A Prospective Study on Resilience Among Children with Different Migrant and Left-behind Trajectories

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Abstract
Parental migration has been an important predictor of children’s psychological resilience. The present study discusses the effect of parental migration on children’s resilience in rural western China from a dynamic viewpoint. Using sequence analysis, this study investigates children’s entire migration trajectory over the course of childhood (ages 1–12) and identifies the typical patterns of the dynamic family structure associated with parental migration: continuously nonmigrant (N=4,238), continuously migrant (N=923), continuously left behind by one parent (N=872), continuously left behind by both parents (N=796) and frequent transition between migrant or left-behind statuses (N=1,624). The results show that the trajectories of left-behind status and transition have a significant negative impact on children’s resilience, which demonstrates that both the effects of parent-child separation and family instability compromise children’s psychological functioning. Family resources can buffer these negative effects, but they work asymmetrically across different groups of children. Family economic resources serve as a significant protective factor among children continuously left behind by both parents, while family social resources are more protective for children in unstable families.

Highlights
- We investigate children’s migration trajectory by sequence analysis.
- We construct a conceptual framework containing the prolonged and instable effect of family structure.
- Parent-child separation and family instability compromise children’s resilience.
- Family resources are protective but work asymmetrically across children with distinct trajectories.

Keywords Parental Migration · Resilience · Instability · Left-behind children
1 Introduction

Rapid urbanization in China is primarily driven by rural-urban migration, which is called the largest population movement in human history (Zhang, 2008). According to the China National Bureau of Statistics (2019), more than 172 million rural residents have migrated to cities to seek jobs. Urbanization involves much more than an economic change or a geographical change in location (Mills, 1997). It has a significant impact on both migrants and their families (Zhang, 2015). As a consequence of large-scale migration, rural left-behind and migrant children have become a fast-growing population in China, which will inevitably change the landscape of education and labor in the coming decades (Wu et al., 2014; Fang et al., 2017). All China Women’s Federation (2013) estimated that approximately 61 million children have been left behind by their parents, while the number of migrant children under 15 years old has reached 18.97 million, according to the Ministry of Education (2017).

In recent years, attention has been drawn to the resilience of children in rural China, and a large stand of literature considers left-behind and migrant children to be vulnerable groups. Resilience is a concept that refers to resistance to the overcoming stress or adversity (Rutter, 2006). A resilient child may have a higher sense of responsibility, caring, flexibility and other prosocial behaviors (Benard, 1991). Left-behind and migrant children are more susceptible to pressure and distress in the process of parental migration, and they lack family care in adapting to those stressful events (Zhang et al., 2021). As a result, they are more likely to develop psychological and behavioral problems and are less capable of dealing with overcoming stress (Wen & Lin, 2012; Huang et al., 2016; Shi et al., 2016; Wu et al., 2017; Dong et al., 2019; Lu et al., 2019). However, some studies present inconsistent conclusions, which suggests that left-behind children and migrant children are not significantly worse off than their non-migrant counterparts (Fan et al., 2010; Wen & Lin, 2012; Ren & Treiman, 2016; Yeung & Gu, 2016; Liang et al., 2020).

The inconsistent responses of children can be attributed to the changed status in the whole dynamic process of parental migration. Migration is a dynamic process that can be able to expose children either a damaged family structure or the family instability (Lu et al., 2021). It is hard to define whether a child suffers from the prolonged parental absence or the family instability at a static point. Hence, studying the impact of migration from a dynamic trajectory perspective rather than a current status is important for understanding factors associated with psychological resilience. In the process of new urbanization in China, more rural residents choose to migrate to local towns or small cities nearby instead of moving to larger, more remote cities. As a result, transition between migrant, left-behind and non-migrant statuses occurs more frequently (Lu et al., 2021), and a study based on clarifying the dynamic features of migration status and family instability is necessary. Against this backdrop, the present study adopts a life-course perspective and recognizes left-behind and migrant trajectories throughout the whole childhood. Rather than categorizing the migration status based on one static snapshot, the new operation can capture the dynamic processes of children’s migration experiences. Based on the theories of family structure and family instability, we hypothesize that both children who continuously suffer
from the parental migration and who experience the family instability perform worse on the psychological resilience compared with their non-migrant counterpart.

In understanding children’s resilience in coping with family stress, studies have demonstrated the key role of family resources (Bronfenbrenner, 1979; Dubow et al., 2012; Waddoups et al., 2019). These resources can be further classified as economic resources and social resources (Zhang et al., 2021). Migrant and left-behind children are vulnerable to those family resources (Hu et al., 2014), and the disadvantage further predicts a lower outcome of psychological well-being (Li et al., 2018; Xiao et al., 2019). However, how these resources impact resilience among children with distinct migration experiences remains unexplored. We hypothesize that both the two resources act as a protective role in fostering children’s resilience, but may possess different level of impact on the performance of children with different migration trajectories. Therefore, the present study also explores the moderate effect of family resources among children with different trajectories. This is helpful for detecting the protective factors of resilience and further understanding an effective way to promote resilience in different children.

This paper uses data from a 2021 survey conducted in the Shaanxi Province to study resilience and family resources among children with different migratory trajectories. Our ability to systematically measure the dynamic family processes of parental migration is aided by sequence analysis. We employ sequence analysis to recognize children’s left-behind/migrant trajectories from a retrospective history of parental migration. We then explore the impact of migration trajectories on children’s resilience. We also investigate the impact of family resources on resilience and how they moderate the differences in resilience among children with different trajectories.

2 Literature Review

2.1 Migration Status and Resilience

Resilience is an important psychological resource within a dynamic system used to recover from significant threats or challenges (Luthans et al., 2006). It forms an adaptive response to overcoming stress and provides protective factors against risks when facing challenges (Reich et al., 2010). Resilience has been proven to be positively linked with both physical and psychological outcomes (Southwick et al., 2005; Ai & Hu, 2016; Pietrzak & Cook 2013). Resilience focuses on both internal and external factors. Internal factors refer to the intrinsic skills of children, including problem-solving abilities, stress-coping strategies or social competence; external factors mainly refer to an individual’s living environment, especially the interaction between children and their families (Werner, 1995; Gilligan, 2001). As such, resilience is not simply a personal trait but rather a part of the complicated ecosystem, within which the embedded family structures have a significant influence on resilience (Luthar, 2003).

