resilience in children from three types of background (i.e., local children in public schools, mobile children in public schools, and mobile children in migrant schools). A resilience scale and a social support scale were used to indicate their level of development in these two aspects. After-school activities as an important resource from the strength perspective of adolescent development were also recorded.

Resilience

In this study, four items from the Connor Davidson Resilience Scale (15) were used to assess the level of resilience in the students. The four selected items were "Can handle unpleasant feelings", "When things look hopeless, I don't give up", "Can deal with whatever comes", and "Past success gives confidence for new challenge". These items belong to the factors on personal competence, tolerance to negative affect, and positive acceptance of change. The Cronbach's α of these items in the studied sample was 0.67. The level of resilience was indicated by the mean of the four item scores.

Perceived social support

The Chinese version of the Multidimensional Scale of Perceived Social Support (MSPSS-C) (24, 25) was used to measure the level of perceived social support in the students. The original scale of a three-factor structure (perceived support from family, friends and significant other) was developed and validated by Zimet and colleagues (26) but a two-factor structure solution (perceived support from family and friends) was found suitable to adolescent in Hong Kong (25). All items were rated on a 7-point scale from strongly disagree to strongly agree. The Cronbach's α of the family and friend subscales in the studied sample were 0.84 and 0.91. The level of perceived social support from family and friends were indicated by the mean subscale scores.

After-school activities

Students responded to the 13 after-school activities by stating the average number of hours and minutes they spent on each every day over a week. The activities recorded were: alone at home, watching television, after-school sports, talking to parents, school activities, playing electronic games/online at home, playing electronic games/online outside (of home), wandering, homework/studying, housework, helping parents' work, talking/interacting with friends (excluding playing electronic games), and leisure reading.

Data analysis

One-way ANOVAs were performed to see if levels of resilience and social support were different across three groups of students of different migration (local vs. mobile) and school (public vs. migrant) types. Post-hoc comparisons using Tukey HSD and Dunnett C tests were performed for variables showing significant group differences. Correlation analysis was used to identify after-school activities showing significant correlation with psychosocial developmental outcomes. After-school activities showing significant correlation with outcomes were further studied using hierarchical stepwise regression analyses after the effects of age, gender, and children's migration and school types were entered into the model. The background variable was dummy coded with local children studying at public school as the reference group. Interaction of after-school activities and school type was also examined.

Results

The levels of psychosocial development, as indicated by resilience and family and friend social support as well as

participation in various after-school activities, were compared among the three groups of children with different migration and school types (Table 1). Significant group differences on resilience and family and friend social support were found [$F(2, 922) = 12.68, 8.93, \text{ and } 6.33$, respectively, $p < 0.01$]. The findings support the first hypothesis. Consistent with the migration literature on children, mobile children studying at migrant schools showed the lowest levels of resilience and family and friend social support. Mobile children studying at public schools also showed lower family and friend social support than local children, suggesting the negative association of social support with migration status. On the other hand, the level of resilience in mobile children studying at public schools was not significantly different from their local counterparts, suggesting the positive association of resilience with school setting.

Children spent more time on homework/studying and watching television, followed by talking/interacting with friends, leisure reading, and after-school sports. They spent on average less than 1 h per day on the other activities. Among the 13 after-school activities, significant group differences were observed in watching television, playing electronic games/online at home, homework/studying, housework, helping parents' work, and leisure reading [$F(2, 922) = 5.17, 6.91, 11.56, 14.45, 18.75, \text{ and } 4.54$, respectively, $p \leq 0.01$]. Mobile children spent significantly more time on housework but less time playing electronic games/online at home than local children. Mobile children studying in migrant schools also spent more time helping parents' work and watching television. However, mobile children studying in public schools

Table 1 Comparisons of psychosocial development and after-school activities in children of different migration and school types.

