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# Social stress, locality of social ties and mental well-being: The case of rural migrant adolescents in urban China



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## ABSTRACT

By comparing rural migrant and urban native adolescents in Guangzhou, the largest city in south China, this study investigated the relationships between social stress, social ties that link migrants to their host cities (local ties) and to their rural home communities (trans-local ties), and the migrants' mental well-being. Non-migration social stress was more strongly related to poor psychological health than to weak self-efficacy in both migrant and urban native adolescents. This pattern also applied to the effect of migration-specific assimilation stress on psychological health and self-efficacy in migrants. Social ties directly enhanced these two well-being outcomes in both samples, with the effects of trans-local and local ties proving equally potent among migrants. Trans-local ties were somewhat more useful for migrants in moderating the effects of non-migration social stress and assimilation stress, whereas the stress moderation function of social ties was less pronounced in urban natives. These findings extend the migration, network and social stress literature by identifying how local and trans-local ties protect mental health and mitigate stress in migrants.

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## 1. Introduction

Economic reform in China over the past three decades has induced massive rural-to-urban migration. According to the 2010 National Population Census, an estimated 221.43 million rural residents had relocated from the largely poor, agriculture-dominated rural areas of the western and central inland provinces. These people had migrated to cities on the eastern seaboard, such as Beijing, Shanghai, Guangzhou and Shenzhen, in search of better job opportunities and income (China National Bureau of Statistics, 2011). Unlike most internal migration settings in which migrants enjoy relative freedom of movement, internal migration within China is plagued by substantial institutional barriers under the long-standing household registration (*hukou*) policy, with its rural–urban bifurcation (Tong and Piotrowski, 2012). The *hukou* policy has been somewhat relaxed in recent years, and some locales offer urban *hukou* to rural migrants who reach stipulated levels of wealth or college education. However, it remains very hard for rural migrants to acquire urban *hukou*, to settle permanently in receiving cities or to become entitled to the same social benefits as urban residents (Nielsen and Smyth, 2008; Zhang and

Treiman, 2013). Past studies have reported on the social stress created by rural-to-urban migration in China, particularly that emanating from marginalization due to the *hukou* system (Chen, 2011; Chen et al., 2011; Jin et al., 2012; Li et al., 2007; Wang et al., 2010) and the environmental hazards of urbanization (Chen et al., 2013), and the effect of this stress on the well-being of adult migrants.

For rural children who accompany their migrant parents to cities, migration is equally stressful because they share the fate of their parents in being treated as second-class citizens who are precluded from attaining urban citizenship (Hu et al., 2002; Wu, 2010). Currently, 20.8% of China's internal migrants are school-aged children, and their restricted access to subsidized schooling, health care and social safety net protection in host cities has generated much concern (Kwong, 2004; Liang and Chen, 2007; Mao and Zhao, 2012). A limited pool of studies, primarily carried out in Shanghai, has indicated that young migrants experience lower self-esteem and life satisfaction, and display more symptoms of depression, separation anxiety, generalized anxiety and hostility than their urbanite counterparts (Mao and Zhao, 2012; Wong et al., 2009; Wu et al., 2011).

In researching the mental health outcomes of migrants, however, it is no longer sufficient to explore the various facets of psychological well-being. The cognitive function of self-efficacy, which denotes the strength of one's expectation of producing

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effective courses of action in a given situation (Bandura, 1982, 1997), may also be a salient problem for migrant populations. Migration scholars have recently called for research to move beyond the often-examined health-related outcomes (e.g., physical health, body mass, mortality risk, psychological well-being) to include the understudied outcomes of cognitive functioning (e.g., reasoning, attention, memory, locus of control) (Hill et al., 2012). There is some overseas evidence suggesting lower feelings of self-efficacy among racial-ethnic immigrants (Verkuyten and Nekuee, 1999; Safipour and Emami, 2011), yet the knowledge of its determinants is even rarer. Understanding the determinants of self-efficacy is useful in the migration context, as stronger self-efficacy is conducive to migrant adaptation (Motti-Stefanidi et al., 2012). As illustrated in subsequent sections, social stress and social ties are two theoretically relevant correlates in managing the self-efficacy of migrants. This study represents one of the first attempts to compare the effects of these correlates on self-efficacy with those on psychological health, as these two well-being outcomes have seldom been considered simultaneously in migration research conducted in China and international settings.

Additionally, in seeking to deal with the mental problems of teenaged internal migrants in China, the above-mentioned studies have emphasized the health-promoting nature of social relationships (or social capital) with parents, teachers, peers and neighborhoods (Mao and Zhao, 2012; Wong et al., 2009; Wu et al., 2011). Nonetheless, these studies have not been sensitive to the distinction between the locally and trans-locally based relations of migrant children. Neither have they provided empirical data on stressful experiences or the relevance of locality of social connectedness for stress moderation among China's migrant children. More importantly, these research gaps exist not only in the context of China but also in the broader, international literature on migration. Based on the case of rural migrant youngsters in urban China, the present study intends to add to the substantive migration literature by enhancing the understanding of these migrants' mental well-being in terms of psychological health and self-efficacy, and of the relative importance of social stress, locality of social ties and stress moderation for well-being.

### 1.1. Social stress and migrant mental health

The social stress paradigm (Lin and Ensel, 1989; Pearlin et al., 2005; Thoits, 1995) has been widely applied for understanding the associations between socially induced stressors and their effects on the mental well-being of migrant populations (Noh and Avison, 1996; Vega and Rumbaut, 1991). The social stressors identified among migrants primarily involve assimilation and acculturation stress, language acquisition, identity change, social discrimination, income inequality, deprivation of opportunities for upward mobility, and a sense of marginality (Bankston and Zhou, 1997; Beiser and Hou, 2001; Cho and Haslam, 2010; Fu and VanLandingham, 2012; Gee et al., 2007; Kulis et al., 2009; Motti-Stefanidi et al., 2012; Noh and Avison, 1996; Young, 2001). Along this line of work, direct correlations between social stress and psychological ill-health (depression, anxiety disorder, low life satisfaction, and poor self-esteem) and behavioral maladjustment (substance abuse and suicidal ideation) among migrant samples are generally acknowledged. Such consistent correlations can also be interpreted using the conservation of resources theory that emphasizes the importance of resources in sustaining mental health (Hobfoll, 2001). This theory suggests that certain populations, such as teenagers and migrants, are more susceptible to the adverse mental health consequences of resource loss stemming from social stress, as these people are at a disadvantage in terms of resource reserves (Hill et al., 2010).

Notwithstanding the sizeable literature on the migrant psychological outcomes of social stress, virtually no migration studies have queried whether social stress is negatively linked to self-efficacy, a cognitive functioning construct. According to Bandura (1982, 1997) who coined and popularized the self-efficacy paradigm, possibilities for effective performance and action are pivotal elements for a sense of self-efficacy. Regarding the migration context, Verkuyten and Nekuee (1999) and Young (2001) have noted the role of personal mastery/locus of control and argued that discrimination stress, for example, restricts the opportunities of migrants to experience themselves as in control of their life circumstances. The exposure to stressful circumstances may accordingly decrease the migrants' feeling that what happens to them is a consequence of their own actions, thus undermining their self-efficacy. In the present study, we extend investigation of the mental health sequelae of social stress by examining both psychological health and self-efficacy in migrant adolescents.