Previous studies have largely conceptualized migrant status and left-behind status as two kinds of family structures that bring stress to the family ecosystem. Children with migrant status refer to those children under 18 who have left their original resi-
dence and migrated with their parents from rural to urban areas for at least six months (Liang et al., 2008; Lu et al., 2018). They left behind important social relationships with friends, classmates, extended family and face a completely unfamiliar environment in the developmental periods of their lives (Schwartz et al., 2010; Cui & To, 2019). Children with left-behind status refer to children under 18 who have lived at rural villages without one or both of their parents that migrated to urban areas for at least six months Duan & Zhou, 2005; He et al., 2012; Zhao et al., 2020). They suffered a long-term parent-child separation (Liu et al., 2009; Lu et al., 2021). The two structures act as risk factors that have a detrimental impact on children’s psychological well-being Case et al., 2002; Asis, 2006; Chen et al., 2009; Wen & Lin, 2012; Lu & Zhou, 2013; Liu & Wang 2015).

When children migrate with their parents, the greatest challenge for them is adjustment (Berry et al., 2006). Migrant children may suffer from acculturation stress due to being uprooting to move to a new environment and the loss of support networks in home villages. Since China’s urban-rural bifurcated hukou system impedes migrants from acquiring equal social welfare in urban areas (Chan & Buckingham, 2008), migrant children also become a marginalized population in urban areas and experience social discrimination (Lu et al., 2019). They may be confused by local peers’ prejudice and lonely in the new environment. Some local adults, including teachers and local parents, may also reject and discriminate against them, which serves as a risk factor for their well-being (Wong et al., 2009).

When children are left behind, they experience the absence of parental affection and guidance (Toyota et al., 2007). Reduced parental control, lessened supervision and weakened guidance may in turn negatively affect child development (Liu et al., 2009). Attachment theory provides an effective framework for understanding the detrimental impact of parental absence on left-behind children. The primary attachment figure for a child is generally to his or her parents (Ainsworth, 1982), and studies have found that migration disrupts children’s primary attachment, which may lead to the perception of insecurity and emotional distress (Kobak & Madsen, 2008; Dreby, 2010). Children may have multiple attachment figures, and several studies have found that these other attachments, such as peers, can promote children’s better emotional outcomes (Allen et al., 1998; Fournier, 2009). However, these figures can hardly compensate for the disrupted parent-child relationship, according to the “attachment hierarchy” (Ainsworth, 1982).

In the era of new urbanization in China, parental migration is more likely to take place in rural areas, which may lead to the instability of family structures (Lu et al., 2021). This instability mainly refers to the frequent transition between different migration statuses. The present study aims to examine the role of this changed family structure and determine whether family instability influences children’s resilience.

Family instability has mostly been explored among children in divorced or cohabiting families Sun & Li, 2002; Manning & Lamb, 2003; Fomby & Cherlin, 2007; Lee & McLanahan, 2015), but it has been overlooked in the context of parental migration. Shifts or reconfigurations in family structures may bring children a feeling of stress as they juggle a list of new demands (Amato, 2005), which in turn disrupt children’s emotional security and deteriorate parenting quality and household rules (Kelly & Wildsmith, 2004; Fomby & Cherlin 2007; Cavanagh & Huston, 2008; Brown, 2010;
Osborne et al., 2012). The change in family structure is found to be more detrimental to child development than the family structure per se (Brown, 2006; Cavanagh & Huston, 2006; Osborne & McLanahan, 2007). In the process of parental migration, the transition between different migration statuses disrupts the existing family routines and causes adjustment stress in the repeated change of the family structure (Coleman et al., 2000; Sandstrom & Huerta, 2013). The instability of family structures also undermines children’s attachment relationships with parents (Lu et al., 2021). The change in family households leads to repeated detachment and reattachment, which may subsequently produce uncertainty of parent-child bonds (Cavanagh & Huston, 2008). Family instability acts as a risk factor causing more tension and conflicts (Suárez-Orozco et al., 2002; Lu et al., 2020).

Overall, the impact of migration status on children’s resilience has been mostly investigated from a static point, where the instability of family structure is hardly explored. Research that systematically examines the impact of family structure on children’s resilience from a dynamic perspective is a necessary but complex issue. The answer depends on a trajectory of migration status but not a snapshot of migration status.

2.2 Family Resources and Protective Factors

An extensive literature has demonstrated that family resources act as important protective factors for children to overcome the faced adversities Place et al., 2002; Bayat, 2007; Walsh, 2012; Toledano-Toledano et al., 2021). Bronfenbrenner’s ecosystem theory suggests that family plays an important role in developing resilience, as it provides pivotal resources for children to overcome the faced adversities (Bronfenbrenner, 1979). According to Block and Block (2014), general resourcefulness is one of the major traits reflecting resilience; in other words, family resources play an important role in constituting each family member’s resilience, and children can fully exploit family resources and opportunities to overcome challenges (Alvord & Grados, 2005; Werner, 1995). Numerous studies have found that the possession of resources is essential for proactive coping (Hobfoll & Lerman, 1989; Norris et al., 2002). These resources have been proved to be important in how families adapt to challenges associated with raising a child with a negative condition (Blacher & Hatton, 2001).

According to Thomson et al.’s resources theory (1994), money and time are critical resources parents give to their children, where money refers to those economic resources including food, clothing, education, better neighborhoods and opportunities for social experiences, while time refers to those social resources including parental support and control associated with children’s better outcomes. The two pivotal resources have a deep impact on children’s physical and psychological outcomes but impart different effects in the family process (Conger et al., 2010; Kelley et al., 2011; Liu & Xie, 2015).

Family economic resources can provide physical security for children to help cushion their challenges (Dodgen et al., 2016). According to Walsh (2012), financial security is crucial for resilience. Children with a lower level of family economic resources are less capable of adapting to stress, and it is difficult for them to recover
from adversity (Becker-Blease et al., 2010). Anderson (2012) stated that financial strain act as the most significant risk factor for disrupting children’s psychological resilience. Inadequate material resources also cause children to experience feelings of social isolation, which may weaken their self-esteem (Cluver & Gardner, 2007) and cause emotional issues including depression (Adejuwon & Oki, 2011). In contrast, more economic resources are helpful in developing children’s intellectual and emotional outcomes (Yeung et al., 2002) and improving children’s capacity to adapt to adversities (Zautra et al., 2008; Li et al., 2015). A well-off family is more likely to provide children with a stimulating home environment with improved household living standards and educational expenditures (Lu & Treiman, 2011). Families with adequate material resources have higher probability of managing stress (McCubbin & McCubbin, 1993), and there exist a strong positive association between the economic resources and children’s resilience (Cunningham, 1996; Van Riper, 2007). The central role of the economic resources for fostering children’s resilience has been also observed during COVID-19 in recent studies (Masten & Motti-Stefanidi, 2020; Walsh, 2020; Zhang et al., 2021) found that family economic status acts as an important protective factor in developing children’s resilience during the pandemic.