Variables	Overall Mean (SD)	Groups			F	p-Value	Comparisons ^b
		A	B	C			
		Mean (SD)	Mean (SD)	Mean (SD)			
Resilience	3.52 (0.77)	5.32 (1.15)	5.07 (1.23)	4.80 (1.24)	12.68	<0.01	A, B>C
Social support – family	4.78 (1.34)	3.65 (0.81)	3.61 (0.77)	3.41 (0.75)	8.93	<0.01	A>B, C
Social support – friend	4.99 (1.23)	5.09 (1.34)	4.70 (1.39)	4.70 (1.30)	6.33	<0.01	A>B>C
Alone at home	2.33 (3.28)	2.42 (3.26)	2.22 (3.03)	2.38 (3.43)	0.31 ^a	0.73	–
Watching television	1.53 (1.71)	1.24 (1.31)	1.47 (1.37)	1.68 (2.01)	5.17 ^a	0.01	C>A
After school sports	1.09 (1.33)	1.08 (1.30)	1.06 (0.99)	1.11 (1.51)	0.12 ^a	0.89	–
Talking to parents	0.52 (0.80)	0.56 (0.93)	0.50 (0.73)	0.51 (0.80)	0.36 ^a	0.70	–
School activities	0.70 (1.55)	0.62 (1.09)	0.60 (1.28)	0.81 (1.82)	1.95 ^a	0.14	–
Playing electronic games/online at home	0.98 (1.78)	1.48 (2.20)	0.80 (1.40)	0.89 (1.78)	6.91 ^a	<0.01	A>B, C
Playing electronic games/online outside	0.67 (1.35)	0.62 (1.14)	0.76 (1.61)	0.62 (1.23)	0.85 ^a	0.43	–
Wandering	0.78 (1.19)	0.72 (1.10)	0.73 (1.13)	0.84 (1.25)	1.01 ^a	0.36	–
Homework/studying	1.76 (1.53)	2.03 (1.22)	1.97 (1.24)	1.52 (1.75)	11.56 ^a	<0.01	A, B>C
Housework	0.72 (0.95)	0.48 (0.56)	0.67 (0.71)	0.84 (1.17)	14.45 ^a	<0.01	B, C>A
Helping parents' work	0.66 (1.27)	0.33 (0.70)	0.49 (0.73)	0.89 (1.62)	18.75 ^a	<0.01	C>A, B
Talking/interacting with friends	1.06 (1.68)	1.03 (1.55)	1.01 (1.49)	1.11 (1.83)	0.39 ^a	0.68	–
Leisure reading	1.30 (1.43)	1.11 (0.91)	1.42 (1.42)	1.30 (1.59)	4.54 ^a	0.01	B>A

A, local students at public schools; B, mobile students at public schools; C, mobile students at migrant schools. ^aHomogeneity of variances assumption was not achieved and the Welch F was used. ^bPost-hoc procedures (Tukey HSD for homogeneity of variances assumed and Dunnett C for not assumed) were applied for pairwise mean comparisons.

Table 2 Correlations of psychosocial development variables with after-school activities (n=925).

	Resilience	Social support-family	Social support-friend
Alone at home	0.01	-0.05	-0.05
Watching television	-0.05	-0.05	-0.06
After school sports	0.09 ^a	0.02	0.05
Talking to parents	0.05	0.23 ^a	0.07 ^b
School activities	0.01	0.06	0.04
Playing electronic games/online at home	-0.06	-0.04	-0.02
Playing electronic games/online outside	-0.11 ^a	-0.09 ^a	-0.01
Wandering	-0.05	-0.03	0.03
Homework/studying	0.11 ^a	0.10 ^a	0.13 ^a
Housework	0.07 ^b	0.01	0.04
Helping parents' work	-0.02	-0.04	-0.03
Talking/interacting with friends	-0.04	-0.01	0.05
Leisure reading	0.07 ^b	-0.03	0.04

^ap<0.01; ^bp<0.05.

spent more time on homework/studying and leisure reading. Among the mobile children, differences between those studying at public and migrant schools were found in resilience, social support from friends, and time spent on homework/studying. Mobile children studying at public schools were showing better outcomes and more constructive time uses than those studying at migrant schools (Table 1). The differences in after-school activity participation may suggest the different resources accessible to the different groups of children. The findings support the second hypothesis, and in addition, pointing to the importance of school setting relative to migration status.

