

Child Development in the Face of Rural-to-Urban Migration in China: A Meta-Analytic Review

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Abstract

In the last 30 years, China has undergone one of the largest rural-to-urban migrations in human history, with many children left behind because of parental migration. We present a meta-analytic review of empirical studies on Chinese children's rural-to-urban migration and on rural children left behind because of parental migration. We examine how these events relate to children's emotional, social, and academic developmental outcomes. We include publications in English and in Chinese to uncover and quantify a part of the research literature that has been inaccessible to most Western scholars in the field of child and family studies. Overall, both migrant children and children left behind by migrant parents in China show significantly less favorable functioning across domains than other Chinese children. It appears that, similar to processes found in other parts of the world, the experience of economic and acculturation stress as well as disrupted parent-child relations constitute a risk for nonoptimal child functioning in the Chinese context. Further, we found evidence for publication bias against studies showing less favorable development for migrant children and children left behind. We discuss the results in terms of challenges to Chinese society and to future empirical research on Chinese family life.

Keywords

China, child development, family, literature review, meta-analysis, culture, migration

One in eight children younger than 15 years of age in the world lives in China. China is now Asia's largest economy—globally the second largest (after the United States)—and is the largest in terms of economic growth (International Monetary Fund, 2014). This means that more than 200 million Chinese children will become part of a major player in the globalized world by the time they reach adulthood. One of the most salient contextual factors shaping Chinese family life in the 21st century is rural-to-urban migration. Although rural-to-urban migration is a common phenomenon in many upcoming economies, China has seen an unprecedented growth in this type of migration. It has been called the largest migration in human history (Q. F. Zhang, 2004).

What happens to children during this mass migration from rural areas to the cities in China? About 32% of rural children less than 18 years of age accompany their parents to their host cities (hereafter, we refer to these children as *migrant children*; All China Women's Federation, 2013). There they are often treated quite differently from

the urban residents—facing peer rejection, enjoying fewer rights to health care, and attending different schools. At the same time, many adult migrants do not bring their children with them to the host cities, which leads to the phenomenon of children left behind. Because of the large scale of rural-to-urban migration, this amounts to no less than 22% of all Chinese children younger than 18 years of age who have been left behind by one or two migrant parents to live with the remaining parent, grandparents, other friends or relatives, or even on their own (All China Women's Federation, 2013). Although migrant children and children left behind are not unique to China, the sheer magnitude of this phenomenon in China makes it a societal reality that cannot be ignored and that deserves scientific attention. In Figure 1, we provide an

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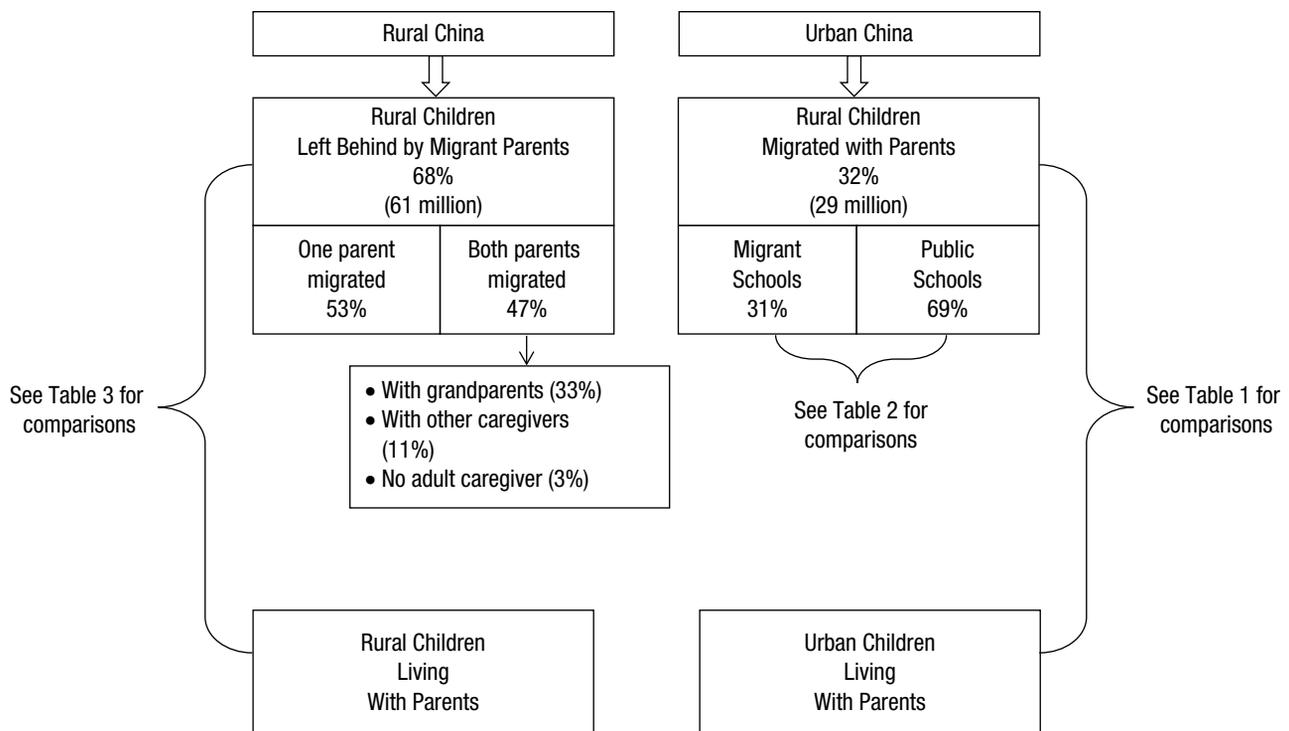


Fig. 1. Overview of the numbers and proportions of children with different rural-to-urban migration arrangements in China.

overview of the numbers and proportions of children who experience parental rural-to-urban migration and the different arrangements that are made for these children.

To understand child development in China and to gain a larger understanding of the impact of migration on child development more generally, we investigated Chinese children's functioning in the face of parental rural-to-urban migration. In this article, we use a meta-analytic approach to review the literature on the major societal issue of rural-to-urban migration and its relevance to child development. In discussing the literature on this phenomenon in China, we refer to both English and Chinese publications—Chinese publications used in the meta-analysis are marked with an asterisk and can be found in the Supplemental Material.

Parental Urban-to-Rural Migration: Functioning of Migrant Children

树挪死人挪活

(Move a tree and it will die—move a human being and they will live.)

The combined forces of China's economic reform, the following relaxation of migration restrictions, and the strong trend of globalization have led to an unprecedented growth of economically driven rural-to-urban migration in China. This migration process started in the early 1980s, and by 2014 there were 273.95 million

migrants who had moved from rural areas of China to work in cities (National Bureau of Statistics of China, 2015). These numbers inspired the characterization of this process as the largest migration in human history (Q. F. Zhang, 2004). Many of these migrants have children; thus, increasing numbers of rural children enter the migration process with their parents (Y. Lu, 2007). On the basis of the 2010 National Population Census, it was estimated that there were around 28 million migrant children less than 14 years of age (Y. Yuan & Hou, 2012) and 35.8 million adolescents less than 18 years of age (All China Women's Federation, 2013). The continuously growing population of migrant children within China has drawn increasing attention. However, relatively few attempts have been made to systematically examine their adaptation to migrant status or to understand their plight within a larger theoretical framework.

Some scholars have emphasized the benefits of rural-to-urban migration, as most migrants make more money at their urban (host city) destination than in their rural areas of origin (Z. Liang & Chen, 2007). According to the household strategy theory (Stark & Bloom, 1985), voluntary migration is primarily a household strategy aimed at maximizing economic welfare at the household level. These additional financial resources enhance the socio-economic status and quality of life of migrant children, facilitating their upward social mobility. In addition to economic gains, migration from rural to urban areas is suggested to lead to changed world views, enhanced aspirations, and new life perspectives (Toyota, Yeoh, &

Nguyen, 2007), thereby substantially broadening the families' horizons. However, migrant children are much less likely to be enrolled in school compared with local urban children—even less likely than children still living at their place of origin (Z. Liang & Chen, 2007). Further, several psychological theories suggest that migration may not be beneficial to child development at all. All of these theories point toward aspects of migration that can be chronically stressful and therefore detrimental to individuals' functioning and mental health, although they differ in emphasis on specific aspects of the migrant experience. We discuss theories focusing on (a) acculturation, (b) discrimination, and (c) socioeconomic pressures.