In addition to family economic resources, family social resources are also a critical factor in fostering resilience. The parent-child relationship is regarded as the predominant relationship in which children frequently seek parents’ guidance, reassurance and direction (Furman & Buhrmester, 1985). Good parent-child relationship typically tops the list of protective factors identified in studies of resilience (Luthar & Eisenberg, 2017; Masten, 2014, 2021). Children’s resilience can be cultivated and developed by parents’ positive action (Pedro-Carroll, 2005; Chen & George, 2005). A strong parent-child relationship predicts the child’s positive well-being and resilience (Gunnar & Quevedo, 2007; Lau & Li, 2011; Hansen, 2014). A series of studies suggest that a warm and supportive parent-child relationship can foster children’s positive development, while a disrupted parent-child relationship may become a risk factor and disrupt the proper functioning of resilience (Grotevant, 1998; Amato & Gilbreth, 1999; Call & Mortimer, 2001; Place et al., 2002; Kelly & Emery, 2003) found that family conflict generates external harmful effects and intolerable stress for children, and thus keeping the children out of the conflict and creating a warm family environment is helpful for protecting children from incurring further harm and fostering their resilience McIntyre et al., 2003; O’Connor, 2003; Ruschena et al., 2005).

According to Dornbusch (1989), a strong parent-child relationship acts as a secure foundation from which children learn to navigate the external world, and children may have more confidence and security in facing environmental challenges with such family support. A positive parent-child relationship has also been found to moderate the negative effects of family poverty and environmental disadvantage placed on children (Burchinal et al., 2008; Bowes et al., 2010; Malmberg & Flouri, 2011; Anagnostaki et al., 2016) stated that family social resources highly predicted higher academic resilience, and the effect of negative life events may become modest if these resources are taken into account (Masten, 2014). Parental nurturing may not only help buffer risk (Evans et al., 2007; Chen et al., 2011) but also mediate the effect of lower family socioeconomic status on children’s emotional and behavioral functioning (Burchinal et al., 2008; Doan et al., 2012; Kiernan & Huerta, 2008). Research
on divorce has also suggested that the parent-child relationship is an important factor which mediates children’s post-divorce adjustment and develops the resilience and comfort of both parents and children in the new environment (Laursen & Birmingham, 2003; Greeff & Van Der Merwe, 2004; Rucshena et al., 2005).

Given the context of migration, migration is a household strategy aimed at improving economic resources according to household strategy theory (Stark & Bloom, 1985). In the process of transferring parental resources to children, parental migration can reduce the family budget by sending remittances home, which can in turn promote children’s quality of life (Asis, 2006; Morooka & Liang, 2009; Bennett et al., 2013). If children migrate with their parents from rural to urban places, they are more likely to experience a more developed and comfortable living condition and better welfare (Lu et al., 2019), and they can get in touch with new ideas and social norms that foster their positive development (Toyota et al., 2007). However, those benefits can hardly compensate for the reduced social resources that parents should invest in their children. The two kinds of resources play important roles in developing children’s resilience under the experience of parental migration, but the ways in which they have an impact are completely different (Zhang et al., 2021). Migrant children and left-behind children have different family contexts and suffer from different kinds of stress. This information will shed light on an underexplored question, namely, to what extent do those resources act as protective factors among children with different migration statuses? Studying the moderating effect of family resources on migration status and resilience expands the conventional paradigm for understanding how family resources affect child development.

3 The Current Study

The foregoing discussion is summarized in Fig. 1, which shows the effect of three kinds of family structures associated with parental migration on children’s resilience, i.e., the uprooting effect from migrant status, the weakened attachment effect from left-behind status and the effect of family instability from transitions between different migration statuses. Specifically, children who continuously migrate with their parents are likely to struggle with prolonged acculturation stress from uprooting to an unfamiliar environment. Children who have been continuously left behind suffer from a long-term care deficit, which monotonously damages parent-child attachment.
and produces subsequent emotional stress. Children who experience frequent transitions between different migration statuses are trapped in family instability. The negative effect of migration status may be mitigated for these children, but the additional adjustment stress subjects them to a similar or even larger risk to their psychological resilience.

The present study aims to discover how the family structure shapes children’s resilience from a dynamic view. To capture the prolonged effects of migrant status and left-behind status, as well as the effect of family instability, we investigate children’s entire migration trajectory over the course of childhood. Specifically, we use sequence analysis to identify the typical migration patterns of trajectories consisting of different migration statuses in each year (including non-migrant children, migrant children, children left behind by a single parent and children left behind by both parents). We then assess how the trajectory pattern affects children’s resilience.

We also pay particular attention to the impact of family resources because they act as an important protective factor in developing resilience. Understanding how they work with the effect of family structure is helpful for detecting the key roles of family in improving children’s psychological well-being. In this respect, we further explore the moderating effect of family resources between distinct migration trajectories and resilience.

4 Data and Methods

4.1 Data and Sample

Data are from the Survey of Life Circumstances of Students in Shaanxi, which is an online survey that was conducted in January 2021 by the New Urbanization and Sustainable Development Research Group at the School of Public Policy and Administration, Xi’an Jiaotong University. The survey was designed to investigate child development in the context of new urbanization in China. All 18 secondary schools in Ningqiang (a rural county in Shaanxi Province) participated in this survey. Shaanxi is a typical province in Western China with a relatively low economic status and a large immigrant and emigrant population. The number of migrant workers in Shaanxi has recently maintained rapid growth. In 2021, over 9.27 million of the registered population in Shaanxi are migrants. Ningqiang is a typical impoverished county where parental migration is a common household. It is characterized by large out-migration (Zhang et al., 2021).

The working relationship we had established with the local government and schools in the previous surveys played instrumental role in completing the survey during the pandemic of COVID-19. The survey adopted standardized designs and questionnaires across all the 18 secondary schools and was supported by the school administrators. The survey included a rich set of questions about children’s development, family resources and home environment. We conducted a pilot survey before implementation of the fieldwork and confirmed previous research that secondary school students were capable of providing relatively accurate reports on their well-being and home environments. Because of the half-lockdown situation during
COVID-19, the survey team members were not allowed to enter schools, so the survey was assigned as homework for each student, and students were required to carefully fill out the online questionnaire with teachers checking the assignment. The online survey was administered online and required a WeChat account or mobile number. A small number of students and their parents did not have such account or were not able to log in successfully to the platform to complete the survey. Local authorities then provided electronic devices to these families. To improve the response quality, the trained survey coordinators and teachers present online guidance to students with questions or difficulties. Parents were also encouraged to involve into the activity and help guide their children to finish the survey. Some difficult questions such as the migration experience or the family economic status were reminded by their teachers to ask for the guidance from their parents.