Potential after-school activity predictors of psychosocial development were identified by a correlation analysis (Table 2). Homework/studying showed consistent positive correlation with resilience and family and friend social support [r (925) ranged from 0.10 to 0.13, p<0.01]. Playing electronic games/online outside was negatively related to resilience and family social support [r (925)=-0.11 and -0.09, p<0.01]. Talking to parents was positively correlated with family and friend social support [r (925)=0.23, p<0.01 and r (925)=0.07, p<0.05]. After-school sports [r (925)=0.09, p<0.01], housework [r (925)=0.07, p<0.05], and leisure reading [r (925)=0.07, p<0.05] were positively associated with resilience. The findings support the third hypothesis linking constructive after-school activity and psychosocial development.

After-school activities with significant correlation were tested in the hierarchical stepwise regression analyses for their adjusted effect after controlling for demographic variables of gender, age, and background. Separate hierarchical stepwise regression models were built for resilience, family social support, and friend social support (Table 3). Migration status was a significant predictor in all three models [resilience: b=-0.32, t (916)=-4.49, p<0.01; family social support: b=-0.33, t (916)=-2.88, p<0.01; friend social support: b=-0.46, t (916)=-4.19, p<0.01]. School type was a significant predictor of family social support [b=-0.54, t (916)=-3.90, p<0.01] and friend social support in children

[b=-0.23, t (919)=-2.00, p<0.05], but not resilience. These results were consistent with the results from group comparison analyses.

Among the five after-school activities showing significant correlations with resilience, playing electronic games/online outside [b=-0.12, t (916)=-4.79, p<0.01], housework [b=0.07, t (916)=2.67, p<0.01], and leisure reading [b=0.04, t (916)=2.34, p<0.05] were identified as multivariately adjusted predictors and a background by playing electronic games/online outside interaction was found [b=0.10, t (916)=2.44, p<0.05]. The negative association between playing electronic games/online outside and resilience was stronger in local children studying in public school and as observed from the results of group comparisons, this group of children also showed a higher level of participation in playing electronic games/online at home.

All the three tested after-school activities were multivariately adjusted predictors of family social support. Talking to parents [b=0.29, t (916)=4.61, p<0.01] and homework/studying [b=0.06, t (916)=2.18, p<0.05] predict higher levels of family social support whereas playing electronic games/online outside [b=-0.10, t (916)=-2.98, p<0.01] predicts lower levels of family social support. A background by talking to parents interaction was also identified [b=0.34, t (916)=2.84, p<0.01]. The protective effect of talking to parents on family social support was stronger in mobile children studying in public schools. Besides, homework/studying [b=0.09, t (919)=3.17, p<0.01] was the only significant multivariately adjusted after-school activity predictor of friend social support.

Discussion

The hierarchical regression analyses confirmed the negative association of migration background and school settings with psychosocial development. Furthermore, multivariately-adjusted associations between after-school activities and psychosocial development were found. More time spent on

Table 3 Separate hierarchical stepwise regression models for resilience, family social support and friend social support.

	Resilience		Social support-family		Social support-friend	
	b	SE	b	SE	b	SE
Step 1. Demographic variables						
Gender	0.12 ^a	0.05	n.s.		n.s.	
Age	n.s.		n.s.		n.s.	
Dummy 1 – (Migrant – public)	n.s.		–0.54 ^b	0.14	–0.23 ^a	0.12
Dummy 2 – (Mobile – local)	–0.32 ^b	0.07	–0.33 ^b	0.12	–0.46 ^b	0.11
Step 2. After-school activity variables						
After-school sports	n.s.		–		–	
Talking to parents	–		0.29 ^b	0.06	n.s.	
Playing electronic games/online outside	–0.12 ^b	0.02	–0.10 ^b	0.03	–	
Homework/studying	n.s.		0.06 ^a	0.03	0.09 ^b	0.03
Housework	0.07 ^b	0.03	–		–	
Leisure reading	0.04 ^a	0.02	–		–	
Step 3. School types by after-school activity interaction						
Dummy 2×Playing electronic games/online outside	0.10 ^a	0.04	–		–	
Dummy 1×Talking to parents	–		0.34 ^b	0.12	–	
Adjusted R ²	0.05		0.08		0.04	

electronic games/online outside (of home) could produce a negative influence on resilience and family social support. Potential positive influences of after-school activities were also found. As suggested from the results, housework and leisure reading could promote resilience, homework/studying could promote family and friend social support, and talking to parents could promote family social support.