Acculturation

First, we can draw on psychological theories focusing on the processes of migration and acculturation. The term *acculturation stress* (Berry, Phinney, Sam, & Vedder, 2006) refers to the challenges for the individual that accompany attempts to adapt to new customs and expectations in the absence of sufficient psychological, social, and material resources. Given that rural-to-urban migrants often lose their social networks, acculturation stress is likely to be part of their daily reality, which, in turn, can harm their psychological well-being. There is substantial evidence that migrants who manage to integrate identification with both their heritage culture and the host culture show the highest level of well-being (Berry et al., 2006). Research shows that less than half of migrant workers in China adopt the acculturation strategy of integration and that those who do not indeed report lower levels of well-being (Gui, Berry, & Zheng, 2012). Further, there is evidence that acculturation stress in migrants leads to less positive parenting, which may harm the well-being and functioning of children of migrants (Emmen et al., 2013). In addition, children themselves may struggle with acculturation processes (X. Fan, Fang, Liu, & Liu, 2009; Yeh, 2003). Finally, psychological and sociocultural adaptation can be distinguished when examining acculturation outcomes, reflecting the distinction between “feeling well”—that is, showing emotional well-being—and “doing well”—that is, showing social and academic competence (Ward & Kennedy, 1994). Outcomes across both domains are important to assess in children who have migrated from rural to urban locations.

Discrimination

Theories on intergroup relations (e.g., Nesdale, 2008; Stephan & Stephan, 2000; Tajfel & Turner, 1979) focus on the cognitive and emotional factors that may explain how individuals form representations of their ingroup (“us”) and outgroups (“them”). This type of social categorization is a basic human trait that simplifies social experiences

and allows people to generalize their knowledge about certain groups to new people (Bruner, 1957). Although this is a cognitively useful strategy, there is a danger that people develop, maintain, and apply inaccurate stereotypes and prejudices in social interactions (Hewstone, Rubin, & Willis, 2002). In addition, perceived competition among groups is enough to generate negative emotions among groups, influenced by inferences of social status (Fiske, 2008). Because migrants are generally seen as lower in social status than locals (Cui, 2012), and because they may be perceived as threatening to the availability of resources, negative emotions toward these groups may develop, leading to discrimination.

Discrimination can take place at the individual level (e.g., being rejected by classmates at school because of migrant status) and at an institutional level. There is substantial evidence that migrant children in China face individual discrimination, in that they are teased about their rural accents or their clothing styles because they do not fit the urban fashion (C. Y. Li, 2007). Further, urban parents have been known to teach their children not to play with rural migrant children because they are supposedly dirty and not well-behaved (Z. Guo, 2007). At the institutional level, several discriminatory rules and regulations are in place that disadvantage rural migrants. Under China's household registration system (*hukou*), which is assigned at birth and designed to control rural-to-urban mobility, migrant children are not granted equal access to education because of urban residence requirements. The rural place of origin is formally responsible for these children's education, but they tend to not follow up on this responsibility after rural-to-urban migration. The cities also do not ensure that these migrant children are provided with their 9-year compulsory education that is made available to local urban children, leading to inequalities in educational opportunities (L. Wang, 2008). Other obstacles for migrant students to enter government-run public schools are the complicated admission procedures (H. Tao, Yang, & Li, 2010) and the annual fee (3,000–30,000 Yuan¹ per child) for nonlocal residents (Fleisher & Yang, 2003). Large numbers of migrant children are thus denied entry into urban public schools and are forced to enroll in so-called “migrant children's schools” (hereafter, *migrant school*), which usually are small, lack qualified teachers, and do not have standard teaching materials and sanitation services (Q. Wu, Palinkas, & He, 2011). By the end of 2010, 69% of migrant children were enrolled in urban public schools, leaving about 2 million migrant children in migrant schools (New Citizen Program, 2014).

China's household registration system also means that migrant families do not have the same rights as local urban families regarding access to health care (Mou et al., 2009), health insurance (M. S. Lu, Zhang, Ma, Li, & Quan, 2008), prenatal care (Zhan, Sun, & Blas, 2002), and immunization for their children (M. P. Sun et al., 2010). Being

thus discriminated against not only has direct negative effects (e.g., being ill because of inadequate health care) but also has indirect effects through the psychologically stressful experience of being discriminated against (Schmitt, Branscombe, Postmes, & Garcia, 2014). For example, among adult rural-to-urban migrant workers in China, Lin et al. (2011) found that discrimination experiences and perceived social inequity predicted poor physical and mental health. Given that discrimination experiences relate to the same unfavorable outcomes in children as in adults (Schmitt et al., 2014), we expect migration status to be related to less favorable emotional, social, and school functioning in rural-to-urban migrant children.

Socioeconomic pressures

An additional stressor for migrant families that stems indirectly from their migrant status is the fact that they often face substantial economic pressures (Hernandez, Denton, & Macartney, 2007). According to the family stress model, low economic resources pose a risk for problems in child development through processes of maladaptive childrearing by stressed parents who lack the resources to provide warm and supportive caregiving (Conger & Donnellan, 2007). For example, a study on Turkish migrant families living in the Netherlands showed that socioeconomic pressures predicted both more general stress and more acculturation stress in these ethnic minorities and that both types of stress, in turn, predicted less positive parenting (Emmen et al., 2013). Further, parental stress is known to be related to lower levels of warm, sensitive, and supportive parenting and to higher rates of harsh and controlling parenting (e.g., Jansen et al., 2012; Ponnet, Van Leeuwen, & Wouters, 2014). Furthermore, these parenting strategies, in turn, have been shown to adversely affect child development across cultures (e.g., Lansford et al., 2005; Mesman, Van IJzendoorn, & Bakermans-Kranenburg, 2012; Soenens, Vansteenkiste, & Van Petegem, 2015). This pattern of associations has also been confirmed in a Chinese study, showing that more maternal stress predicted more maternal psychological aggression toward the child, which, in turn, predicted children's internalizing and externalizing behavior problems (L. Liu & Wang, 2015). Thus, we would expect migrant children to show less positive emotional, social, and school functioning through processes of parental stress resulting in negative parenting.

Taken together, psychological theories and empirical evidence regarding acculturation, discrimination, and socioeconomic pressures faced by migrant families all point toward heightened stress levels. Chronic stress is known to lead to disturbed regulatory systems, a phenomenon also known as *allostatic load* (i.e., the corrosion

of bodily functions that occurs when an individual is repeatedly exposed to stress; Juster, McEwen, & Lupien, 2010; McEwen & Stellar, 1993). This process may affect migrant parents (indirectly hurting child development through less adequate caregiving) and migrant children themselves (directly threatening their well-being). Thus, the literature indicates that rural-to-urban migrant children in China are at risk for unfavorable social-emotional outcomes.

However, not all parents who migrate to the city take their children with them. Some leave their children behind in the rural village to be taken care of by grandparents or relatives. Migrants' decision to leave the children behind or to bring them along depends on several factors. Studies show that children are more likely to be left behind when they are older, when there is more local social support, when the distance of migration is greater, and when the living status of migrants in host cities is less favorable (C. C. Fan, Sun, & Zheng, 2011; H. Liang & Ren, 2010).

Parental Urban-to-Rural Migration: Functioning of Children Left Behind

儿行千里母担忧

(When her child travels far away, a mother will worry to no end.)

The structural and social barriers in the Chinese system that prevent migrants from becoming full urban citizens have led some migrant parents to leave their children behind when moving to an urban host city. These children who stay behind in rural areas are referred to as *children left behind*. On the basis of the sixth national census by the Chinese National Bureau of Statistics in 2010, in about 68% of families with migrant parents, children were left behind rather than migrated with their parents to the cities, resulting in more than 61 million children left behind in rural China (All China Women's Federation, 2013). More than 75% of Chinese migrants send money back to their families still living in rural areas; when children are left behind, the rate is more than 90% (Y. Lu, 2012). One survey showed that most migrant parents return home to their children left behind about once a year, and then they stay there for a month or less (Ye & Pan, 2011). However, only 66% of 3- to 5-year-old children left behind entered kindergarten in 2013, about 3.4% of 6- to 17-year-old children left behind did not receive 9-year compulsory education, and children left behind have a much lower entrance rate—only 23% in 2010—into high school education than others (Duan, Lv, & Wang, 2014; Lv, 2014).