### 1.2. Main and buffering effects of local/trans-local ties on migrant mental health

Studies on the effects of social ties forged by migrants have largely been concerned with the role of social support and have produced converging evidence that social ties manifest both main and buffering effects on mental health (Fu and VanLandingham, 2012; Noh and Avison, 1996; Young, 2001). With respect to the buffering mechanism, the various models on social stress and coping (Cohen and Wills, 1985; Lin and Ensel, 1989; Pearlin et al., 2005; Thoits, 1995) affirm that social stress does not inevitably jeopardize well-being, as social support ties – perceived or actual – can offer a salient psychosocial resource to alleviate the detrimental effects of stressful conditions.

The migration literature focusing on social ties and mental health, while vast, still has at least two major substantive gaps. One major gap is the scant attention paid to the potential consequences of social support ties for the migrants' self-efficacy. As demonstrated by social psychology studies, social support ties are linked to better self-efficacy in general populations (Rees and Freeman, 2009; Saltzman and Holahan, 2002). Affective support and information guidance embedded in social ties directly encourage the possibilities for effective action and thus feelings of self-efficacy (Saltzman and Holahan, 2002). Social support can also modulate the effects of stressors on self-efficacy through the four channels of performance accomplishments, vicarious experiences, verbal persuasion, and physiological response specified by Bandura (1997) (Rees and Freeman, 2009). That is, supportive others can promote self-efficacy by reminding of one's previous accomplishments of adaptation to stress, relating stories of their own or others' effective coping tactics, providing verbal support, or using distraction to reduce the physiological reaction to stress.

The other major gap is the dearth of studies addressing the locality of social ties or explicitly distinguishing how ties to a migrant's receiving community (local) and ties to the home community (trans-local) may affect health and moderate social stress (Jasinskaja-Lahti et al., 2006). Previous migration research has focused on the role of ethnic enclave/different-ethnic protective networks generated in transnational migration destinations (Bankston and Zhou, 1997; Cho and Haslam, 2010; Noh and Avison, 1996; Rumbaut, 1997), or on the role of native urban-based/co-villager migrant-based ties forged by internal rural migrants in urban destinations (Korinek et al., 2005). Some studies have tended to identify stress-buffering social resources in terms of their functional specificity (instrumental versus expressive) for social support (Fu and VanLandingham, 2012; Kulis et al., 2009; Landale and Oropesa, 2001; Young, 2001), with little attention to the network source of these resources. This study seeks to bridge the gaps in the migration, social support ties and social stress

research by comparing the roles of local and trans-local ties in psychological health, self-efficacy and social stress moderation among rural-to-urban migrant teenagers in the developing country of China.

The importance of differentiating trans-local and local ties lies in the emerging evidence on the health benefits of trans-local networks for migrants. To date, we are aware of only three studies that have dealt with the locality in social ties and their main and buffering roles in migrant health (Donato and Duncan, 2011; Jasinskaja-Lahti et al., 2006; Jin et al., 2012). Collectively, the three studies seem to suggest that the main and buffering effects of trans-local ties are more consistent, and those of local ties are less clear. Specifically, within the setting of international migration, Donato and Duncan (2011) revealed that the subjective health status of Mexican migrant children living with their immigrant parents in the United States was enhanced when the immigrant families maintained trans-local networks of immediate or extended relatives and friends in Mexico, which suggested a direct positive effect of trans-local support networks. Nonetheless, Donato and Duncan did not include teenaged Mexican migrants' local networks in the United States for comparison. Jasinskaja-Lahti et al. (2006) placed particular emphasis on the locality of social ties. They distinguished between same-ethnic networks of the family, relatives and friends of immigrants moving to the destination country, native-host networks at the destination, and networks in the country of emigration. They then compared the roles that these different kinds of support ties played on adult ethnic immigrants in Finland as they sought to deal with the acculturative stressor of discrimination and the challenges of psychological adjustment. Interaction with same-ethnic and native-host support networks in the receiving country and networks in the home country yielded similar, positive main effects on the immigrants' psychological adjustment, irrespective of the level of discrimination stress. While evincing the usefulness of trans-local ties, this finding echoes those of past studies (e.g., Bankston and Zhou, 1997; Cho and Haslam, 2010; Korinek et al., 2005; Noh and Avison, 1996) in that same-ethnic support networks that provide local ties to the receiving society can be directly protective resources for immigrants, especially when native-host networks are not readily available in the society of settlement. Jasinskaja-Lahti et al. also found stress moderation to be a function of the locality of social ties, with networks in the home country being significantly more helpful for adjustment under conditions of stressful discrimination than same-ethnic and native-host networks at the destination. They concluded that social stress tends to activate support networks in the homeland. Although the proposition concerning the locality of social ties seems valid in the transnational migration milieu, its relevance remains unclear in the internal migration context. Indeed, China presents a compelling setting in which the institutional obstruction of permanent settlement in urban destinations may amplify the need for internal migrants to seek support and handle stress by sustaining social ties with their communities of origin.

One study conducted by Jin et al. (2012) investigated the relationship between the locality of social ties and health in China's internal migration context, focusing on adult rural-to-urban migrants in Shanghai. As Jin et al. observed, adult rural migrants' trans-local ties (measured by the number of close relatives/friends outside the host cities) were directly associated with better mental health, but the main effect of their local ties (measured by the number of close relatives/friends in the host cities) was not significant. In partial support of the relative status hypothesis, which proposes that people's evaluation of their social status affects their health (Marmot, 2004), Jin et al. further reported that adult migrants' trans-local ties alleviated the stressful effect of status devaluation on mental health, but their local ties

did not. Their explanation was that the migrants' ties to their underdeveloped villages of origin provided a favorable social comparison for migrants to view their standing in the urban social hierarchy. However, the insignificant main and buffering functions of local ties to the receiving community, as shown by Jin et al., are possibly due to the institutional obstruction of permanent residence in urban destinations, rendering ties with rural homelands far more important than local ones. In contrast, protective local ties tend to operate, as exemplified by Jasinskaja-Lahti et al., in transnational destinations where migrants settle permanently. In brief, whether migrants can achieve permanent settlement may matter regarding the utility of local ties in health protection. It should also be noted that Jin et al. used the number of close friends and relatives living outside the receiving cities as a proxy for the migrants' trans-local ties in their home villages. It would be better to provide a direct assessment of the internal migrants' ties to their home communities, as has been done in our study.

### 1.3. Hypotheses

The foregoing review of the literature leads us to propose the following hypotheses. We hypothesize that social stress (as indicated by both non-migration social stress and migration-specific assimilation stress) is directly related to the two mental well-being outcomes of psychological health and self-efficacy among rural-to-urban migrant adolescents. Regarding the locality of social ties, while teenaged rural migrants may forge social networks in their host cities, trans-local ties with their rural communities of origin may also matter in terms of their well-being, and may serve as stress-moderating social resources. More specifically, we hypothesize the main effects of both local and trans-local ties on psychological health and self-efficacy and the buffering effects on the relationships between social stress and the two well-being outcomes. For the buffering effects, a positive interaction between social stress and local/trans-local ties is anticipated, implying that when migrants increase their local/trans-local ties, the effect of social stress on psychological health and self-efficacy is reduced. Comparing local with trans-local ties, we also hypothesize the main and buffering effects of trans-local ties to be more pronounced than those of local ties for rural migrant adolescents under institutional restriction of permanent settlement.

Although we target rural-to-urban migrant adolescents, we also include a sample of urban native adolescents for comparison, to detect the possible features of exposure to social stress and of relationships between social ties and mental health that may be unique to young migrants. We expect social stress to be more closely related to both psychological health and self-efficacy for migrants than for urban natives, because migrants have fewer resource reserves with which to handle the detrimental consequences of social stress, as discussed above. Presumably, the direct and stress moderation effects of social ties are also stronger for migrants than for urban natives, given that migrants, who undergo the uprooting process of migration (Noh and Avison, 1996), may be more sensitive to the benefits of social ties.