The results of significantly lower levels of resilience and social support among mobile children corroborated with the relatively fewer studies on the negative influence of migration on children (5–9), especially those studying in migrant schools operated under extremely impoverished conditions and resource levels relative to standards set by the government (22). Migration is considered as a stressful experience to children because children are more vulnerable and at risk in psychosocial development (8). In a new environment after migration, mobile children have to overcome changes and challenges from their families, schools, and the neighborhood. Their parents have to work long hours in order to make ends meet. Support from parents of mobile children was relatively less than for the local children as mobile children spent more time on housework and helping with housework left behind by parents. Communication with parents was generally low (about 30 min each day on average) in all studied children. The impoverished migrant schools in which mobile children studied and the neighborhood areas in which they lived are both with insufficient facilities (22, 23). Mobile children in migrant schools spent more time watching television than local children and less time on homework/studying than children in public schools.

Although the language barrier was not a problem to children of intra-national migrants, difficulties faced in study were still prominent among the mobile children (27). The negative influence migration background and impoverished school settings have on the levels of resilience and social support in

children, as well as low level of after-school activities participation, indicated the importance of systematically providing facilitative measures to mobile children studying in migrant schools in after-school activities participation.

Local children spent more time playing electronic games/online at home than mobile children. When combining the time spent on playing electronic games/online both at home and outside, the amount of time spent on this activity was the highest among all children. Much of children's leisure time was consumed by computer games and the Internet and its negative influence on psychosocial development has been clearly demonstrated (28–31). Mobile children who have lower levels of social support may spend their time building weak ties through the Internet, or time for constructive social activities is displaced by computer games, as suggested by the “rich-get-richer” or “poor-get-poorer” effect (29, 30). The negative influence of computer games on children has become a national concern in the Chinese Mainland (32). Time spent on playing electronic games/online outside was found to show a unique predictive capability on the levels of resilience and family social support, and local children were at an accelerated risk of poorer resilience when they spent more time playing electronic games/online outside of home. This finding confirmed the negative influence of computer and online games and ways to reduce such time usage have to be identified and promoted in both local and mobile children.

Resilience and social support, as well as constructive use of time, are important assets to child development (33, 34) and they are also an important factor of adjustment in children of migrants (10, 11). In the present study, 13 after-school activities were studied and their predictive power on the levels of resilience and social support were demonstrated. Apart from the negative association of playing electronic games/online outside of home, positive predictors of resilience and social

support were found from the hierarchical stepwise regression analyses.

Talking to parents showed a strong and unique positive association with family social support, whereas homework/studying were associated with both family and friend social support. As discussed earlier, the time spent talking to parents in all studied children was relatively low and given the positive effect of this activity, programs promoting family interaction and relationships appeared to be essential for child development. More time spent on homework/studying also showed unique association with social support of family and friends. It is possible that children reported higher support from family and friends because they received help and assistance in homework from them, or because homework/studying was a medium for more interaction with family and friends and hence, receiving more support from them.

Furthermore, mobile children studying in migrant schools spent significantly less time on homework/studying and more time on watching TV and helping in housework or parents' work when compared to local students. They also showed the lowest social support and resilience. The possible mechanism might be the lack of time and resources in migrant families for parents to participate in and provide homework/studying support to their children. The poor education quality received by children studying in migrant schools and the often unstable conditions in facilities and teacher resources of migrant schools might also contribute to the less time spent on homework/studying and the building up of stable friendship among mobile children. Further studies with follow-up data over time are required to clarify the precise relations between school environment, learning experience, and psychosocial development of children in migration.