A narrative review of studies published in Chinese about the development of children left behind confirmed

the predominantly negative impact of being left behind when parents move to the city (Qin & Albin, 2010). About half (53%) of the children are left behind by only one parent, so they are still being taken care of by the other parent (All China Women's Federation, 2013). However, single parenthood is known to be particularly stressful and is related to lower quality parenting, which may, in turn, hurt children's well-being (Brown, 2004). Of the other half of children who are left behind by both parents, most children (33% out of 47%) stay with grandparents, who have been most commonly found to use a neglectful parenting style and to show little attention toward the children's psychological needs, possibly because of competing demands and time constraints (Y. Xu & Pei, 2012; J. Ye, Wang, Zhang, & Lu, 2006). Further, about 11% of children left behind live with other relatives or nonrelatives (All China Women's Federation, 2013), and these children have been found to only rarely communicate with such nonparental caregivers (J. Ye et al., 2006). Finally, some children left behind (3%) are left to fend entirely for themselves, which refers to more than 2 million 0- to 17-year-old children. Recently, a tragic story emerged from rural China in which four siblings between 5 and 13 years of age who were left behind by both their parents committed suicide, even though they were provided with sufficient financial support and a large stock of provisions (Miller, 2015).

Most children left behind do have adequate physical care (e.g., being provided with housing and food by a relative), but the notion that this is enough to foster healthy development has been falsified long ago. Attachment theory (Bowlby, 1969, 1973) is one of the most empirically validated psychological theories regarding child development; this theory posits that prolonged separations from parents are expected to lead to less optimal development, because these separations disrupt a child's access to his or her primary attachment figures as havens of security and safety in times of distress, leading to problems in emotion regulation (Kobak & Madsen, 2008). Observations of infants separated from their parents for extended periods of time reveal a behavioral pattern of severe distress characterized by protest, despair, and ultimately detachment (Robertson & Bowlby, 1952). Since then, several studies have shown that separations from parents in childhood are related to unfavorable outcomes and, in particular, to depression (e.g., Browne, Joyce, Wells, Bushnell, & Hornblow, 1995; Slavich, Monroe, & Gotlib, 2011). Although not studied as extensively, attachment theory would also predict more problems in social functioning following separation from parents, because the parent-child relationship is described as a blueprint for future social relationships, and if it is disturbed, this will likely to lead to problems in the social domain—an

assumption that has been confirmed in studies of rhesus monkeys (Suomi, 2008).

The Current Study

In this literature review, we analyze empirical studies that provide insights into the social-emotional adaptation of rural children who migrated to urban areas in China and those who were left behind by their migrant parents. Paradoxically, the reasons that parents migrate to urban areas—with or without their children—are generally to provide better futures for their children, but psychological theories suggest that both migration and being left behind are detrimental to child well-being. Theoretical frameworks describing processes of acculturation, discrimination, and economic pressures experienced by migrant families all emphasize how these heighten both parents' and children's stress levels, and high stress levels, in turn, are known to impair functioning across domains through impaired regulatory systems. Further, the experience of being left behind entails the loss of important attachment figures and often a lack of emotionally supportive alternative caregivers, leaving the children without the much-needed supportive care that fosters healthy psychosocial development. We would therefore expect that both migrant children and children left behind would fare less well than their respective non-migrant and non-left-behind counterparts across psychological-emotional, social, and academic domains of functioning. Further, we would expect migrant children to do better in public schools than in migrant schools.

Studies included

This literature review includes publications not only in English but also in Chinese. In the Chinese-language studies, researchers uncover and disclose an important part of the research literature on rural-to-urban migration and child development in China that has been inaccessible to most Western scholars in the field of child and family studies. To give a relatively current account of societal context in China, we chose to only include studies from 2000 onward. Relevant articles published before 2000 were included as background information in the introduction and discussion parts of each section. Publications in the English language were collected by systematically searching the Web of Science (WoS), PsycINFO, and Education Resources Information Center (ERIC) databases, and for publications in the Chinese language, we searched the China National Knowledge Infrastructure (CNKI). Literature searches were completed on December 31, 2014. See Figures 2 and 3 for the search terms and selection process. We selected articles in which the researchers

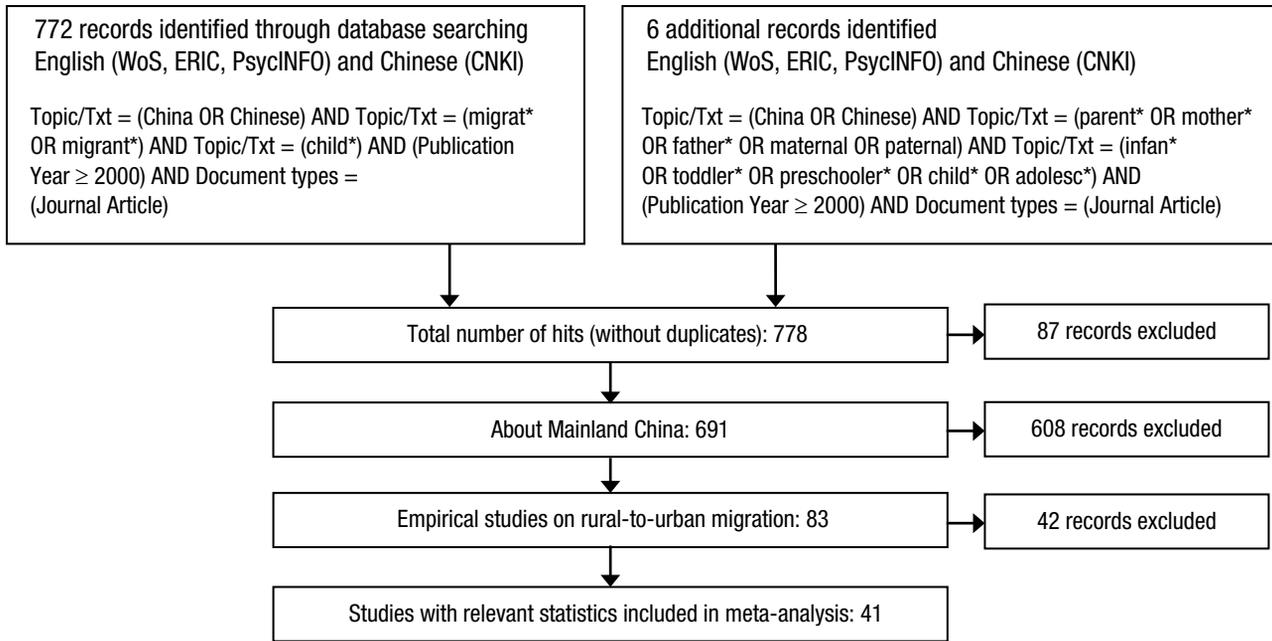


Fig. 2. Overview of literature search strategy and selection criteria for the topic “rural-to-urban migration.” WoS = Web of Science; ERIC = Education Resources Information Center; CNKI = China National Knowledge Infrastructure.

reported on the primary outcomes represented in our hypotheses—namely, emotional, social, and school functioning. *Emotional functioning* refers to children’s feelings about themselves and can be both positive (such as self-esteem) and negative (such as depression). *Social functioning* refers to children’s interactions with peers and also includes outcome measures

of positive aspects (e.g., social competence) as well as negative experiences (e.g., peer rejection). *School functioning* almost exclusively comprises positive variables, mostly related to school grades and sense of belonging to the school. The number of independent samples (k) and the total sample sizes (N) for each meta-analysis can be found in Tables 1, 2, and 3.

