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Poverty and quality of life of Chinese children: From the perspective of deprivation

Wong Y.-C., Wang T.-Y., Xu Y. Poverty and quality of life of Chinese children: From the perspective of deprivation

Using data from the *Family and Children Survey of Beijing 2011*, the authors constructed a child poverty measure – Child Deprivation Indicators (CDIs) – and explored the relationship between poverty and children's quality of life. The CDIs were found to be a more valid child poverty measure than the conventional measure which is based mainly on individuals' social assistance status. The findings show that deprived children are worse off in terms of living conditions. Furthermore, deprived boys and girls are disadvantaged differently; boys in self-efficacy and girls in physical development. The findings have four important implications: (i) policy makers should look beyond those on social assistance; (ii) more public funding should be invested in deprived children's informal education and social interaction; (iii) dealing with structural problems relating to parents' socioeconomic status (SES) would be helpful to alleviate child deprivation; (iv) different types of support should be provided to deprived boys and girls for their disadvantages are not identical.

Yu-Cheung Wong[1], Ting-Yan Wang[2], Yuebin Xu[3]

[1] The Chinese University of Hong Kong, Hong Kong
[2] The University of Hong Kong, Hong Kong
[3] Beijing Normal University, Beijing, China

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Ting-Yan Wang, Department of Social Work and Social Administration, Jockey Club Tower, The University of Hong Kong, Hong Kong 999077
E-mail: wangty-1987@163.com

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It has been well documented, both in academic work and the reports of international organisations, that growing up in poverty may have irreversibly detrimental effects on children's well-being and development (Brooks-Gunn & Duncan, 1997; Duncan, Brooks-Gunn, & Klebanov, 1994; Gordon, Nandy, Pantazis, Pemberton, & Townsend, 2003; Gordon, Pantazis, & Townsend, 2001; Harper, Marcus, & Moore, 2003; Oshio, Sano, & Kobayashi, 2010; Smith, Brooks-Gunn, & Klebanov, 1997; UNICEF, 2012). Because of their young age and dependence on adults, and being at a crucial stage of development, children may be seriously disadvantaged in many aspects of their lives, including physical and mental health, cognitive development, academic performance, social adjustment and even labour force participation in adulthood, by living in a poor environment (Bradshaw, 2001; Conger, Conger, & Elder, 1997).

However, Chinese academics and policy makers have not paid sufficient attention to the issue of child poverty, especially urban child poverty. The reason for this is due partly to the dual system in China. Since the foundation of the People's Republic of China, a disproportionately large share of resources has been allocated to urban areas, with relatively little going to rural areas. Consequently, people in cities and towns have had a relatively comprehensive social security system covering health care, education, pension, social assistance, unemployment and so on, whereas their rural counterparts have been exposed to various life risks without appropriate public security. Because of their extreme and absolute hardship, poor children in rural areas have received much academic and policy attention (see e.g. Tao & Luan, 2011). However, since the 1990s, along with the reconstruction of the economy, hundreds of thousands of urban workers have been laid off from state-owned enterprises (Wong, Chen, & Zeng, 2014), and the urban poverty issue has become increasingly severe (Leung & Xu, 2010). As a result, the urban child poverty issue has for the first time become the focus of people's concern.

Despite this change, domestic child poverty research in China has developed fairly slowly during the past two decades, both in terms of quantity and quality. To date, fewer than 10 empirical studies on the urban child poverty issue have been carried out in China. Except for the work of Tang and colleague (Tang, 1998; Zhang & Tang, 2009) and Tao and his student (Tao & Luan, 2011), most of these studies are too weak in terms of methodology to be used as reliable references. For example, some studies are vague in their definitions and measurements of poverty while others are unclear in their sampling procedures or arbitrary in drawing conclusions. In addition, the focus of domestic urban child

poverty studies has been limited to describing children's living conditions and making general policy suggestions. Research that looks further into the association between poverty and children's outcomes is rare in China.

Among the methodological limitations of previous domestic studies, the most problematic one is that they did not have a valid child poverty measure. Having an appropriate measure is the prerequisite for conducting any social science empirical study. This is particularly true for the study of child poverty because different poverty definitions or measurements can generate different results regarding the number and characteristics of poor children. For instance, some studies have found that the overlap between poor children identified by income poverty measures and those identified by deprivation measures is never perfect (Fusco, Guio, & Marlier, 2010).

In that there is no official poverty line in urban China (Xiao, 2009), nor a child-specific poverty measure, researchers have usually defined and measured child poverty according to the beneficiary status of children's families' under the Minimum Living Standard Guarantee Scheme (MLSGS, or *dibao* 低保 in Chinese) (Tao & Luan, 2011; Zhang & Tang, 2009). *Dibao* is a means-tested social assistance programme in China providing cash assistance to needy families (Leung & Xu, 2009; Xu, 2008; Zhang, 2012). Families with a per capita income falling below the *dibao* assistance standards set up by local governments are eligible to apply for the benefits (Leung & Xu, 2009; Xu, 2008; Zheng, 2008, p. 154). According to this definition of poverty, if a child lives in a family which is on *dibao*, he or she will be identified as a child living in poverty.