After-school time use in children is an important topic in developmental research and has strong implications for education and social policy. Constructive use of after-school time is an important developmental asset to child development, although time spent on structured leisure activities in East Asian youths was consistently less than that in the West (35). Structured leisure activities and activities settings are an important context for development (19, 36) which should be promoted among children in China. It is especially valuable to children of migrants in preventing psychological and behavioral problems, and promoting better developmental outcomes. Mobile children may spend most of their time at home and they lack other leisure activity options for constructive time use in a relatively poor education and living environment.

Physically and mentally challenging activities may be targeted at children who have demonstrated inferior levels of resources for development. Providing a very important non-parent adult to adolescents allows adolescents to build relationships and have high frequency contact and receive quality social support (37). A local adult mentor to mobile children will facilitate adaptation and acculturation of mobile children, which is important to their psychological well-being (9). Mentorship programs usually include provision of structured leisure activities to children, such as exposure to community facilities and providing homework/studying assistance, which can enhance their physical, psychological, and social development (6).

There are several limitations to this study. Firstly, the cross-sectional design of this study cannot imply any causal relationship between the predictor variables and the outcome variables, although migration status and school background should be considered to affect the resilience and social support of the children. Secondly, there were other after-school activities which had not been included in our study, such as religious or other programmatic activities. These other constructive activities could produce a positive influence on resilience and social support in children of disadvantaged backgrounds and future study in the development of mobile children should consider studying them. Thirdly, this study only looked into mobile and local children from the two main cities in China and might not be generalizable to other cities in China of a different stage of development and importance. Lastly, the small-to-medium effect sizes in the regression models of resilience and social support would suggest that other important predictors of outcomes were not included in this study. The level of resilience and social support in children therefore could only partially be explained by the migration and school backgrounds, and the studied after-school activities in the children.

Implications

Migration background and impoverished school environments are static factors or markers of negative outcomes in mobile children studying at migrant schools. The lower levels of resilience and social support in this group of children indicate the importance of building assets in them. Differences in time spent on after-school activities, as an important asset, further suggest a need for positive development in children of migrants. The negative influence from long hours spent on computer games and being online has to be minimized by reducing time spending on such activities, or promoting participation in other constructive activities. Intervention that promotes thriving and positive development in youth, under the developmental framework of person-context interaction, should be integrated with the traditional prevention-oriented framework in the consideration of designing an intervention strategy (17). Programs promoting parent-child communication and relationships should be provided to children in order to enhance their resilience and family social support. The benefits of programmatic activities such as mentorship programs to mobile children should be of priority interest to child development research and policy agendas on children in migration.