The school-based design, coupled with the survey logical settings, yielded a response rate of more than 95%. We have also built checks and filtered out questionnaires with serious logical errors or outliers. The final sample consisted of 9537 secondary-school students. One of the limitations is that the data are cross-sectional, and the migration trajectories may be difficult to detected. We sought to solve this problem by employing sequence analysis (discussed below) which is able to capture both continuity and change in family structure in children’s lives from the independent survey.

### 4.2 Variables

The outcome variable was resilience and was adapted from the Resilience Scale for Chinese Adolescents (RSCA; Hu & Gan 2008). The RSCA was developed by Hu and Gan in 2008, and it demonstrates good reliability and has been widely applied to assess resilience in Chinese adolescents through self-reports (Ye et al., 2016; Han et al., 2018). It includes 27 items designed to measure five subscale dimensions of resilience, including goal planning, affect control, positive thinking, family support and help seeking. The complete list of questions can be referred to Table S1 in Appendix. The first three dimensions reflect the higher-order factor of individual power, and the last two reflect the higher-order factor of supportive power. Students rated each item on a 5-point Likert scale ranging from 1=completely disagree to 5=completely agree. The mean resilience score was calculated, and the Cronbach’s α for resilience was 0.88 in the sample. The Cronbach’s α for each sub-dimension of resilience are respectively 0.84, 0.78, 0.84, 0.72, 0.75 for goal planning, affect control, positive thinking, family support and help seeking.

The key predictor is the children’s migration trajectories. It is a categorical variable obtained from sequence analysis using parents’ and children’s retrospective residential histories. To capture the whole picture of the migration trajectories, we need collect the detailed information of the migration status for each year and then combine the information into a dynamic time line. The tool of the sequence analysis allows us to draw the picture and document the persistence of parental migration over time. Sequence analysis is helpful for characterizing family structure trajectories when the trajectory of interest involves discrete statuses (Lu et al., 2021). By applying the cluster analysis attached to the sequence analysis, we can acquire a few
clusters of trajectories in similar patterns that represent the typical family migration patterns of children’s trajectories. The migration status for each year was measured with answers to the following questions: “Where were you living?”, “Where was your father living?”, and “Where was your mother living?” The response categories were “within-county”, “out-of-county”, “do not remember”, and “death, disappearance or divorce”. Participating students answered the three questions each year before the age of 12. Combining the responses to the three questions at each age, we come up with four kinds of family migration status, namely, non-migrant status (children and both parents living in the home county), migrant status (children living outside the county, and one or both parents living outside the county), left-behind by one parent (children living in the home county, and one of the parents living in the home county while the other one lives outside the county), left-behind by both parents (children living in the home county, and both parents living outside the county). To further guarantee the reporting quality, the schools informed the students and their guardians about the survey in advance, and children were encouraged to check with their caregivers about the migration experience. Then, we generated five clusters of typical family migration trajectories as the key predictor with the Sequence Analysis tool. To exclude the effect of parental death, disappearance and divorce, we dropped a small number of children who had those experiences. We also dropped a small number of children who were unclear about their migration status in any of the 12 years.

The moderating variables are family resources, including economic and social resources. Family economic status is an important material resource for promoting children’s resilience (Conger et al., 2010; Kelley et al., 2011; Liu & Xie, 2015; Yeung et al., 2002). It was measured by the response to the question, “What is the overall economic status of your family?” The responses ranged on a five-point Likert scale, where a score of 1–5 correspondingly represented status from low to high. This question was rated by students but was also reminded by their teachers to ask for the guidance from their parents. These children have been proved to be capable of providing relatively accurate reports on the family economic status in previous surveys (Lu et al., 2020; Zhang et al., 2021). Family social resources mainly refer to parent-child relationships that predict children’s positive well-being (VanWel et al., 2000; Gunnar & Quevedo, 2007). The survey asked five questions about parent-child relationships: “Do you love your father/mother?”; “Are you intimate with your father/mother?”; “Do your parents care for you?”; “Is the relationship between you and your father/mother very close?”; “Do you often communicate with your father/mother?” A five-point Likert scale was used for each item, ranging from 1=completely disagree to 5=completely agree. We averaged the responses to the five questions and averaged the relationship with either the father or mother to generate the overall parent-child relationship variables.

We also controlled for a list of demographic attributes shown to be critical for children’s resilience (Li et al., 2018). The control variables included gender (male or female), registration (rural or non-rural hukou), age (in years), presence of siblings, academic scores (lowest, medium lower, medium, medium higher, highest), health condition (worse or better), father’s education (illiteracy or primary school, junior high school, senior high or more), mother’s education (illiteracy or primary school, junior high school, senior high or more), parental relationships (worse,
medium worse, medium, medium better, better), boarding (living at home, boarding at school), classmate friendships (unfriendly, friendly), and relationships with neighbors (worse, medium worse, medium, medium better, better). Several respondents were missing a few data on the above variables. Thus, we dropped these individuals and acquired a final sample size of 8,453.

4.3 Methods

We conducted sequence analysis (Brzinsky-Fay & Kohler, 2006; Aisenbrey & Fasang, 2010) to capture the entire migrant and left-behind trajectories during childhood from the age of 0 to 12. This operation is capable of systematically documenting the persistence or instability of parental migration in a timeline. The sequence analysis proceeded in the following steps. First, we encoded the children’s migration status at each age as the unit of the whole trajectory (sequence). At each age, one of the four statuses was assigned to children’s trajectories: non-migrant, migrant, left behind by one parent, and left behind by both parents. Theoretically, there should be $4^{12} = 16,777,216$ unique sequences. Then, we employed an optimal matching algorithm (Needleman & Wunsch, 1970) to compute the dissimilarities between different sequences. The cost of transformation (substitution) between different states is measured by transition rates (Halpin, 2014). The procedure formed a dissimilarity matrix for each pair of sequences. Next, we employed Ward’s hierarchical fusion algorithm to conduct a cluster analysis on the generated dissimilarity matrix to detect the optimal clusters consisting of sequences in similar patterns (Milligan & Cooper, 1985). The criteria that maximize within-cluster homogeneity and between-cluster heterogeneity were introduced in this process, which means that we could then classify the large number of sequences into an optimal number of distinctive clusters. Finally, we acquired a solution with five clusters that represented the typical family migration patterns related to children’s trajectories. We used the SQ-Ados package in Stata to conduct these procedures (Brzinsky-Fay & Kohler, 2006).