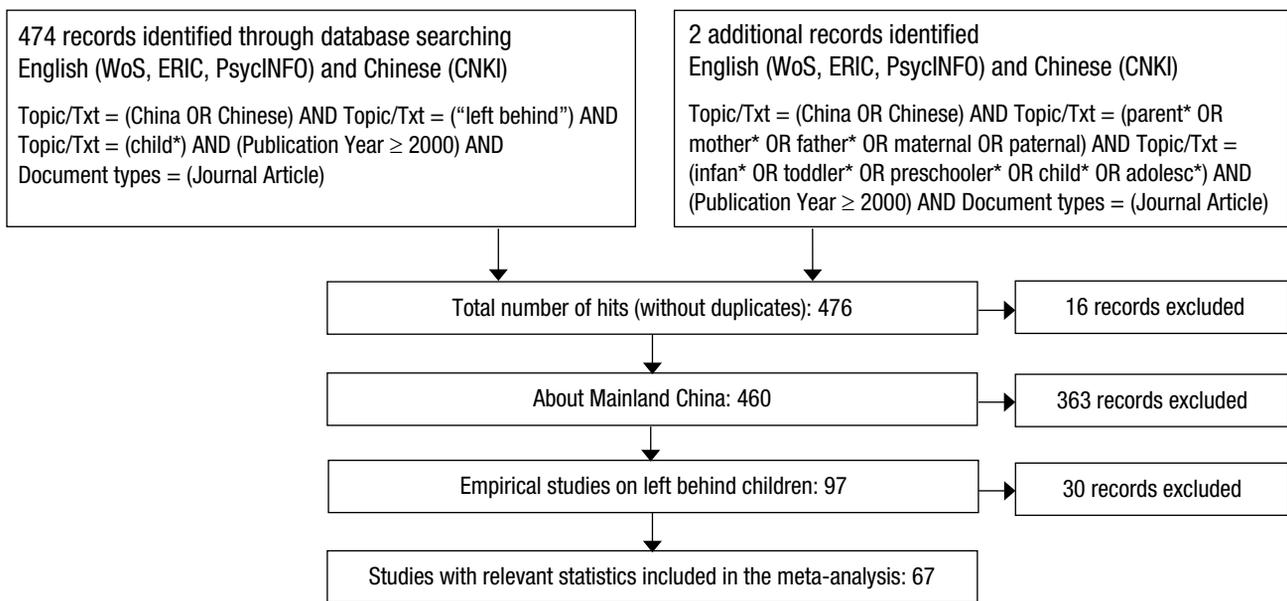


Fig. 3. Overview of literature search strategy and selection criteria for the topic “children left behind.” WoS = Web of Science; ERIC = Education Resources Information Center; CNKI = China National Knowledge Infrastructure.

Table 1. Meta-Analyses of Differences Between Rural Children Who Migrated to Urban Areas and Urban-Born Children in China

Study	Outcome variable ^a	(Informant)	Age of children (years)	Region	Study design	Migrant sample (n)	Urban sample (n)	Effect size ^b (d)
Emotional functioning (<i>k</i> = 15)								
X. Chen, Wang, and Wang (2009)	–	C	8–11	North	CSObs	518	411	0.64
Cheung (2013)	–	C	12–18	South	CSQ	482	838	0.08
H. Y. Li (2009)*	–	C	6–13	South	CSQ	258	279	0.25
Y. Li et al. (2014)*	–	C	3–6	North	CSQ	271	552	0.12
X. Lin, Fang, et al. (2009)*	–	C	11–17	North	CSQ	624	393	0.21
Mao and Zhao (2012)	–	C	11–17	South	CSQ	712	303	0.17
X. Ren et al. (2014)*	–	C + P	10–12	North	CSQ	393	532	0.17
Zeng (2010)	–	P	6–16	South	CSQ	684	545	0.11
H. Zhou (2010)*	–	C	10–12	North	LQ	553	421	0.17
H. Li et al. (2012)*	+	C	11–16	South	CSQ	369	209	0.23
X. Li et al. (2008)*	+	C	12–15	North	CSQ	319	807	1.06
Y. Lin et al. (2013)*	+	C	6–14	South	CSQ	573	1,580	0.16
Ma (2014)*	+	C	11–13	South	CSQ	220	229	0.36
Ouyang and Yin (2014)*	+	C	8–18	N/A	CSQ	407	414	0.23
X. Zhang et al. (2014)*	+	C	10–15	South	CSQ	798	172	0.32
Total (before and after adjustment for publication bias)						7,181	7,685	0.28/0.35
Social functioning (<i>k</i> = 15)								
X. Chen et al. (2009)	–	T + P	8–11	North	CSObs	411	518	0.01
F. Hu and Li (2009)*	–	C	6–15	Both	CSQ	1,164	525	0.34
D. Li et al. (2011)*	–	C	10–12	South	CSObs	91	311	0.24
X. Lin, Fang, et al. (2009)*	–	C	11–17	North	CSQ	624	393	0.17
Y. Lin et al. (2013)*	–	C	6–14	South	CSQ	573	1,580	0.06
Y. Lu and Zhou (2013)	–	C	9–10	North	CSQ	274	246	0.29
Z. Xie et al. (2009)*	–	C	14–16	South	CSQ	238	248	0.25
Yi et al. (2013)*	–	C + O	10–13	South	CSObs	239	332	0.22
Ying and Ye (2007)*	–	C	11–13	South	CSQ	669	459	0.16
H. Zhou (2010)*	–	C	10–12	North	LQ	974	297	0.13
Y. Wen et al. (2009)*	+	C	12–15	North	CSQ	440	216	0.01
T. Hu et al. (2012)*	+	C	11–16	South	CSQ	512	462	0.21
X. Wang and Zhuang (2012)*	+	C	3–6	South	CSQ	324	263	0.79
X. Wang and Zhou (2013)*	+	T	3–6	South	CSQ	139	161	0.01
Y. Li et al. (2014)*	+	C	3–6	North	CSQ	271	552	0.12
Total (before and after adjustment for publication bias)						6,943	6,563	0.17
School functioning (<i>k</i> = 6)								
Y. Wen et al. (2009)*	+	C	12–15	North	CSQ	440	216	0.34
X. Wang and Zhuang (2012)*	+	P + T	3–6	South	CSQ	324	263	0.28
Zeng (2010)	+	P	6–16	South	CSQ	120	83	–0.10
W. X. Li and Lau (2012)	+	C	11–12	South	CSQ	369	209	0.00
Y. Lu and Zhou (2013)	+	T	9–10	North	CSQ	274	246	0.17
W. Liang and Zhang (2013)	+	C	11–13	South	CSQ	1,421	1,836	0.14
Total (before and after adjustment for publication bias)						2,948	2,853	0.16/0.18

Note: References marked with an asterisk refer to publications in Chinese in the Supplemental Material. Positive effect sizes refer to results that confirm the hypotheses (migrant children showing less favorable functioning than local urban children), whereas negative effect sizes refer to results that do not confirm these hypotheses. C = child reported; P = parent reported; T = teacher reported; O = observed; N/A = not applicable; CSObs = cross-sectional observation study; CSQ = cross-sectional questionnaire study; LT = longitudinal test study.

^aA plus sign refers to positive outcomes (e.g., self-esteem, social skills, school belonging), whereas a minus sign refers to negative outcomes (e.g., depression, peer rejection, school problems). ^bFor studies with multiple relevant effect sizes, these were first meta-analyzed within that study, and the resulting effect size was entered in the total meta-analysis.

Table 2. Meta-Analyses of Differences Between Migrant Rural Children in Migrant Versus Public Schools in China

Study	Outcome variable ^a	Age of children (years)	Study design	Region	Migrant school sample size (<i>n</i>)	Public school sample size (<i>n</i>)	Effect size ^b (<i>d</i>)
Emotional functioning (<i>k</i> = 7)							
X. Li et al. (2008)*	–	12–15	North	CSQ	806	319	0.91
X. Lin, Fang, et al. (2009)*	–	11–17	North	CSQ	147	477	0.38
L. Yuan et al. (2009)*	–	14–16	South	CSQ	342	256	0.38
X. Yuan, Fang, Liu, Hou, and Lin (2012)	–	11–16	North	LQ	217 ^c	705 ^c	0.43
Shi et al. (2013)*/X. Deng and Shi (2013)*	+	10–15	North	CSQ	190	313	0.30
R. Wang and Zou (2010)*/Y. Yu and Zou (2008)*	+	12–15	North	CSQ	807	211	0.29
Z. Wang et al. (2014)*	+	7–16	North	CSQ	180	269	0.31
Total (before and after adjustment for publication bias)					2,689	2,550	0.48/0.44
Social functioning (<i>k</i> = 6)							
X. Lin, Fang, et al. (2009)*	–	11–17	North	CSQ	147	477	0.35
X. Yuan et al. (2012)	–	11–16	North	LQ	217 ^c	705 ^c	0.46
Chan, Lai, Choi, Tsang, and Ming (2011)	+	12–14	Both	CSQ	455	289	0.00
Ni and Li (2014)*	+	9–18	North	CSQ	642	566	0.35
Shi et al. (2013)*/X. Deng and Shi (2013)*	+	10–15	North	CSQ	190	313	0.29
Z. Wang et al. (2014)*	+	7–16	North	CSQ	180	269	0.46
Total (before and after adjustment for publication bias)					1,831	2,619	0.32/0.29
Academic functioning (<i>k</i> = 6)							
X. Li et al. (2009)*	+	14–16	South	CSQ	807	339	0.13
X. Lin, Wang, et al. (2009)*	+	11–17	North	CSQ	90	103	0.35
Nie and Xu (2011)*	+	12–15	North and South	CSQ	356	422	0.47
Qu et al. (2008)*	+	12–15	North	CSQ	806	319	0.35
Z. Wang et al. (2014)*	+	7–16	North	CSQ	180	269	0.47
Y. Wen et al. (2009)*	+	12–15	North	CSQ	336	104	0.59
Total (before and after adjustment for publication bias)					2,575	1,556	0.38/0.31

Note: References marked with an asterisk refer to publications in Chinese in the Supplemental Material. Positive effect sizes refer to results that confirm the hypotheses (migrant children in public schools function better than those in migrant schools), whereas negative effect sizes refer to results that do not confirm these hypotheses. CSQ = cross-sectional questionnaire study; LQ = longitudinal questionnaire study.