Dibao has long been criticised for its low benefit level. There is an explicit principle that the assistance standard should not be set higher than that of other social protection programmes, such as unemployment benefit and minimum wage (Leung & Xu, 2009). The financial capacity of the local government is another factor determining the assistance level because *dibao* is financed by local government (Leung & Xu, 2009). As a result, the *dibao* assistance levels have always been extremely low. Zhang and Tang (2005) estimated that the average *dibao* assistance standard of the cities in their study was even lower than average residents' expenses on food consumption. The situation has not changed much over the past decade. Because of the low assistance standard, the conventional approach has to a large extent underestimated the extent and severity of child poverty in urban China. According to Zhang and Tang's (2009) report, children in urban *dibao* families accounted for only around 1 per cent of the whole urban population in 2007. A great number of children in hardship have been excluded from the officially sanctioned policy targets, and thus have received little help to alleviate their plight.

Against such a background, the authors of this article constructed a child poverty measurement for the context of China – Child Deprivation Indicators (CDIs) – that can provide a multidimensional and child-specific lens to examine which children are really poor, how many of them there, are and what they are experiencing. So child poverty in the present study is based on the concept of deprivation and measured by the CDIs.

As mentioned above, another limitation of previous domestic studies on urban child poverty is that they did not examine the association between poverty and children's development outcomes. However, only on the basis of robust and precise evidence can we effectively alleviate and eventually eradicate child poverty. Western scholars have made considerable efforts in this area, and their work could provide us with valuable experience and clues. It is well recognised that children of different ages have different indicators of well-being, and so they are affected by poverty in different ways (Brooks-Gunn, Duncan, & Maritato, 1997). For example, suffering from economic hardship during infancy might result in lower cognitive functioning, while adolescents living in poor families will be at higher risk of experiencing social and emotional problems and academic failure (Brooks-Gunn et al., 1997; Conger, Ge, Elder, Lorenz, & Simons, 1994). There are also gender differences in the patterns of the impact of poverty on children's outcomes; this means that boys and girls respond to poverty differently (Conger et al., 1992). Furthermore, wide evidence supports the arguments that negative child development outcomes might not be caused by poverty itself but by some other relevant factors such as parents' education level and the employment status of the family head (Bradley & Corwyn, 2002; Corcoran & Chaudry, 1997; Whiteford & Adema, 2007), and that poverty might not influence children's outcomes directly but rather indirectly through various mediators, such as family economic stress, negative parenting and parents' mental health problems (Guo & Harris, 2000; Lam, 2011; McLoyd, 1990). Only when these complications are soundly documented can we design effective policies and programmes to help children in poverty.

The present study is an endeavour in this direction. Considering the huge research gap in this area in China as well as the good availability of data for the study, the authors attempted to explore the potential association between poverty and children's quality of life, specifically their physical health (height and weight), psychosocial condition (self-esteem and self-efficacy) and home environment (living conditions and family relationship). The authors expected that such an analytical study on child poverty would provide evidence-based suggestions for policy makers.

The following sections of this article are organised around the aforementioned two objectives. We detail the data, sampling procedure, survey and measurements in the Method section, and in the Results section we introduce the data analyses and present the results for the two research objectives individually based on two separate data sets. The second to the last section discusses the results relative to those of previous studies, and in the last section we offer a brief summary and conclude the article with policy suggestions.

Method

Data and sampling

The data used in this study were derived from the *Family and Children Survey of Beijing 2011* project, which was carried out in Beijing from October to December 2011 by the authors of the present study. The sample size of this project was 1,000 families, and the research targets were families with one or more children aged below 18 years.

There are three administrative zones in Beijing: inner city, outer city, developmental zones. The inner city consists of Xicheng and Dongcheng districts; the outer city includes Haidian, Chaoyang, Fengtai and Shijingshan districts; and the developmental zone consists of Fangshan, Changping and two other districts. Considering the huge population size and the significant socioeconomic diversity in Beijing, a family-based, multistage sampling method was adopted. The sampling procedure was carried out as follows.

In the first stage, three districts, Xicheng, Haidian and Fangshan, were randomly selected from each of the three zones. Second, a full list of the street offices[1] (N = 193) of these three selected districts was collected from the Civil Affairs Bureau in each of these districts. Systematic random sampling was used to select street offices from this full list; nine offices were selected, three of which were located in Xicheng district, five in Haidian and two in Fangshan. In the third stage, 20 communities were selected through random sampling from the complete list of communities provided by the nine street offices sampled. In the last step, from each community, 40 families with one or more children aged below 18 were randomly sampled from the resident lists provided by each street office. Additionally, as a major purpose of this study was to make a comparison between deprived and non-deprived children, families on *dibao*, which are more likely to have deprived children, were oversampled to guarantee that there was a sufficient number of deprived children in the sample. Hence, an extra 10 *dibao* families in each community were sampled. Ultimately, information on 909 families was successfully collected, representing a response rate of approximately 91 per cent.