To study the effect of migration trajectories on children’s resilience, we conducted an OLS regression where the identified cluster derived from sequence analysis was assigned as the key independent variable, and resilience was set as the dependent variable. We used the cluster of stable non-migrant children as the reference category because they represent the most regular arrangement in rural counties.

We further performed the propensity score matching (PSM) to mitigate potential confounding bias (Morgan & Winship, 2014). Children who experienced different migration trajectories may differ in other ways that impact on their psychological resilience. For example, children left behind by their parents may be exposed to certain environments or have certain attributes that put them at higher level of risks of mental problem independent of migration trajectories. As a result, the effect of family migration may be overestimated or underestimated without considering these factors. PSM allows us to compare children who are similar across a wide range of characteristics except for their migration trajectory. This is done by matching on a summary measure (i.e., propensity score) of factors that predict the trajectory. The presented result is carried out by the nearest neighbor matching algorithm where the matching partner in the control group is chosen for a treated individual that is closest in terms
of propensity score. Nearest neighbor matching algorithm is the most straightforward matching estimator and has been widely applied when employing PSM (Caliendo & Kopeinig, 2008; Austin, 2014). We also run additional analyses based on radius matching and kernel matching methods and obtained similar results. Radius matching requires that all individuals from the control group who lie within a specific caliper (the propensity range) for the treated individual are matched for the comparison (Becker & Ichino, 2002; Austin, 2011). Kernel matching is a non-parametric estimator calculated by a counterfactual outcome that use the weighted averages of individuals in the control groups; this method is applied using a weighted regression based on the kernel weights depending on the distance between each individual from the control group and the participant observation (Smith & Todd, 2005; Caliendo & Kopeinig, 2008; Handouyahia et al., 2013).

To examine the moderating effect of family resources, we further performed interactions between children’s migration trajectories and different types of family resources. This allowed us to have a better understanding of how family resources protect children’s psychological well-being among children with distinct experiences.

5 Results

5.1 Descriptive Statistics

Applying the procedures described above, we reached five clusters of family migration patterns based on the childhood trajectories (ages 0–12). Specifically, Cluster 1 (50.14%) consisted of children who were always non-migrant and living with parents in home counties. Cluster 2 (10.92%) was composed of children who experienced most of their childhood migrating out with parents, although some had brief spells of being non-migrant or left-behind. Cluster 3 (10.32%) featured the most time spent left behind by a single parent. Those children who suffered from a long period of separation from both parents comprised Cluster 4 (9.42%). Cluster 5 (19.21%) was made up of children who experienced frequent transitions between non-migrant status and other migration statuses. These five clusters represent the typical family migration patterns, and we named these clusters non-migration, migration, left-behind by a single parent, left-behind by both parents, and transition. The sequence index plot of childhood trajectory clusters can be seen from Fig. S1 in Appendix.

Table 1 shows the descriptive statistics by different trajectory clusters. We found that children with different trajectories have significantly different levels of resilience. Children associated with parental migration have lower levels of resilience compared to stable non-migrant children. An exception to this outcome is that children who have experienced transitory migration status have lower resilience than non-migrant and migrant children. It should be noted that this finding should be interpreted with caution, as it does not account for other factors that may differ across different trajectories.

There are also significant differences in family resources among children with distinct family structures. Migrant children and children left behind by both parents possess the advantage of family economic status, but they are constrained by less
### Table 1: Descriptive statistics of variables by different trajectory patterns

|                     | Total       | Non-migration | Migration | Left-behind by single parent | Left-behind by both parents | Transition | p-value |
|---------------------|-------------|---------------|-----------|------------------------------|----------------------------|-----------|---------|
| Resilience          | 3.33 (0.57) | 3.36 (0.57)  | 3.31 (0.56) | 3.27 (0.56)                  | 3.30 (0.57)                | 3.21 (0.56) | ***     |
| Economic            | 2.79 (0.56) | 2.79 (0.57)  | 2.83 (0.57) | 2.74 (0.54)                  | 2.85 (0.50)                | 2.77 (0.55) | ***     |
| Parent-Child Relation | 7.30 (1.23) | 7.36 (1.17)  | 7.19 (1.38) | 7.32 (1.22)                  | 7.12 (1.38)                | 7.28 (1.12) | ***     |
| Gender              |             |               |           |                              |                            |           | ***     |
| Boy                 | 48.18       | 50.38         | 48.10     | 45.18                        | 47.61                      | 44.40      |
| Girl                | 51.82       | 49.62         | 51.90     | 54.82                        | 52.39                      | 55.60      |
| Registration        |             |               |           |                              |                            |           | ***     |
| Rural               | 82.69       | 79.16         | 83.75     | 88.07                        | 88.32                      | 86.65      |
| Urban               | 17.31       | 20.84         | 16.25     | 11.93                        | 11.68                      | 14.35      |
| Age                 | 15.07       | 15.09         | 15.16     | 14.87                        | 14.99                      | 15.11      |
|                     | (1.75)      | (1.77)        | (1.74)    | (1.74)                       | (1.67)                     | (1.73)     |
| Sib                 |             |               |           |                              |                            | ***       |
| Single              | 25.35       | 27.04         | 29.90     | 19.04                        | 25.75                      | 21.55      |
| Two or more         | 74.65       | 72.96         | 70.10     | 80.96                        | 74.25                      | 78.45      |
| Score               | 2.84 (1.03) | 2.85 (1.03)  | 2.80 (1.02) | 2.87 (1.04)                  | 2.85 (1.03)                | 2.83 Ns    |
| Health              |             |               |           |                              |                            |           | *       |
| Worse               | 29.02       | 27.98         | 31.20     | 31.54                        | 26.01                      | 30.60      |
| Better              | 70.98       | 72.02         | 69.80     | 68.46                        | 73.99                      | 69.40      |
| Father Education Degree |         |               |           |                              |                            | ***       |
| Illiteracy or Primary | 34.98     | 33.95         | 33.91     | 40.60                        | 32.16                      | 36.64      |
| Junior High         | 45.38       | 42.59         | 45.40     | 47.25                        | 52.76                      | 48.03      |
| Senior High or above | 19.64     | 23.45         | 20.69     | 12.16                        | 15.08                      | 15.33      |
| Mother Education Degree |         |               |           |                              |                            | ***       |
| Illiteracy or Primary | 52.31     | 50.26         | 48.54     | 59.63                        | 51.26                      | 56.40      |
| Junior High         | 34.77       | 33.11         | 37.38     | 34.98                        | 39.70                      | 35.10      |
| Senior High or above | 12.92     | 16.64         | 14.08     | 5.39                         | 9.05                       | 8.50       |
| Relations between Parents |       |               |           |                              |                            | Ns        |
| Boarding            | 3.13 (1.32) | 3.14 (1.34)  | 3.15 (1.29) | 3.04 (1.31)                  | 3.11 (1.34)                | 3.13 (1.28) |
| No                  | 84.19       | 81.15         | 84.72     | 86.70                        | 89.70                      | 87.81      |
| Yes                 | 15.81       | 18.85         | 15.28     | 13.30                        | 10.30                      | 12.19      |
close parent-child relationships. Children who have experienced long-term separation from a single parent or family instability fare worse on economic resources, but their social resources are not notably reduced.