^aIn almost all studies, the child outcomes were self-reported (teacher reports were used in X. Lin, Wang, et al., 2009); a plus sign refers to positive functioning (e.g., self-esteem, social skills, school belonging), whereas a minus sign refers to negative functioning (e.g., depression, loneliness, school problems). ^bFor studies with multiple relevant effect sizes, these were first meta-analyzed within that study, and the resulting effect size was entered in the total meta-analysis. ^cSample sizes were averaged across two waves.

Meta-analytic approach

Whenever enough studies (four or more) were found for a quantitative approach, we conducted a meta-analysis using Version 2 of the Comprehensive Meta-Analysis program (Borenstein, Hedges, Higgins, & Rothstein, 2005). For each study, effect sizes were calculated. Because all meta-analyses reflected group comparisons (e.g., differences in functioning between migrant children and local urban children), we used the standard differences in means (*d*). Significance tests and moderator analyses were performed through random-effect models, which

are more conservative than fixed-effect models. In the random-effect model, the true effect could vary among studies, depending on characteristics of the specific sample. Because of these different characteristics, there may be different effect sizes underlying different studies (Borenstein, Hedges, Higgins, & Rothstein, 2009). To test the homogeneity of the overall and specific sets of effect sizes, we computed *Q* statistics (Borenstein et al., 2009). In addition, we computed 95% confidence intervals (CIs) around the point estimate of each set of effect sizes as well as *Q* statistics, *I*² statistics, and *p* values to assess differences among combined effect sizes for specific subsets

Table 3. Meta-Analyses of Differences Between Children Left Behind and Children Not Left Behind in Rural China

Study	Outcome variable ^a	Age of children (years)	Region	Study design	Left-behind sample (n)	Comparison sample (n)	Effect size ^b (d)
Emotional functioning (<i>k</i> = 38)							
S. Cheng et al. (2008)*	-	14-18	South	CSQ	2,440	970	0.50
L. Cui (2009)*/Hao and Cui (2007)*	+	7-17	Both	CSQ	321	763	0.52
Z. Deng and Li (2014)*	-	11-14	South	CSQ	2,065	1,680	0.11
F. Fan, Su, Gill, and Birmaher (2010)	-	9-13	South	CSQ	629	645	0.28
X. Fan (2011)*	+	11-16	South	CSQ	240	235	0.32
X. Fan et al. (2013)*	+	11-14	South	LQ	72	56	0.50
Gao et al. (2010)	-	13-15	South	CSQ	244	1,206	0.07
S. Guo (2006)*	-	8-16	South	CSQ	770	599	0.11
J. Guo et al. (2012)	-	8-17	North	CSQ	164	140	0.17
Han et al. (2012)*	+	10-13	South	CSQ	1,694	1,223	0.04
B. He et al. (2012)	-	9-14	South	CSQ	590	285	0.50
K. Hou et al. (2014)*	+	11-16	North	CSQ	1,457	2,355	0.11
H. Hu, Lu, and Huang (2014)	-	6-14	South	CSQ	764	1,477	0.20
Y. Huang, Liu, et al. (2010)*	+	11-12	South	CSQ	596	948	0.99
Y. Huang, Zheng, et al. (2010)*	+	14-16	South	CSQ	98	115	0.35
Z. Jia and Tian (2010)	+	8-14	South	CSQ	324	282	0.25
Kuang and Xu (2013)*	+	11-17	South	CSQ	267	644	0.01
L. J. Liu, Sun, Zhang, Wang, and Guo (2010)	+	9-11	South	CSQ	216	240	-0.22
Liu (2012)*	-	12-16	North	CSQ	205	235	2.15
Y. Liu et al. (2014)*	+	14-16	South	CSQ	924	1,324	0.49
J. Lu et al. (2010)	+	14-15	South	CSQ	442	434	0.51
Q. Ren and Tang (2014)*	-	10-15	Both	CSQ	516	2,213	0.10
Song and Zhang (2009)*	+	12-14	South	CSQ	257	72	0.36
Su, Li, Lin, Xu, and Zhu (2013)	+	12-15	South	CSQ	501	653	0.12
X. Tao, Guan, Zhao, and Fan (2014)	-	3-5	South	CSQ	650	100	-0.01
S. Wang et al. (2011)*	-	6-14	South	CSQ	301	260	0.06
M. Wen and Lin (2012)	+	8-18	South	CSQ	303	322	-0.05
M. Xiao et al. (2010)*	-	12-16	South	CSQ	283	182	0.20
Q. Xie et al. (2011)	-	12-17	South	CSQ	1,108	500	0.18
P. Xie (2014)*	-	12-14	South	CSQ	1,425	317	0.18
Z. Xu et al. (2010)*	-	12-14	South	CSQ	1,920	1,482	1.09
Y. Xu (2013)*	+	11-15	South	CSQ	120	126	0.83
Y. Zhang (2013)*	-	9-14	North	CSQ	400	282	0.20
M. Zhao et al. (2012)*	+	5-16	North	CSQ	926	1,081	0.13
X. Zhao et al. (2014)	+	7-17	South	CSQ	1,694	1,223	0.15
Z. Zhou and Wang (2011)*	-	8-17	South	CSQ	486	1,398	0.27
N. Zhou and Xu (2012)*	+	3-4	South	CSQ	213	587	0.27
Y. Zhou et al. (2013)*	-	11-16	South	CSQ	260	82	-0.09
Total (before and after adjustment for publication bias)					25,885	26,736	0.31/0.43
Social functioning (<i>k</i> = 35)							
Y. Chen, Zhum, and Chen (2013)	+	3-4	Both	CSQ	241	218	-0.02
L. Cui (2009)*/Hao and Cui (2007)*	+	7-17	Both	CSQ	321	763	0.23
L. Fan et al. (2009)*	+	9-14	North	CSQ	198	173	0.19

(Continued)

Table 3. (Continued)