Survey

The survey consisted of two questionnaires: the Family Questionnaire and the Child Questionnaire. The Family Questionnaire was completed by a randomly selected parent of each family in the sample. These parents answered questions on the demographic and socioeconomic characteristics of their families, as well as questions regarding what they thought children's necessities should be and whether their children were deprived of these items. The Child Questionnaire was answered by the child in the surveyed families. Considering the issue of children's ability to understand the questions and the validity of their answers, only those aged 10 or above were invited to participate in the study. In families where there was only one child who fulfilled the age requirement, this child was automatically included in the survey, while a random selection procedure was applied if there were two or more children aged between 10 and 17 in the family, although such cases were rare because of the long-term implementation of the one-child policy in China. The children answered questions about themselves (e.g., height, weight, psychosocial condition etc.) and gave their views about the conditions of their family and their parents. A total of 909 Family Questionnaires and 297 Child Questionnaires were successfully enumerated.

Measurements

Child poverty. In the present study, child poverty was measured using the newly constructed CDIs. As will be explained later, the CDIs consists of 34 living necessity items covering six dimensions, namely diet, clothing, housing conditions, household facilities, education and social interaction. The parents were asked two questions: (i) 'Does your child have this item?' (e.g., a computer). If the answer to this question was No, they were asked the following question: (ii) 'Is the lack of this item due to economic constraints?' Only those children reported to be lacking an item because of economic constraints were identified as being deprived of that particular item.

Physical health. In this study, children's physical health information was captured by inquiring about their height and weight at the time of the survey.

[1] The administrative system in urban China consists of five levels: province, city, district, street, community. Street office is the administrative unit at the street level.

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Living conditions. To assess the children's family living conditions, seven aspects of their accommodation were evaluated by the children themselves on a 5-point scale, with a score of 5 indicating *very good* and 1 *very bad*. The seven aspects were: (i) spaces for activities, (ii) sanitary conditions, (iii) ventilation, (iv) toilet facilities, (v) quietness during daytime, (vi) quietness during night-time, and (vii) learning environment. The scores for each question were summed up to obtain an index representing the overall living conditions of the household. The living condition index ranged from 7 to 35.

Family relationship. The child respondents were asked to give their views on five aspects of their family relationship: (i) time being together with parents, (ii) family atmosphere, (iii) relationship with parents, (iv) family communication, and (v) family cohesion. Each aspect was scored on a 5-point scale ranging from 1 *very unsatisfied* to 5 *very satisfied*. The scores were summed up to obtain a total score ranging from 5 to 25 to indicate the quality of the children's family relationship.

Self-esteem. Children's self-esteem level was assessed using the Chinese version of the Rosenberg Self-Esteem Scale (SES) (Yeung, 1998) which has been found to have acceptable reliability ($\alpha > 0.60$) and validity for Chinese children. This scale comprises 10 items, such as 'I feel that I am a valuable person, at least at the same level as others', 'I hold a positive attitude towards myself' and 'I always feel that I am useless' (reverse item). The Self-Esteem Scale is a Likert-type scale, and the children were required to evaluate their situation in the past week using a 4-point scale, with 1 indicating *extremely agree* and 4 *extremely disagree*. The resulting total scores ranged between 10 and 40. A higher score denotes better self-esteem and a lower one denotes worse self-esteem.

Self-efficacy. Assessment of the children's self-efficacy level was based on the Chinese version of the General Self-Efficacy Scale (GSES) (Wang, 2001), which has been found to have acceptable reliability ($\alpha = 0.87$) and validity for Chinese youth and has been widely used in psychological and social science studies. The GSES comprises 10 items. Example items include: 'If I try hard enough, I can always solve problems', 'With my intelligence and ability, I can surely manage unexpected conditions' and 'I can usually find several solutions to solve a problem'. The GSES is a 4-point Likert-type scale, with 4 indicating *very correct* and 1 *very wrong*. The eventual summation scores of the GSES ranged between 10 and 40. High scores represent good self-efficacy and low scores represent relatively low self-efficacy.

Results

Given the two objectives of the study – constructing the CDIs and examining the relationship between child deprivation and children's quality of life – we conducted separate analyses based on the family database (N = 909, including the information from the Family Questionnaires) and the child database (N = 298, including the information from the Child Questionnaires).

To construct the CDIs, the items to be included as indicators of child deprivation have to be decided by families with children. Accordingly, the sample had to be representative of the households with children in Beijing (i.e., the population of this study). However, because *dibao* families had been oversampled during the survey, their proportion in the sample was not consistent with their proportion in the general population. According to the most updated data from the National Bureau of Statistics of China, the percentage of children on urban *dibao* in 2010 was estimated to be around 2.5 per cent among all children with urban residential status in Beijing, while in our family data sets, *dibao* families accounted for 32.2 per cent of the sample. To deal with this issue of disproportionality, weighting was applied. After weighting, there were 23 *dibao* families in the family sample, representing 2.5 per cent of the sample. The resulting distributions of *dibao* and non-*dibao* families are shown in Table 1.