Other control variables also exhibit significant cluster differences. Girls are more likely to be associated with parental migration, which reflects the presence of slight gender discrimination in rural China. Rural children have a higher probability of experiencing parental migration than those who have urban hukou. Left-behind children are slightly younger, and they have a higher percentage of boarding at school, but they have better academic performances. On average, migrant parents have a lower education level than non-migrant parents. Children left behind by single parents are not as healthy as other children. This is perhaps because they are more likely to have siblings, and thus less nutrition and social support is available to them. Moreover, migrant children fare worse in relationships with classmates and neighbors, which reflects the potential acculturation stress they may face.

5.2 Results from Regression Analyses

The regression results of the effect of family structure on resilience are presented in Table 2. Before controlling for family resources and demographic characteristics, children who experienced household parental migration in their childhoods all demonstrated significantly lower resilience, as shown in Model 1. Model 2 controlled for children’s demographic characteristics and showed that the cluster of migrant children does not have a significant impact. Migrant children may experience stress while adapting to a new environment, but this stress can be offset by improved family economic conditions; thus, their psychological outcomes do not significantly differ from those of their non-migrant counterparts. However, other trajectories still exhibit a consistent effect. Children who are continuously left behind by one or both parents and children who experience frequent transition between different migration statuses are significantly less resilient. These results point to the detrimental impact of weakened attachment and family instability.

Model 3 added the variable of family economic status, and the patterns largely held. The role of family economic status was, as expected, found to have a positive effect on developing children’s resilience. Family economic resources turned out to be
|                                | Model 1          | Model 2          | Model 3          | Model 4          |
|--------------------------------|------------------|------------------|------------------|------------------|
| Cluster (Refer: Non-migration) |                  |                  |                  |                  |
| Migration                      | -0.054(0.021)**  | -0.023(0.019)    | -0.024(0.019)    | -0.011(0.018)    |
| Left-Behind by Single Parent   | -0.089(0.021)**  | -0.074(0.020)**  | -0.073(0.020)**  | -0.070(0.019)**  |
| Left-Behind by Both Parents    | -0.061(0.022)**  | -0.056(0.020)**  | -0.058(0.020)**  | -0.031(0.020)    |
| Transition                     | -0.050(0.017)**  | -0.040(0.015)**  | -0.040(0.015)**  | -0.031(0.015)*   |
| Economic                       |                  |                  | 0.030(0.011)**   | 0.023(0.010)*    |
| Parent-Child Relation          |                  |                  |                  | 0.106(0.005)**   |
| Gender (Refer: Boy)            |                  |                  |                  |                  |
| Girl                           | -0.004(0.011)    | -0.005(0.011)    | -0.017(0.011)    |                  |
| Hukou (Refer: Rural)           |                  |                  |                  |                  |
| Urban                          | -0.019(0.016)    | -0.022(0.016)    | -0.018(0.016)    |                  |
| Age                            | -0.011(0.004)**  | -0.011(0.004)**  | -0.009(0.003)**  |                  |
| Sib (Refer: Single)            |                  |                  |                  |                  |
| Two or More                    | -0.020(0.014)    | -0.020(0.014)    | -0.019(0.013)    |                  |
| Score                          | -0.078(0.006)**  | -0.077(0.006)**  | -0.070(0.005)**  |                  |
| Health (Refer: Worse)          |                  |                  |                  |                  |
| Better                         | 0.155(0.013)**   | 0.153(0.013)**   | 0.126(0.012)**   |                  |
| Father Education Degree        |                  |                  |                  |                  |
| (Refer: Illiterate or Primary) |                  |                  |                  |                  |
| Junior High                    | 0.006(0.013)     | 0.004(0.013)     | -0.002(0.013)    |                  |
| Senior High or Above           | 0.044(0.019)*    | 0.040(0.019)*    | 0.028(0.019)     |                  |
| Mother Education Degree        |                  |                  |                  |                  |
| (Refer: Illiterate or Primary) |                  |                  |                  |                  |
| Junior High                    | -0.000(0.013)    | -0.004(0.013)    | -0.001(0.013)    |                  |
| Senior High or Above           | 0.078(0.022)**   | 0.073(0.022)**   | 0.078(0.021)**   |                  |
| Relations between Parents      | 0.010(0.004)*    | 0.010(0.004)*    | 0.003(0.004)     |                  |
| Boarding (Refer: Yes)          |                  |                  |                  |                  |
| No                              | -0.027(0.017)    | -0.028(0.017)    | -0.020(0.017)    |                  |
| Classmate Friendships (Refer:  |                  |                  |                  |                  |
| Unfriendly)                    |                  |                  |                  |                  |
an important protective factor to provide to children with physical security that helps them resist emotional stress. The variable of parent-child relationships was included in Model 4, where higher social resources predicted higher levels of resilience. However, the difference between children left behind by both parents and non-migrant children was nonsignificant. This alludes to the mediating role of the parent-child relationship. If left-behind children were to have the same amount of parental care as non-migrant children, they would be as resilient as non-migrant children.

Other covariates also play roles in creating resilience. Older children are less resilient than younger children. Academic scores negatively influence resilience. Physical health serves as a significant protective factor. Parents with higher levels of education help their children exhibit better outcomes. A closer relationship between parents and children may also protect children from being distressed. Children who have better relationships with their peers and neighbors have a lower risk of psychological problems. A sensitivity analysis using parental migration history from age 4 and above has been also conducted, for which students may have better recollection. The results can be referred to Table S1 in Appendix, where the regressions are in line with the main results.