## 2. Methods

### 2.1. Samples and data collection

This study builds on data from the study, "Stuck in the City: Migration and Delinquency among Migrant Adolescents in Guangzhou," which was carried out between June 2010 and November 2011. Unlike previous work on the health of China's migrant children that has been primarily conducted in Shanghai (Mao and Zhao, 2012; Wong et al., 2009; Wu et al., 2011), the

setting of this research is Guangzhou, the capital of Guangdong province and the largest city in south China. Guangzhou is one of the three largest urban economies in China, along with Shanghai and Beijing. This city has been the leading rural migrant destination since the onset of China's reform period, and rural migrants presently make up approximately 53% of the city's total population (Li and Li, 2010). In this study, a stratified cluster sample of middle schools in Guangzhou was selected, based on Guangzhou's ten administrative urban districts and school funding types (public school or private school specifically for migrant children). Altogether, the school sample included 22 public schools (with between one and three public schools in each of the ten districts) and ten private schools for migrant children (from nine of the ten districts, as one district has no school for migrant children). Each participating school then randomly assigned one eighth-grade class for the data collection, which was conducted in the spring of 2011. Research assistants administered anonymous, self-report questionnaires to the respondents in their classrooms. Ethical approval for the study was given by the Survey and Behavioral Research Ethics Committee of the author's university. Consent was enlisted from the students and their parents through the coordination of the participating schools. We excluded migrant students from other cities ( $n=91$ ) from the analysis. Our analytical sample thus comprised 482 migrant students and 838 urban native students from 32 junior high schools.

## 2.2. Measures

### 2.2.1. Mental well-being outcomes

Our analysis of the adolescents' mental well-being was based on two outcome measures, namely, self-rated psychological health and self-efficacy. The measurement of *psychological health* was adapted from the Kessler 6 (K6) psychological distress scale, which was constructed to estimate the distribution of non-specific distress and to diagnose cases of mental illness in the general population. The K6 scale has been used in national surveys conducted under the World Health Organization's World Mental Health Initiative. Five items of the K6 scale were used. The respondents were asked how often they felt nervous, hopeless, anxious, depressed, or worthless within the past month (often=1 to never=4). Higher scores meant fewer psychological distress symptoms, and thus better psychological health (5-item scale,  $\alpha=0.87$ ). *Self-efficacy*, a cognitive functioning construct, was assessed by Zhang and Schwarzer's (1995) 10-item general self-efficacy psychometric scale that gauges optimistic self-beliefs and judgment of how well one can execute courses of action to deal with difficult demands in life. Sample items included "Thanks to my resourcefulness, I know how to handle unforeseen situations" and "I can usually handle whatever comes my way" (strongly disagree=1 to strongly agree=4). Higher scores meant stronger self-efficacy (10-item scale,  $\alpha=0.83$ ).

### 2.2.2. Social stress

The factor of social stress was indexed by non-migration and migration-specific measures. The *non-migration social stress* measure was a count variable that tapped the number of stressful events that the migrant and urban native respondents had experienced and were bothered by. Two types of events, namely, deaths of family members and accidents or serious illnesses experienced by family members, were assessed with respect to a time frame from the age of ten up to the time of the survey. The other thirteen events were assessed over the past year. These events included a parent losing a job, being physically punished or treated with force by parents, parents quarreling or fighting with one another, family financial problems, difficulties with the

burden of school tuition fees, dropping out of school due to family financial problems, heavy study stress, in-school class repetition, school expulsion, being teased or insulted by schoolmates, being hit by schoolmates, being teased or insulted by teachers, and being physically punished by teachers. Higher scores on this count variable (15-item scale,  $\alpha=0.70$ ) represented more non-migration social stress. The *migration-specific* measure concerned *assimilation stress*, which was tapped by two questions: "Are Guangzhou natives receptive to non-natives?" (well accepted=1 to not accepted at all=5) and "Do you find it difficult to interact with Guangzhou natives?" (no=0 and yes=1). The scoring of the two items was standardized, such that higher scores indicated more assimilation stress in migrants.

### 2.2.3. Local ties with host community

The adolescents' social ties within Guangzhou were indexed by two kinship measures (parent-child ties and local family ties with relatives) and three non-kinship measures (teacher-child ties, ties with local friends, and neighborhood cohesion). Higher scores on these measures represented better local ties. *Parent-child ties* were gauged by eight questions: "Do your parents show interest in your school life?" (never=1 to often=4); "Do your parents engage in leisure activities with you?" (never=1 to often=4); "Do your parents take care of your daily needs?" (very poor=1 to very good=4); "Do you talk to your parents when you are unhappy?" (never=1 to often=4); "Do your parents give you support and encouragement?" (never=1 to often=4); "Do your parents understand you?" (do not understand at all=1 to understand very much=4); "Do you feel satisfied with your communication with your parents?" (very dissatisfied=1 to very satisfied=4); and "How is your relationship with parents?" (very poor=1 to very good=4) (8-item scale,  $\alpha=0.87$ ). *Local family ties with relatives* were measured with one item asking the number of relatives in Guangzhou with whom the migrant or urban native respondents' families had regular contact (none=1 to many=4). As for the non-kinship measures, *teacher-child ties* in Guangzhou were captured by five questions: "Are the teachers close to the students?" (none=1 to most of them=4); "Do you talk to your teachers?" (never=1 to often=4); "Do you think the teachers care about the students?" (not caring at all=1 to very caring=4); "Do the teachers treat the students fairly?" (unfairly=1 to fairly=4); and "How do you rate your class master teacher?" (very poor=1 to very good=4) (5-item scale,  $\alpha=0.84$ ). To estimate *ties with local friends*, the respondents were asked "Do you seek help from friends in Guangzhou?" (never=1 to often=4). The *neighborhood cohesion* variable was constructed based on four statements, rated on a 5-point scale (strongly disagree=1 to strongly agree=5): "Most people in this neighborhood know each other"; "People in this neighborhood are willing to help each other"; "People in this neighborhood get along well with each other"; and "People in this neighborhood are trustworthy" (4-item scale,  $\alpha=0.89$ ).

### 2.2.4. Trans-local ties with home community

This measure was migrant-specific, and indexed by two variables relating to *ties with relatives* and to *friends in the sending community*. The migrant respondents were asked to report how often they had been in contact with relatives and friends in their home community while living in Guangzhou (never=1 to often=4).

### 2.2.5. Control measures

We adjusted for sex, age (years), school type (public versus private for migrant children), and standard of living, which we measured by asking the respondents to report how many of the fourteen amenities (e.g., self-contained kitchen, air-conditioner, computer, motorcycle) were available in their living quarters, and

what type of residence they lived in (urban village=1, signifying a marginalized urban slum in Guangzhou; factory dormitory=2; working class apartment=3; and middle/upper class apartment=4). For the migrants, we also considered their years of residence in Guangzhou.