Task 1: Constructing the CDIs

Procedure for constructing the CDIs. First, the authors drew up a list of living necessities for children after holding a discussion about general living conditions in urban China, children's special needs and comparable child deprivation studies in other countries. The initial index consisted of 48 items covering six major dimensions of children's well-being: diet, clothing, housing conditions, household facilities, education and social interaction. Then 10 academics in the field from The University of Hong Kong, The Chinese University of Hong Kong, Beijing Normal University and Fudan

Table 1. Distributions of families before and after weighting.

Weighting	Whether on *dibao*	*n*	%
Before	No	616	67.8
	Yes	293	32.2
	Total	909	100
After	No	886	97.5
	Yes	23	2.5
	Total	909	100

Note: Calculation was based on the family data set (N = 909) of the *Family and Children Survey of Beijing 2011.*

Table 2. The Child Deprivation Indicators (CDIs) and deprivation rate for each item.

Dimension	Indicator	Deprivation rate (%)
Diet	1. Fresh fruit and vegetables at least once a day	1.8
	2. A meal with meat, fish or vegetarian equivalents at least every second day	6.8
Clothing	3. Shoes can be replaced by a new pair once they no longer fit or become worn	3.8
	4. Clothes suitable for every season	2.1
	5. All required school uniform provided	0.4
	6. Clothes, socks and underwear can be replaced by new ones once worn	1.2
Housing conditions	7. Indoor flushing toilet for sole use of the household	6.4
	8. Enough windows	4.5
	9. Enough daylight	5.0
	10. Good ventilation	3.7
	11. Rooms are soundproof	5.6
	12. No noise around accommodation	3.7
	13. Sufficient heating supply in winter	2.8
	14. Roof does not leak	1.8
	15. No cement or lime powder peeling from walls	2.9
	16. Child has own bed	3.3
Household facilities	17. Washing machine	2.7
	18. Air conditioner	6.9
	19. Colour TV	2.0
	20. (Mobile) phone	2.7
Education	21. Computer	7.5
	22. Internet connection (at home)	7.9
	23. Study desk	4.0
	24. Books (for children of school age)	1.2
	25. Toys (for primary school children)	1.8
	26. New or second-hand bicycle	2.5
	27. Tutorial classes after school	9.8
	28. Interest classes	13.0
Social interaction	29. Invite friends home at least once a month	3.6
	30. Play outside (e.g., a park) with friends at least once a week	3.1
	31. Join (self-paying) school outings at least once a semester	2.7
	32. Travel with family at least 5 days a year	13.9
	33. Eat out with family at least once a month	12.5
	34. Visit relatives and friends on traditional festivals	0.6

Note: Calculation was based on the family data set (N = 909) of the Family and Children Survey of Beijing 2011.

University participated in reviewing the deprivation indicators. They evaluated the appropriateness of each indicator by specifying whether or not it was a living necessity for children in Beijing. They also provided suggestions regarding the wordings of the indicators. After this review, 16 items were deleted from the list and two were added. Thus, there were 34 indicators in total and the number of dimensions remained at six. Finally, these 34 items were included in the Family Questionnaire and parents were asked whether they considered the proposed items to be living necessities for their children. Items perceived to be necessities by 50 per cent or more of the respondents were identified as living necessities. This process was based on the notion of 'socially perceived necessities' promoted by Mack and Lansley (1985), who believed that only those items accepted by most of the population as necessities could be considered as deprivation items. Ultimately, all 34 items were retained because each of them received a support rate exceeding 50 per cent. Table 2 shows the details of the 34 CDIs and the deprivation ratio in the weighted sample.

To utilise the CDIs in practice, the children's parents were asked two questions regarding each item: (i) 'Does your child have this item?' (e.g., a computer). If the answer was No, they were asked a further question: (ii) 'Is the lack of this item due to economic constraint?' Only those who lacked items because of economic constraints were identified as being deprived. These two questions worked together to avoid mistaking someone who lacked certain items simply because they did not want them (not their choice or preference) or did not need them (e.g., inappropriate for their age or geographical location) as being deprived. This process of identifying deprivation is in line with the concept of 'enforced lack' advocated by Mack and Lansley

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(1985), which excludes lifestyle preferences from real deprivation.

The deprivation threshold was set at four, which meant that only those children lacking four or more life necessities due to economic constraint would be considered as being deprived. This threshold is consistent with a number of existing studies, such as those carried out in Hong Kong (Wong, Saunders, Wong, Chan, & Chua, 2012) and in Australia (Saunders, Naidoo, & Griffits, 2008). Besides the previous examples, two other factors were also considered when the authors were determining the threshold. First, the threshold should be able to effectively distinguish poor from non-poor people; second, the number of people identified as poor or deprived should be reasonable, neither too many nor too few. After examining the child deprivation results, the threshold was set at four as this could best fulfil these two requirements.

Child deprivation situation in Beijing. On the basis of the threshold of four items, we distinguished between deprived and non-deprived children. After aggregating the individual-level data, we found that the deprivation rate of urban children in Beijing was 13.6 per cent (n = 124) at the end of 2011 when the survey was conducted.