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References

- Hu XJ, Cook S, Salazar MA. Internal migration and health in China. *Lancet* 2008;372:1717–9.
- Zhu Y. China's floating population and their settlement intention in the cities: beyond the Hukou reform. *Habitat Int* 2007; 31:65–76.
- Li X, Stanton B, Fang X, Lin D. Social stigma and mental health among rural-to-urban migrants in China: a conceptual framework and future research needs. *World Health Populat* 2006;8: 14–31.
- Wong DF, Chang Y, He X, Wu Q. The protective functions of relationships, social support and self-esteem in the life satisfaction of children of migrant workers in Shanghai, China. *Int J Soc Psychiatry* 2010;56:143–57.
- Liang Z, Chen YP. The educational consequences of migration for children in China. *Soc Sci Res* 2007;36:28–47.
- Hjern A, Bouvier P. Migrant children: a challenge for European paediatricians. *Acta Paediatr* 2004;93:1535–9.
- Lu Y. Educational status of temporary migrant children in China: determinants and regional variations. Annual Meeting of the Population Association of America; 2006 Mar 30–31; Los Angeles, CA, 2006:29–55.
- Aronowitz M. The social and emotional adjustment of immigrant children: a review of the literature. *Int Migr Rev* 1984;18: 237–57.
- Berry JW, Phinney JS, Sam DL, Vedder P. Immigrant youth: acculturation, identity, and adaptation. *Appl Psycho-Int Rev* 2006;55:303–32.
- Bhugra D. Migration and depression. *Acta Psychiatr Scand* 2003;108:67–72.
- Berry JW. Immigration, acculturation, and adaptation. *Appl Psycho-Int Rev* 1997;46:5–34.
- Chou KL. Pre-migration planning and depression among new migrants to Hong Kong: the moderating role of social support. *J Affect Disord* 2009;114:85–93.
- Young MY. Moderators of stress in Salvadoran refugees: the role of social and personal resources. *Int Migr Rev* 2001;35:840–69.
- Rogler LH. International migrations: a framework for directing research. *Am Psychol* 1994;49:701–8.
- Connor KM, Davidson JR. Development of a new resilience scale: the Connor-Davidson resilience scale (CD-RISC). *Depress Anxiety* 2003;18:76–82.
- Howard S, Dryden J, Johnson B. Childhood resilience: review and critique of literature. *Oxford Rev Educ* 1999;25:307–23.
- Schwartz SJ, Pantin H, Coatsworth JD, Szapocznik J. Addressing the challenges and opportunities for today's youth: toward an integrative model and its implications for research and intervention. *J Primary Prev* 2007;28:117–44.
- Berry JW. A psychology of immigration. *J Soc Iss* 2001;57: 615–31.
- Larson RW, Verma S. How children and adolescents spend time across the world: work, play, and developmental opportunities. *Psychol Bull* 1999;125:701–36.
- Larson RW. Toward a psychology of positive youth development. *Am Psychol* 2000;55:170–83.
- Tassinopoulos A, Werner H, Kristensen S. Mobility and migration of labour in the European Union and their specific implications for young people. Thessaloniki: European Centre for the Development of Vocational Training, 1998.
- Human Rights in China (HRIC). Shutting out the poorest: discrimination against the most disadvantaged migrant children in city schools. New York, 2002 May 8.
- Tang WS, Chung H. Rural-urban transition in China: illegal land use and construction. *Asia Pac Viewpoint* 2002;43:43–62.
- Cheng ST, Chan AC. The multidimensional scale of perceived social support: dimensionality and age and gender differences in adolescents. *Pers Individ Differ* 2004;37:1359–69.
- Chou KL. Assessing Chinese adolescents' social support: the multidimensional scale of perceived social support. *Pers Individ Differ* 2000;28:299–307.
- Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. *J Pers Assess* 1988;52:30–41.
- Wong DF. Differential impacts of stressful life events and social support on the mental health of Mainland Chinese immigrant and local youth in Hong Kong: a resilience perspective. *Br J Soc Work* 2008;38:236–52.
- China Internet Network Information Center (CNNIC). Internet addiction is the biggest threat to healthy development in adolescents from the Internet. Available at: http://research.cnnic.cn/html/index_75.html. Accessed: June 30, 2010.
- Kraut R, Kiesler S, Boneva B, Cummings J, Helgeson V, Crawford A. Internet paradox revisited. *J Soc Iss* 2002;58:49–74.
- Selfhout MH, Branje SJ, Delsing M, ter Bogt TF, Meeus WH. Different types of Internet use, depression, and social anxiety: the role of perceived friendship quality. *J Adolesc* 2009;32:819–33.
- Subrahmanyam K, Greenfield P, Kraut R, Gross E. The impact of computer use on children's and adolescents' development. *J Appl Dev Psychol* 2001;22:7–30.
- China Internet Network Information Center (CNNIC). Online game brings the largest harm to adolescents. Available at: <http://research.cnnic.cn/html/1244618125d577.html>. Accessed: June 30, 2010.
- Fergus S, Zimmerman MA. Adolescent resilience: a framework for understanding healthy development in the face of risk. *Annu Rev Public Health* 2005;26:399–419.
- Roth J, Brooks-Gunn J. Promoting healthy adolescents: synthesis of youth development program evaluations. *J Res Adolesc* 1998; 8:423–59.
- Larson RW. How US children and adolescents spend time: what it does (and doesn't) tell us about their development. *Curr Dir Psycho Sci* 2001;10:160–4.
- Eccles JS. Student council, volunteering, basketball, or marching band: what kind of extracurricular involvement matters? *J Adolescent Res* 1999;14:10–43.
- Beam MR, Chen C, Greenberger E. The nature of adolescents' relationships with their "Very Important" nonparental adults. *Am J Community Psychol* 2002;30:305–25.