### 2.3. Statistical procedures

All analyses were performed in Stata 11.2. Missing observations (comprising 0.4–5.5% of the cases) were imputed using the multiple imputation method (Amelia program) (King et al., 2001). There was potential non-independence on the two well-being outcomes among respondents recruited from the same school, with intra-class correlation coefficients estimated at 0.21–1.89% and 2.27–3.94% for the migrant and urban native samples, respectively. Thus, all test statistics were adjusted for school clustering. Two-sided *t*-tests and chi-square tests (in which the design effect, or the increase of between-cluster/school variance, was considered using Stata's *svyset* option) were used to compare the responses of internal migrant and urban native adolescents. Multilevel (two-level) random-intercept linear regression models (*xtmixed* command in Stata) were conducted to examine the relative contributions of non-migration social stress, migration-specific assimilation stress, and local/trans-local ties to the continuously measured psychological health and self-efficacy outcomes for the migrant and urban

native samples, while addressing the hierarchical nature of our data (students nested within schools). To further test whether the relationship between social stress and mental well-being was conditioned by the locality of social ties, we added the interaction terms between non-migration social stress and each social ties measure, and between migration-specific assimilation stress and each social ties measure, into the multilevel models. Given that computation of the social stress/social ties interactions required the use of standardized scores to minimize the multicollinearity problem (Aiken and West, 1991), all variables were mean-centered, and the multilevel modeling was run using standardized scores to maintain consistency in the results. All predictors (except school type) and interactions were modeled at the individual/student level (level 1). Including schools in level 2 corrected for school clustering, and the measure of school type was served as a level-2 control variable. The maximum likelihood method was used to estimate model parameters.

## 3. Results

### 3.1. Descriptive statistics

Table 1 provides the sample statistics of the dependent and independent variables, stratified by migrant status. Migrant

**Table 1**  
Descriptive statistics for rural-to-urban migrant and urban native adolescents in Guangzhou.

	Range	Migrant adolescents (N=482)		Urban native adolescents (N=838)		Test statistics <sup>a</sup>	p Value
		Mean (%)	(SD)	Mean (%)	(SD)		
Mental well-being							
Psychological health	5–20	13.57	(3.92)	13.24	(4.00)	<i>t</i> =1.13	0.268
Self-efficacy	10–40	28.60	(5.42)	30.66	(4.34)	<i>t</i> =5.94	0.000
Social stress							
Non-migration social stress	0–15	5.94	(2.75)	4.80	(2.71)	<i>t</i> =4.34	0.000
Migration-specific assimilation stress	–4.53 to 1.86	–0.03	(1.52)	–	–	–	–
Local ties with host community							
Parent–child ties	8–32	21.11	(5.05)	22.08	(4.78)	<i>t</i> =3.72	0.001
Local family ties with relatives	1–4	2.98	(0.85)	2.41	(0.89)	<i>t</i> =3.49	0.001
Teacher–child ties	5–20	13.82	(3.31)	13.40	(3.09)	<i>t</i> =0.44	0.666
Ties with local friends	1–4	2.67	(0.85)	3.00	(0.72)	<i>t</i> =8.15	0.000
Neighborhood cohesion	4–20	15.16	(4.10)	15.92	(3.79)	<i>t</i> =3.08	0.004
Trans-local ties with home community							
Contact with home relatives	1–4	3.04	(0.88)	–	–	–	–
Never		6%		–			
Seldom		21%		–			
Sometimes		38%		–			
Often		35%		–			
Contact with home friends	1–4	2.39	(0.94)	–	–	–	–
Never		14%		–			
Seldom		40%		–			
Sometimes		32%		–			
Often		14%		–			
Sociodemographics							
Age (years)	12–18	14.71	(0.80)	14.42	(0.61)	<i>t</i> =4.74	0.000
Gender							
Male		57%		52%		$\chi^2=4.31$	0.046
Female		43%		48%			
School type							
Public school		26%		98%		$\chi^2=222.66$	0.000
Private school for migrant children		74%		2%			
Household amenities (number)	0–14	8.73	(2.88)	9.77	(2.35)	<i>t</i> =3.08	0.004
Residence type							
Urban village		45%		40%		$\chi^2=1.55$	0.219
Factory dormitory		4%		2%			
Working class apartment		43%		44%			
Middle/upper class apartment		8%		14%			
Years of residence in Guangzhou	1–18	8.67	(4.43)	–	–	–	–

<sup>a</sup> *t*-Tests assess the mean differences of continuous variables between migrant and native adolescents. Chi-square tests are used for the categorical variables of gender, school type, and residence type. Both tests include the design effect to account for school clustering.

adolescents unexpectedly exhibited fewer psychological distress symptoms and better psychological health than urban native adolescents, but the difference was not statistically significant. However, the self-efficacy of migrant youths was significantly weaker than that of their urban native counterparts. As expected, migrant students encountered significantly more non-migration social stress than urbanite students. For migration-specific assimilation stress, the mean level among the migrants was  $-0.03$ , within the score range of  $-4.53$  to  $1.86$ . With respect to local ties with the host community, migrant adolescents reported significantly fewer parent-child ties, fewer ties with local friends, and weaker neighborhood cohesion than native adolescents. There were also fewer teacher-child ties among migrants compared to urban natives, although this difference was insignificant. However, migrant students reported significantly more local family ties with their relatives in Guangzhou than urban natives. In terms of trans-local ties, 73% of the migrant adolescents were sometimes or often in contact with relatives in their home community, whereas 46% sometimes or often contacted friends in their home community.

Regarding the sociodemographic features, the living quarters of migrant children held fewer amenities than those of urbanite children, but the types of residence did not differ significantly between the two samples. The migrant respondents had lived in the receiving city (Guangzhou) for an average of 8.67 years. Three-fourths of the migrant respondents were enrolled in private schools and 26% in public schools, whereas 98% of the urban natives attended public schools. There were significantly more

migrants attending underprivileged private schools, because migrant children do not have household registration in their receiving cities, and have difficulty entering public schools and affording their expensive tuition fees (Kwong, 2004).

### 3.2. Main effects of social stress and local/trans-local ties on psychological health and self-efficacy

Table 2 presents a series of two-level random-intercept linear regression models that estimate how far the social stress and social ties variables directly relate to the two mental well-being outcomes among migrant and urban native adolescents. In the analysis of the psychological health outcome, Model 1a represents the migrant sample and Model 2 the native sample. These models include variables common to both samples for comparison. In Model 1b of the migrant sample, the migrant-specific variables concerning assimilation stress, trans-local ties, and years of residence in Guangzhou were added to contrast the effects of non-migration versus migration-specific social stress along with the effects of local versus trans-local ties on the migrants' psychological health. Likewise, in the analysis of the self-efficacy outcome, Models 3a and 4 compare variables common to the migrant and native samples, respectively, and Model 3b considers the migrant-specific variables.

As shown in the models, non-migration social stress was the strongest predictor of suboptimal psychological health in both migrant and urban native respondents, and the effect of such

**Table 2**  
Standardized estimates of main effects of social stress and social ties from two-level random-intercept linear regression models on psychological health and self-efficacy.<sup>a</sup>