The last column of Table 2 shows the details of the deprivation rates for each indicator. Different degrees of deprivation, ranging from 0.4 to 14.9 per cent, existed among the 34 indicators. Eleven items were lacked by more than 5 per cent of the children. These were: protein intake, private toilet facilities, daylight, soundproofed accommodation, air conditioning, computer access, Internet access, tutoring, interest classes, travel, eating out. Education and social interaction seemed to be the two dimensions on which poor children were most likely to be deprived. Because of their direct and multidimensional nature, the CDIs provided far more extensive and richer information on child poverty than did the conventional monetary poverty measure.

CDIs and other child poverty/well-being measures. Making comparisons among various types of child poverty measures helps to broaden our understanding of the child poverty issue. We may thus be able to obtain an objective evaluation of the reliability of the present poverty measures, the performance of the public social assistance system as well as the validity of the proposed new child poverty measure. In the present study, the authors compared the CDIs with three other child poverty/well-being measures, based on the official social assistance standard in China, the median income level of Beijing and the parents' socioeconomic status (SES), respectively.

Table 3. Number of poor families (weighted) in the sample by different poverty measures.

Families with children	*n*	%
Living on *dibao*	23	2.5
Having income below half of the household median	115	12.7
Having children being deprived of four or more necessities	124	13.6
Total number of families	909	100

Note. Calculation was based on the family data set (N = 909) of the *Family and Children Survey of Beijing 2011* and statistics from the National Bureau of Statistics of China in 2010.

As there is no official poverty line in urban China (Xiao, 2009), most of the time the *dibao* allowance level (*dibao line)* acts as a substitute measure, although this is far from satisfactory. As noted above, the percentage of *dibao* families in early 2010 was estimated to be 2.5 per cent, which was extremely low. Another universally used way of measuring income poverty is to take half of the median household income of the target society as the poverty line; this measure has been widely adopted among OECD countries (Bradshaw, 2002; Harker, 2006; Whiteford & Adema, 2007). Utilising this method in our sample, the poverty rate in Beijing in 2011 was estimated to be 12.7 per cent, which approximated to the figure generated by the CDIs (13.6%; see Table 3). It is apparent that the conventional social assistance method currently being used in China to measure child poverty dramatically underestimates the extent of child poverty. The CDIs clearly provide a more reliable way to capture the extent of child poverty because in the present study, the result obtained using the CDIs was not only more consistent with the internationally acknowledged poverty measures, but also more reasonable.

Another widely utilised proxy for examining child poverty is parents' socioeconomic status, usually that of the family head, for it normally has a strong capacity to predict children's life situation. In the current study, the authors chose fathers' education and income level (schooling year and monthly salary) to represent parents' status. To test whether the child deprivation rates were different in each status level, we used a χ^2 test of independence with $\alpha = 0.05$ as criterion for significance. The analysis results showed that the child deprivation rates of families at the three lowest levels of parents' socioeconomic status were significantly higher than those of the upper two quintiles, with χ^2 (4, $N = 268$) = 70.43, $p < 0.001$ for father's education level test and χ^2 (4, $N = 269$) = 37.49, $p < 0.001$ for father's income level test. We can infer, therefore, that child deprivation is highly correlated with parents' socioeconomic status, and this provides evidence that the newly constructed CDIs exhibit good validity.

Table 4. Children's quality of life by deprivation status.

	M (SD)		t-test	
Quality of life	Deprived	Non-deprived	t (df)	p
Physical health				
Height (cm)	156.71 (14.05)	159.06 (12.00)	–0.14 (289)	0.887
Weight (kg)	50.22 (14.77)	50.47 (13.60)	–1.51 (289)	0.133
Home environment				
Living conditions	23.79 (6.51)	27.69 (5.77)	–5.29*** (291)	0.000
Modified living conditions	10.06 (3.13)	11.90 (2.55)	–5.483*** (295)	0.000
Family relationship	20.40 (3.82)	20.80 (4.05)	–0.84 (293)	0.400
Psychosocial conditions				
Self-esteem	30.14 (3.71)	30.69 (4.13)	–1.13 (290)	0.261
Self-efficacy	27.36 (6.83)	28.75 (6.18)	–1.77 (287)	0.077

Note: Calculation was based on the child data set (N = 297) of the Family and Children Survey of Beijing 2011.
***p < 0.001.

Task 2: Exploring the relationship between deprivation and children's quality of life

The second task of this study was to explore the potential association between deprivation and children's quality of life; the investigation was based on the child data set ($N = 297$) in which the number of boys and girls was generally similar (140 and 157, respectively) and the age distribution was rather even. Among the children in this data set, 108 were deprived (62 girls and 46 boys), and 189 children, who served as the comparative group, were not.