To adjust for the endogenous bias, we conducted a sensitivity analysis based on propensity score matching (PSM). Since PSM allows only pairwise comparisons, we compare children in different trajectories with their non-migrant counterparts. Kernel density graphs are displayed in Figs. S2-S5 in Appendix, which show the distribution of estimated propensity scores for different groups of children before

### Table 2 (continued)

|                          | Model 1       | Model 2       | Model 3       | Model 4       |
|--------------------------|---------------|---------------|---------------|---------------|
| Friendly                  | 0.284(0.017)*** | 0.282(0.017)*** | 0.243(0.016)*** |               |
| Neighborhood Relations   | 0.148(0.008)*** | 0.147(0.008)*** | 0.118(0.008)*** |               |
| Constant                 | 3.356(0.009)*** | 2.754(0.071)*** | 2.673(0.077)*** | 2.072(0.079)*** |
| N                        | 8453          |               |               |               |
| PSM estimates (Migration vs. Non-migration) | -0.030(0.027) | -0.046(0.028) | 0.016(0.027) |               |
| PSM estimates (Left by single parent vs. Non-migration) | -0.082(0.029)** | -0.057(0.028)* | -0.088(0.029)** |               |
| PSM estimates (Left by both parents vs. Non-migration) | -0.052(0.026)* | -0.071(0.031)* | -0.042(0.030) |               |
| PSM estimates (Transition vs. Non-migration) | -0.043(0.022)* | -0.068(0.022)** | -0.065(0.023)** |               |

Note. * p<0.05; ** p<0.01; *** p<0.001
Table 3  Regression analysis of moderating effects of family resources with trajectory patterns on children’s resilience (standard errors in parentheses)

|                              | Model 1          | Model 2          |
|------------------------------|------------------|------------------|
| Group (Refer : Non-migration)|                  |                  |
| Migration                    | -0.058(0.092)    | 0.042(0.102)     |
| Left-Behind by Single Parent | -0.151(0.097)    | -0.218(0.115)    |
| Left-Behind by Both Parents  | -0.256(0.110)*   | -0.004(0.107)    |
| Transition                   | 0.036(0.075)     | -0.209(0.091)*   |
| Economic                     | 0.017(0.014)     | 0.023(0.010)*    |
| Group ⊆ Economic             |                  |                  |
| Migration ⊆ Economic         | 0.017(0.032)     |                  |
| Left-Behind by Single Parent ⊆ Economic | 0.030(0.034) |                  |
| Left-Behind by Both Parents ⊆ Economic | 0.079(0.038)* |                  |
| Transition ⊆ Economic        | -0.024(0.026)    |                  |
| Parent-Child Relation        | 0.106(0.005)***  | 0.101(0.007)***  |
| Group ⊆ Parent-Child Relation|                  |                  |
| Migration ⊆ Parent-Child Relation | 0.007(0.014)   |                  |
| Left-Behind by Single Parent ⊆ Parent-Child Relation | 0.020(0.016) |                  |
| Left-Behind by Both Parents ⊆ Parent-Child Relation | -0.004(0.015) |                  |
| Transition ⊆ Parent-Child Relation | 0.024(0.012)* |                  |
| Gender (Refer: Boy)          |                  |                  |
| Girl                         | -0.017(0.011)    | -0.018(0.011)    |
| Hukou (Refer: Rural)         |                  |                  |
| Urban                        | -0.017(0.016)    | -0.018(0.016)    |
| Age                          | -0.010(0.003)**  | -0.009(0.003)**  |
| Sib (Refer : Single)         |                  |                  |
| Two or More                  | -0.019(0.013)    | -0.020(0.013)    |
| Score                        | -0.070(0.005)*** | -0.070(0.005)*** |
| Health (Refer: Worse)        |                  |                  |
| Better                       | 0.126(0.012)***  | 0.126(0.012)***  |
| Father Education Degree (Refer: Illiteracy or Primary) |                  |                  |
| Junior High                  | -0.002(0.013)    | -0.003(0.013)    |
| Senior High or Above         | 0.028(0.019)     | 0.028(0.019)     |
| Mother Education Degree (Refer: Illiteracy or Primary) |                  |                  |
| Junior High                  | -0.001(0.013)    | -0.001(0.013)    |
| Senior High or Above         | 0.078(0.021)***  | 0.078(0.021)***  |
| Relations between Parents    | 0.003(0.004)     | 0.003(0.004)     |
| Boarding ( Refer: Yes )      |                  |                  |
| No                           | -0.020(0.017)    | -0.020(0.017)    |
| Classmate Friendships (Refer: Unfriendly) |                  |                  |
| Friendly                      | 0.243(0.016)***  | 0.243(0.016)***  |
| Neighborhood Relations       | 0.117(0.008)***  | 0.118(0.008)***  |
| Constant                     | 2.093(0.083)***  | 2.108(0.087)***  |
| N                            | 8453             |                  |

Note. * p<0.05; ** p<0.01; *** p<0.001
and after matching, and the results suggest that matching improved data balance. The PSM result is presented in the last four rows of Table 2. Before controlling the family resources, children continuously left behind by single or both parents and children who experience the family instability fared significantly worse than non-migrant children. The patterns largely held when we controlled the economic status. However, children continuously left behind by both parents were no longer significantly worse off than non-migrant children when we controlled the parent-child relationships. These results are qualitatively similar to those based on regression analysis.

To study how family resources work with family structures associated with parental migration, we examined the interaction effect of family resources and migration trajectories on children’s psychological well-being, as shown in Table 3. Model 1 included the interaction of family migration pattern multiplied by family socioeconomic status. The item of children left behind by both parents is statistically positively significant. This means that the protective effect of family economic resources is significantly more important for children who suffer continuous separation from both of their parents. Although economic resources can hardly offset the broken attachment to parents, they still act as a protective factor to mediate the stress derived from the negative family structure.

Model 2 presents the interaction effect of social resources and migration trajectories on children’s resilience. The item of transition multiplied by the parent-child relationship is positively significant. This result suggests that the parent-child relationship serves as a more pronounced protective factor to protect children in unstable family structures. A stronger mind is actually required for these children because they should not only overcome the emotional stress derived from parental migration but also adapt to the uncertainty or insecurity of family households and adjustment stress. Parental company turns out to be the most effective medicine to mediate both emotional stress and adjustment stress.

6 Discussion and Conclusion

The present study has discussed the effect of parental migration on children’s resilience in rural Western China. It has sought to extend existing research on this topic by detecting the common trajectories of children’s migrant and left-behind experiences. By the use of sequence analysis, we have identified five typical patterns of those trajectories, i.e., continuously non-migrant children, continuously migrant children, children continuously left behind by single parent, children continuously left behind by both parents, children who experienced frequent transitions between different migration statuses. The results show that the trajectories of left-behind children and transitory migration patterns have a significantly negative impact on children’s resilience. The results demonstrate that the effect of parent-child separation and the effect of family instability both compromise children’s resilience.