	Psychological health						Self-efficacy					
	Migrant adolescents		Urban native adolescents		2	Migrant adolescents		Urban native adolescents		4		
	1a	1b				3a	3b					
<b>Level 1. Fixed effect (standard error)</b>												
Social stress												
Non-migration social stress	-0.245	(0.174)***	-0.242	(0.173)***	-0.371	(0.139)***	-0.010	(0.253)	-0.003	(0.251)	-0.050	(0.159) <sup>+</sup>
Migration-specific assimilation stress	-	-	-0.093	(0.112)***	-	-	-	-	-0.054	(0.162) <sup>+</sup>	-	-
Local ties with host community												
Parent-child ties	0.121	(0.032)**	0.122	(0.032)**	0.128	(0.026)***	0.118	(0.046)*	0.117	(0.046)*	0.127	(0.030)***
Local family ties with relatives	-0.062	(0.185)	-0.068	(0.183)	-0.024	(0.131)	0.022	(0.268)	0.033	(0.267)	0.046	(0.148)
Teacher-child ties	0.138	(0.047)**	0.124	(0.047)*	0.122	(0.038)*	0.117	(0.066)	0.114	(0.068)	0.123	(0.044)***
Ties with local friends	0.031	(0.163)	0.054	(0.162)	0.096	(0.140)**	0.113	(0.237)*	0.116	(0.236)*	0.063	(0.159)*
Neighborhood cohesion	0.023	(0.166)	0.012	(0.167)	0.005	(0.133)	0.147	(0.240)**	0.152	(0.242)**	0.099	(0.151)**
Trans-local ties with home community												
Contact with home relatives	-	-	0.002	(0.176)	-	-	-	-	0.131	(0.255)*	-	-
Contact with home friends	-	-	0.130	(0.185)**	-	-	-	-	0.115	(0.269)*	-	-
Sociodemographics												
Age	-0.005	(0.146)	-0.012	(0.145)	0.012	(0.145)	-0.023	(0.211)	-0.013	(0.210)	0.002	(0.166)
Gender (0 = male, 1 = female)	-0.266	(0.339)**	-0.244	(0.334)**	-0.244	(0.246)***	-0.112	(0.491)	-0.118	(0.486)	-0.228	(0.279)***
Household amenities	0.087	(0.163)*	0.095	(0.162)*	0.085	(0.144)*	0.037	(0.232)	0.037	(0.233)	0.051	(0.165)
Residence type	0.022	(0.175)	0.013	(0.172)	0.017	(0.133)	0.073	(0.251)	0.061	(0.248)	0.036	(0.156)
Years of residence in Guangzhou	-	-	-0.020	(0.166)	-	-	-	-	-0.089	(0.239) <sup>+</sup>	-	-
<b>Level 2. Fixed effect (standard error)</b>												
School type (0 = public, 1 = private)	-0.142	(0.416) <sup>+</sup>	-0.150	(0.410) <sup>+</sup>	-0.587	(0.983)*	-0.074	(0.563)	-0.118	(0.563)	-0.070	(1.205)
<b>Random effect (standard error)</b>												
Individual-level variance	0.795	(0.052)	0.766	(0.050)	0.774	(0.038)	1.121	(0.073)	1.094	(0.070)	0.664	(0.033)
School-level variance	0.004	(0.004)	0.003	(0.004)	0.006	(0.009)	0.001	(0.004)	0.001	(0.010)	0.013	(0.009)
Log-likelihood	-631.52		-621.98		-1083.52		-712.23		-705.64		-1022.58	
Wald chi-square	96.42***		120.20***		246.32***		49.81***		64.69***		134.97***	
Number of individuals	482		482		838		482		482		838	
Number of schools	30		30		27		30		30		27	

<sup>+</sup>  $p < 0.10$ .

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

\*\*\*  $p < 0.001$ .

<sup>a</sup> All models control for school clustering.

Table 3a

Standardized estimates of social stress/social ties interactions from two-level random-intercept linear regression models on psychological health among rural-to-urban migrant adolescents ( $N=482$ ).<sup>a</sup>

	I	II	III	IV	V	VI	VII							
<b>Fixed effect (standard error)</b>														
Social stress														
Non-migration social stress	-0.241	(0.180)***	-0.258	(0.181)***	-0.249	(0.175)***	-0.229	(0.178)***	-0.246	(0.175)***	-0.242	(0.173)***	-0.244	(0.173)***
Migration-specific assimilation stress	-0.083	(0.116)**	-0.094	(0.119)**	-0.088	(0.113)**	-0.078	(0.116)**	-0.088	(0.114)**	-0.093	(0.112)**	-0.089	(0.112)**
Local ties with host community														
Parent-child ties	0.120	(0.032)**	0.122	(0.032)**	0.121	(0.032)**	0.122	(0.032)**	0.122	(0.032)**	0.121	(0.032)**	0.121	(0.032)**
Local family ties with relatives	-0.072	(0.183)	-0.076	(0.184)	-0.071	(0.183)	-0.070	(0.182)	-0.069	(0.183)	-0.069	(0.183)	-0.070	(0.183)
Teacher-child ties	0.124	(0.047)*	0.124	(0.047)*	0.125	(0.049)*	0.124	(0.047)*	0.124	(0.048)*	0.125	(0.047)*	0.124	(0.047)*
Ties with local friends	0.051	(0.162)	0.053	(0.162)	0.056	(0.162)	0.060	(0.163)	0.055	(0.162)	0.053	(0.161)	0.054	(0.162)
Neighborhood cohesion	0.011	(0.167)	0.010	(0.167)	0.012	(0.167)	0.012	(0.166)	0.012	(0.176)	0.018	(0.167)	0.015	(0.167)
Trans-local ties with home community														
Contact with home relatives	0.003	(0.176)	0.001	(0.175)	0.001	(0.175)	0.002	(0.175)	0.003	(0.177)	0.007	(0.178)	0.003	(0.175)
Contact with home friends	0.126	(0.185)**	0.133	(0.185)**	0.128	(0.185)**	0.129	(0.184)**	0.127	(0.186)**	0.131	(0.184)**	0.126	(0.187)**
Non-migration social stress/local ties interaction														
× Parent-child ties	0.003	(0.027)												
× Local family ties with relatives			0.055	(0.180)										
× Teacher-child ties					0.007	(0.040)								
× Ties with local friends							0.051	(0.153) <sup>+</sup>						
× Neighborhood cohesion									-0.012	(0.157)				
Assimilation stress/local ties interaction														
× Parent-child ties	0.005	(0.016) <sup>+</sup>												
× Local family ties with relatives			0.001	(0.109)										
× Teacher-child ties					0.006	(0.024) <sup>+</sup>								
× Ties with local friends							0.042	(0.098)*						
× Neighborhood cohesion									0.018	(0.101)				
Non-migration social stress/trans-local ties interaction														
× Contact with home relatives											0.057	(0.163)*		
× Contact with home friends													0.003	(0.172)
Assimilation stress/trans-local ties interaction														
× Contact with home relatives											0.018	(0.108)		
× Contact with home friends													0.031	(0.096)*
<b>Random effect (standard error)</b>														
Individual-level variance	0.762	(0.050)	0.764	(0.050)	0.765	(0.050)	0.758	(0.050)	0.765	(0.050)	0.763	(0.050)	0.764	(0.050)
School-level variance	0.003	(0.004)	0.002	(0.004)	0.002	(0.004)	0.003	(0.004)	0.003	(0.004)	0.002	(0.004)	0.003	(0.004)
Log-likelihood	-621.06		-621.23		-621.34		-619.45		-621.70		-620.81		-621.15	
Wald chi-square	122.26***		122.13***		122.01***		126.55***		120.84***		123.21***		122.25***	

<sup>+</sup>  $p < 0.10$ .\*  $p < 0.05$ .\*\*  $p < 0.01$ .\*\*\*  $p < 0.001$ .<sup>a</sup> All models for migrants control for age, gender, household amenities, residence type, years of residence in Guangzhou, school clustering, and level-2 school type.