Given the limitations of a cross-sectional study, we were unable to establish any causal relationship between deprivation status and children's quality of life. However, we could still obtain some important insights by examining the different levels of quality of life between deprived and non-deprived children. For this purpose, the authors compared physical characteristics (height and weight), living conditions, family relationship, self-esteem and self-efficacy between the children who were deprived and those who were not. Among these outcome variables, the scale of living conditions deserves extra attention for it contains four items (ventilation, toilet facilities, quietness during daytime, quietness during night-time) which are very much similar to three indicators of the CDIs, under the dimension of housing condition ('good ventilation', 'indoor flushing toilet for sole use of the household' and 'no noise around accommodation'). So these four items were deleted to construct an adjusted scale of living conditions entitled 'the modified living conditions', which were entered into the analysis, too. The software used was SPSS 19.0 (IBM Corporation, Armonk, NY, USA).

The internal consistencies of the quality of life variables (except for height and weight) were evaluated by examining their Cronbach's alpha values. All four scales (living conditions, family relationship, self-esteem, self-efficacy) showed acceptable levels of reliability ($\alpha > 0.78$; for details, see Table 5).

We first calculated the means and standard deviations of the outcome variables by children's deprivation status (deprived, non-deprived) by running independent samples t-tests. Table 4 presents the results which showed that there was no significant difference on most outcome variables except for living conditions. According to the children's own evaluations, deprived children's living conditions were worse than those of their non-deprived counterparts ($t = 5.29$, $p < 0.001$). The analysis of the modified living conditions showed almost identical results ($t = 5.48$, $p < 0.001$).

According to the existing literature, children's demographic variables, such as age and gender, might affect children's outcome variables. For example, age is highly associated with children's height and weight, and researchers have also found that girls and boys may respond to poverty differently (Conger et al., 1992). We therefore analysed boys and girls separately in a series of one-way analysis of covariance (ANCOVAs) to assess group differences, and at the same time, age was entered as a covariate. Table 5 presents the detailed statistics for the differences in the conditions between deprived and non-deprived children across six outcome variables, plus the variable of the modified living conditions; boys and girls were modelled separately.

The results of the separate ANCOVAs were significantly different from those of the t-tests. Non-deprived children were found to be significantly better off in terms of living conditions measured by the original scale ($p < 0.001$) as well as the modified one ($p < 0.001$) than deprived children. In addition, deprived girls appeared to be disadvantaged in terms of physical characteristics (height and weight), whereas boys were more disadvantaged in terms of psychosocial condition (self-efficacy). There were no significant differences between deprived and non-deprived children in family relationship and self-esteem.

Comparing the means of children's height, deprived children were on average shorter than non-deprived children by around 2 cm. This finding was consistent across gender, although the difference was significant

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Table 5. Reliability of quality of life scales and results of one-way ANCOVA for deprived and non-deprived groups by gender.

			Boys				Girls			
			M (SD)		ANCOVA		M (SD)		ANCOVA	
	α	*n*	Deprived	Non-deprived	*F* (df)	p	Deprived	Non-deprived	*F* (df)	p
Quality of life		291	159.61 (15.71)	161.64 (11.84)	2.32 (1, 133)	0.130	154.62 (12.44)	156.54 (11.67)	7.43** (1, 152)	0.007
Height (cm)		291	54.51 (16.03)	51.84 (14.96)	1.42 (1, 133)	0.236	47.20 (13.13)	49.11 (12.04)	4.11* (1, 152)	0.044
Weight (kg)		293	23.57 (6.86)	27.78 (5.73)	14.99*** (1, 137)	0.000	23.97 (6.29)	27.60 (5.85)	11.50*** (1, 150)	0.001
Living conditions	0.91	297	9.85 (3.33)	11.96 (2.53)	17.85*** (1, 137)	.000	10.23 (2.58)	11.84 (2.99)	11.01*** (1, 154)	0.001
Modified living conditions		295	19.93 (4.17)	20.28 (4.19)	0.22 (1, 137)	.644	20.74 (3.53)	21.33 (3.86)	0.58 (1, 152)	0.446
Family relationship	0.92	292	29.59 (3.27)	30.58 (4.06)	2.19 (1, 134)	0.141	30.57 (3.99)	30.79 (4.22)	0.057 (1, 152)	0.812
Self-esteem	0.78	289	26.78 (5.79)	29.49 (5.85)	7.09** (1, 136)	0.009	27.80 (7.54)	27.98 (6.45)	0.005 (1, 147)	0.946
Self-efficacy	0.91									

Note: Calculation was based on the child data set ($N = 297$) of the *Family and Children Survey of Beijing 2011*. Covariate entered was children's age.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.
ANCOVA, analysis of covariance.

only among the girls ($p = 0.007$). The average weight of the deprived girls was significantly lower than that of their non-deprived counterparts ($p = 0.044$), and the difference was around 2 kg. However, there was no such disadvantage among deprived boys. Living conditions was the only outcome variable that appeared to be worse for both genders when comparing deprived children with their non-deprived peers. The significant differences in the modified living conditions between the deprived and the non-deprived reconfirmed the strong correlation between deprivation and poor living conditions. It has often been assumed that the family relationship of poor families must be worse than that of affluent families because of economic stress; however, this assumption did not hold in our sample. Regarding children's psychological condition, worse-off outcomes were found among the deprived boys, but not among the girls. Specifically, deprived boys scored significantly lower than their affluent counterparts in self-efficacy ($p < 0.01$), but the difference was not significant for self-esteem ($p = 0.141$).