Study	Outcome variable ^a	Age of children (years)	Region	Study design	Left-behind sample (<i>n</i>)	Comparison sample (<i>n</i>)	Effect size ^b (<i>d</i>)
F. Fan et al. (2010)	+	9–13	South	CSQ	629	645	0.17
X. Fan (2011)*	–	11–16	South	CSQ	240	235	0.21
X. Fan et al. (2013)*	+	11–14	South	LQ	72	56	0.34
Gao et al. (2007)*	+	11–17	South	CSQ	357	310	0.17
Gao et al. (2010)	–	13–15	South	CSQ	541	2,445	0.15
X. Hu and Chen (2011)*	+	8–11	South	CSQ	418	340	0.00
H. Hu et al. (2014)	–	6–14	South	CSQ	764	1,477	0.25
Y. Huang, Liu, et al. (2010)*	+	11–12	South	CSQ	596	948	1.17
Z. Jia and Tian (2010)	+	8–14	South	CSQ	324	282	0.48
Kuang and Xu (2013)*	+	11–17	South	CSQ	267	644	0.22
X. Liu et al. (2007)*	+	12–14	South	CSQ	112	132	0.24
L. J. Liu et al. (2010)	–	9–11	South	CSQ	216	240	0.23
Z. Liu (2013)*	–	9–11	South	CSQ	381	169	–0.04
Y. Lu et al. (2014)*	–	11–17	South	CSQ	250	538	0.11
Luo, Gao, and Zhang (2011)	+	13–17	Both	CSQ	456	494	–0.31
Su et al. (2013)	–	12–15	South	CSQ	501	653	0.24
Tan et al. (2009)*	+	12–14	South	CSQ	584	538	0.14
X. Tao et al. (2014)	–	3–5	South	CSQ	650	100	–0.07
F. Xiao (2007)*	+	8–14	South	CSQ	237	192	0.33
C. Xiao and Chen (2009)*	+	12–14	North	CSQ	492	514	0.28
Q. Xie et al. (2011)	+	12–17	South	CSQ	1,108	500	–0.12
P. Xie (2014)*	+	12–14	South	CSQ	1,425	317	0.21
Y. Ye (2014)*	+	8–11	South	CSQ	156	163	0.08
L. Zhang (2011)*	–	8–14	North	CSQ	264	213	0.00
J. Zhang (2012)*	–	8–11	South	CSQ	50	150	0.55
X. J. Zhang et al. (2012)	+	0–3	South	CSQ	81	208	0.18
M. Zhao et al. (2012)*	–	5–16	North	CSQ	926	1,081	0.13
J. Zhao et al. (2013)*	–	10–17	North	CSObs	76	215	–0.01
X. Zhao et al. (2014)	–	7–17	South	CSQ	1,694	1,223	0.15
Z. Zhou et al. (2007)*	–	6–14	South	CSQ	138	329	0.20
N. Zhou and Xu (2012)*	+	3–4	South	CSQ	374	213	0.61
Zhu (2009)*	+	12–14	South	CSQ	304	388	0.38
Total (before and after adjustment for publication bias)					15,443	17,106	0.20/0.31
Academic functioning (<i>k</i> = 8)							
X. Chen (2009)*	+	10–15	North	LT	485	2,143	–0.10
Jia (2010)	+	8–14	North	CSQ	324	282	0.16
Kuang (2013)*	+	11–17	South	CSQ	267	644	0.19
Meyerhoefer (2011)	–	7–15	North	CST	44	305	0.16
D. Wang (2009)*	+	6–17	North	CST	227	269	0.66
Wen and Lin (2012)	+	12–18	South	CSQ	153	322	–0.07
Yang (2010)*	+	7–11	South	CST	61	61	0.48
Yao (2008)	+	9–11	Both	CSQ	2,228	4,984	0.09
Total (before and after adjustment for publication bias)					3,789	9,010	0.13

Note: References marked with an asterisk refer to publications in Chinese in the Supplemental Material. Positive effect sizes refer to results that confirm the hypotheses (children left behind show less positive functioning than non-left-behind children), whereas negative effect sizes refer to results that do not confirm these hypotheses. CSQ = cross-sectional questionnaire study; LQ = longitudinal questionnaire study; CSObs = cross-sectional observation study; LT = longitudinal test study; CST = cross-sectional test study (standardized testing).

^aIn almost all studies, the child outcomes were self-reported (parent reports were used in Zhou & Xu, 2012); a plus sign refers to positive functioning (e.g., self-esteem, social skills), whereas a minus sign refers to negative functioning (e.g., depression, loneliness). ^bFor studies with multiple relevant effect sizes, these were first meta-analyzed within that study, and the resulting effect size was entered in the total meta-analysis.

of study effect sizes grouped by moderators. Contrasts were only tested when at least two of the subsets consisted of at least four studies each (Bakermans-Kranenburg, Van IJzendoorn, & Juffer, 2003). Moderators with enough variation to be tested included positive versus negative outcomes (e.g., self-esteem vs. depression), child age (0–12 vs. 13–18 years), study region (North vs. South), and language of publication (English vs. Chinese). We also coded study design, but almost all studies were cross-sectional and used questionnaire methods, yielding too little variation to test moderator effects. We tried to code socioeconomic characteristics of the study samples, but only a small minority of researchers reported this in publications, which made it impossible to test this moderator.

Funnel plots for each subset (if $k \geq 10$) were examined to detect possible publication bias. A description of the use of these plots and all funnel plots from the current analyses are presented in the Supplemental Material. We further report the fail-safe N for each analysis, representing the number of studies needed to reduce the reported significant effect size to a nonsignificant effect size.

Results

Parental rural-to-urban migration: Functioning of migrant children

The first set of meta-analyses revealed that migrant children are impaired compared with local urban children in all domains of functioning (see Table 1).

Emotional functioning. Migrant children showed more problems in emotional functioning than local urban children ($k = 15$; $d = 0.28$, 95% CI [0.16, 0.41], $p < .01$; $Q = 198.02$, $p < .01$, $I^2 = 92.93$), with a fail-safe N of 1,007. Inspection of the funnel plots showed evidence for publication bias against larger studies demonstrating that rural migrant children have lower emotional well-being than local urban children, with four missing studies on the upper right-hand side of the plot. Thus, the difference between rural and urban children's emotional functioning was underestimated in the meta-analysis, and the adjusted effect size after trimming was therefore higher than before ($d = 0.35$, 95% CI [0.23, 0.46]). Because 12 out of 13 studies were published in Chinese, we did not examine the funnel plots for the Chinese and English sets of studies separately. There were no significant moderator effects for positive versus negative outcomes ($p = .64$), age group ($p = .43$), or study region ($p = .60$).

Social functioning. Migrant children also fared worse than local urban children regarding social functioning ($k = 15$; $d = 0.17$, 95% CI [0.10, 0.24], $p < .01$; $Q = 48.96$, $p < .01$, $I^2 = 71.40$), with a fail-safe N of 275 and no evidence for publication bias. There were no significant

moderator effects for positive versus negative outcomes ($p = .24$), child age ($p = .73$), and study region ($p = .21$). The moderator effect for language of publication could not be tested because most studies were published in Chinese.

School functioning. Regarding school functioning, migrant children showed poorer adaptation than local urban children ($k = 6$; $d = 0.16$, 95% CI [0.05, 0.26], $p < .01$; $Q = 13.56$, $p < .01$, $I^2 = 63.12$). The fail-safe N was only 36, indicating that this effect needs to be interpreted with caution. Because of the small number of studies, we could not test moderator effects. The meta-analysis regarding the relation between school type and migrant children's functioning shows a clear advantage for children in public schools (see Table 2). Migrant children in public schools showed more positive functioning than those in migrant schools in all domains: emotional functioning ($k = 7$; $d = 0.44$, 95% CI [0.27, 0.61], $p < .01$; $Q = 55.89$, $p < .01$, $I^2 = 89.26$; fail-safe $N = 425$), social functioning ($k = 6$; $d = 0.32$, 95% CI [0.19, 0.46], $p < .01$; $Q = 28.53$, $p < .01$, $I^2 = 82.48$; fail-safe $N = 197$), and school functioning ($k = 6$; $d = 0.38$, 95% CI [0.24, 0.53], $p < .01$; $Q = 20.52$, $p < .01$, $I^2 = 75.63$; fail-safe $N = 172$). Because of the small numbers of studies in these meta-analyses on school type, we did not perform moderator analyses.

Parental rural-to-urban migration: Functioning of children left behind

The studies in which researchers examined the functioning of rural children left behind in comparison with their rural peers who were not left behind are shown in Table 3. Overall, children left behind fared worse than their non-left-behind counterparts across domains of functioning.