**Table 3b**

Standardized estimates of social stress/social ties interactions from two-level random-intercept linear regression models on psychological health among urban native adolescents ( $N=838$ ).<sup>a</sup>

	I		II		III		IV		V	
<b>Fixed effect (standard error)</b>										
Non-migration social stress	-0.371	(0.139)***	-0.369	(0.139)***	-0.370	(0.140)***	-0.362	(0.140)***	-0.365	(0.141)***
Local ties										
Parent-child ties	0.128	(0.026)***	0.128	(0.026)***	0.128	(0.026)***	0.128	(0.026)***	0.128	(0.026)***
Local family ties with relatives	-0.024	(0.131)	-0.020	(0.134)	-0.025	(0.131)	-0.023	(0.130)	-0.025	(0.131)
Teacher-child ties	0.122	(0.038)*	0.121	(0.039)*	0.122	(0.039)*	0.121	(0.038)*	0.122	(0.038)*
Ties with local friends	0.094	(0.140)*	0.096	(0.140)*	0.094	(0.141)*	0.109	(0.143)*	0.099	(0.140)*
Neighborhood cohesion	0.005	(0.133)	0.005	(0.133)	0.005	(0.133)	0.007	(0.133)	0.008	(0.133)
Non-migration social stress/local ties interaction										
× Parent-child ties	0.003	(0.022)								
× Local family ties with relatives			0.020	(0.127)						
× Teacher-child ties					0.003	(0.032)				
× Ties with local friends							0.061	(0.131) <sup>+</sup>		
× Neighborhood cohesion									-0.035	(0.130)
<b>Random effect (standard error)</b>										
Individual-level variance	0.773	(0.038)	0.774	(0.038)	0.774	(0.038)	0.770	(0.038)	0.773	(0.038)
School-level variance	0.006	(0.009)	0.006	(0.009)	0.006	(0.009)	0.007	(0.009)	0.006	(0.008)
Log-likelihood	-1083.32		-1083.33		-1083.44		-1081.79		-1082.94	
Wald chi-square	246.71***		246.85***		246.49***		250.43***		248.07***	

<sup>+</sup>  $p < 0.10$ .

\*  $p < 0.05$ .

\*\*\*  $p < 0.001$ .

<sup>a</sup> All models for urban natives control for age, gender, household amenities, residence type, school clustering, and level-2 school type.

stress for both groups was highly significant at the  $p < 0.001$  level, even in the presence of the other variables. Migration-specific assimilation stress was also very significantly related to poor psychological health among migrants ( $p < 0.001$ ), yet the magnitude of this factor was milder than that of non-migration social stress. Nonetheless, non-migration social stress did not make a significant difference in the self-efficacy level of the migrant respondents, and it had only a marginally significant negative relationship to the urbanites' levels of self-efficacy ( $p < 0.1$ ). The significance level of the inverse association between assimilation stress and migrants' self-efficacy was also marginal. In short, two main observations were derived: social stress overall tends to be far more influential in psychological health status than self-efficacy; and the effect of social stress on migrant teenagers relative to their urbanite counterparts is less severe than we anticipated, given the smaller coefficient of non-migration social stress in psychological health among migrants.

Certain local ties with the host community were found to contribute directly to mental well-being for both samples, net of the effects of the social stress and other measures. More specifically, closer parent-child ties were significantly and consistently predictive of better psychological health and stronger self-efficacy among the migrant respondents. Teacher-child ties were more helpful in strengthening the migrants' psychological health, given their significant positive association with psychological health, but these ties showed a non-significant association with self-efficacy. Ties with local friends and neighborhood cohesion in the host city were also significant predictors for higher levels of self-efficacy among the migrants, but not for their levels of psychological health. Within the urban native sample, parent-child ties, teacher-child ties, and ties with local friends significantly predicted both psychological health and self-efficacy. Neighborhood cohesion was significantly related to stronger self-efficacy among the urbanites but not to their psychological health. However, there were no significant associations between local family ties with relatives in the host community and the two well-being outcomes for either sample in a multivariate context.

With regard to trans-local ties, having contact with friends in the home community significantly increased migrant adolescents'

psychological health and self-efficacy. Having contact with relatives in the home community also had a significant positive relationship to migrants' self-efficacy, although this factor's prediction for psychological health was insignificant. It bears mentioning that the significant effect sizes of these trans-local ties were highly comparable to those of the local ties measures found in the migrant sample. This finding indicates that trans-local ties are as important as local ties for the migrant adolescents.

### 3.3. Moderation effects of local/trans-local ties

Tables 3a and 4a for the migrant sample, and Tables 3b and 4b for the urban native sample present the findings of our interaction analyses, which estimated whether the psychological health and self-efficacy effects of social stress are moderated by the respondents' local and trans-local ties, while adjusting for the main effects of the independent variables.

Within the migrant sample, we detected six significant interaction effects on the migrant teenagers' psychological health in the hypothesized positive direction. Non-migration social stress significantly interacted with the levels of contact with relatives in the home community ( $p < 0.05$ ), and with ties to local friends in the host community at a marginally significant level ( $p < 0.1$ ). Migration-specific assimilation stress interacted with the levels of contact with friends in the home community ( $p < 0.05$ ), and with parent-child ties ( $p < 0.1$ ), teacher-child ties ( $p < 0.1$ ) and ties to local friends ( $p < 0.05$ ) in the host community. These results mean that the migrant respondents who were exposed to more social stress, but had more trans-local ties with relatives/friends and more local ties with parents/teachers/friends, had higher levels of psychological well-being compared to those who experienced more social stress, but had fewer trans-local relative/friendship ties and fewer local parent/teacher/friendship ties.

For the migrants' self-efficacy outcome, three significant positive interactions were found. These interactions were between non-migration social stress and contact with friends in the home community ( $p < 0.05$ ), between non-migration social stress and contact with relatives in the home community (marginally significant), and between assimilation stress and family ties with

**Table 4a**Standardized estimates of social stress/social ties interactions from two-level random-intercept linear regression models on self-efficacy among rural-to-urban migrant adolescents ( $N=482$ ).<sup>a</sup>

	I	II	III	IV	V	VI	VII							
<b>Fixed effect (standard error)</b>														
Social stress														
Non-migration social stress	-0.005	(0.262)	-0.011	(0.262)	-0.003	(0.254)	-0.015	(0.260)	-0.001	(0.254)	-0.001	(0.251)	-0.003	(0.250)
Migration-specific assimilation stress	-0.057	(0.169) <sup>+</sup>	-0.083	(0.172)*	-0.063	(0.164) <sup>+</sup>	-0.046	(0.170) <sup>+</sup>	-0.059	(0.166) <sup>+</sup>	-0.057	(0.162) <sup>+</sup>	-0.055	(0.162) <sup>+</sup>
Local ties with host community														
Parent-child ties	0.118	(0.047)*	0.115	(0.046)*	0.118	(0.046)*	0.116	(0.046)*	0.117	(0.046)*	0.117	(0.046)*	0.117	(0.046)*
Local family ties with relatives	0.034	(0.268)	0.030	(0.268)	0.038	(0.266)	0.030	(0.267)	0.034	(0.267)	0.033	(0.266)	-0.039	(0.266)
Teacher-child ties	0.115	(0.068)	0.113	(0.068)	0.113	(0.070)	0.114	(0.068)	0.114	(0.068)	0.115	(0.068)	0.114	(0.068)
Ties with local friends	0.115	(0.237)*	0.114	(0.234)*	0.117	(0.236)*	0.123	(0.238)*	0.118	(0.236)*	0.119	(0.235)*	0.121	(0.235)*
Neighborhood cohesion	0.152	(0.243)**	0.152	(0.241)**	0.149	(0.242)**	0.151	(0.242)**	0.150	(0.255)**	0.146	(0.243)**	0.156	(0.242)**
Trans-local ties with home community														
Contact with home relatives	0.132	(0.256)*	0.132	(0.254)*	0.134	(0.254)*	0.129	(0.255)*	0.128	(0.257)*	0.115	(0.258)*	0.128	(0.254)*
Contact with home friends	0.114	(0.270)*	0.116	(0.268)*	0.112	(0.268)*	0.117	(0.269)*	0.111	(0.270)*	0.112	(0.268)*	0.109	(0.271)*
Non-migration social stress/local ties interaction														
× Parent-child ties	-0.002	(0.040)												
× Local family ties with relatives			0.002	(0.261)										
× Teacher-child ties					0.006	(0.058)								
× Ties with local friends							-0.034	(0.223)						
× Neighborhood cohesion									0.020	(0.228)				
Assimilation stress/local ties interaction														
× Parent-child ties	-0.001	(0.023)												
× Local family ties with relatives			0.076	(0.158)*										
× Teacher-child ties					0.012	(0.036)								
× Ties with local friends							0.027	(0.143)						
× Neighborhood cohesion									-0.019	(0.147)				
Non-migration social stress/trans-local ties interaction														
× Contact with home relatives											0.084	(0.238) <sup>+</sup>		
× Contact with home friends													0.103	(0.250)*
Assimilation stress/trans-local ties interaction														
× Contact with home relatives											0.022	(0.158)		
× Contact with home friends													0.008	(0.140)
<b>Random effect (standard error)</b>														
Individual-level variance	1.094	(0.070)	1.082	(0.070)	1.088	(0.070)	1.091	(0.070)	1.093	(0.070)	1.087	(0.070)	1.085	(0.070)
School-level variance	0.001	(0.010)	0.001	(0.009)	0.001	(0.010)	0.001	(0.009)	0.001	(0.007)	0.001	(0.010)	0.001	(0.007)
Log-likelihood	-705.59		-702.88		-704.24		-705.01		-705.37		-703.94		-703.60	
Wald chi-square	64.82***		70.98***		67.88***		66.13***		65.32***		68.56***		69.34***	