Given that child deprivation is highly correlated with parents' socioeconomic status, there might be a similar relationship between parents' status and children's quality of life. However, this hypothesis remains to be tested in the future research for it was not the focus of the current study.

Discussion

The CDIs and the child deprivation situation in Beijing

In the present study, the newly constructed CDIs presented a comprehensive picture of child poverty in Beijing. Children in Beijing were found, to various extents, to be deprived in all 34 items. Education and social interaction are the two dimensions in which poor children are most likely to be deprived. The findings suggest that poor families are able to guarantee their children's formal education, but have difficulties in providing other informal out-of-school educational resources, despite the fact that interest classes and tutorials are increasingly important for children's integrated development. Travel and eating out seem to be luxuries for children living in poor families, although these activities are crucial to peoples' subjective well-being. We also found that there are still many children who are deprived in terms of nutrition intake. For example, 'a meal with meat, fish, or vegetarian equivalents at least every second day' was not enjoyed by 6.8 per cent of the children in our sample. This finding is consistent with previous studies which showed that the nutrition intake of children in low-income families is seriously unbalanced and to some extent insufficient, although the problem of starvation does not exist (Tao & Luan, 2011).

By comparing different child poverty measures, the results from task one suggest that the CDIs are a more valid measuring tool than the conventional measure based on *dibao* status. Using the *dibao* line as the poverty line, the child poverty rate was only 2.5 per cent in Beijing at the time of survey, and around 2 per cent for all of the urban population of China in 2007. These proportions are unreasonably low compared with the situation in other countries. For example, the average child poverty rate of the OECD countries was 12.2 per cent in 2000 (Whiteford & Adema, 2007). The big difference between the official child poverty rate in China and the rate in other countries definitely does not indicate that the problem of child poverty is not serious in urban China. Rather, it suggests the opposite: The problem is severe but has not yet been acknowledged because of the low child poverty threshold. The CDIs can compensate for the limitations of the traditional poverty line by offering us a more reasonable and reliable estimate of the population of poor children and the complexity of the child poverty issue. It was estimated that the child deprivation rate of the sample was 13.6 per cent, which approximates to the one calculated using the international poverty measuring approach (12.7%). The strong correlation between child deprivation and parents' SES reconfirms the validity of CDIs. Furthermore, the CDIs can also reveal the specific disadvantages of individual deprived children and their severity.

Child deprivation and quality of life

On balance, our analyses provide evidence that the quality of life of deprived children is worse than that of non-deprived children. In this study, the comparative disadvantage appeared across the three major areas, namely physical health, home environment and psychosocial conditions. However, the specific patterns were different between boys and girls. To be precise, we found that deprived girls were worse off physically while boys were worse off psychosocially, and both genders were disadvantaged in terms of their living conditions. These findings are in part consistent with previous studies showing that boys and girls respond differently to family economic hardship (Conger et al., 1992) and that poor children's housing conditions are commonly worse than those of children from normal income families (Tang, 1998; Tao & Luan, 2011).

Physical health. Both the height and the weight of the deprived girls were lower than those of non-deprived girls, with around 2 cm for height and just under 2 kg for weight. No similar pattern was observed among the boys; although the deprived boys were found to be shorter than their non-deprived counterparts (around 2 cm), the difference was not statistically significant ($p = 0.236$).

The authors did not find exactly the same results as those of previous studies; certain factors, supported by relevant evidence, might explain our findings. First, deprived girls might have a lower birth weight than their non-deprived counterparts, but deprived boys might not. Scholars have found that neonatal health condition, especially weight at birth, is a crucial predictor of children's future physical development; for example, low birth weight may lead to stunting or wasting from infancy through to early adolescence (Korenman & Miller, 1997). Second, in terms of the distribution of family food resources, boys in poor families might be protected by their parents, but girls might not because of the preference for boys in Chinese tradition. In their work, Tao and Luan found that around 20 per cent of poor families prioritised children in daily diet allocation (Tao & Luan, 2011). Although he did not specify the gender distribution of this 20 per cent of children, we can assume that most of them would have been boys because boys have always been treasured more than girls in Chinese culture. These hypotheses need to be examined in future research.

Psychosocial conditions. Unlike the deprived girls, the deprived boys were disadvantaged in terms of their psychosocial conditions rather than physical health. The test score of their self-efficacy was significantly lower than that of the comparison group ($p = 0.009$). However, this relation pattern did not appear among the girls.

Regarding the association between poverty and children's psychosocial conditions, there is no consensus in previous studies. For example, Conger et al. (1997) found that poverty, through financial conflicts between parents, threatened the psychological adjustment of boys (e.g., their self-confidence) more than of girls. However, the study by Elder, Nguyen, and Caspi (1985) showed that economic hardship adversely influenced the psychosocial well-being of girls but not boys. Our study provides evidence of the situation in China, and thus facilitates future comparison research in this area.