Emotional functioning. For the meta-analysis on emotional functioning, we found 38 effect sizes. The results showed less positive emotional functioning of children left behind compared with their non-left-behind peers ($k = 38$; $d = 0.31$, 95% CI [0.19, 0.342], $p < .01$; $Q = 1,294.22$, $p < .01$, $I^2 = 97.14$), with a fail-safe N of 7,495. The funnel plot showed evidence for publication bias, with 11 missing studies to the upper right-hand side of the mean (bias against large studies showing unfavorable emotional outcomes for children left behind). The adjusted effect size after trimming was therefore higher than before ($d = 0.43$, 95% CI [0.32, 0.54]). To investigate whether publication bias was different in the studies published in Chinese ($k = 27$) versus those published in English ($k = 11$), we examined the funnel plots of each of these two sets of studies separately. Publication bias was only evident in the Chinese set (six missing studies on the top right of the funnel). Moderator analyses also showed that the effect sizes for the emotional functioning of children left behind were significantly higher ($p < .01$)

in studies published in Chinese ($k = 27$; $d = 0.38$, 95% CI [0.23, 0.53]) than those published in English ($k = 11$; $d = 0.14$, 95% CI [0.04, 0.23]). This moderator effect was still significant after removing one large effect size in the Chinese language group ($d = 2.15$; X. Liu et al., 2012). Further, child age was a significant moderator ($p < .05$), with stronger effect sizes of being left behind for unfavorable emotional functioning in adolescent samples ($k = 16$; $d = 0.45$, 95% CI [0.22, 0.69]) than in samples including both children and adolescents ($k = 11$; $d = 0.14$, 95% CI [0.09, 0.18]) but not in child samples ($k = 11$; $d = 0.23$, 95% CI [0.04, 0.43]). However, the difference in effect size between the adolescent and mixed samples was due to the aforementioned single large effect size in the adolescent group ($d = 2.15$; X. Liu et al., 2012). Without this effect size, the moderator effect of age was no longer significant. There were no significant moderator effects for positive versus negative outcomes ($p = .78$) or study region ($p = .21$).

Social functioning. Children left behind also fared worse than their peers with regard to social functioning ($k = 35$; $d = 0.20$, 95% CI [0.12, 0.29], $p < .01$; $Q = 496.37$, $p < .01$, $I^2 = 93.15$), with a fail-safe N of 2,540. The funnel plot again showed evidence for publication bias—that is, 11 missing studies to the middle/upper right-hand side of the mean (showing bias against medium to large studies in which negative outcomes of being left behind were found when it comes to social functioning). The adjusted effect size after trimming was therefore higher than before ($d = 0.31$, 95% CI [0.22, 0.39]). Separate analyses of the studies published in Chinese ($k = 25$) and in English ($k = 10$) revealed that publication bias was only present in the Chinese set of studies, with eight missing studies to the right of the mean. Language of publication was not a significant moderator in these analyses ($p = .22$); furthermore, positive versus negative outcomes ($p = .54$), child age ($p = .37$), and study region ($p = .29$) were also not significant moderators.

School functioning. Further, there was a near-significant trend for children left behind showing poorer school functioning than their peers ($k = 8$; $d = 0.13$, 95% CI [0.00, 0.26], $p = .054$; $Q = 28.70$, $p < .01$, $I^2 = 75.61$). We did not examine the funnel plot or moderator effects because of the small number of studies in this analysis.

Discussion

The current series of meta-analyses clearly shows that parental rural-to-urban migration in China is related to unfavorable child outcomes across emotional, social, and academic domains of functioning. This is the case both for children who migrate to the city with their parents

and those who are left behind in rural China. We discuss these results in terms of their scientific and societal meaning as well as in light of issues such as publication bias and potential moderators of the reported effects.

Migrant children

Our review shows that Chinese domestic migrant children show lower emotional well-being, poorer social functioning, and poorer school functioning than local urban children, which is remarkably consistent with theories and empirical evidence about the fates of inter-country migrant families (e.g., Bhugra, 2004; McLoyd, 1990; Stevens & Vollebergh, 2008). It appears that especially the experience of chronic (economic and acculturation) stress constitutes a major risk for nonoptimal migrant family functioning, leaving both parents and children vulnerable to physical and mental health problems. In line with this, compared with local children, migrant children have been found to experience less warmth/understanding and more punishment/strictness from their parents (X. Zheng, 2003), to spend less time communicating with their parents, to show less initiative in parent-child communication (L. Chen & Liu, 2012), to experience less optimal family functioning (J. Hou, Zou, & Li, 2009), and to experience more physical abuse (Wong, Chen, Goggins, Tang, & Leung, 2009). Unfortunately, insufficient data on the topic of socioeconomic status precluded the investigation of this variable as an explanatory variable in the current meta-analyses. Some studies do show that the migrant-local variable does not predict differences in child functioning after controlling for socioeconomic factors (e.g., Mao & Zhao, 2012), whereas other studies show that there are still significant differences between migrant and local children in functioning after controlling for socioeconomic factors (e.g., W. Liang & Zhang, 2013; Zeng, 2010). Further, little is known about group differences in children's or parents' stress levels.

An important part of migrant children's stress is due to the experience of social rejection by local peers but also by adults such as teachers and other children's parents. Because the experience of social rejection has been shown to share neural circuitry with the experience of physical pain (Eisenberger & Lieberman, 2004), these children are not only at risk for emotional, social, and academic problems but may also develop hypersensitivity and heightened distress in response to negative physical sensations. In addition, social rejection is known to hurt migrant children's self-esteem (W. Gu, 2006; Z. Guo, 2007; Z. Xie & Pan, 2008), which, in turn, harms children's emotional well-being, school functioning (Ciarrochi, Heaven, & Davies, 2007), and social functioning (Riggio, Throckmorton, & DePaola, 1990).

Attending public schools appears to relate to higher well-being in migrant children, but this may be partly because it is easier to enroll in public rather than migrant schools when the family's socioeconomic status is higher (L. Yuan, 2011). Thus, children in public schools already have an advantage over those in migrant school in terms of their family's background. Unfortunately, in studies to date, researchers have not taken this issue into account. Another problem specific for migrant children in urban China is that their parents tend to move frequently from one worksite to the next, which may harm their relations with peers and teachers and foster a lack of belonging (Z. Guo, 2007). These migrant-specific stressors may also explain why researchers in several studies found that migrant children also fare worse than their left-behind counterparts (e.g., Jin, Liu, & Chen, 2012; W. Zhou, Gao, Sun, & Luo, 2011). Unfortunately, the scientific literature lacks longitudinal studies in which researchers investigate mediation models that include variables related to stress, discrimination, parenting quality, and family functioning in the context of China's massive rural-to-urban migration.

Children left behind

The meta-analyses further show that being left behind without parental care when parents migrate to the city to work is detrimental to child emotional well-being and social functioning. Further, the literature on predictors of the functioning of children left behind (not tested meta-analytically) shows that the outcomes for those with both parents (vs. only one parent) who migrated are generally most unfavorable (e.g., J. Chen, Fan, Cheng, & Wang, 2014; W. Liang, Hou, & Chen, 2008; Z. K. Liu, Li, & Ge, 2009; X. Sun, Zhou, Wang, & Fan, 2010). In addition, children whose mothers migrated tend to do worse than those whose fathers migrated (e.g., Z. K. Liu et al., 2009; Y. Lu, 2012; Y. Zhao, Fan, & Liu, 2014). These findings are not surprising, as they confirm the traditional role of mothers as primary caregivers, whose absence is felt more acutely by children than the absence of fathers. It also means that in cases of the mother migrating, the child loses its primary attachment figure, especially given the relatively infrequent and brief visits that generally occur after parents have migrated (Ye & Pan, 2011). From an attachment theory perspective, prolonged separation from an attachment figure is likely to spark emotional distress, including anxiety, anger, depression, and emotional detachment (Bowlby, 1977). Indeed, there is evidence that the risk for depression following interpersonal loss is substantially larger than for any other type of stressful life event (Kendler, Hettner, Butera, Gardner, & Prescott, 2003; Monroe, Rohde, Seeley, & Lewinsohn, 1999). An earlier onset of parental absence in rural

children left behind was found to be related to worse child outcomes, especially at less than 3 years of age (e.g., Z. K. Liu et al., 2009), which is consistent with other literature on the impact of early separations from caregivers and subsequent functioning (Adam, 2004; Crawford, Cohen, Chen, Anglin, & Ehrensaft, 2009; Moss, Cyr, Bureau, Tarabulsky, & Dubois-Comtois, 2005).

In the meta-analyses, we found no significant moderator effect of age of the children left behind at the time of the study, but this does not account for potential effects of the age at which the children were first left behind, which may be years earlier than the age at the time of the study. In some studies, researchers have addressed the age at which children are left behind and the duration of parental absence in relation to these children's outcomes, and they generally have found worse outcomes for earlier onset of parental absence (F. Fan, Su, Gill, & Birmaher, 2010; Z. K. Liu et al., 2009; N. Wu & Lian, 2011; Xia, Qin, Su, Liu, & Tang, 2011; D. Zhang, 2007), and longer duration of parental absence (F. Fan et al., 2010; J. Lu, Lu, & Lin, 2010; R. Tao & Zhou, 2012; N. Wu & Lian, 2011; Q. Xie, Yang, & Zhong, 2011; X. Zhang et al., 2011). These factors could not be tested in the meta-analyses, as these factors generally are not reported, and only the current age of the participating children is known rather than the age at which they were left behind.