<sup>+</sup>  $p < 0.10$ .\*  $p < 0.05$ .\*\*  $p < 0.01$ .\*\*\*  $p < 0.001$ .<sup>a</sup> All models for migrants control for age, gender, household amenities, residence type, years of residence in Guangzhou, school clustering, and level-2 school type.

**Table 4b**

Standardized estimates of social stress/social ties interactions from two-level random-intercept linear regression models on self-efficacy among urban native adolescents (N=838).<sup>a</sup>

	I		II		III		IV		V	
<b>Fixed effect (standard error)</b>										
Non-migration social stress	-0.051	(0.159) <sup>+</sup>	-0.052	(0.159) <sup>+</sup>	-0.048	(0.159) <sup>+</sup>	-0.063	(0.160) <sup>+</sup>	-0.048	(0.161) <sup>+</sup>
Local ties										
Parent-child ties	0.127	(0.030) <sup>***</sup>								
Local family ties with relatives	0.047	(0.148)	0.039	(0.152)	0.045	(0.148)	0.045	(0.148)	0.046	(0.148)
Teacher-child ties	0.123	(0.044) <sup>*</sup>	0.124	(0.044) <sup>*</sup>	0.124	(0.044) <sup>*</sup>	0.125	(0.044) <sup>*</sup>	0.123	(0.044) <sup>*</sup>
Ties with local friends	0.065	(0.159) <sup>*</sup>	0.063	(0.159) <sup>+</sup>	0.067	(0.160) <sup>*</sup>	0.083	(0.161) <sup>*</sup>	0.062	(0.159) <sup>+</sup>
Neighborhood cohesion	0.099	(0.151) <sup>**</sup>	0.099	(0.151) <sup>**</sup>	0.098	(0.151) <sup>**</sup>	0.102	(0.150) <sup>**</sup>	0.098	(0.152) <sup>**</sup>
Non-migration social stress/local ties interaction										
× Parent-child ties	0.003	(0.025)								
× Local family ties with relatives			-0.028	(0.145)						
× Teacher-child ties					0.007	(0.037)				
× Ties with local friends							0.090	(0.149) <sup>**</sup>		
× Neighborhood cohesion									-0.012	(0.147)
<b>Random effect (standard error)</b>										
Individual-level variance	0.663	(0.033)	0.663	(0.033)	0.663	(0.033)	0.657	(0.033)	0.664	(0.033)
School-level variance	0.013	(0.009)	0.012	(0.009)	0.013	(0.009)	0.013	(0.009)	0.013	(0.009)
Log-likelihood	-1022.37		-1022.12		-1022.18		-1018.27		-1022.49	
Wald chi-square	135.41 <sup>***</sup>		136.24 <sup>***</sup>		135.74 <sup>***</sup>		144.88 <sup>***</sup>		135.23 <sup>***</sup>	

<sup>+</sup> *p* < 0.10.

<sup>\*</sup> *p* < 0.05.

<sup>\*\*</sup> *p* < 0.01.

<sup>\*\*\*</sup> *p* < 0.001.

<sup>a</sup> All models for urban natives control for age, gender, household amenities, residence type, school clustering, and level-2 school type.

relatives in the host community (*p* < 0.05). Accordingly, the migrant respondents under higher levels of stress were more likely to have a higher level of self-efficacy when they had more trans-local friendship/relative ties and more local ties with relatives. Taken together, the stress moderation function of social ties appears to be somewhat more pronounced in the psychological health outcome than in the self-efficacy outcome among migrants; and trans-local ties in particular matter for migrants in modulating social stress.

For the urban native respondents, non-migration social stress had a significant positive interaction only with ties to local friends in terms of effects on psychological health (*p* < 0.1) and self-efficacy (*p* < 0.01). This result implies that the urbanite respondents' local friendship ties decreased the effect of social stress on their psychological health and self-efficacy. No other interaction terms for the native sample were statistically significant. Thus, it appears that social ties matter less for urbanites in mitigating the well-being consequences of social stress.

#### 4. Discussion

Our interest in the differential effects of social stress and the locality of social ties on migrant well-being was stimulated by the growing population of internal migrant children in urban China. Based on data from a cross-sectional school-based survey in Guangzhou, this study compared the responses of rural migrant and urban students to explore the roles of social stress (both non-migration social stress and migration-specific assimilation stress), the relative influence of local ties to the receiving city and trans-local ties to the rural homeland, and the effect of stress moderation from these ties in terms of psychological health and self-efficacy among rural-to-urban migrant children.

Interestingly, our data reveal a mixed pattern of mental well-being in rural-to-urban migrant adolescents. These young people do not inevitably suffer from poorer psychological health than their urban native counterparts, but they fare significantly worse than urbanites in terms of self-efficacy. In terms of psychological health, the healthy migrant hypothesis may help to explain why

the teenaged migrants in this study reported fewer symptoms of psychological distress. This hypothesis posits that migrants are healthier because the migration process demands good health (health selection). Migrants in poor health tend to return to their regions of origin (salmon bias), and migrants tend to avoid risky health behavior (healthy lifestyle) (Abraido-Lanza et al., 1999; Palloni and Morenoff, 2001). Tong and Piotrowski's (2012) analysis of the China Health and Nutrition Survey's longitudinal data (1997–2009) from eight provinces, and Lu and Qin's (2014) analysis of nationally representative longitudinal data (2003–2007) from the China Rural Production Survey provide recent evidence for the health selection and salmon bias effects in China on the basis of self-rated physical health but not mental distress. These researchers corroborated that healthier rural people are more likely to migrate and to move further away from home, whereas less-healthy internal migrants tend to return or to move closer to their home villages. They explained that the healthy migrant phenomenon might be more marked in China, because marginal membership of and under-provision of welfare to rural migrants in the receiving cities generate higher levels of stress, which deters migration. Without adequate access to health services and labor protection, rural migrants with declining health and productivity tend to lose their jobs and resort to returning to their hometown as a survival strategy. In this regard, rural adolescents in China who migrate to and remain in urban destinations with their parents may be healthier. Migrant children may also consider their life circumstances to be more favorable than those of their counterparts left behind in rural villages (Jia et al., 2010), thereby creating a relative gratification and psychological health advantage, rather than a sense of relative deprivation (Fozdar and Torezani, 2008).