Home environment. As a physical aspect of the home environment, the living conditions in deprived children's homes were found to be seriously and significantly ($p \leq 0.001$) worse than those of their counterparts. This finding is consistent with the results of previous studies. Tang (1998) and Tao and Luan (2011) found that the living conditions of poor families were far worse than those of ordinary families, with examples such as having cramped living quarters, poor soundproofing and lack of space for children to study. Our study did not reveal any significant difference between deprived and non-deprived children with respect to the spiritual aspect of the home environment, namely family relationships. Overseas research has

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provided wide and robust evidence for the argument that family relationships would be adversely influenced by economic hardship; for example, there would be more marital conflicts and harsh parenting in poor families (Conger et al., 1994, 1997; McLoyd, 1990). A possible reason for this inconsistency with the finding of other studies might be that some parental factors weakened the detrimental effects of poverty on family relationships in our sample; for example, parents' education level, especially that of mothers (Kean & Pamela, 2005). This means that parents' higher education level could protect children from harsh family interactions. However, this assumption remains to be tested in future studies.

Summary and policy implications

Using the data from the *Family and Children Survey of Beijing 2011*, the authors constructed an urban child poverty measure, CDIs, and examined the differences in quality of life between deprived children and non-deprived children. The CDIs were demonstrated to be a more reliable measure than the traditional child poverty measure in China which is based on entitlement to social assistance. The general child deprivation situation in Beijing was described, and it indicates that education and social interaction are the two areas in which children are most likely to be deprived, and that many children do not enjoy a nutritionally balanced diet. A strong correlation was found between child deprivation rate and parents' socioeconomic status, denoting that children living with parents with low status are more likely to be deprived than children living with parents with high status. After examining the differences in quality of life between the deprived and the non-deprived groups, the authors found that deprived girls are disadvantaged in terms of physical health while boys are significantly worse off psychosocially, and both genders are living in far worse living conditions than their non-deprived counterparts. No difference was found in terms of family relationship or self-esteem between the deprived and the non-deprived groups.

On the basis of these findings, we have several policy suggestions. First, policy makers should look beyond the families and children living on social assistance. According to the poverty size statistics generated by different poverty measures, children living on *dibao* do not represent the whole of the poor child population. Policy makers could consider employing the CDIs as a complementary child poverty measure; this would extend the coverage of public support for poor children and allow it to reach children who are deprived.

Second, given that many of these children are deprived of informal education resources and social interaction opportunities, the focus of family and children services and poverty elimination schemes should be shifted from solely fulfilling children's basic physical needs to guaranteeing equal developmental opportunities for the disadvantaged children. Universal welfare programmes at community level, such as public library access and after-school classes, would be good choices to help needy children have a good learning environment after school. Social organisations could also contribute to this by providing free or low-price tutorial services and interest classes for children from poor families, or by organising free trips or voluntary programmes for deprived children.

In addition, responding to the situation that children living with parents of lower socioeconomic status are more likely to be deprived, it is important to look into the structural problem of unequal income distribution and the redistributive measures available to address the problem. Like many other developing countries, China as a whole scores very high on the Gini coefficient, a measurement for gauging income inequality (Yao & Wang, January 2013). There is no information regarding income inequality at city level. However, the existing social welfare system at the local level focuses more on income protection of the very poor instead of promoting more equitable income. Economic development indeed promotes general income, but as the living standard rises, deprivation, as a relative condition, might become more severe for those households whose income improves very little while the rest of society has good fortune in the expanding economy.

To improve the income position of those with lower socioeconomic status, promoting marketable employment skills and introducing income transfers are essential. Measures such as providing poor parents with job training and continuing education should be strengthened. Also, moderate regulation of the labour market by setting a minimum wage at a reasonable level, implementing unemployment benefits and introducing active policies to promote employment should be actively considered. New forms of income transfers, such as offering needy families with low-income family allowances and child welfare allowances besides *dibao*, should also be considered.

Lastly, social programmes should respond differently to the varied disadvantages of girls and boys. Findings indicate that deprived girls are significantly worse-off in terms of physical health than are non-deprived girls, whereas deprived boys show no difference in this respect with their non-deprived peers. Nutrition intake/food consumption is the most direct factor influencing children's physical health (height and weight in this article), and there is evidence that parents of poor families tend to sacrifice their own well-being to protect children by offering them a disproportionate share of the family's food resource. This finding suggests that girls living in poor families might not be receiving such protection, or the protection is

ineffective. Further studies are needed to explore this phenomenon.

Compared with deprived girls, deprived boys are significantly worse-off in terms of psychological health. Thus, in addition to addressing income inequality, measures to promote socio-psychological well-being would be useful. In addition, providing a housing allowance for poor families could help to alleviate the hardship experienced by deprived children.

The present study has limitations. The data used were cross-sectional, which prevents demonstrating a causal association between deprivation and poor quality of life of the children. Follow-up surveys should be carried out in the future to provide an array of longitudinal information which would allow us to further verify the results.

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