Furthermore, the quantity and quality of contact with the parents as well as the quality of care that children receive from their new guardians appear to relate to the well-being of children left behind. If the migrant parents manage to contact their children regularly, if perceived family cohesion and parental attachment are high, and if the nonparental guardian provides a supportive home, then children may fare less poorly when left behind (F. He et al., 2011; W. Jia, 2011a, 2011b; L. J. Liu, Sun, Zhang, Wang, & Guo, 2010; L. Zhang, Wang, & Zhao, 2014). Similarly, more adequate supervision and attention from the (temporary) nonparental guardians are likely to benefit left-behind children's development in other areas as well, such as academic functioning (Ye & Pan, 2011) and physical health (e.g., M. Wen & Lin, 2012). In some studies, researchers have also reported more unfavorable outcomes for boarding school students or other nonfamily care versus students staying with relatives (F. Fan et al., 2010; W. Jia, 2011b, 2012; L. Zhang et al., 2012), suggesting that investment in nonfamily care facilities may not be the best approach. It may be better if rural governments facilitate the socioeconomic circumstances of the caregiving relatives to enhance these children's rearing environment within the emotional security of a family setting. In sum, raising awareness of the plight of children left behind and what other caregivers can do to foster their emotional and social well-being should be at the forefront of rural governments' policies.

When considering the findings referenced earlier, it is important to note that we found evidence for publication bias in the opposite direction than one would generally expect. Publication bias is usually thought to work against (smaller) studies with nonsignificant results or with effect sizes in the nonhypothesized direction—that is, those with negative effect sizes (Duval & Tweedie, 2000a). However, we found multiple instances of publication bias against medium to large studies with effect sizes in the hypothesized direction. Further investigation of the data sets revealed that this type of publication bias was only found in the sets of studies published in Chinese and not in those published in English. Although highly speculative, it may be that for certain Chinese researchers and journals, there is a reluctance to publish results that show unfavorable outcomes of current Chinese government policies and programs, such as the political emphasis on economic growth that is largely responsible for the booming rural-to-urban migration of families and that is indirectly responsible for the phenomenon of children left behind in rural areas. An in-depth analysis of a wider range of studies specifically aimed at uncovering such potential patterns would be needed to properly test this idea. For example, a series of meta-analyses could be done to cover more than just the social-emotional adjustment of children facing (parental) rural-to-urban migration, also including adult migrants' functioning and physical health outcomes. Such a series of meta-analyses could help to uncover whether there is systematic publication bias in favor of results that do not imply criticism on Chinese governmental policies.

Limitations of this research

Despite notable strengths of this review—including that to our knowledge we are the first to quantitatively and systematically integrate research on how changes in Chinese society affect child development—the work should be considered in light of several limitations. First, this review is not exhaustive in the area of rural-to-urban migration in China. Despite the breadth of this review, we did set some boundaries for the sake of feasibility. For instance, we only barely scratched the surface of the issue related to migrant families in (urban) China, but many more issues regarding migrant populations would be relevant to address. Further, a limitation of the inclusion of studies published (only) in Chinese is that unfortunately these studies were not always of the best quality in terms of design. Common problems were the exclusive use of single informants and questionnaires as well as the lack of longitudinal or experimental designs (although these were not exclusive to the Chinese articles). Additionally, most meta-analyses showed considerable heterogeneity as evidenced by large I^2 values (most

around 80%), suggesting that important moderators may be at play that could explain large differences in effect sizes within sets of studies. Unfortunately, only a few moderators (i.e., language of publication, type of outcome variable, child age, and study region) could be tested, and these were mostly not significant. More moderators that could provide explanations for different processes in different subgroups could not be tested because of a lack of available data (as was the case for socioeconomic status) or a lack of variation in the studies selected for the meta-analyses (as was the case for study design).

Finally, there are limitations to comparisons between migrant and nonmigrant (urban or rural) families. Those who migrate may differ from those who do not on several dimensions that could be responsible for differences in child functioning between the two groups, which would make the relation with migration itself a spurious one. However, in China the main driving factors behind rural-to-urban migration appear to be locality determined and not so much personally determined. For example, some of the poorer rural areas where family incomes were traditionally low are now emptying rapidly, whereas the richer rural provinces are still well-populated (W. Sun, Bai, & Xie, 2011). Nevertheless, this does suggest that the experience of economic strain is likely to be responsible for migration, suggesting that children with migrant parents (whether they accompany them or not) might be at risk for unfavorable development simply because of their disadvantaged socioeconomic background. It is therefore crucial to take such contributing factors into account when studying the potential effects of migration on child development.

Conclusion and Implications

Overall, the empirical studies on the consequences of rural-to-urban migration for children in China described in this review provide more evidence for patterns of association between family circumstances and child development that are similar to those found elsewhere. Chinese children who are deprived of their primary attachment figures either physically (in the case of children left behind) or emotionally (in the case of migrant parents overwhelmed by the demands of their new urban working environment) fare less well than Chinese children growing up in stable homes (e.g., X. Chen, Wang, & Wang, 2009). Unfortunately, Chinese society is currently rife with developments that threaten family stability and may thus adversely affect the adjustment of many children. However, one study also showed evidence that through urbanization processes—in terms of increased opportunities and more optimistic expectations about improvements in socioeconomic circumstances—positive parenting strategies, such as autonomy encouragement, have become more common (X.

Chen, Bian, Xin, Wang, & Silbereisen, 2010). It appears that the macrolevel processes currently going on in China can lead both to detrimental disruptions in family life and to improvements in the quality of parent-child relations. This paradox is most likely due to the differing levels of success that parents have in becoming a part of the socioeconomic boom. Those who manage to get a piece of the pie will thrive, but those who miss the boat will flounder. Thus, a major societal challenge for China is to minimize the detrimental processes related to the country's economic reforms and policies for large groups of families and to provide services and opportunities to those who do not (immediately) manage to catch the train to affluence and security.

The development of rural-to-urban-migrant children in China may be improved by enhancing their opportunities to enroll in public schools and by improving the quality of the migrant schools. The former strategy may be more advantageous than the latter because it allows for the social integration of rural migrant children within the school context; separate schools preclude regular contact between the two groups, which may, in turn, exacerbate social inequalities between the two groups. Further, given that by 2010 more than 61 million Chinese children had been left behind by their parents, the observed relations between parental migration and child outcomes have considerable public health implications for child development in this region. Unfortunately, this will be difficult to change under the current policy and economic circumstances in China. As our analyses show, taking children along to the city in search of work is not necessarily a much better alternative. Migrant children's adjustment is significantly worse than that of local urban children and, in some areas, is even worse than that of children left behind (e.g., W. Zhou, Gao, Sun, & Luo, 2011), even though migrant parents who take their children with them tend to be higher educated than those who do not (H. Liang & Ren, 2010). This conundrum can be resolved best if government institutions intervene and promote equal rights for migrant families in urban areas, or when rural areas develop to meet adequate economic and educational standards; however, both of these options are unlikely to be realized in the near future. The best point of intervention may, however, be a role for local rural governments to organize proper facilities and to provide support for these children (Qin & Albin, 2010). For example, adequate foster homes for children left behind, psychologist-in-school programs, and psychological training for teachers could be beneficial.

In conclusion, our literature review shows that one of the biggest challenges to Chinese society is to adopt an inclusive approach to family politics in which parents and children are provided with opportunities as well as safeguards in this era of major societal change. Some changes have occurred recently. Urban areas are increasingly more

open to migrants, with many new regulations being enacted to integrate migrants into cities more easily (C. Yu, 2013). For example, in 2013, the boundary of urban and rural *hukou* has been lifted in middle-sized and small cities, and many cities have started to offer community-level medical service to migrants. Thus, some of these societal challenges are being addressed in a changing societal context as we write. The biggest challenge to empirical research on Chinese family life is also about the adoption of a more inclusive approach so as to do justice to the country's enormous diversity in ethnicities, regions, and demographic developments. This approach will undoubtedly further researchers' insight into the development of one eighth of the world's children.

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Both authors contributed equally to this article.

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The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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Supplemental Material

Additional supporting information may be found at <http://pps.sagepub.com/content/by/supplemental-data>

Note

1. In 2015, roughly 1 U.S. dollar = 6.21 Yuan.

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