While the aforementioned speculation regarding the psychological health of migrant adolescents warrants further investigation, it explains only some of our findings. Our study also shows that self-efficacy, as a form of cognitive functioning, is notably weaker among teenaged migrants than among native urbanites, consistent with our expectation. However, it is premature to dismiss the healthy migrant hypothesis at this point, given that data from non-migrant children of the sending areas are unavailable and there is no evidence to

suggest that the teenaged migrants in our study have weaker self-efficacy than their counterparts in the homeland. Moreover, as our research was only conducted in Guangzhou, our results regarding lower self-efficacy among migrant children is by no means generalizable to all migrant-host cities in China, and is therefore suggestive rather than affirmative. Despite this, the inclusion of self-efficacy as a mental health outcome in this study contributes to the growing literature on the cognitive functioning (e.g., reasoning, attention, orientation, memory, locus of control) of migrant populations. For example, longer residence in the receiving country boosts transnational immigrants' cognitive functioning (Gonzalez et al., 2009), but other reports have suggested that middle-life immigrants (between the ages of 20 and 49) tend to have slower rates of cognitive decline than early-life immigrants (before the age of 20) and late-life immigrants (aged 50 or older) (Hill et al., 2012). Because our data do not contain cognitive measures other than self-efficacy, future research should incorporate a comprehensive measurement to arrive at a fuller picture of cognitive functioning in migrant youths. Collectively, our findings indicate the need for a far more detailed examination of the healthy migrant hypothesis and its extension to cognitive functioning with respect to migrant children in the internal migration milieu.

The influence of social stress operates differently for the two well-being outcomes in this study. The robust associations between the two forms of social stress – non-migration social stress and migration-specific assimilation stress – and psychological health across all of our analyses indicate that these forms of social stress, as hypothesized, are detrimental to the psychological well-being of both migrant and urban native adolescents. However, these two forms of social stress have far less influence on self-efficacy among the migrants or urbanites, a finding that is not consonant with our hypothesis. Overall, one implication of these results is that in promoting psychological health among migrant adolescents, efforts should target the management of the deleterious effects imposed by non-migration social stress and assimilation stress. More unexpectedly, social stress has a slighter effect on migrant adolescents compared with urban native teenagers, suggesting that the disruption of young migrants' psychological health caused by social stressors is less severe. In interpreting this result, we argue that resource disadvantages among migrants for dealing with stress might be counteracted by protective migrant resilience. Greater stress and more challenges due to migration may hone the migrants' personal growth, allowing them to develop a resilience that manifests as eudaimonic well-being (Ryff et al., 2003). In China, rural migrant adolescents may be more resilient to the effects of social stress and less psychologically disturbed by stressful situations than urban native adolescents, despite being exposed to higher levels of social stress as shown in our data, and despite experiencing a coping resource disadvantage. The role of migrant resilience in the management of stressful experiences is worthy of future inquiry.

Furthermore, we find some support for the conjecture that the locality of social ties matters for the mental well-being of internal migrants. With respect to the main function, trans-local ties with friends and relatives in the home community are found to be as essential as local ties with parents, teachers, local friends and neighborhood in directly improving the self-efficacy and psychological health of the young migrants, irrespective of the level of social stress. As hypothesized, some social ties also serve as a moderating mechanism in the links between social stress, psychological health and self-efficacy, which are more important for migrant adolescents than for their urban native counterparts. Nevertheless, it is noted that the significant direct associations between the social ties measures and the two well-being outcomes appear similar in magnitude between the migrant and urban teenagers. We originally hypothesized that due to the uprooting process of migration, migrants should be more affected

than urbanites by the main and buffering effects of social ties. The results regarding the migrant–urbanite comparison are partially aligned with this hypothesis in that migrants tend to be more sensitive to the stress-buffering function of social ties than to the direct health benefits of social ties. In comparison with the moderating effects of migrant ties with parents, teachers, friends and relatives in the receiving community, we also find that trans-local ties with home relatives and friends are, as expected, somewhat more useful for migrant teenagers in diluting the influences of non-migration social stress and migration-specific assimilation stress. This analysis provides evidence that trans-local ties are not only direct health resources, but also salient stress-coping resources for migrants, and these ties are activated in the presence of general social stress and migration-related assimilation stress.

More broadly, the above findings regarding the main and buffering effects of trans-local and local ties have two implications. First, although earlier work on trans-local ties with the community of origin and migrant health has focused disproportionately on transnational migration, our results clearly demonstrate that such ties also operate for internal migration. These findings inform the development of a unified framework concerning the locality of social support ties that affect the health of both internal and international migrants. Second, contrary to our expectation, the obstruction of permanent settlement in the host community does not appear to impede the main and buffering functions of local ties for teenaged migrants in our study. Local ties to the host community are no less important than trans-local ties, as demonstrated especially by the consistent direct links between local ties and better well-being of teenaged migrants, and these results differ from those of Jin et al.'s (2012) research on adult internal migrants in China mentioned earlier. It may be the case that migrant youths need more social resources for adaptation and normative adolescence development (Motti-Stefanidi et al., 2012), and therefore they may be sensitive to local ties resources even without permanent settlement. More studies are required to confirm how far sojourner migration may affect the utility of local ties in health protection.

This study also shows a noteworthy gender pattern, with gender being the strongest correlate across the sociodemographic variables. Gender predicts psychological well-being but not self-efficacy among migrant adolescents, with female migrants being more likely to be psychologically distressed than their male counterparts. Similarly, poorer psychological health and self-efficacy are reported by urban female adolescents. Whereas these findings reflect gender disparities in the appraisal of mental well-being regardless of migrant status, the causal mechanisms may vary between migrant and urban native youths. On the one hand, urban parents in China are increasingly willing to fully invest in urban girls (such as providing them with education) under the one-child policy, which eliminates opportunities for parents to display traditional son preference and discriminate against daughters (Lee, 2012). It follows that there is improved status of urban girls, and urban parents expect their daughters to perform and succeed as well as their male counterparts. Such parental expectation may have become a source of stress for urban female adolescents, generating poorer well-being among them. On the other hand, son preference remains highly pervasive in rural China (Li, 2004). This is because in consideration of the relatively high demand for manpower in agricultural households, the one-child policy has been relaxed in rural areas, allowing rural couples to have a second child if their first child is female. The enduring gender bias against rural daughters along with unfavorable migrant status may have led to more feelings of inferiority and higher levels of psychological ill-health among migrant girls.

Lastly, a few limitations to our study should be noted. This study on China only captured sojourner internal migration, thereby limiting the generalizability of the results to permanent

internal migrant children in other less institutionally constrained migration settings. Also, the measurement of migration-specific assimilation stress, with only two indicators, was limited and perhaps inadequate. To explore this factor further, a thorough measurement covering migrant children's assimilation stress in different life domains will be necessary. In addition, as this was a cross-sectional study, we were able to gauge the contemporaneous effects of social stress and social ties, but their longer-term causal effects on the mental well-being of migrant adolescents remain elusive. The retrospective accounts of social stress and social ties may also have introduced an estimation bias, as they may have reflected pre-existing psychological distress and reduced levels of self-efficacy.

Despite these limitations, the present study underlines the need for social network research on migrant well-being to distinguish between the social ties that link internal migrants to their receiving and origin communities. Equally important is that our findings broaden the literature on migration, social stress and health by substantiating the relevance of social stress to different well-being outcomes, and by illuminating the function of locality in social ties in the protection of mental well-being and stress moderation among young migrant populations.

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