The two significant effects of family structure may work with distinct potential mechanisms. Children consistently left behind by their parents fared worse than children in stable non-migrant families. They acquire little parental care and suffer from weakened parent-child bonds. They are taken care of by other caregivers, such as...
grandparents, who are unable to provide enough support and guidance to substitute for the missing parents. Care deficits during childhood then become a risk factor that injures children’s mental health. The consistent parent-child separation deprives children of family support and exposes them to the family malfunctioning. However, the parent-child relationship acts as an important mediating role; those disadvantaged group can be as resilient as those living in the stable two-parent families if they possess the same level of family relationship. This result adds to family functioning theory by exploring how family stress associated with parental migration impairs family functioning and ultimately impacts on children’s resilience. Prolonged care deficits caused by continual parent-child separation has caused weakened family relationships and attachment, which reflects the disengaged family profile in family functioning theory. Under the background of the new urbanization in temporary China, residents in rural western areas are more likely to migrate to local urban areas for job opportunities, which largely decreases the migration distance. However, the results suggest that even though parents’ work may not be far from their home counties, left-behind children are still less resilient because of the absence of parents, thereby reflecting that a shorter distance of migration cannot offset the negative effect of parent-child separation.

On the other hand, children who experience multiple transitions of migration status also fared worse than those living in stable non-migrant families. This trajectory appears to be similarly detrimental to the trajectory of prolonged parent-child separation, and the result also parallels several scenarios in family functioning theory. Multiple transitions of migration status lead to the imbalance of family relationships and challenge the family adaptability, exposing children to an environment of chaotic family functioning. The family instability makes children become more stressed when adapting to new family routines. They not only suffer from the negative effects associated with parental migration (uprooting or weakened attachment) but are also required to adjust to the repeated presence and absences of the attachment figure. The joint effects render them especially vulnerable to resilience. Our finding reflects the potential mechanism that the repeated parental migration accumulates to generate chronic disruptions and adjustment difficulties for children’s resilience. These children did not experience parent-child separation for as long as those children who were consistently left behind. Intuitively, transition children may perform better than left-behind children because family reunions help to restore their attachment to their parents. However, the relationship is vulnerable to the repeated disturbance of transition. As a result, children face attachment instability as parents move out and re-enter the family repeatedly. Uncertainty challenges them, and they sacrifice their psychological welfare to adjust for changed family routines and household strategies. Overall, the present study highlights the adverse effect of both family structure and family instability associated with parental migration in a dynamic perspective.

Parental migration is a common household strategy in rural China that can improve family economic resources but sacrifice social resources. The present study highlights the importance of the two kinds of resources. Both resources play a protective role in promoting children’s well-being. This paper found that children who are continuously left behind by both parents possess the fewest social resources, but these children can perform as well as their non-migrant counterparts if they have the
same level of social resources available. This is a departure from the existing studies that regard left-behind children as a less-resilient population. Further interaction analyses found moderate effects of family resources. Children left behind by both parents are the most deprived of parental care, and family economic resources have a pronounced positive impact on children’s resilience. For children who experience frequent transition of migration status, family social resources serve as a significantly protective factor for developing resilience compared to other groups.

Our study has some theoretical implications. The present study adds to the current knowledge about the impact of family structure and resources associated with parental migration on children’s resilience from a dynamic perspective. Taking the effect of uprooting, weakened attachment and family instability into account, this study combines different stress sources with the migration trajectory to systematically examine how parental migration shapes the risk of compromising resilience and how family resources protect children with distinct trajectories from being distressed. By incorporating the prolonged negative effect as well as the instability of the family structure, we move beyond the existing findings on the effect of static migration status and demonstrate the cumulative effect of parental migration over the life course.

The present study also sheds some light on practical implications. Family economic and social resources have been demonstrated to be important in boosting children’s psychological functioning. In comparison, the role of family resources becomes asymmetrical across different groups of children. For example, promoting family remittance seems to be more useful in improving left-behind children’s psychological well-being. Creating a warm and supportive parent-child relationship can be one of the most effective ways to promote the resilience of children who suffer from family instability. In this case, the optimal social policy that fosters children’s resilience should cater to children with different trajectories. To some degree, the current study emphasizes the critical importance of social resources, which may give too much weight to the role of economic resources. Even though family economic resources provide physical security that can cushion stress, they cannot offset the sacrificed parental care that should be invested in children. The ultimate key to promoting resilience hinges on easing structural barriers for migrant families so that parents can invest more care and time in their children. Our findings can be also extended to other developing countries where parental migration is a common family household strategy.

For the foreseeable future, the process of China’s urbanization will keep going forward, accompanied by an increasing number of rural migrants, which will lead to greater challenges to the development of rural migrants’ children. Small counties and cities have a less public infrastructure and a lack of industry, which leaves them unable to provide enough jobs for residents. As a result, a large number of rural residents will continue to migrate to faraway cities for job opportunities. The national government should strengthen the employment capacity of small counties and cities, which may provide an orderly and stable return of migrant workers and allow rural residents can be better settled in local areas. Moreover, the urban-rural dual hukou system precludes rural children from equal access to public schools in urban areas. Many of these individuals have to transition to different parts of the city for education, which leads to further instability. The government should adhere to the integra-
tion of urban and rural education, break the structural concept of two standards for urban and rural education, support the development of private education, improve the teaching quality in private schools, and rationally allocate educational resources throughout local counties. Overall, the designed policy should create a stable environment for children’s schooling, while parents should be guided to spend more time with their children, thereby forming a stable and harmonious family environment. Our findings can be also extended to some other developing countries where parental migration is a common family household strategy. Our research may reflect some common problems of children development brought about by the migration process in different countries, e.g. the detrimental effects of the family structure of parent-child separation and the family instability on children’s resilience. The present study aims to provide a new perspective on conducting the research of children’s resilience in different countries.

Despite the merits of these new insights, there are limitations to the current study. Since the data we used are cross-sectional, some potential endogeneity bias may be difficult to completely address. We sought to strengthen our findings by use of PSM model. The main findings largely hold, which proves that the presented result are not entirely driven by endogeneity. Going forward, longitudinal research recording psychological well-being at each time point is needed, and such research may more accurately measure the migration effect on children’s development with less potential bias. Another limitation is that our study is limited to one county. Future research should gather nationally representative data with detailed information on parental migration history.

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Author Contributions X. He designed the study and wrote the original draft; R. Zhang collected the data, and edited the manuscript; B. Zhu provided the methodology, analyzed the data and edited the final manuscript.

Declarations

Conflict of Interest The author declares that there is no conflict of interest to declare.

Ethics Approvals This research was approved by the Scientific Ethics Committee of Xi’an Jiaotong University.

Informed Consent All participants gave their informed consent to participate in the study.
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